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Gothic Revival

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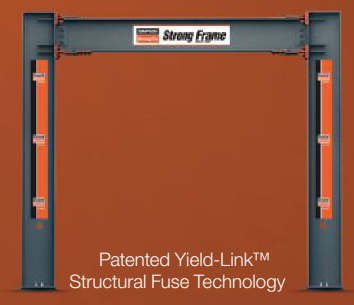

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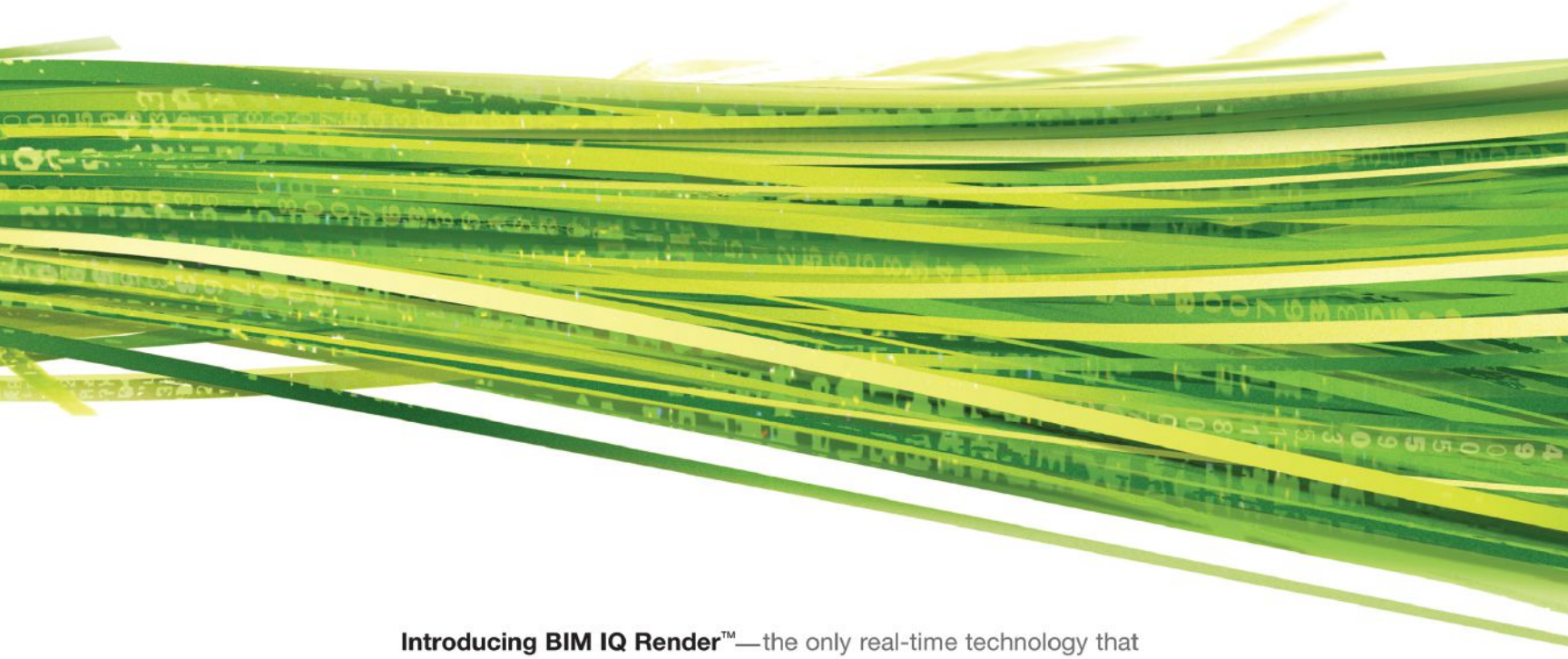

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Contents

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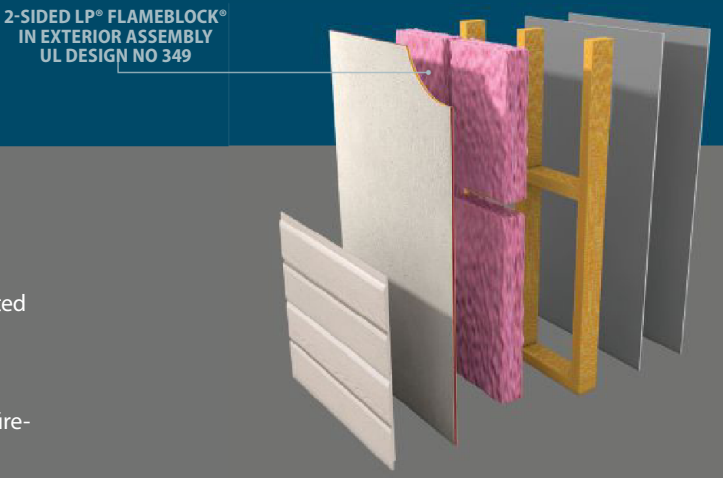

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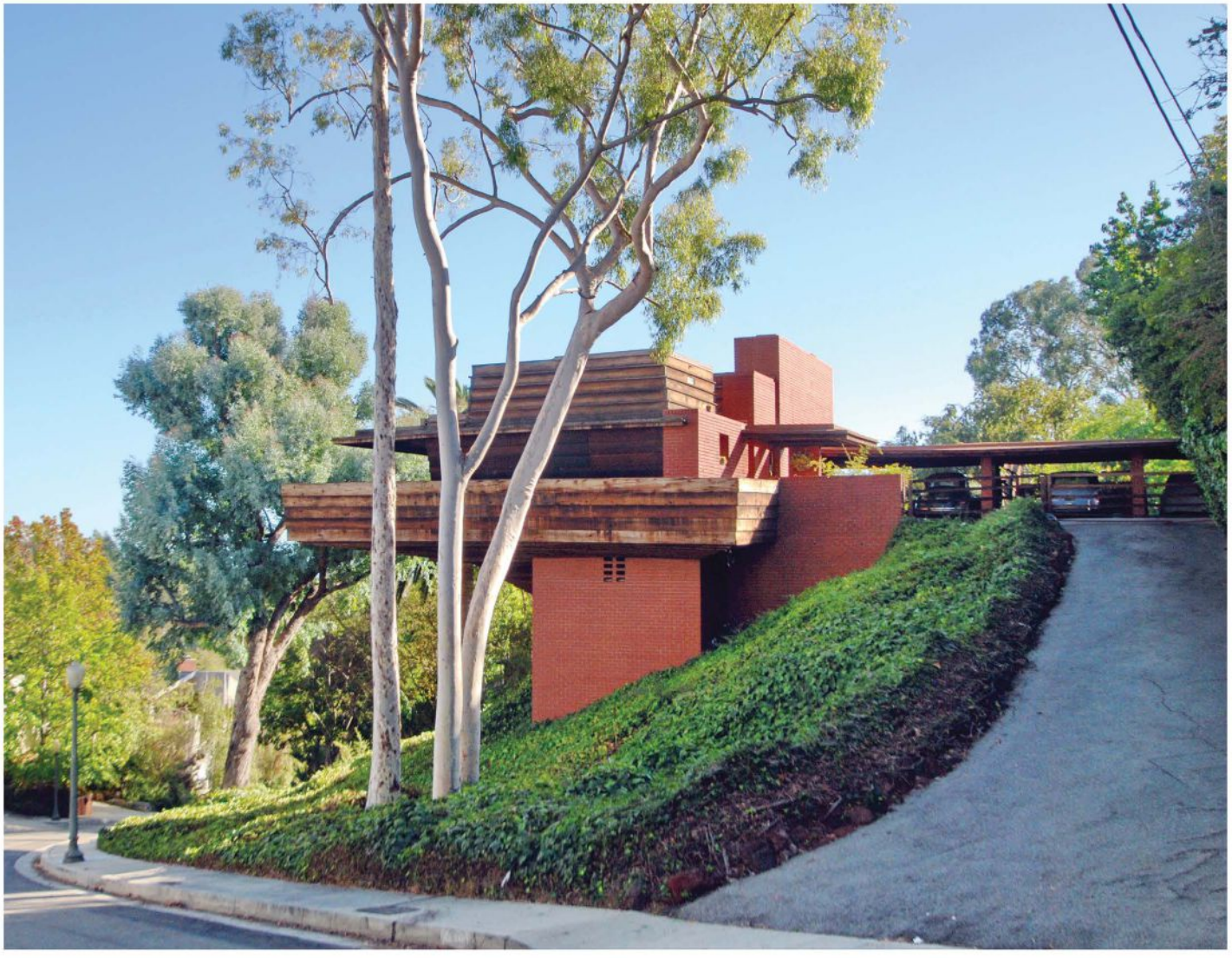
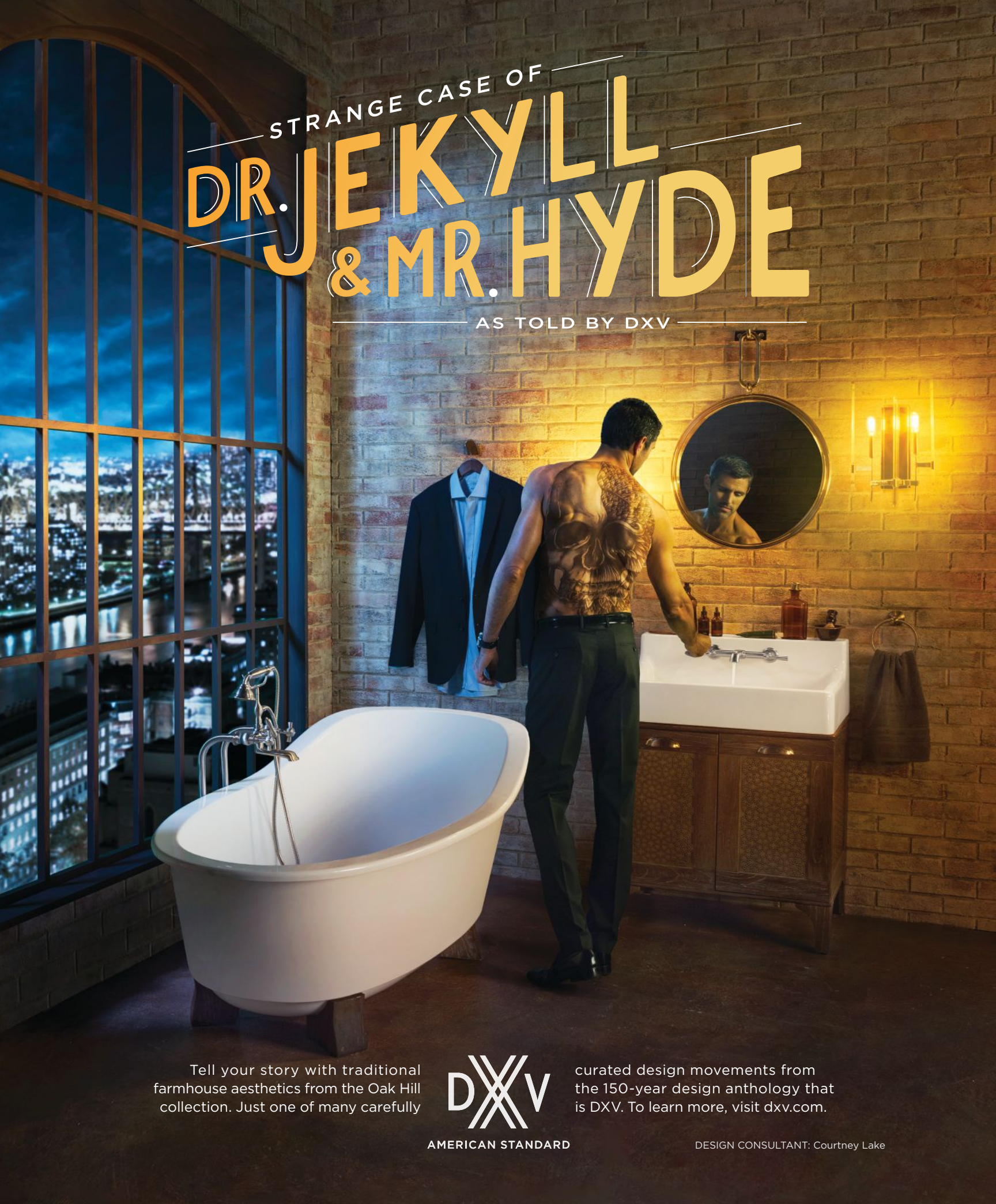


MICHAEL LOCKE

Leap Some Tall History in a Single Bound

Frank Lloyd Wright's George D. Sturges residence will be auctioned on Feb. 21. The house is up for sale for the first time in nearly 50 years, as a part of the estate sale of actor Jack Larson, best known for playing Jimmy Olsen in the '50s-era *Adventures of Superman* TV show. Set in a hillside lot in Los Angeles' Brentwood neighborhood, the 1,200-square-foot house was designed a few years after Fallingwater, and is Wright's only Usonian design in the City of Angels. Expected to go for $2.5 to $3 million, all proceeds benefit the Bridges/Larson Foundation, which established the James Bridges Award in Film Directing. —ANGIE COOK

> *Read Angie Cook's full story about the auction for the Sturges house at bit.ly/FLWStugesSale.*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In early January, New York Gov. Andrew Cuomo (D) rolled out a $3 billion plan to renovate Penn Station and the nearby James A. Farley Post Office Building. Using a public–private partnership to ensure a three-year building timeline, improvement to the underground station will include widening walkways, reconfiguring ticketing and waiting areas, updating signage, and increasing natural light penetration. Across Eighth Avenue, work on the Farley Post Office is continuing on a design by Skidmore, Owings & Merrill. This new train hall for Amtrak will be renamed after the late New York Sen. Daniel Patrick Moynihan. —CHELSEA BLAHUT

> *Read more about New York Gov. Andrew Cuomo's plan to revamp Penn Station at bit.ly/3BPennStation.*


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On New Year's Eve, we lost Richard Sapper. Born in 1932, the German designer studied at the University of Munich and started his career at Daimler Benz before moving to Milan to work for architect Giò Ponti. In 1959, Sapper struck out on his own designing radios and televisions, and in the ensuing decades, he branched out to a vast array of other areas, from lighting, computers, and automobiles, to furniture and even modular housing. He even turned down an offer from Steve Jobs to design for Apple because he was too busy and didn't want to move to California. (Sapper's classic 1972 Tizio task lamp for Artemide is pictured above.)

> *Learn more about Richard Sapper's prolific design life at the elegant website he crafted for himself: richardsapperdesign.com.*

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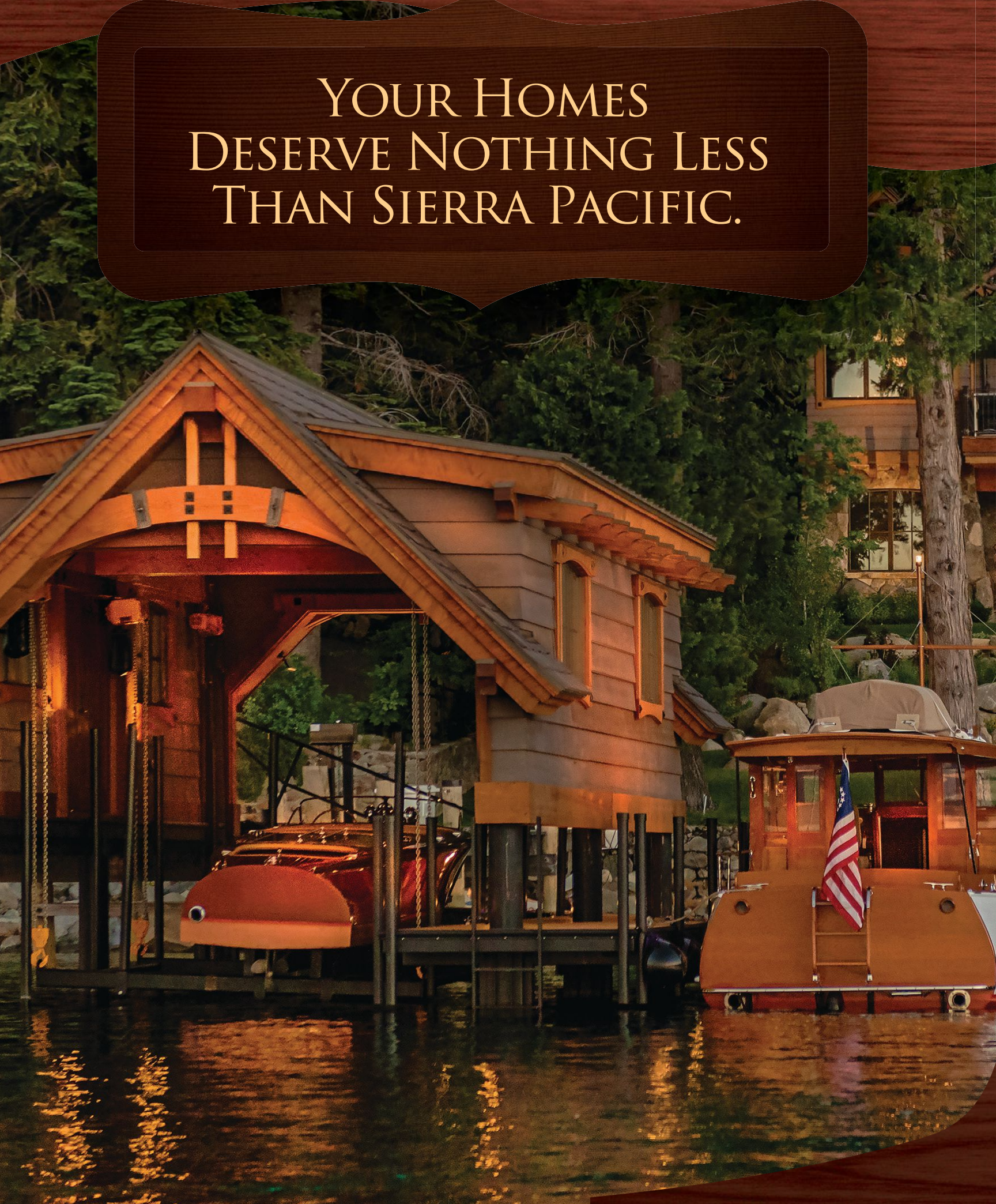

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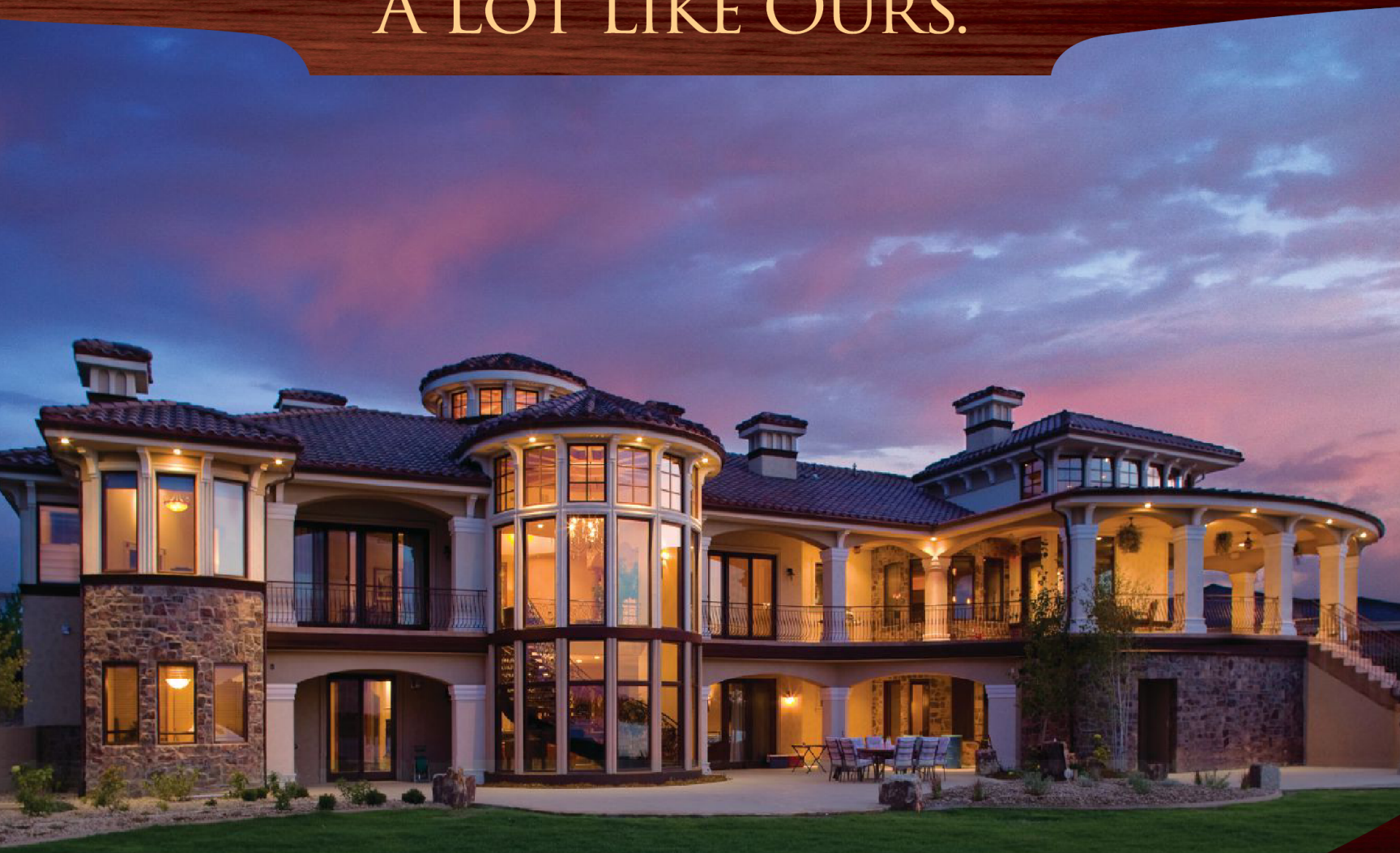

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TRISTAN FEWINGS

Architects, Assemble

Assemble, a five-year-old London-based design collaborative made up of 18 young architects, artists, and designers, won the 2015 Turner Prize. The annual prize, which comes with £25,000 bestowed by the Tate Gallery, has recognized British visual artists under the age of 50 since 1984. This year, however, is momentous on two fronts: It is the first time a group of architects and designers have won and it is only the second time the prize has gone to more than one person. The Brutalist Playground installation (above) ran last summer in the gallery of the Royal Institute of British Architects in London. —CHELSEA BLAHUT

> *Read more about Assemble's Turner Prize win at bit.ly/AssembleTurner.*

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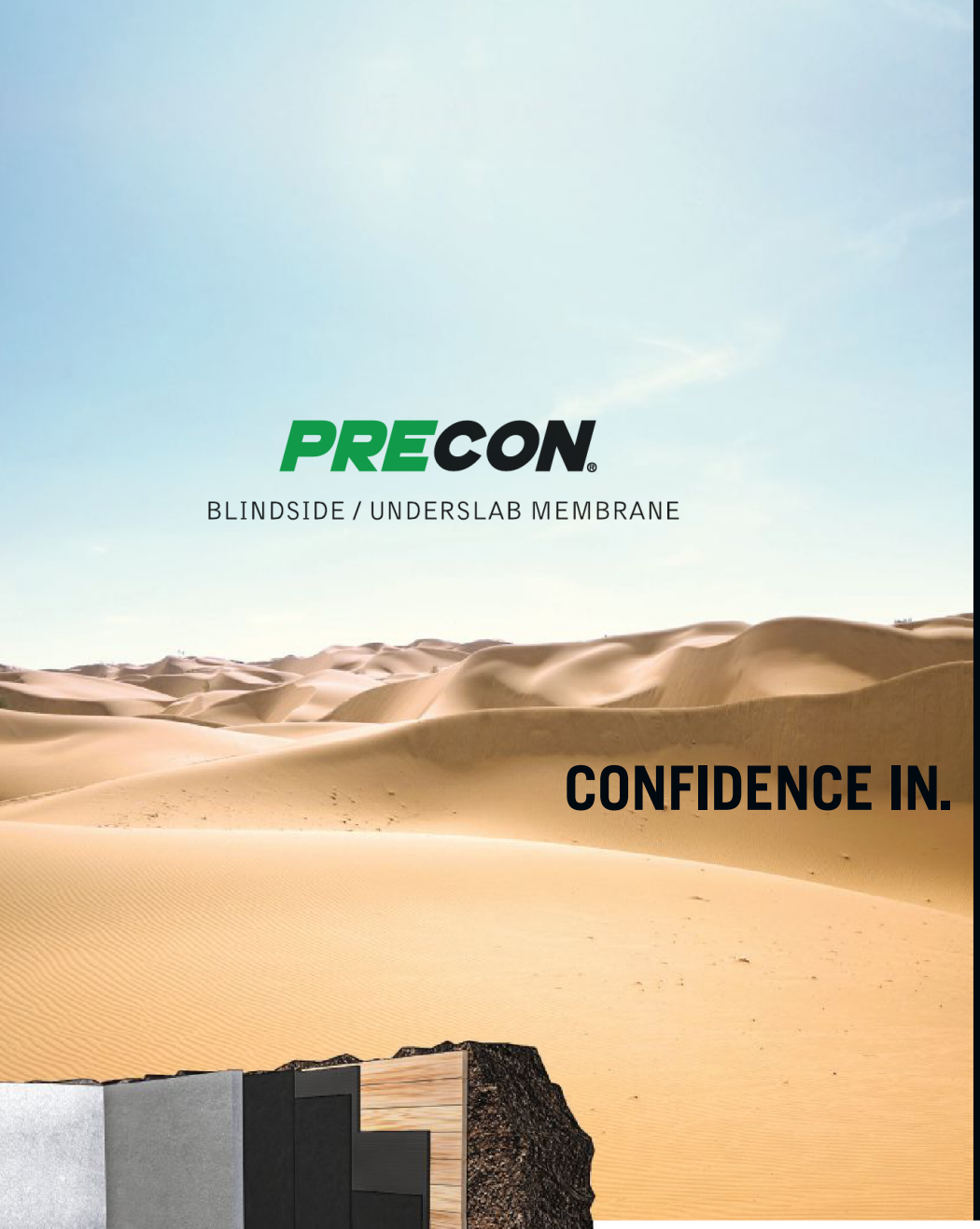

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JOSEPH MIZZI

Empire Builders

AIA New York State announced the winners of its 47th annual Design Awards at an October reception in Saratoga, N.Y., giving out seven excellence awards, 13 merit awards, and 20 citations. Of these 40 projects, 25 are in-state, nine are out-of-state, and six abroad, and were divided into 14 categories, including a Best in State, which went to Rogers Partners Architects+Urban Designers for its Henderson-Hopkins school in Baltimore. Chipakata Children's Academy (above), in Lusaka, Zambia, designed by a team led by Susan Rodriguez, FAIA, of New York–based Ennead Architects, received the merit award for Pro Bono.

> *Learn more about each of the New York State Design Award excellence and merit winners at bit.ly/2015NYSAwards.*

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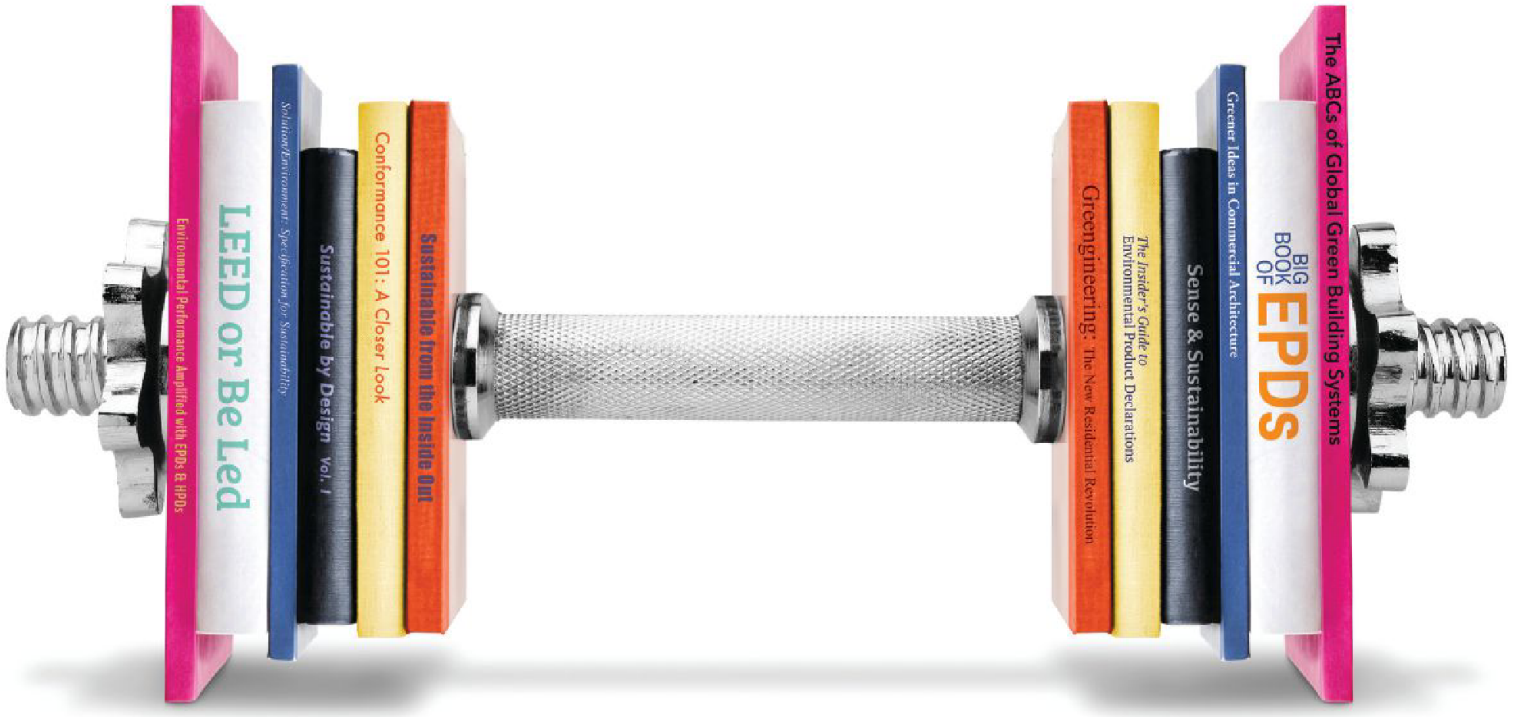
Equally Golden, Finally

The 2016 AIA Gold Medal is going to Robert Venturi, FAIA, and Denise Scott Brown, HON. FAIA, the first pair to receive the award since the Institute changed its bylaws in 2013. (Their 1978 Best Products Showroom is above.) Scott Brown is the first living woman to win, and when notified of their win, she said, "It's a great day for architecture, not because of us, but because of everyone who follows." Other 2016 AIA Honor Award winners are LMN Architects with the Architecture Firm Award, R. Steven Lewis, AIA, with the Whitney M. Young Jr. Award, Douglas S. Kelbaugh, FAIA, with the Topaz Medallion, and Terrance Brown, FAIA, with the Edward C. Kemper Award.

> *The 2016 AIA Honor Awards will be given out at the AIA National Convention in Philadelphia. Learn more at architectmagazine.com/awards/aia-honor-awards.*

Information is power.



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CALL FOR SUBMISSIONS

ARCHITECTURAL LIGHTING invites you to forward new product releases for editorial consideration in our **Annual Product Issue** (Mar/Apr 2016), which is distributed at Lightfair. Luminaires, light sources, and lighting products that have been released after May 2015, qualify. This annual special issue showcases more than 150 lighting products in categories such as:

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SUBMISSION INSTRUCTIONS

Product submissions must include the following materials:

1. PDF file with Submitter's contact information including: Name; Title; Company Name; Address; Phone Number; and Email address. If you work for a PR firm/agency and are sending materials on behalf of a manufacturer, please indicate the manufacturer that you are representing.
2. Hardcopy printout of product information including product press releases and technical spec sheets that describe the product in detail. (Do not send full catalogs.)
3. If you are submitting in the 'Apps' category, please provide URL link to page in the iTunes® store.
4. Hardcopy color printout of the digital image(s) being included as part of the submission. Images can include the product image and/or the product in an installation/application setting. Include the submitter's name, address, phone number, and email address on all printouts.
5. CD or USB drive with all of the entry materials—product literature (text materials in PDF or Word format) and images in correct file format (see Artwork Submission Requirements below). Please note, if the entry materials are being sent electronically, please coordinate with the editor for file transfer instructions via Dropbox. Hardcopy of all materials must be sent, regardless.

ARTWORK SUBMISSION REQUIREMENTS

All artwork must be 300 dpi, and at least 4" x 6" or the closest approximation. Appropriate file types are JPEG, TIFF, EPS, or PSD. There should be no text on the images. Please label the digital image files using the following format: Manufacturer_Product Name.

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Best Practices: Augmented and Virtual Reality Tools

TEXT BY ALICE LIAO

This year will see the commercial release of several virtual reality (VR) headsets, as well as the shipping of the developer edition of Microsoft's augmented reality HoloLens. Both augmented reality (AR) and VR technologies hold potential in design workflow and client relations.

Of the two, VR is currently more widely used in architecture, immersing users in a simulation of an unbuilt project. The platform has had about 30 years to mature and "there's more momentum happening," says George Valdes, AIA, vice president of product at New York–based software developer IrisVR. By contrast, AR superimposes digital information onto real-time imaging of the physical world, therefore requiring hardware with a higher level of processing to emulate human vision, which has been a challenge to achieve, Valdes says. Thus, its use in architecture remains limited.

That isn't to say that designers haven't taken advantage of AR offerings on the market. Augment is a Paris-based startup whose eponymous iOS and Android app can overlay a 2D floor plan on a 3D model or virtually map digital objects, such as furniture, into a real-world context, which helps clients to visualize a building or space early in the design process. The app has had more than 2 million downloads, with AEC professionals accounting for 30 percent of its users.

> "When clients experience VR for the first time, there's always that 'wow' moment."
>
> —Guy Messick, AIA, director of design technology, IA Interior Architects

For designs that are further along, VR is presently the more powerful communicator, allowing clients to better understand their forthcoming project. "When clients experience VR for the first time, there's always that 'wow' moment," says Guy Messick, AIA, director of design technology for San Francisco–based IA Interior Architects. "Then that goes away and they start making decisions." The first time his firm presented a project using VR, he adds, the client saw the design intent and boosted the construction budget by 10 percent.

VR also enables remote viewing. IA has sent headsets to clients along with an emailed link to the model, allowing them to walk through the project on their own or with an architect accompanying them either via a remote monitor or headset. For one large, multistory project, IA created an avatar of a staff member, who guided the client through the project. In fact, Valdes predicts design review meetings could soon take place inside virtual environments, eliminating the need to travel.

VR's benefits extend beyond client interaction. Jason Halaby, ASSOC. AIA, associate designer and BIM manager for San Francisco–based WRNS Studio, first recognized its potential when a VR experiment conducted toward the end of a project sparked "new discussions that we never had throughout the traditional design process, like the relationships of materials, scale of certain spaces, and how different materials come together at intersections," he notes.

One drawback to VR is poor integration with design-authoring software. While plug-ins for Autodesk Revit and other software help streamline the process of exporting models to headsets, the resulting virtual world is less detailed and thus only appropriate for internal use, Halaby notes. For client presentations, VR renders have to be meticulously modeled, illuminated, and textured. High-quality, customized virtual experiences require knowledge of programming and gaming engines, such as Unity or Unreal. All of this is doable, says Derek White, chief information officer of SmithGroupJJR, in Ann Arbor, Mich., but "you have to be curious about the technology, because it's not plug-and-play."

Although VR has enjoyed wider adoption, many see greater potential in AR. With HoloLens and future AR devices, some foresee the ability to create an initial model of an area by scanning it, overlaying a truly immersive environment on top of a raw space, and editing digital 3D models in real time. Until then, White advises taking the plunge and experimenting. As AR and VR continue to advance, the technology will not be in its current form, but surely "it's not going away."

> *Read the full story, with more information about augmented and virtual reality technology, at bit.ly/ARVRtools.*

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Detail:
Fondation Jérôme Seydoux-Pathé Vault

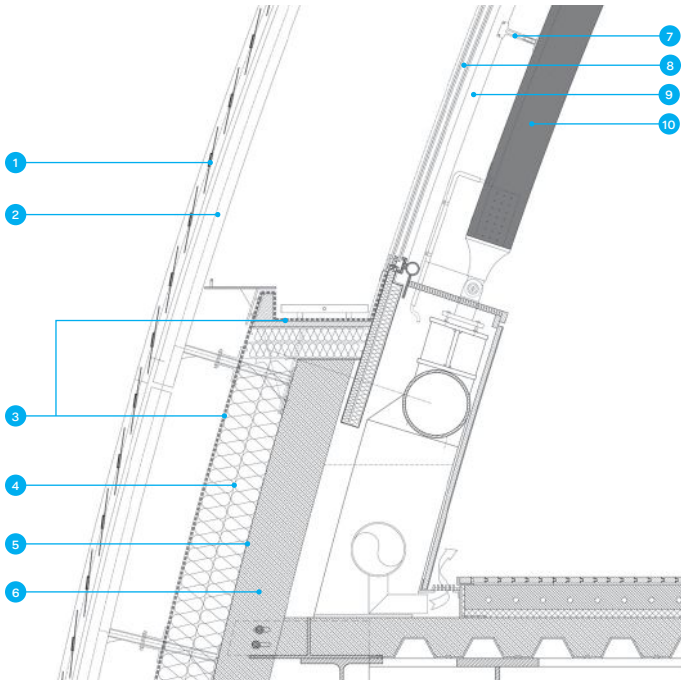
TEXT BY TIMOTHY A. SCHULER

Necessity is the mother of invention, and at the new headquarters of the Fondation Jérôme Seydoux-Pathé, in Paris, complex site constraints gave rise to a bulbous but elegant building by Renzo Piano Building Workshop (RPBW). Completed in 2014, the 23,000-square-foot, five-story structure features an organically shaped glass vault clad in perforated aluminum panels that drew immediate comparisons to an armadillo.

The voluminous vault, which houses a research center, is supported by parabolic wood arches, with spans ranging from 10 feet to upward of 50 feet. In cross-section, the longest arches assume a banana-like shape in midspan due to a 4-inch increase in depth as compared to the base.

RPBW chose laminated larch wood for the 32 arches, for its look and flexibility. Glulam beams can be cut to any size, but the difficulty "was the shape and the aesthetic because obviously we wanted a perfect wood surface," says Thorsten Sahlmann, the firm's architect in charge. He flew to the timber contractor Rubner Holzbau's fabrication facility in Bressanone, Italy, and approved each arch before it was transported to the site. Fabrication took about three months.

The largest arches were delivered in two pieces and then joined by embedded steel plates and bolts. The arches tie into a steel beam that runs the building perimeter and is braced by a double-curved steel superstructure, which then ties into the concrete shell encasing the lower floors.



1. Perforated aluminum panel, 250mm
2. Painted steel tube, Ø 76mm
3. EPDM gutter and membrane
4. Insulation, 20mm thick
5. Vapor barrier
6. Concrete shell
7. Fabricated steel tie, length variable
8. Insulated glazing, double curvature
9. Painted steel tube, Ø 50mm
10. Glulam arch beam, dimensions variable

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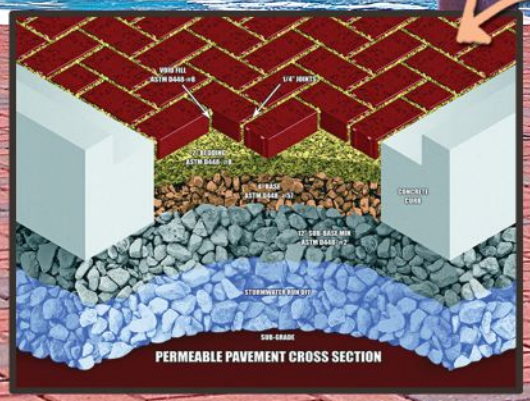

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Next Progressives: The Principals

TEXT BY DANIELLE RAGO
PORTRAIT BY DUSTIN ASKLAND

Brooklyn, N.Y.–based design collective The Principals seeks to create objects and spaces that balance utility with whimsy. The collective was founded in 2012 by three designers—Drew Seskunas, ASSOC. AIA, industrial designer Charles Constantine, and master craftsman Christopher Williams—who aligned their respective specialties into a shared, singular trajectory. By merging their trades, the trio wants to foster deeper connections to the environment.

Charles Constantine, Christopher Williams, and Drew Seskunas

Seskunas and Constantine grew up together and studied at Brooklyn, N.Y.'s Pratt Institute. Constantine and Williams worked together at a design studio in nearby Bushwick, while Seskunas was designing a modular lighting system for technology festival Transmediale 2011 in Berlin. "I was having trouble finding people who could not just build my design, but could also understand what the idea was about," Seskunas says.

That project, BotoxCloud, ended up being built by the trio at the Bushwick studio's shop in its off hours. It is the first in the firm's Botox series, which centers on the idea of producing volume with something flat and thus "demystifying complex geometries through making," Seskunas says. BotoxCloud was later adapted into a consumer product of flat sheets that could be folded and combined to form a 3D puzzle.

BotoxLamp, the second in the series, uses hand-folded, plasma-cut aluminum sheets embedded with sensors that react to the proximity of passersby.

BotoxUtopia, the conclusion of the series, is a canopy of inverted pyramids of different sizes, made of cardboard and emergency blankets. As part of a workshop at the Polytechnic University of Milan, students adorned the underside of the canopy with networked sensors and LEDs that detect movement in the area and illuminate it.

A collaborative, hybrid design approach guides the firm. "We try to think about space holistically," Seskunas says. "We're always designing things from a very small scale to a large scale." Exemplifying this range are two more of the firm's projects: Bullseye, which is a slick, metal device that can convert almost any object into a pipe, and the immersive environment Snowblind, which alters the user's perception of space and time through the manipulation of clouds, light, and sound.

Two larger-scale installations, Space Trash and Dynamic Sanctuary, incorporate the use of biorhythms. Space Trash, inspired by a friend's struggle with multiple sclerosis, explores bionic architecture that uses myoelectric sensors attached to a user that translate muscle impulses into movement in the installation. Dynamic Sanctuary, a pavilion designed for the Ford Motor Co., links a heartbeat monitor to light levels to visualize a person's pulse. "On one level, you're realizing something that's going on with your body that you're not typically aware of, like electricity running through your muscles, or your heartbeat," Seskunas says. "But when it's actually broadening your experience of your surroundings, you begin to engage with them."

The Principals also maintain a deep interest in recontextualizing mundane, ordinary objects by incorporating them into their work. The group employed inflatable air dancers, typically used for advertising by car dealerships, in AirMOSH, a kinetic installation at MoMA's PS1 in Queens, N.Y. With the Dead Chair Tables series, they laid iconic chairs on their sides and topped them with glass as a commentary on their inefficiency as functional furniture.

"If someone is in an inspiring space, he or she might start to think about what it's doing, how it's reading their body, and therefore what's going on in their own body," Seskuans says. "We see that people's ability to understand space has evolved, and we're trying to tap into that so people are willing to think about space in more complex ways."

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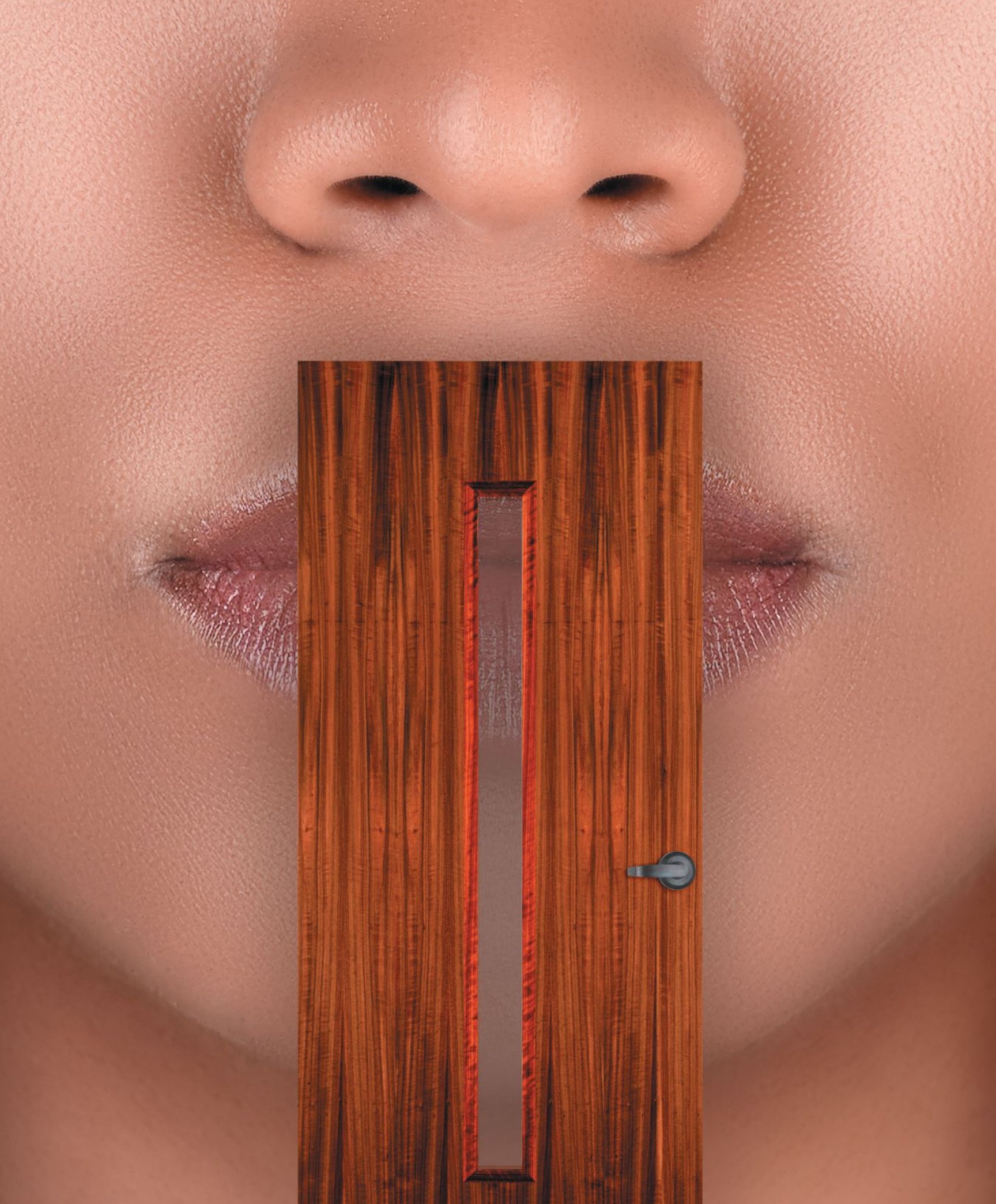

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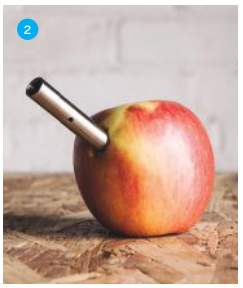
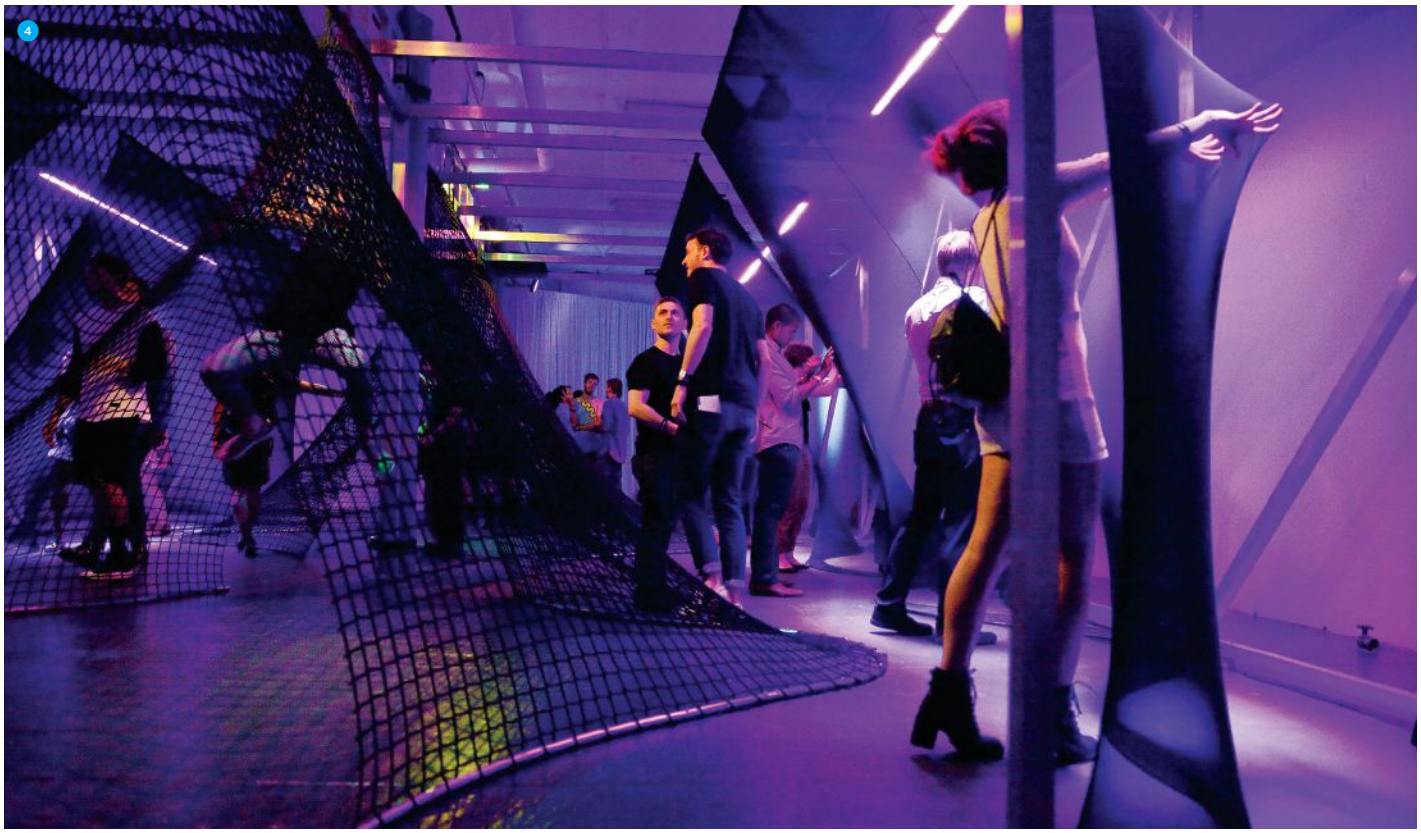
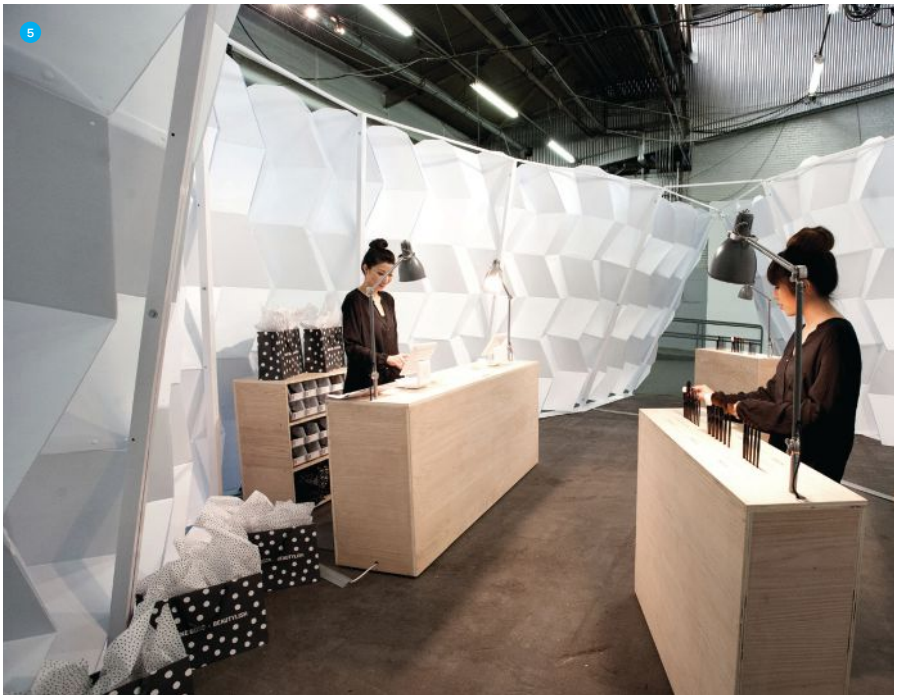
The Principals





TOP LEFT AND MIDDLE: DUSTIN ASKLAND; TOP RIGHT: DAN MCMAHON;
BOTTOM: DREW REYNOLDS



1. Adding water pressure to welded, mirror-polished stainless steel produced Liquid Body Flask, a product manufactured for retailer Areaware. **2.** Bullseye is a piece of smoking paraphernalia that pokes fun at René Magritte by turning any object with a cavity (in this case an apple) into a pipe. **3.** One piece in The Principals' Dead Chair Table series places a glass top on Frank Gehry, FAIA's Wiggle Chair to make it function as a different kind of furniture. **4.** In collaboration with musician Matthew Dear, The Principals developed Delqa, a mesh landscape in which users could interact with their surroundings to alter a recorded composition. **5.** Shell Pavilion, a sales booth commissioned by makeup company BeautyLish, allows ease of transport through its modular construction. **6.** Developed in collaboration with SAQ Architects, BotoxLamp employs proximity sensors to respond to a person's presence by adjusting its lighting. **7.** Dynamic Sanctuary uses medical sensors to create an illuminated experience linked to the user's pulse. **8.** Motors embedded in the canopy of Cosmic Quilt, which was the result of a workshop with students from the Art Institute of New York, create fluid overhead motion based on movement beneath it.

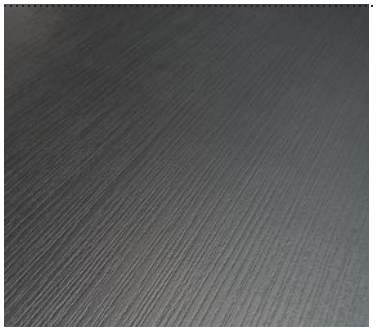
TOP LEFT: KRISTY LEIBOWITZ; TOP RIGHT: MATTHIAS WEINGAERTNER; BOTTOM LEFT: PIPPA DRUMMOND; BOTTOM RIGHT: WALLING MCGARITY

Products: Solid Surfacing

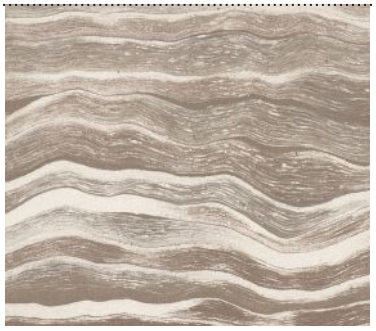
TEXT BY HALLIE BUSTA

X-Gloss, Cosentino Group
Bringing the shine—and then some—this surface joins the manufacturer's ultracompact sintered Dekton line in five shades of gray. Nonporous, it comes in 8mm, 12mm, and 20mm thicknesses with uses from flooring to façades. *dekton.com*

Corian Charging Surface, DuPont
The addition of a wireless transmitter on the slab's underside allows Corian brand surfaces to serve a dual purpose as tables or counters as well as power sources for devices like smartphones and tablets, reducing the need for electrical outlets and cords that can clutter worktops. Using magnetic induction, the transmitter sends power to a companion Duracell Powermat ring (shown) or the mobile device's own receiver when either is placed on the surface above the hidden charger. *corian.com/powerup*



W-Solid Itopker Series, Inalco
A subtle relief brings the texture of wood grain to a large-format, thin-profile porcelain countertop. The 12mm-thick, 1.5m-by-3.2m surface is offered in white and black colorways and resists heat, stains, and impact. *inalco.es*



Oakmoor, Cambria
Linear ridges of cream, tan, and caramel wave through Oakmoor, a natural quartz surfacing from Cambria's new Oceanic Collection. Oakmore comes in 1cm, 2cm, and 3cm thicknesses with slab dimensions of 55" by 120". *cambriausa.com*

Neolith Calacatta Gold, TheSize
Digitally printed gray veining with hints of gold contrast a white background to recall the namesake marble. In 6mm and 12mm thicknesses, the compact sintered slabs can be book- or end-matched for large-scale use. *thesize.es*

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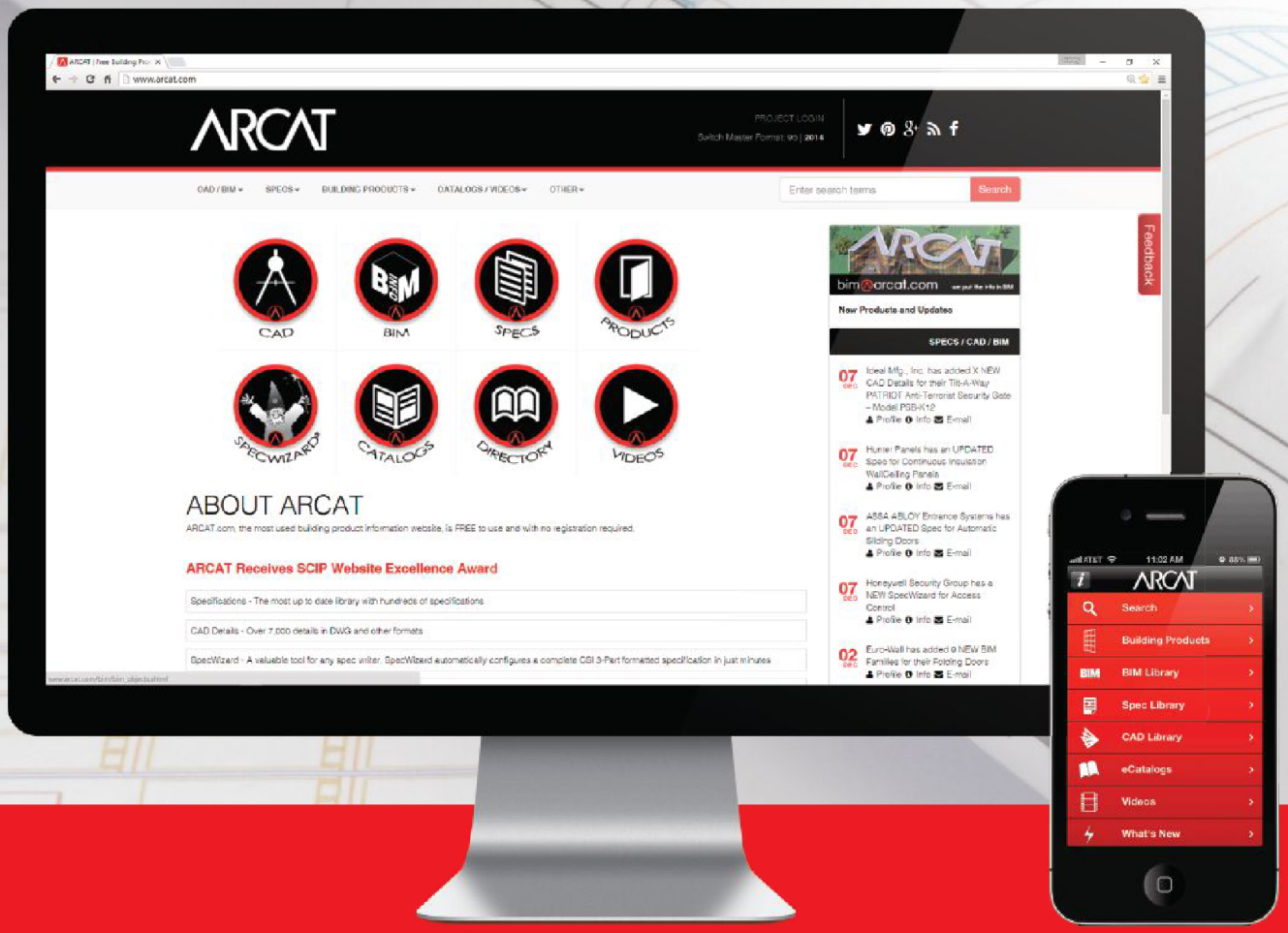

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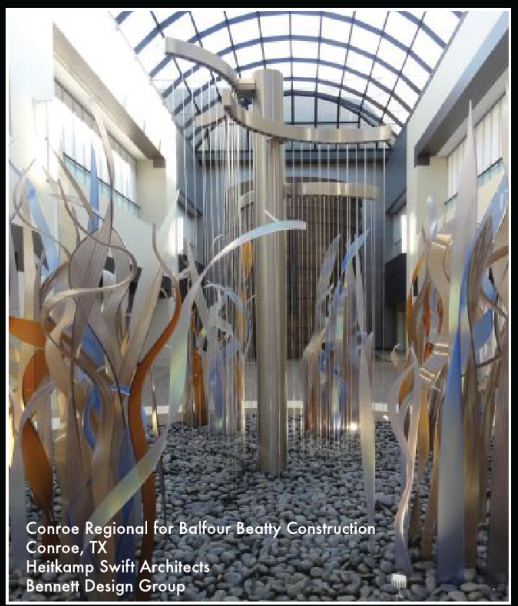
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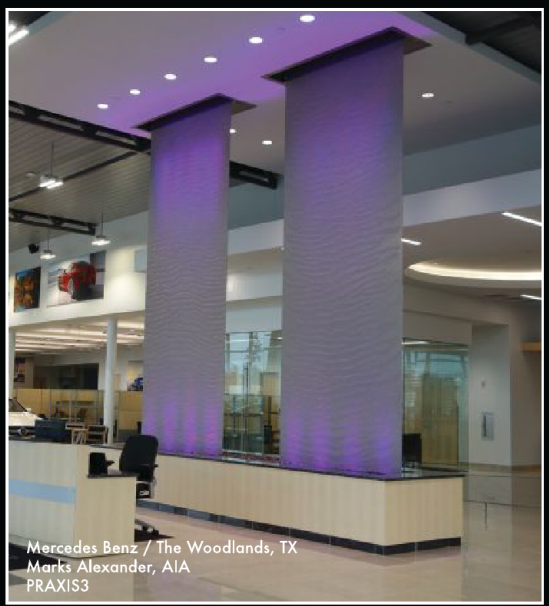
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Professional Development: The Experience of Public Interest Design

AS TOLD TO WANDA LAU

Architects and aspiring architects seeking to help the greater good have many opportunities available to them through nonprofit and humanitarian organizations worldwide. Below, three designers—Jesús Porras Montesino, Carly Althoff, and Catherine Callaway, AIA—describe the moment they realized the full impact of their service.

Jesús Porras Montesino

Architects Without Borders and the NGO Manav Sadhna sent me to India to help build schools in the slums of Ahmedabad. I remember the Patangyu (Butterfly) School most fondly. We had only the resources around us for construction. The kids, ages 3 to 16, gathered rocks for the school's gabion walls, made from coiled wire cages. For the roof, we wove a bamboo lattice, similar to the mats they use for sleeping, and then draped an old, plastic billboard over it for waterproofing. The women in the community helped us mix the flooring from cow dung, water, and straw, a common technique in villages there. It's nice to walk on with bare feet.

During construction, to celebrate the completion of the walls, we decided to hold a special movie night. The kids got to the site early and swept the ground clean, created a theater by outlining a space on the floor with rocks, and hung up a white sheet as a screen. It was touching to see how much they cared.

My initial assignment was three months, max—I ended up staying for two-and-a-half years. The school's teacher has kept me updated on its progress. The kids have added a garden, built benches, and painted walls. It's wonderful to watch their confidence grow as they take ownership of the school. *Montesino worked in India from 2009 to 2012.*

Carly Althoff

As a fifth-year architecture student at Cal Poly, I was tasked by Journeyman International (JI), which was collaborating with Mission to the World, to produce a design vision for a church community center in Tacloban, Philippines, which had been devastated by Typhoon Yolanda in 2013.

In January 2015, I spent a week in the Philippines to meet the community and see the site. After dinner one night, a group of us gathered in a circle under the stars. A few men began talking about the day of the storm. One of the church's pastors described how his family raced to the upper floor of the existing building on the site as floodwaters topping 20 feet rushed in. He and his family had to stand on furniture and hold onto each other to not be washed away.

The men shared their stories with dignity and optimism. They knew that their physical home was only temporary, and that finding refuge as a family and community was more important. The Heroes Church at Liferock Center now provides a place for 30 to 50 people to gather in fellowship and for shelter. *Althoff was involved with JI from September 2014 to June 2015.*

Catherine Callaway

As the family services coordinator for Habitat for Humanity (HFH) of Charlotte, I led volunteer construction crews and provided education and support for homeowners. I still recall listening to one woman, as we shimmed and hammered the bedroom doors of her future home, describe how difficult it was for her kids to do homework in their existing apartment, which was small, crowded, and surrounded by noisy neighbors. She beamed with joy as she imagined her kids in their new home, able to focus on schoolwork, have privacy, and decorate their own bedrooms.

Working with HFH showed me the incredible impact that a simple shelter can have on people's lives. Now, I engage with building users throughout design and construction to ensure their voices are heard, they understand the process, and their goals are achieved. *Callaway worked HFH of Charlotte from 1999 to 2003.*

JESÚS PORRAS MONTESINO

> *For the full text of these stories and for additional anecdotes, visit bit.ly/ARDoGood2016.*

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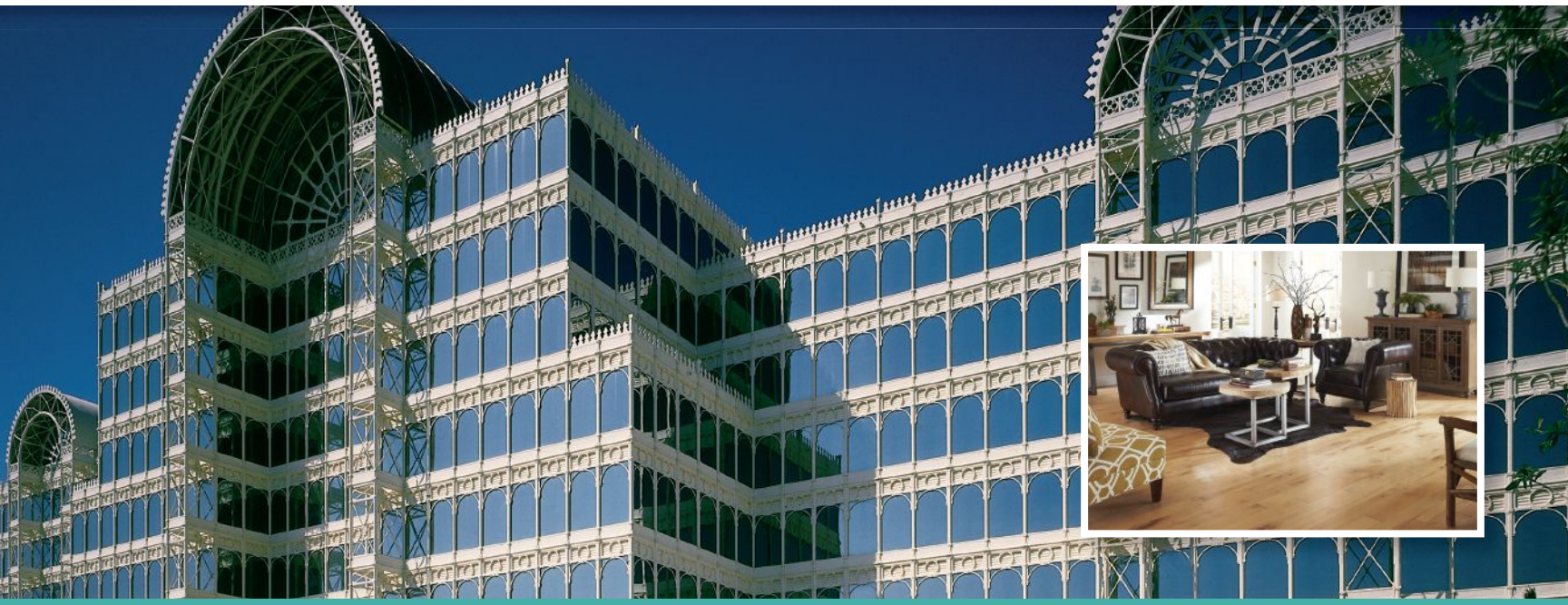

Main Image: INFOMART • Dallas, TX • 1985 | Inset Image: Maple Pine Hardwood Floors

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Ethan Bedingfield
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Just ask Ethan Bedingfield, AIA, NCARB who works at Architectural Nexus in Salt Lake City, Utah. Ethan was designing University Place Building One in Orem, Utah, part of the University Mall being developed by Woodbury Corporation, one of the West's largest and most experienced full-service real estate development firms.

"Building One includes about 26,000 square feet on the ground level, and then approximately 139,000 square feet on levels two to five," he says, "and sits in the parking lot of the existing mall, which meant we had to replace and add parking by going below ground. The changing axis of the building as it rises (the parking level below a level of retail with 4 levels of office space that have a separate axis) is what made the steel design so complicated."

His inspiration came from the site constraint itself. The project used all steel moment framing, affording him extraordinary flexibility. Costs also played a role, and was one of the reasons he reached out to the AISC Solutions Center.

"The base is a rectangle that fills the whole site we had available to us," Ethan explains. "We are within a foot of hitting utilities. We twisted the top of the building rather than following the grid of the immediate context, relating it to the major additions that will happen behind the mall and also facing it to the extremely busy intersection on which the project sits. That's where we landed in our initial studies. Once we had it to that point, I remembered meeting Tabitha Stine, S.E., P.E., LEED AP from the AISC Steel Solutions Center at a conference. I called, and we sent over Revit files and the narrative we had describing our intent. University Place was the first time I used the Solutions Center. I've used it a few times since, but this was the most impactful experience. I will definitely use them again."

Ethan explains that some of the options they received were unexpected, but they all stimulated his thinking, including the one that grabbed their attention the most. "It was the use of SidePlate for our moment frame for the lateral system," he says. "We ended up saving around $70,000 because of it and the aesthetic design was unimpacted."

Ethan says the AISC Solutions Center does two things: adds to creative thinking and validates your own design. "I don't know why you wouldn't call them on every project for the second set of eyes," he adds.

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People Person

The humanity of design thinking.

Michael Murphy is the executive director of Boston-based MASS Design Group, where he leads design and research programs in several countries. Murphy advocates for "lo-fab" design, which combines local labor and economical prefabrication—"not to fetishize 'the local,' but to exhume the commodity of labor," he says. "We need to be asking about the human handprints in the built environment, which is a thing made by people that includes materials extracted by people, and is ultimately used by people."

As told to William Richards

It's important that we, as architects, care about words like "context," "dignity," "social outcomes," and "evaluation." We also have to have the capability of investing in those concepts—through how you spend your time, how you treat your staff, and the projects you take on. The question for our firm is, "How are architects making progress in a measurable way?" We have six full-time researchers and we are making a significant financial investment in measurability, which has forced us to recalibrate our firm. We've forged three great partnerships lately: with the Robert Wood Johnson Foundation, on the history and future of hospitals; with Atlantic Philanthropies and the S.D. Bechtel, Jr. Foundation, to build a tool set to evaluate the impact of architecture on communities, organizations, and place; and with Atul Gawande's Ariadne Labs, to look at a research protocol that asks how the design of operating rooms affects the rate of Caesareans.

I believe in public interest design, but my question about it is, "What architecture isn't socially minded?" I don't think we have a choice here—it's a false dichotomy to say we can do capital-A Architecture or we can do architecture that is socially minded. That dichotomy implies that it's possible to work in a vacuum and not think about political and social issues. It implies that it's possible to ignore ethics—and that's a pernicious claim. The problem with advocates of, say, the autonomous project in design is that they believe there's a debate here. There is no debate. There is only the choice we have to acknowledge the social implications of our work. What makes today's social project of architecture different from the social project of Modernism is that we now have data to assess the impacts that buildings have on our lives.

I think architects possess an underleveraged value proposition. By contract, we have a fiduciary responsibility to the public good. We are accountable during the lifetime of a building. If architects can start to leverage their actual value, they can change our perceived value. MASS Design's goal is not to corner a market and exploit it; it's to create a bigger pie for more architects to work for more communities. AIA

AIAFeature

The Coming Decade for Residential Design

Adaptable, connected homes are here, but changes in scale and function will define the home of the (near) future.

Kermit Baker, HON. AIA, and Jennifer Riskus

ILLUSTRATIONS: LAUREN NASSEF

While it seems safe to assume that the design of U.S. homes will undergo fairly significant changes over the coming decade, it's equally likely that these changes will be determined by fundamental economic and demographic developments instead of *Jetsons*–style technological innovations. The aging of our population, the continued recovery from last decade's housing collapse, and a painfully slow economic recovery that is making it difficult for younger households to get ahead in the housing market are all factors that will shape the future of home design.

In the AIA's Home Design Trends Survey, leading residential architecture firms provided their vision for the next 10 years in terms of home layout; features, systems, and products; neighborhood and community design; and kitchens and baths. The key trends that they identified are the growing popularity of universal design; increased attention to a healthy living environment; infill development and its focus on improved design; and the growing popularity of kitchens as the focus of household activities.

Housing Progress and the Housing Bust

The AIA has been tracking home design trends since 2005 through quarterly surveys of approximately 500 residential architecture firms. Since that inaugural year was near to the peak of the last housing boom, this survey has traced the housing market from one of the strongest booms through the steepest housing downturn since the Great Depression of the 1930s. Through this decade of transition, several home design themes emerged.

• **Outdoor living expanded in popularity**. Lifestyles have become more informal, and homes are reflecting this. Formal living rooms and dining rooms are disappearing, replaced by great rooms, dens, and open-space layouts. With this movement to informality has been growth in outdoor living. While initially decks, patios, and outdoor grills were the focus, this trend has expanded to outdoor kitchens and even fully furnished outdoor rooms.

• **Changing work patterns encouraged growth of home offices**. During the recession, company scale-backs forced many to work or job hunt out of their homes. Additionally, technology advancements made telecommuting a more feasible option for many workers. As a result, even though homes were getting smaller during the housing downturn, home offices were growing in popularity.

• **Residential projects were integrated into mixed-use facilities.** With the downturn came the demise of large suburban tract housing developments. In their place, housing activity occurred in smaller projects, often tied to other commercial activities. This approach often necessitated higher-density development and provided additional amenities for nearby residents.

• **Technology was incorporated into kitchens and baths.** The Great Recession coincided with a period of technological innovation. Many consumers supplemented their traditional desktop computer with laptops, tablets, and smartphones. This

AIA Feature

CONTINUED

created the need to provide the infrastructure within homes to support all these devices. Additionally, growing concerns about sustainability increased consumer demand for energy and water conservation devices, and emerging technologies often facilitated the management of these systems in the home.

Forces Shaping the Coming Decade

While economic cycles will, hopefully, be a good deal less severe over the coming decade, several demographic forces will shape housing demand in the years ahead. The first of these is the general aging of our population and, more specifically, the movement of the Baby Boom generation into their retirement years. Though population growth will slow in the coming years, the share of people 65 or older will grow dramatically, relative to current numbers, accounting for about two-thirds of net population growth in the coming decade.

Gen Xers, defined by some experts as those currently between the ages of 31 and 50 (and others as those between 35 and 50), are a key demographic for the future health of the housing market. This group was also the hardest hit by the housing recession, often because they were just entering into homeownership as the market collapsed. While the national homeownership rate declined from 69 percent to less than 64 percent over the past decade, rates fell at about twice that pace for Gen Xer households.

Still, most of the concern over future housing market conditions is focused on the Millennial generation, the largest generation in U.S. history. The weak economy has had the greatest effect on this generation in terms of delays in forming independent households, getting married or forming partnerships, and having children. This has limited the need for additional homes and skewed demand toward renting for those Millennial households that have been formed.

Generational patterns aside, the overall slowdown in population growth is reducing the need for new homes. As such, a greater share of residential investment in coming years will be devoted to improving existing homes rather than building new ones. Over the past few decades, about 60 percent of housing spending has been devoted to building new homes as opposed to maintaining and improving the existing housing stock. That share is shifting, and within a decade we should see that ratio flipped with 60 percent of expenditures devoted to the existing housing stock.

"New technological breakthroughs; evolving building code and regulatory issues; changing consumer preferences for housing features; and materials are obvious considerations that will influence home design."

Emerging Influences on Home Design

A recovering housing market, coupled with evolving demographic patterns nationally, will largely determine emerging home design trends through 2025. Identified by leading architecture firms in our survey, some of these trends are already in place and will continue to develop while thers are still in the early stages of adoption.

• **Continued expansion of universal design and accessibility features throughout the home.** Universal design, a series of principles that encourage a more accessible environment, has been well-articulated for two decades. However, we now have a large generation of households that is beginning to think more seriously about its housing needs for the coming years. Over the next 10 years, the majority of Baby Boomers will have turned 65, Those households that remain actively involved in home improvement projects will increasingly think about how to incorporate accessibility features into the projects they undertake.

• **Increased focus on a healthy home environment**. The emerging concern over environmental health issues is increasingly being focused on residential environments. A recent national consumer survey found that a quarter of homeowners were at least suspicious that their home may be causing health problems, while an additional 20 percent were unsure whether to be concerned or not. Since renters have less ability to control their residential environment, they express even higher levels of concern. Indoor air quality tops the list of healthy home concerns, but water quality and potentially harmful materials or chemicals in the home also are commonly mentioned. Greater consumer awareness and growing mistrust of government and industry are likely to push healthy home issues to even greater levels of awareness.

• **Infill development promotes smaller, better designed homes.** Building in established locations that are more accessible to jobs, public transportation options, and commercial activities has increased as many younger households show little interest in traditional housing subdivisions in more remote locations. Building in these more accessible locations is typically more expensive, so homes frequently are smaller and have more innovative designs. Residential architects feel that this trend will continue. Smaller households may have less interest in larger homes, and may instead look for more desirable locations with more personalized design features.

• **Kitchens remain a focus of household activities**. Even during the housing downturn, as households scaled back many home features, few residential architects reported less attention to size and features of kitchens. Kitchens have evolved into the family center of most homes, and, as the housing market recovers, residential architects report even more emphasis on this. Because family space connected to kitchen space has become standard in most new homes, the centrality of the kitchen to household operations is destined to continue to increase.

Obviously, other factors will have a major influence on how homes are designed over the coming decade. New technological breakthroughs, evolving building code and regulatory issues, and changing consumer preferences for housing features and materials are obvious considerations that will influence home design. Still, residential architects see that changes in design features are incremental, and generally reflective of underlying social and economic trends.

Beyond Your Front Door

Nonresidential buildings are expected to reflect similar changes to homes over the coming decade. The members of the AIA's Work-on-the-Boards panel provide their perspective on how buildings might evolve.

Technology enhancements increase efficiency. *Fifty-nine percent of architects currently use natural ventilation in their projects, with 75 percent expecting to do so by 2016.* (The Drive Towards Healthier Buildings McGraw-Hill Construction SmartMarket Report, 2014)

Emerging technologies continue to be increasingly important in design and construction. New technologies not only make buildings more efficient, but can also increase the efficiency of the people using the buildings. Architects anticipate that there will be a significant increase in the importance of lighting technology systems (e.g., LED) over the next five to 10 years. These changes not only contribute to the increased energy efficiency of buildings by decreasing the use of electricity, but also enhance the workplace environment for the people working there through more natural light. In addition, 41 percent of survey respondents anticipate a significant increase in the importance of automated systems, which can also help decrease energy usage through products like motion-sensor-activated lights.

Heightened focus on conservation. *Sixty percent of architecture firms anticipate that water efficiency will be one of the top client sustainability priorities in the coming decade.* (April 2015 Architecture Billings Index special question)

Along with reductions in energy usage through the use of new technology, conservation of other natural resources is expected to increase in the design and construction industry in the future. Four in 10 responding architecture firms expect that water conservation will significantly increase in importance over the next five to 10 years, while 38 percent of firms anticipate that energy efficiency designs and retrofits will do the same. In fact, in some jurisdictions, codes governing many of these issues already exist. Solar and wind power are also expected to increase in importance for building design over the next decade.

New design and construction methods change the building process. *Thirty-seven percent of architecture firms used BIM for billable work in 2013, up from 10 percent in 2005.* (2014 Firm Survey)

The tools and methods that architects use to design buildings are also continuing to evolve. The use of building information modeling software, while already widespread, will continue to grow over the next decade. In addition, 22 percent of responding firms expect that design/build and other alternative project delivery techniques will significantly increase in importance, as will lean construction techniques. These trends speak to increased efficiency in both the building design process as well as throughout the life cycle of the building.

Innovation in materials allows for expanded design options. *From 5.5 to 8 percent of total annual U.S. energy consumption is from building construction and materials.* (2030 Challenge for Products)

In the future, efficiency will not only be found in the design of buildings but also in the products that are used in the construction of those buildings. Technology has led to the development of products that not only contribute towards increasing building efficiency (e.g. renewable and low-maintenance materials)—which 28 percent of responding firms anticipate will significantly increase in importance over the next five to 10 years, but products that also allow for new ways to design, such as through composite materials and new glass and glazing technologies. AIA

AIAPractice

A Day in the Life of an ArchiMom

To call Amy Kalar a busy working mother would be an understatement.

Amy Kalar, AIA, senior associate for HGA Architects and Engineers in Minneapolis, founded the blog ArchiMom (archimom.com) in January 2015 to raise important issues that working parents face in the profession.

"I believe that when we share our stories we create a really powerful network, and we let each other know we're not alone," Kalar says.

Actively involved in her local AIA Minneapolis chapter, Kalar is also a visiting instructor at St. Catherine University, training for a marathon in Iceland, leads a recurring discussion series at HGA amongst her colleagues, and is the founder of an online discussion group on LinkedIn, Women in Architecture and Design.

To an outsider, Kalar appears to be an average American mother trying to make it all work, but to an insider she is far and away above average. In one day, Kalar essentially does the work of four full-time jobs: mom, architect, college instructor, and blogger.

"The idea of work-life balance to me is literally laughable," Kalar says. "There's never a time when my life is perfectly balanced. It's like a yo-yo."

Here's a look inside a typical day with Amy.

By Caitlin Reagan

6:45 a.m. "I wake up before the kids and always hit the coffee pot. I try to have a quiet moment of coffee just for myself before I make the kids breakfast."

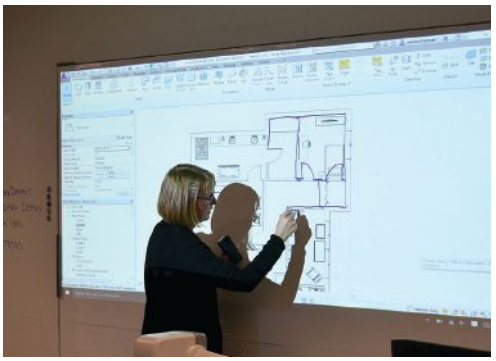
7:05 a.m. "I used to make their waffles from scratch, but that's just not logical anymore. So we eat a lot of Eggo waffles in our house," she says, laughing.

7:45 a.m. "I leave for work earlier than my husband, so he sits with the kids while I get ready and drops them off at school and daycare."

9:50 a.m. "I created these networks [of women] because I needed them myself. I need these women and I need them to remain in the profession. I needed them a long time ago, and because of them I've stayed in the profession."

11:05 a.m. "Women should get together—it's really important that they talk and support each other—but as women, we aren't the majority. Men need to get involved and address these changes, to help to better integrate women into the profession. It's about retention. Men are the key in this."

12:55 p.m. "If I don't have a lunch date, I'll bring a frozen lunch. I teach part-time and I am not super-prepared today, so I'm going to look over my materials at lunch before I start teaching at 1:30. Thankfully, I know Revit so well that it's easy for me to teach."



3:40 p.m. "The most challenging part of teaching is the time outside of the classroom. It's developing the curriculum, the coursework, finding the best way to present the information, grading, writing rubrics. It just takes a lot of time. I'm in the classroom about seven and a half hours a week."

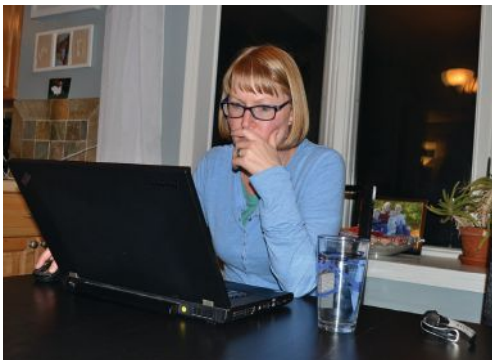
6:10 p.m. "I feel like I'm always rushing everywhere I go, especially on Wednesdays. My firm is really flexible. I can come in when it works for me and leave when I need to. If I need to leave during the day for my child's doctor appointment or a holiday concert, it usually isn't an issue."

6:20 p.m. "If dinner can't be made incredibly fast, the kids get grumpy. As a result, they eat things like hot dogs, peanut butter and jelly, grilled cheese, quesadillas, and chicken nuggets. Tonight it's tacos with broccoli."

6:30 p.m. "The culture of long hours in architecture is pervasive. We all want to do a good job, but when you are a parent you want to back off a little and spend more time with your families. This also seems to happen right when women and men tend to be rising into roles with more responsibility."

"There have been a lot of times in my life that I've wanted something—no, actually, I've needed something—but I've been afraid to ask for it. The worst that is going to happen is that the answer will be 'No,' and that is certainly the answer if you don't ask."
—Amy Kalar, AIA

7:05 p.m. "Either I or my husband clean up the dinner table and do the dishes. The other hangs out with the kids—playing, reading, doing homework, etc. We don't watch TV in our house—except for our Friday-night movie night!"



8:55 p.m. "Work for me at this time isn't so much the billable stuff. It's catching up on email, working on the blog, or reviewing upcoming meetings. I'm a late-night person, so I get more done during this time period than I do during the day."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AIA Knowledge

Managing Uncertainty

New research identifies opportunities to create greater clarity in the architect–client relationship.

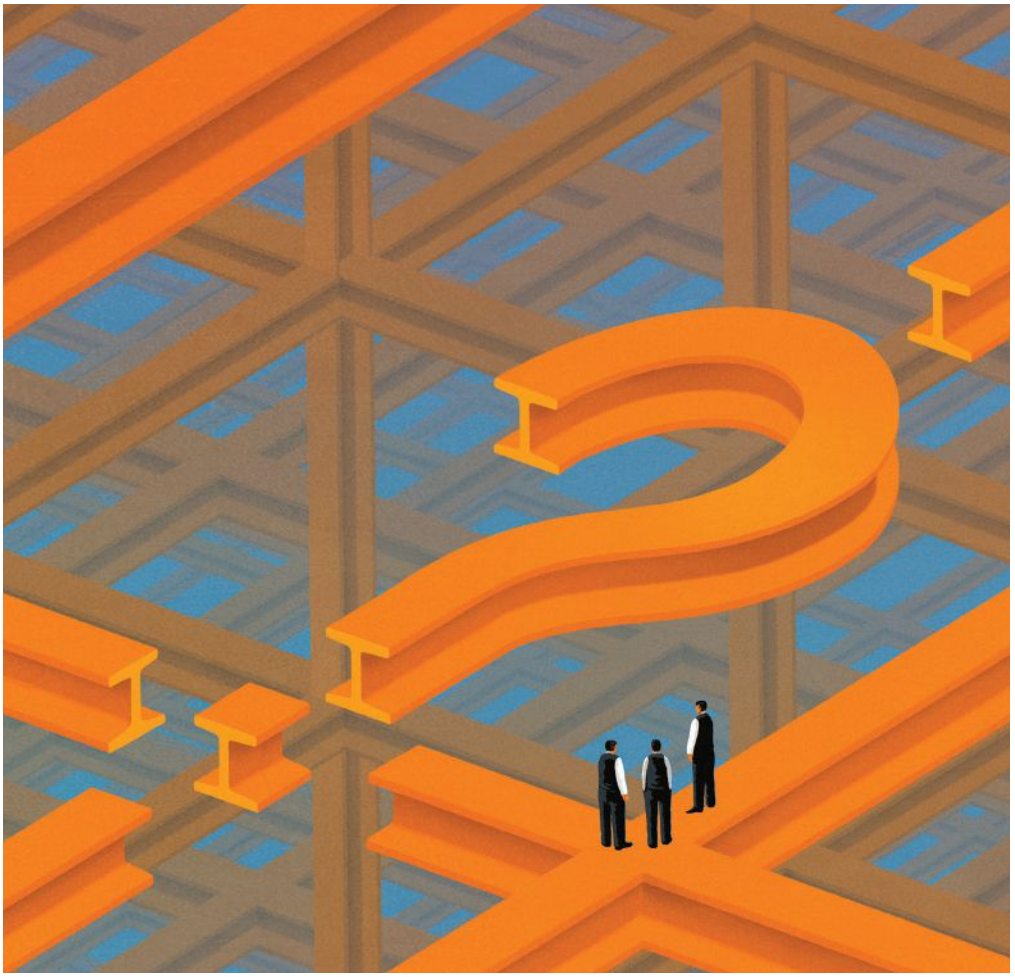

ILLUSTRATION: MICHAEL GLENWOOD

A recent industry study supported by the AIA shows how architects can provide greater leadership in their client relationships and projects. This research about uncertainty, expectations, and project performance defines significant opportunities for practicing architects. Architects can take the lead in applying the study's findings, demonstrating innovation in the delivery process as well as in design.

Although it's generally agreed that the design and construction process isn't an exact science, this can still be a source of frustration for even the best owners and project teams. Traditionally, we have often talked about this uncertainty after a project is completed, rather than upstream.

Until now there has been little data to share about actual expectations and experiences with uncertainty in design and construction. The AIA and the AIA Large Firm Roundtable cosponsored a study, "Managing Uncertainty and Expectations in Building Design and Construction," to provide guidance for owners, architects, and other project-team members.

The study is based on interviews with 150 owners, 50 architects, and 50 contractors—plus personal insights from leaders at the General Services Administration and the University of Chicago, as well as at companies like Crate & Barrel, Disney, Hines, Sutter Health, Whirlpool, and others. In addition, an online background survey yielded more than 2,500 responses from members of the AIA and other industry organizations.

Improving Project Performance

According to the research, owners, architects, and construction contractors believe the most valuable strategies to reduce project uncertainty include earlier integration and better communication among team members; stronger project leadership and engagement by owners; use of alternatives to traditional design/bid/build delivery; appropriate project contingencies; and shared use of BIM technologies across the team.

These conclusions are reinforced in another new study, "Examining the Role of Integration in the Success of Building Construction Projects," sponsored by the Charles Pankow Foundation and the Construction Industry Institute. This group created an owner's guide titled "Maximizing Success in Integrated Projects," available at bim.psu.edu/delivery. It identifies three critical factors in project performance: early involvement of all key team members; qualifications-based rather than low-bid selection of key team members; and cost transparency to support trust and collaboration within the project team.

Leadership Opportunities for Architects

Architects can use both studies to help establish reasonable expectations, budgets, and delivery approaches for projects—all at the right points in the process—by employing progressive project-delivery strategies, early engagement of construction team members, more thorough definition of project requirements, realistic budget contingencies, open-book cost management, and shared technology applications.

Research Findings

"Managing Uncertainty" revealed that project owners are generally less satisfied with project outcomes than their architects and contractors believe. While 86 percent of owners report a high level of satisfaction with the quality of their built projects, fewer are highly satisfied with the cost (63 percent) and schedule (64 percent). Owners, architects, and contractors were also found to have different perceptions about the primary causes of uncertainty in building projects.

When the frequency and cost impact of common problems are factored together, according to the study, seven leading causes of uncertainty surfaced; in order of concern, they are owner-driven program or design changes, accelerated schedules, design errors, design omissions, construction coordination issues, contractor-caused delays, and unforeseen site

AIAKnowledge AIAPerspective

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or construction issues. Unsurprisingly, design omissions and design errors are identified as factors for uncertainty—and architects and engineers are viewed as responsible. However, almost 90 percent of owners, architects, and builders believe it is impossible to achieve a "perfect" set of construction documents. Most owners (80 percent) expect to incur some cost from design errors and omissions in future projects. As an average, they believe that 3 to 4 percent is a reasonable range for the cost of these non-negligent design mistakes, with projects varying based on size and complexity. These issues generally fall well within the standard of care for architects, engineers, consultants, and contractors.

Project Budgets and Contingencies

More effective budget planning is a specific opportunity for architects and owners to minimize uncertainty. Most owners (81 percent) indicate that they always include contingencies in project budgets, but nearly two-thirds (65 percent) of owners have no standard risk-assessment process to determine the appropriate contingency amount. The study reveals that most owners do not share their contingency amounts with other team members.

We believe that project contingencies should be developed as a team, considering potential risks and the probabilities that they may be encountered on a particular job. Allowances can be made for program changes, design and technical complications, unforeseen conditions, permitting and regulatory changes, design imperfections, construction market conditions, and other issues. The architect should take the lead in this process, and owners will value this guidance. AIA

Clark S. Davis, FAIA, and R. Craig Williams, AIA

Clark S. Davis, FAIA, led the Managing Uncertainty research project for the AIA Large Firm Roundtable, AIA, and other industry sponsors. He is principal consultant with Cameron MacAllister Group and former vice chairman of HOK. He is a past president of AIA St. Louis and AIA Missouri.

R. Craig Williams, AIA, ESQ., is principal and chief legal officer of HKS. He helped to initiate the Managing Uncertainty research project as a leader in the AIA Large Firm Roundtable's Legal Committee. He is a nationally recognized author and speaker on design and construction law.

PHOTOGRAPHY: CARL BOWER

Architecture's Future

"A future for architecture depends upon a new sense of reality, a different success ideal, a deeper social consciousness," said Frank Lloyd Wright in a lecture at Princeton University in 1930. Although that lecture was published in 1931 by Princeton University Press, it did not become popular until 1953 as part of the Wright anthology *The Future of Architecture.*

In the middle of the last century, the future seemed bright and full of opportunities. Promoting the impact of excellent design then was an almost evangelical movement and made America a leader in design thinking. We need to rediscover Wright's same sense of urgent purpose for the 21st century for an architecture that is global in its outlook and local in its impact. Architects practice in a unique era today, when technology has never been more powerful yet social consciousness can be defined, even inspired, by grassroots movements. It is also a time when success itself, to echo Wright, has once again been redefined—not just by the architect's expanded role in society, but by the performance of our buildings and spaces.

Indeed, we have always wondered about architecture's future, but our sense of reality—the world in which we work today—is measurable. Architects uniquely prove ourselves to be indispensable by articulating how our work is thoughtful, healthy, conscientious, and, most of all, vital to our neighbors, our clients, and our communities.

So what does architecture's future look like from today's vantage point? Imagine a future for architects where clients and the public trust and truly value the imagination and technical skill of our profession. The AIA's new public website, Topic Architecture, will be instrumental in helping us get there by engaging clients and design enthusiasts alike.

Imagine a future for architects where AIA membership and involvement carries with it expertise in communicating our value. The Institute's public awareness effort, building on last year's Look Up campaign, will evolve to empower every member to skillfully demonstrate the value and relevance of all we do. Initiatives will expand beyond a compilation of feel-good taglines to include user-friendly customizable tools and resources available to volunteer leaders and members across the country.

Imagine a future for architects where we advocate together at federal and state levels to ensure prosperity for our futures. Self-promotion cannot be outsourced. Every member is an advocate and a messenger.

Imagine a future for architects where this is all being accomplished. This is the profession moved by profound social impact that we must deliver to future generations. A better future for architecture can and should be our new sense of reality. This opportunity—this cause—should serve as a unifying mantra to every AIA architect: Every day, architecture matters. I invite you to join me in this cause. Let's do this together. AIA

Russell A. Davidson, FAIA, 2016 AIA President

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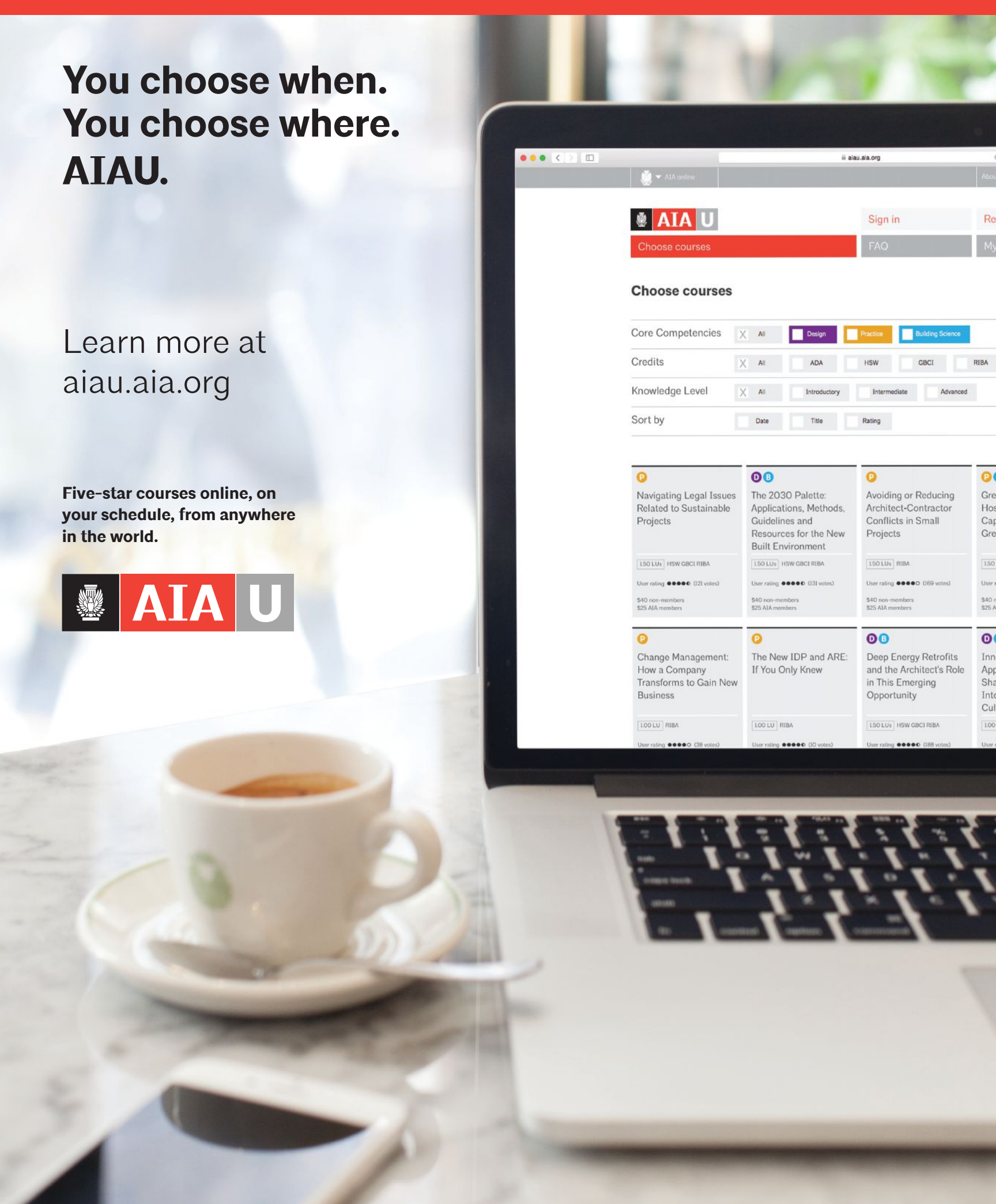


The Evolving Office

In the new landscape of work the role of the designer is more critical than ever before. Four experts weigh in.

BY DREW HIMMELSTEIN

The office used to be where you went to do your job. Today, between smartphones, laptops, and high-speed wireless around every corner, employees have come to expect—and even thrive—with more autonomy. But too many employees spending too much time away from the office can come at a cost to important things like collaboration, innovation, speed, and creativity. Quite simply, people work better when they work together.

In this climate, what does it mean for workplace design to keep pace with the evolving needs of both businesses and employees? Offices should to be places that people want to be in, where they'll do their best work, and where they'll grow. In addition to being beneficial to workers, such environments help organizations attract top talent and inspire high-caliber performance.

In order to explore how the design world is adapting to this changing landscape of work, Herman Miller recently spoke with four experts to gain their perspective on where workplace design is headed. We asked Carlos Martinez of Gensler, Yves Béhar of fuseproject, Amanda Stanaway of Woods Bagot, and Greg Parsons of Herman Miller about how they respond to the changing nature of work and the crucial roles that design and designer play in its future.

HermanMiller

The Workplace as a Bustling Metropolis

CARLOS MARTINEZ
Gensler

Now that so many people can just work out of their living rooms, what draws them to an office? Carlos Martinez, consumer products practice area leader for global design firm Gensler, says it's the creative energy that comes from being around other people—vibrant spaces that buzz with energy in order to attract and foster talent.

"Why do you want to go to a restaurant, especially a really cool, good restaurant? It's not because you need food; it's because being in that space is exciting," Martinez says.

"People like to go to places that are crowded—bars that are very crowded versus bars that are empty—because it's exciting. It's about the fact that the place has to have a draw that is more than what you can get when you're doing it on your own."

In Martinez's view, successful workplaces hum with the energy of cities. In busy urban neighborhoods, people live and work in close quarters and move along the streets and in and out of businesses throughout the day. Creative people are drawn to the Brooklyns and San Franciscos of the world because they want to be in exciting environments. And they'll gladly pay $5 for a cup of artisanal coffee to set up their laptop in a busy cafe if it brings them closer to people who share their drive and interests.

"Workplace has become more of a place to be with other people," notes Martinez, who says that businesses that are competing for top talent should take note of this in their office designs.

To better understand the appeal and benefits of a more social workplace, Gensler studied co-working spaces, where freelancers and small start-ups rent desks in a shared office environment and get access to perks like Wi-Fi, conference rooms, and kitchen space. They also chat with their counterparts over the espresso machine, trading ideas and establishing valuable networking relationships, all while maintaining their autonomy outside of the traditional nine-to-five grind.

Martinez has noticed that the aesthetics of co-working spaces seem almost unimportant; you can walk into one and it can be ugly but as long as there's fast Wi-Fi and access to people and technology, it hums with energy. "I remember to this day one of the sites that I went to see," Martinez says. He was touring workplaces across the country, and the design of this one was rather generic—but what was happening inside was anything but. "I remember opening the door, and I was there for one minute and I said, 'Oh my, I want to work here.' It was this energy."

Even though this particular co-working space had compromised on aesthetics, it hadn't compromised on technology—fast internet connections and up-to-date office products. But technology works a lot better in places that are flexible and hackable enough for the people inside them to make the most of that technology. Indeed, this space seemed to be shaped by the people using it, and not the other way around, so that workers could seamlessly connect with one another, their clients, and their projects.

"We are really more of orchestrators, and we need to let [workplaces] become living organisms," Martinez says.

That's what's happened with 1871, a Gensler-designed Chicago co-working space and nonprofit business incubator for budding technology start-ups. 1871, which is set on the 12th floor of an historic Chicago building, is filled with natural light, colorful furniture, and eclectic wall murals. But the most important component of 1871 is the people who work inside it. As budding entrepreneurs, they are hungry to learn from each other, to network, to create, and to be inspired. The attractive office setting with top-notch technological capabilities gives them a jumping-off point to turn the space into an innovation hub.

For Martinez, the moment when employees move into a newly designed office is when the project really starts. It's important that designers are not overly attached to their own creations, because in a successful office, workers will continuously adapt the space for their evolving needs. Led by employee needs and ideas, the designer should accept and find ways to facilitate constant change within the office landscape.

Martinez recalls a time ten years ago, when he was asked to create, "the perfect space—a space that was composed in a way that acknowledged the expertise that

(TOP) Meeting areas and social space at the 1871 encourage impromptu collaborations and serendipitous encounters between the more than 400 tech entrepreneurs who share the space. (BOTTOM) The 600,000-square-foot workspace designed by Gensler for Motorola hums with energy thanks to open areas where employees can work, socialize, or simply relax.

PORTRAIT ILLUSTRATION MICHAEL GILLETTE

“Workplace has become more of a place to be with other people.” —Carlos Martinez

we brought to the table. Companies were very vigilant to make sure the vision of the designer was maintained, either through protocols like clean desk policies or maybe a facilities group that made sure there were standards that had to be maintained.”

But Martinez thinks it’s the other way around. “I think now we need to create places that actually are lived in. People in those spaces need to own them,” he says.

It’s so inevitable that employees will adapt their work environments that designers can often figure out design solutions simply by observing the ad hoc adaptations workers have already made.

“I always say many of the solutions that we’re asked to solve are already there, and it’s what I call ‘user work-arounds,’” Martinez says. “If you pay attention to how the user has totally made do with what the space doesn’t give them, that’s where the good stuff is.”

Of course, these user work-arounds may be quick and dirty—like uneven tables pushed together or chairs crammed into a conference room that’s too small. For Martinez, the designer’s opportunity is to integrate those necessary adaptations in the office design in a graceful, beautiful, or clever way. Looking at it this way, Martinez sees the relationship between office designer and worker as analogous to that of urban planner and urban resident.

“Why do people say, ‘I love Barcelona’ or ‘I love London?’ It’s because the framework [the urban planners developed] has been visionary,” Martinez says. “A city is very spontaneous. We’re not controlling every single thing that gets built in a city; what you do is create a system that allows that city to grow in a very healthy way, almost like an ecosystem.”

If urban spaces are planned but malleable, constantly changing shape based on the people who inhabit them, offices can be as well.

YVES BÉHAR
fuseproject

Collaborating Outside the Conference Room

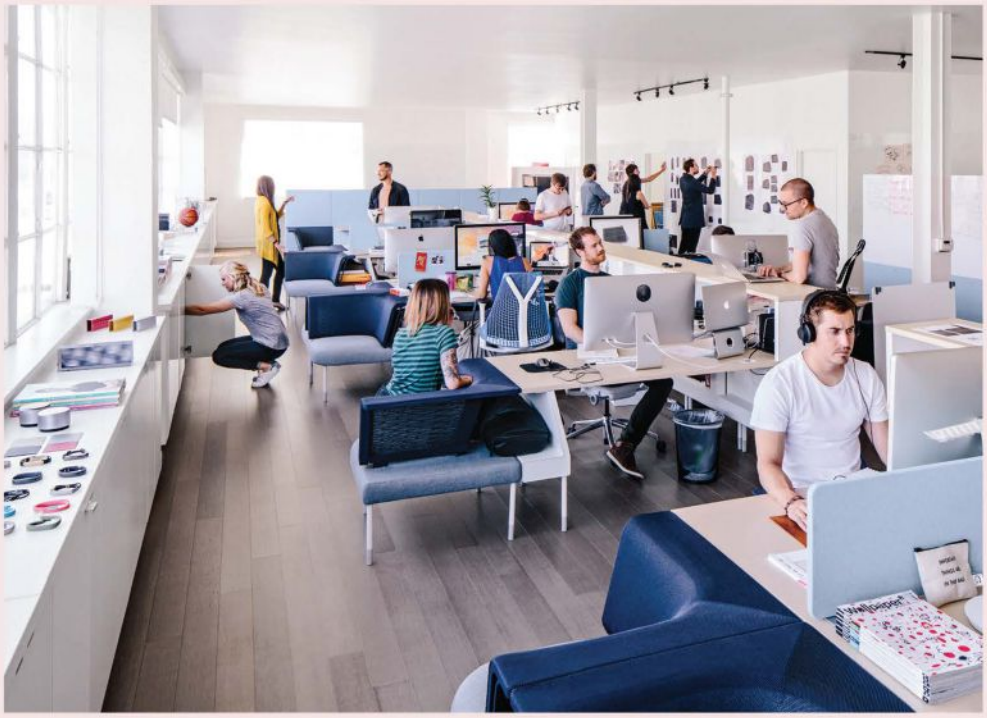
When fuseproject cofounder Yves Béhar started looking into how people collaborate in workplaces, he realized it's been approached all wrong. Most collaboration, he found, doesn't happen in meeting rooms designed to fit a dozen people around a big table; it happens in informal meetings at people's desks.

"We need people to sit together and exchange quick ideas, brainstorm together, one-on-one or in a group, pretty much all the time, but without the formality of having to schedule meetings and to move people from one space to another," Béhar explains. "A big 'aha' moment for us was to realize that 70 percent of meetings happen at the desks, and no personal office desk has ever been designed for collaboration."

In 2011, Béhar and fuseproject were hired by Herman Miller to fix that. The resulting new office furniture line Public Office Landscape is specifically designed to facilitate this kind of casual collaboration. It includes innovations such as the "social chair," casual performance seating that works across a variety of applications to facilitate impromptu conversation or on-the-fly brainstorming as the need arises during the day. With Public, it's possible to create a wide variety of office settings that range from open to private, with a unified design vocabulary.

When fuseproject moved into a new, much larger workspace, it saw an opportunity to put the Public prototype to the test. One concern, Béhar recalls, was that the open space of a renovated 20,000-square-foot warehouse would slow the pace of quick brainstorming, collaboration, and iteration that had characterized the workplace in its smaller site. The trick was to move out of cramped quarters while maintaining the tight-knit mindset.

Fuseproject has studied offices in the U.S., Europe, and Asia, and managers and employees on every continent say they would like to see more conversation and interaction in



(BOTTOM) Casual seating adjacent to work areas make collaboration easy at fuseproject. (RIGHT) The visually consistent modular surfaces, storage, and seating of Public Landscape Office, designed by fuseproject for Herman Miller, can be configured into a broad range of settings that encourage fluid transitions between collaborative and focused work.

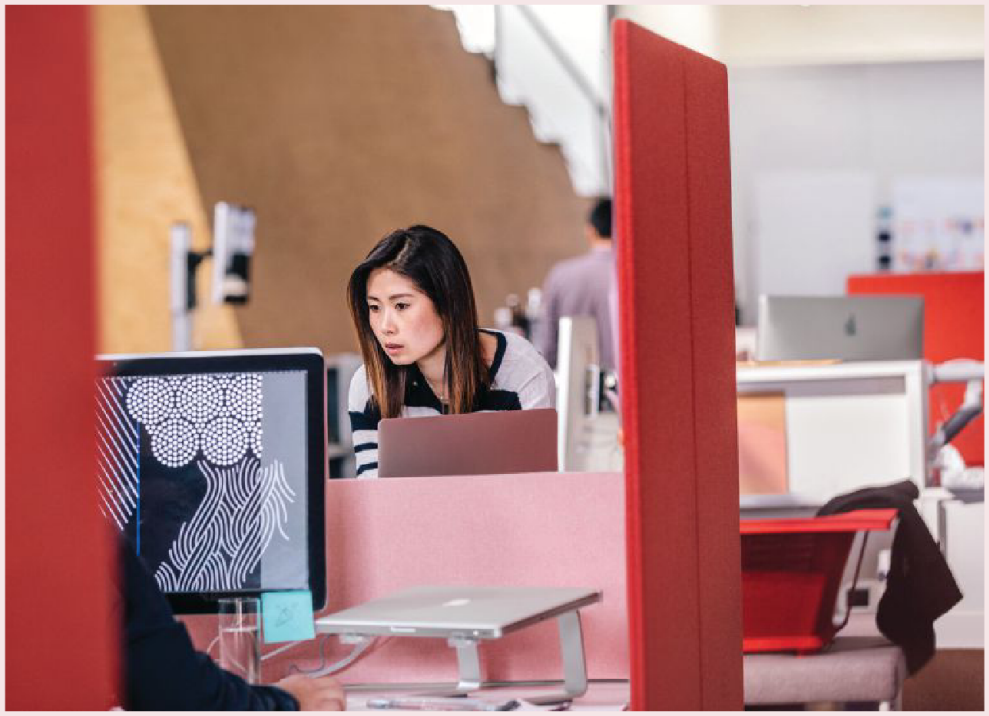
PORTRAIT ILLUSTRATION MICHAEL GILLETTE

HermanMiller

HermanMiller

(LEFT) The team at fuseproject, an industrial design firm, is at its most creative when surrounded by things that inspire them. (BELOW) Public transforms every part of the office—including individual desks—into places where collaboration can take place.

"If you're going to create collaborative space, it has to be everywhere; it can't just be restricted to a certain area." — Yves Béhar



the workplace, according to Béhar. Many offices, though, aren't conducive to that type of collaborative environment. To foster a collaborative workplace, Béhar says that maintaining the "flow" is crucial. If collaboration requires scheduling a meeting, reserving a conference room, and connecting a laptop to a projector (while troubleshooting the inevitable technical glitches), the flow of creative work is lost. Not only is collaboration slowed down, it's discouraged by the barriers that the office environment places in its way.

"If you're going to create collaborative space, it has to be everywhere; it can't just be restricted to a certain area," Béhar says. "It has to be something that you encourage throughout."

It's not that conference rooms aren't needed, but they should be just one option in an office landscape that invites collaboration in a variety of diverse settings. People can collaborate most wherever makes the most sense for them and their project: in open and enclosed meeting rooms, at their desks, as well as in shared spaces like hallways and break rooms. The designer's main responsibility is to make those places inviting and conducive to the sharing of ideas.

Béhar noticed a marked change in how collaboration happened when fuseproject moved into its new office with the new furniture. "The transition was so immediate from having to schedule every encounter for a meeting versus meeting with people in the flow of your day—the transition was so natural."

With less unnecessary friction in the workplace, the pace of innovation, iteration, and change increases. Perhaps that's why Béhar has noticed large companies taking their cues on office design from smaller companies that are sometimes more nimble and fast-paced.

"I think there's a renewed focus on quality human interaction," Béhar says of the companies that wonder, "How can I bring interaction and the same kind of efficiency and speed to my large enterprise?" He foresees a day when office workers track and measure their movements and work habits throughout the workday. With quantifiable data on how much time workers spend on various tasks and how they move about the office, office design could become even more sophisticated.

"You can see how we track our daily physical activity or sleep," Béhar explains. "If you consider that we spend at least eight to ten hours per day in an office, and we don't track any of that activity, I think it's quite surprising."

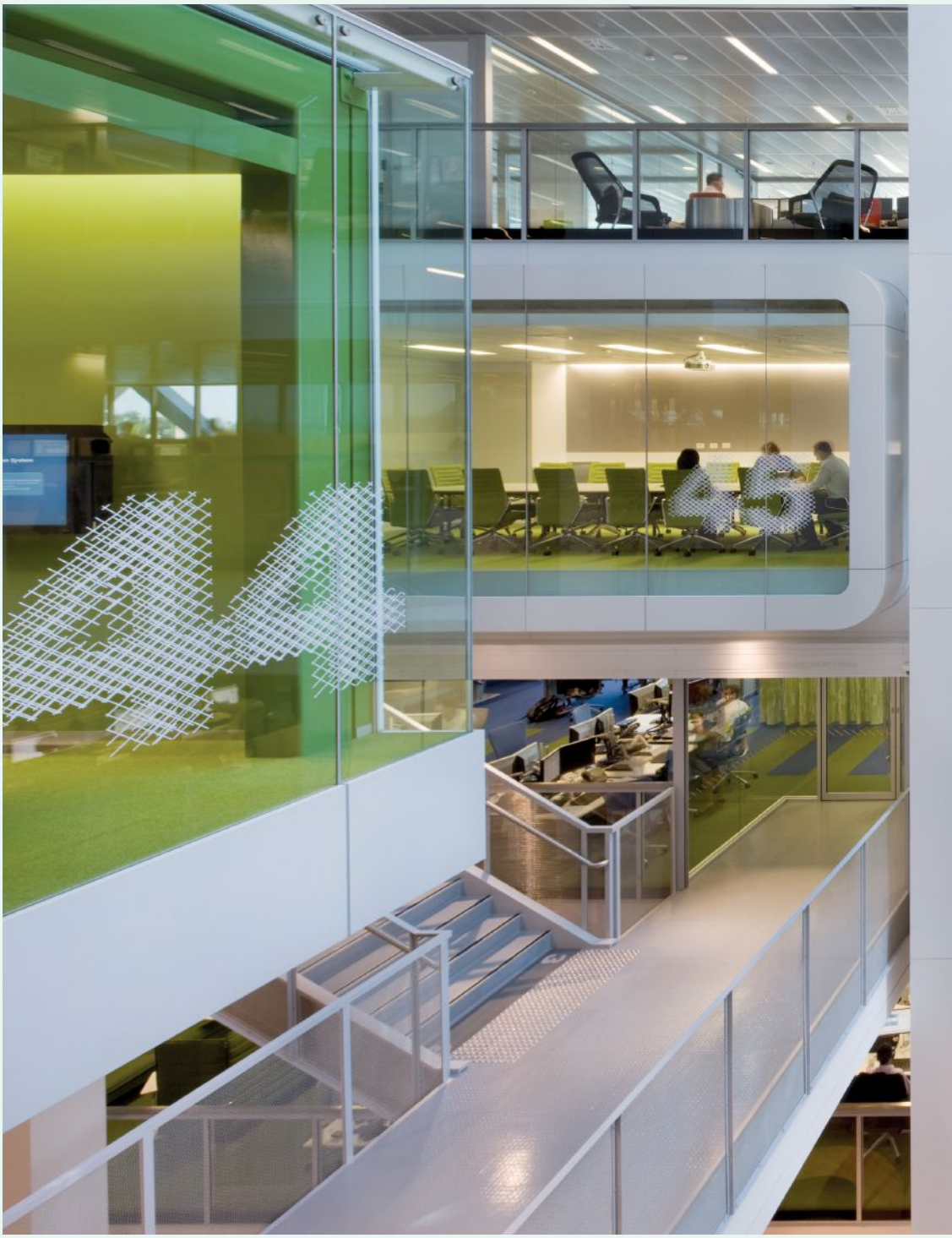
The information could inform everything from collaboration tools to furniture design and provide evidence that good design improves business outcomes.

"You can say you want people to collaborate more, but what does that mean effectively? What is the furniture's role in that? What is the educational role in that?" Béhar asks.

Until the day that big data takes over office design, however, designers can focus on creating frictionless offices where space and furniture facilitate, rather than hinder, creativity.

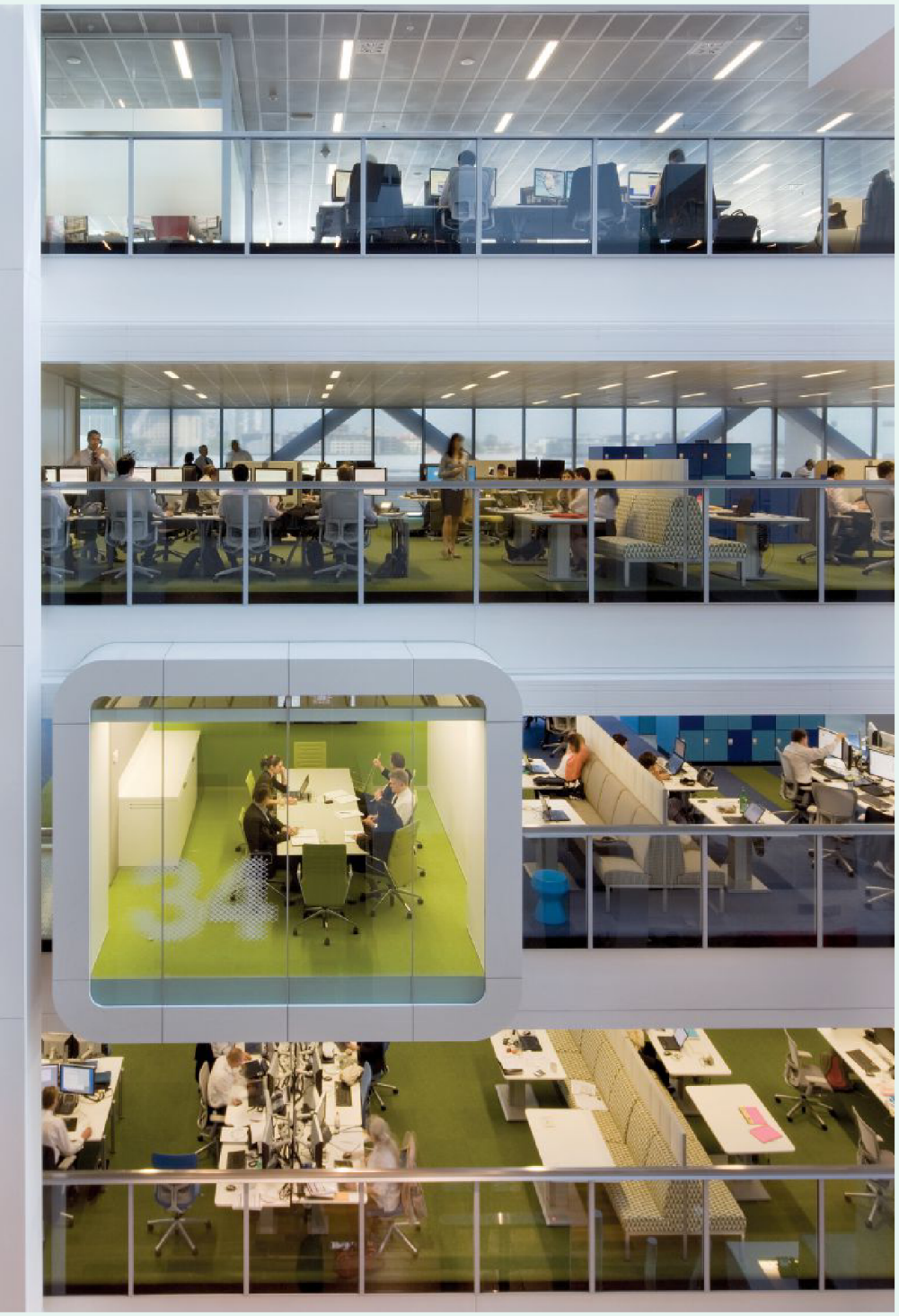
Chance Encounters by Design

AMANDA STANAWAY
Woods Bagot



In the Macquarie Group's Sydney headquarters, designed by Clive Wilkinson Architects and executed by Woods Bagot, no one has assigned workstations. Executives are granted priority in a booking system for certain spaces.

“The whole idea of activity-based working is that you use the right space for the right task, and by doing so you will perform at your best.”—Amanda Stanaway



For Amanda Stanaway, a principal at architecture firm Woods Bagot, updating the modern workplace starts with updating how work gets done. She steers clients of her global practice toward activity-based working, an approach to office design that frees employees from assigned seating and allows them to choose different settings in the workplace that meet the needs of their work. It’s appealing and empowering for employees, but requires a shift in thinking for managers who must learn how to manage through clearly articulated expectations rather than by tracking an employee’s presence in the office.

“Instead of me saying ‘You need to work from nine to five because I need to know that you are here,’ [even though] you might work on Facebook all day long....The opposite of that is freedom and trust and managing by performance or output,” Stanaway says.

Most of the offices that Woods Bagot has designed share a simple premise: instead of assigned desks where workers sit all day, employees have access to a variety of commonly shared workstations, and they can move freely throughout the office as their project requirements and workload dictate. Team members who are running up against a tight project deadline might group themselves at desks in one corner of the office or even create a “war room” by reserving a private conference room for a day. A colleague who needs to do heads-down work can choose a desk in a more private area of the office set up for quiet concentration. Where you work is determined by what you are doing, not by your title, department, or your manager’s preferences.

“Activity-based working was developed with the idea that work is made up of a set of activities and actually no matter what type of a worker you are, you will have some collaborative work and you will have some work requiring quiet and concentration,” Stanaway says. “The whole idea of activity-based working is that you use the right space for the right task, and by doing so you will perform at your best.”

The style has caught on in Australia, where office space is at a premium. Flexible workspaces are more economical because they use space efficiently; for example, corner offices don’t sit vacant when the CEO is out of town. Some of the biggest adopters have been the country’s largest banks. Woods Bagot, along with Clive Wilkinson Architects, did a

major office redesign for the Macquarie Group, an investment bank, where employees had previously worked at desks grouped by department. In the new Sydney headquarters, there are no assigned workstations and employees stow their laptops in lockers. Large staircases cut diagonally through the airy office, encouraging employees to move and cross paths with people from different divisions. The flexible workspaces abolish what Stanaway describes as "command and control silos," where managers separated employees by department and oversaw them literally through sight lines.

"It is vital because you need to get people moving between places and connecting with others," Stanaway says. "I think ultimately connection is always an important part of any business and if you have a big business, connection is critical."

Strip away ingrained expectations and it becomes clear that sitting in one place for a certain number of hours each day isn't helping—and may actually be hindering—people from doing their jobs. On the other hand, when design encourages movement through the workspace people bump into each other serendipitously, make connections, decide to collaborate, and perhaps even come up with the next big thing. Bright hallways, coffee bars, and walkways that cut through the heart of the office are all spaces that can maximize this "bump."

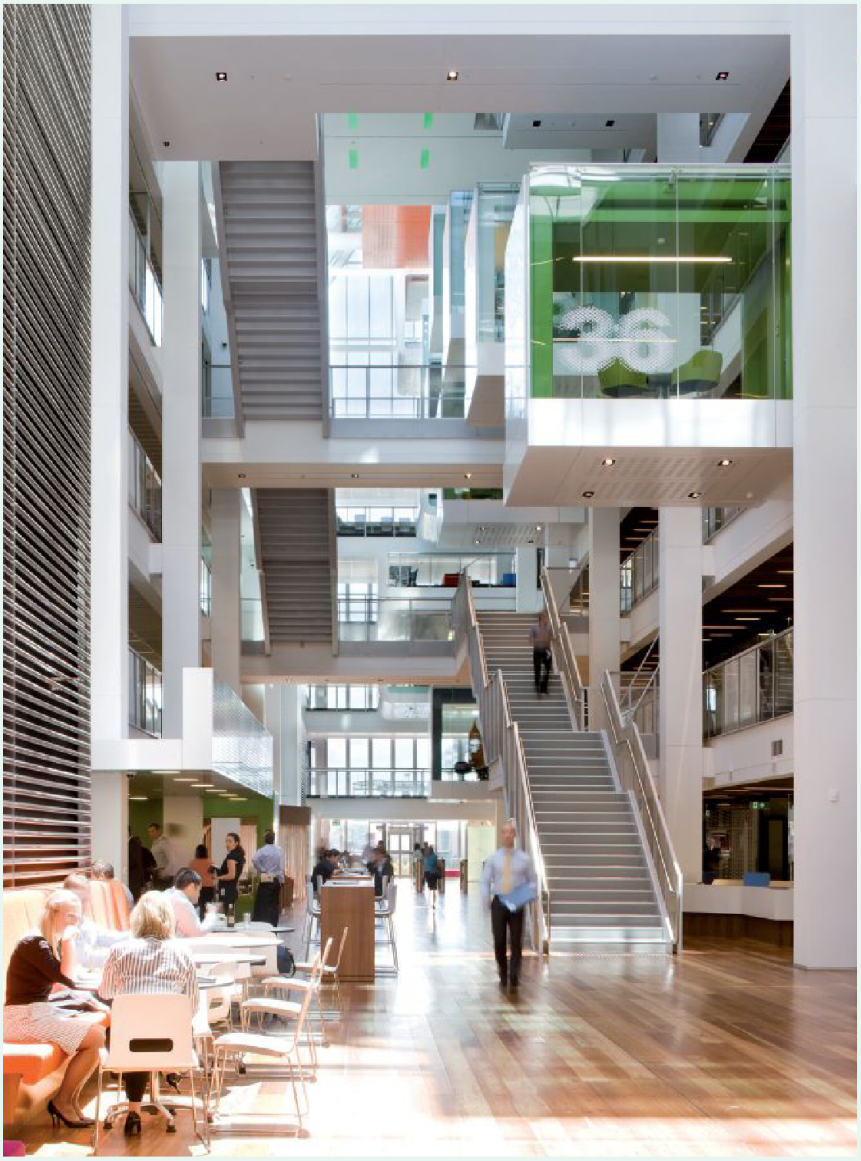
That said, empowering people to work anywhere, anytime can be a challenging shift for some managers. "You have to manage people by performance, because if you try to manage by presence or by visibility, you will fail," Stanaway explains. This can often be a positive transition, because it encourages managers to set clear expectations and monitor progress through structured team meetings.

Not all employees will accept change willingly, either. Stanaway likes to tell the story of an employee in a new office who didn't like the idea of stowing his things in a locker. For three months, he refused to cooperate and would instead overnight mail his belongings to himself at the end of each workday.

But ultimately, design can be an effective tool to change behavior and business culture. Stanaway worked on an office design for a company that was trying to become more people-focused, but the employees described themselves as "grumpy old men." The new office was structured such that nearly everyone had to walk through a common area where they would come into contact with at least ten other employees to get to their individual workspace. Lockers were also clustered around a community gathering point to encourage interaction.

"You would really struggle to go to that office and not talk to other people," Stanaway recalls. "It was about trying to use design to change the culture."

Stanaway firmly believes that in order to best motivate workers, offices must recognize that diverse people with diverse functions need diverse spaces in which to work. The challenge for her, she says, is "the belief that a homogenous workplace is going to create a great outcome."



(LEFT) Macquarie's offices had previously grouped its employees by department. The move to the new space was predicated by a desire to break down silos within the organization and promote a client-based culture.

PORTRAIT ILLUSTRATIONS MICHAEL GILLETTE

GREG PARSONS
Herman Miller

Succeeding by Meeting Fundamental Human Needs

(ABOVE) Approachable spaces such as this one in the Herman Miller San Francisco showroom can satisfy a range of human needs, from autonomy to belonging.

Technology and a changing business landscape may be transforming the workplace, but what remains constant are the core needs of the human beings that inhabit it. Greg Parsons, Herman Miller's senior vice president and creative director for Global Work, believes designers need to dig into the basic principles that motivate people—the so-called "human operating system."

"Whatever describes the character of the people and their work should describe the character of the workplace," Parsons says. "So if your people and their work are informal and open and rapidly changing, the space should be informal and open and rapidly changing. It's a pretty simple rule really."

When Herman Miller updated its approach to designing human-centered workplaces, a team within the company researched the psychological factors that motivate people at work. Their research led them to understand that though each person and each company is different, everyone is driven by the same fundamental human needs—security, belonging, autonomy, achievement, status, and purpose. For a company to succeed, it should provide the conditions that help satisfy these needs for its employees.

"We're creating a new idea that starts with people, so let's remember that's also what we need to base our designs on," Parsons says.

The methodology Herman Miller arrived at, Living Office, recognizes that all people and all companies have things in common (like those fundamental needs), and that they are also all unique. In response to this, it moves away from a one-size-fits-all standardized solution for office spaces, to a customizable landscape made up from ten different settings that are attuned to the specific purpose, character, and activities of the people working in them. In a single day, an employee might spend time in a "haven"—a private space ideal for concentrated work; a "cove"—an easily accessible area optimized for casual group collaboration; or a "plaza"—a large open setting in a well-trafficked area that offers a multitude of gathering points and attractions, like coffee or a library.

It's an office landscape designed for an era in which business success is increasingly driven by creative innovation. Today's workplace, shaped by the culture of Silicon Valley start-ups and co-working spaces, brings talented people together and nourishes their creativity.

"Work is less and less about repetitive, administrative tasks, and more about changing, creative paths," Parsons says. "What are the right ways to manage people doing that work? What are the right tools to give them? And what are the right kind of places to support them? The answer is they're all new and different."

Living Office balances the needs of the individual and the organization by supporting workers as individuals while letting the company customize its workplace landscape in a way that best suits its corporate culture and workday needs. By working together with architects and interior designers to apply its methodology, Herman Miller offers a way for companies to arrive at an ideal mix of settings, creating spaces suited to the character of the workers who use them and the activities they pursue. Within those settings, an ideal arrangement of surroundings, tools, and furnishings helps to deliver on the needs of people and offer an elevated experience of work. The resulting Living Office will be a place where people want to be—because it helps to facilitate better work.

"We think this is a moment for design to reestablish itself as a force that enables business leaders to create places that are powerful tools to help realize their goals," Parsons says.

The end result will be energetic, higher-performing offices that stimulate innovation through a more humane way of working. Parsons believes design will lead the way in creating vibrant workplaces that do as much good for the people who work in them as they do for the bottom line.

To see more Living Offices, learn about our approach, and find experts who can guide you through our process, head to hermanmiller.com/livingoffice.

"Whatever describes the character of the people and their work should describe the character of the workplace."—Greg Parsons

Herman Miller's Living Office in Mexico City offers a balance of formal and informal places where people can meet with clients or work together on projects.

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ELECTRONIC SENSOR FAUCETS IMPROVE HYGIENE AND CONSERVE WATER IN COMMERCIAL RESTROOMS

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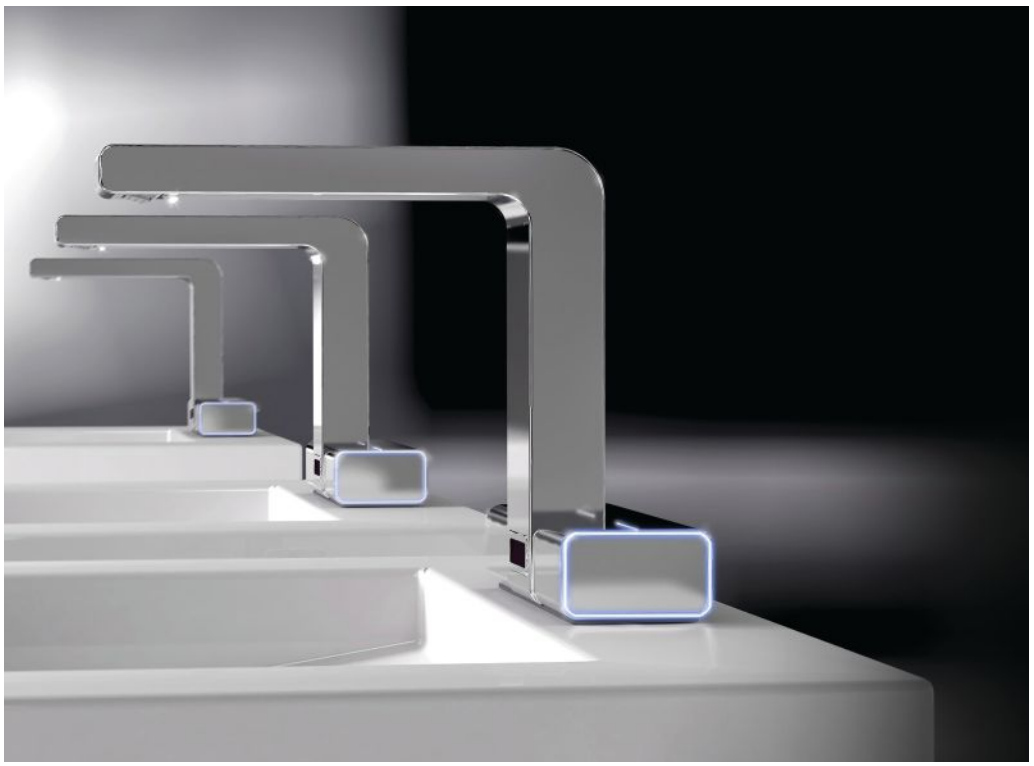

LEARNING OBJECTIVES

At the end of this program, participants will be able to:

1. Understand how electronic sensor faucets improve hygiene in commercial settings.
2. Examine the various technologies, options, and settings available in electronic sensor faucets.
3. Describe the importance of electronic sensor faucet selection for specific markets and applications.
4. Identify how electronic sensor faucets contribute to water conservation.
5. Understand how regulatory compliance factors into electronic sensor faucet selection.

CONTINUING EDUCATION

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By Paige Lozier

IMPORTANCE OF HANDWASHING

Visitors often judge a company or institution on the condition of its restrooms. Therefore, restrooms tend to receive special attention when undergoing new construction or renovations. New plumbing technologies, product aesthetics, and their ability to provide a hygienic environment can go a long way toward boosting a facility's overall image. These products can reduce operating costs, conserve water and energy, and improve hygiene.

Although users often believe flush handles are the dirtiest touch point in the restroom, sink areas are usually more germ-laden, as this is where bacteria are shed from hands during washing. Of course, this does not mean restroom visitors should skip handwashing. According to the U.S. Centers for Disease Control and Prevention (CDC), proper handwashing is the single most effective means of preventing the spread of germs that can result in everything from the common cold and diarrhea to more serious and potentially life-threatening diseases.

The Association for Professionals in Infection Control and Epidemiology (APIC) states that, "Handwashing causes a significant reduction in the carriage of potential pathogens on the hands." Yet, according to APIC's *Guideline for Handwashing and Hand Antisepsis in Health Care Settings*, proper handwashing occurs only about

The advantages of sensor-operated faucets extend beyond the public restroom to almost any other type of handwashing station, especially in applications requiring the highest levels of cleanliness. Photo courtesy of Sloan Global Holdings, LLC

half as often as it should and usually for a shorter duration than recommended. For users to gain the most benefits from handwashing, specifiers should pay close attention to faucet details.

In restrooms with manual faucets, handles are a prime breeding ground for germs. Touching faucet handles after washing simply re-contaminates hands and reverses much of the good that came from washing in the first place. While some experts recommend that restroom visitors use a paper towel to turn faucets off, the reality is users are either unaware of this advice, do not care to follow it, or restrooms are not stocked with paper towels.

Therefore, touchless, sensor-operated faucets can contribute to a higher level of handwashing hygiene. The advantages of sensor-operated faucets extend beyond the public restroom to almost any other type of handwashing station, especially in applications requiring the highest levels of cleanliness. For example, proper handwashing is particularly essential with healthcare workers, who can unwittingly accelerate worker-to-patient and patient-to-patient germ transmission. Additionally, anyone involved in food preparation should also take special precautions to prevent food contamination that can be difficult to identify and even more difficult to stop.

Sensing technologies based on electronics are most often used for hands-free activation of plumbing fittings such as faucets to improve user accessibility in compliance with the Americans with Disabilities Act (ADA) and improve overall hygiene and restroom cleanliness. Electronic plumbing fittings offer sanitary, touch-free operation, while conserving water and energy in that they only dispense water when the sensor detects a user and can also limit water delivery duration.

MEETING A NEED—THE HISTORY OF HANDS-FREE FAUCETS

Hands-free faucets have been around since the 1970s, when they were sold under the name "promixity faucets" and were marketed to offer several advantages, including greater convenience, less maintenance, and improved hygiene. Many companies tried to create faucets that would allow water to flow without use of a handle or push-button to minimize spreading germs in public restrooms, as well as to make faucets easier to use for people with disabilities.

Early product development was somewhat unsuccessful until a breakthrough in

Electronic faucet research and development efforts became even more critical with the passing of the Americans with Disabilities Act in 1990. Photo courtesy of Sloan Global Holdings, LLC

plumbing technology occurred in the early 1970s when Chicago's O'Hare International Airport underwent a major renovation. The job included retrofitting the airport's public restrooms with toilets featuring new flush-valve technology, which used sensors to monitor the light level in individual stalls. When an object blocked the sensor, a timer activated and prepared the toilet to flush when the object was removed. Faucet manufacturers studied this technology and realized that if it were modified, it could potentially work in their products. Electronic faucets did not reach critical mass until 1985 when the electronic hand washing faucet was designed and then also tested at O'Hare, teaching America how to use automatic faucets.

According to Plumbing and Mechanical Magazine, "Throughout the late 1980s and early 1990s, many faucet companies created prototype electronic faucets operated by wiring, power source, and sensor technology. A big push for the use of sensing faucets came when the U.S. government issued the Energy Conservation Act of 1992." This legislation dictated new water use levels for faucets, thus increasing the need for efficient hands-free products. Electronic faucet research and development efforts became even more critical with the passing of the Americans with Disabilities Act in 1990. With the creation of a sensor faucet, a person would be able to operate it without the use of hands, fingers, or the use of force, making it an ideal ADA compliant product.

In the mid-1990s, with improvements in sensory technology, many faucet companies had either successfully brought an electronic faucet to market, or were developing improved products. Energy efficient and cost effective battery-powered faucets were developed, which led more organizations to install them in their facilities. As people began to learn of the faucet's hygienic benefits and ease-of-use, the products became much more accepted and requested for use in new building and remodeling projects.

Digitally calibrated electronics automatically adjust to environmental conditions, preventing false faucet starts while maintaining operational sensitivity. Photo courtesy of Sloan Global Holdings, LLC

MODERN SENSING TECHNOLOGY

Sensing technology has improved over the years. Digitally calibrated electronics automatically adjust to environmental conditions, preventing false faucet starts while maintaining operational sensitivity. This same technology allows the faucet to adapt to various sink sizes, shapes, and finishes so water continuously flows without interruption, eliminating the need for manual adjustment of the sensors during installation. Spout styles gradually evolved to mimic those offered in popular residential models. Most recently, the addition of specialty finishes have provided companies with a step-up option to match other fixtures and fittings in their facilities.

Typically, an electronic faucet operates by means of an infrared sensor. Once the user enters the sensor's effective range, the solenoid activates the water flow. Tempered water flows from the faucet until hands are moved away; the loss of reflected light initiates an electrical signal that deactivates the solenoid valve, shutting off the water flow. The circuit then automatically resets and is ready for the next user.

Touchless faucets are designed to operate for a pre-set amount of time when a user's hands are in the active area. This type of faucet uses approximately 3.8 L (1 gal) less water than a manual faucet which, in a public restroom,

continues to flow while a person lathers and dries their hands. In contrast, sensor-operated faucets turn off during this stage. More water can be saved when sensor faucets automatically switch off as soon as users remove their hands from the wash area, as opposed to metered and manual faucets that can be left running for extended cycles, sometimes even after users leave the restroom. These energy savings over the faucet's lifetime reduce a facility's water and wastewater bills. As companies struggle to contain operating costs, or face pressure to reduce overall water usage in water-scarce regions, water reduction from faucets makes sense in the long run.

Today's electronic sensor faucets incorporate many new technologies, features, and configurations. Photo courtesy of Sloan Global Holdings, LLC

TECHNOLOGIES, SETTINGS, FEATURES, AND CONFIGURATIONS

Today's electronic sensor faucets incorporate many new technologies, so before moving on let's talk about some of these options so that you have a better understanding for the remainder of the discussion.

Today's commercial sensor-operated faucets are designed for strength and vandal resistance. They typically feature locking spray heads, below-deck electronics and armored cabling to reduce vandalism and water damage. Cost savings over traditional faucets can be measured in increased water savings and a faster return on investment.

For typical restrooms, there are numerous styles of hand-washing faucets, featuring either tempered or hot/cold water operation, which mount on a deck or wall. Various spout styles are suitable for a range of applications,

Higher flow rates are permitted for residential or "private" faucets in homes, hotel rooms, and private hospital rooms. Any other "public" or commercial installations are much more restrictive. The flow rate can influence which type of spray head is chosen to maximize customer satisfaction. Photo courtesy of Sloan Global Holdings, LLC

including kitchen/foodservice, healthcare and other commercial, industrial, and institutional uses. Each category offers specific feature options including:

- A variety of flow outlets;
- User-specific electronic controls for run times;
- Vandal-resistant options;
- AC- or DC-battery powered electronics;
- Above- or below-deck mixing valves; and
- Wall- or deck-mount installation.

SENSING TECHNOLOGIES

There are two different kinds of sensing technologies available, Active Infrared (IR) and Capacitance (C).

Active Infrared sensing operates when a user's hands reflect an invisible light beam, alerting the faucet to begin the flow of water. Infrared models are designed to provide easy, above-deck access to key components, and offer additional user enhancements.

Capacitance (C) sensing utilizes the human body's own natural conductivity. When the faucet senses a hand, it starts the flow of water. There is no sensor window and critical components are protected in a watertight, below-deck box. In some instances the proper functioning of Capacitance technology can be inhibited by metal fixtures or the proximity of large metal objects.

The addition of an above-deck mixing valve to hands-free electronic faucets has created a product that satisfies users' demands for good-looking, hands-free products with readily available hot/cold adjustment. Mixing/sensing hands-free electronic faucets not only allow for a pre-programmed duration of continuous water flow, but also allow users to preset, or adjust, the temperature of the water being dispensed to satisfy their needs.

UNDERSTANDING SPRAY HEADS

Let's talk a bit about spray heads, or what a layperson would typically call an "aerator". There are four main ways spray heads affect the stream of water coming from the tap. The first is a typical aerator spray head, which is most often used in homes and apartments and the only one that truly mixes air into the water. It produces a larger, whiter aerated stream that is soft to the touch and non-splashing. By definition, an aerator spray head adds air. Installing one on the end of a faucet adds air to the water flow. Mixing air into the flow of water produces a steadier, more stable stream. An aerator is usually a simple, mesh screen made of metal or plastic that is attached to the end of a faucet with housing. As water flows through this screen it is divided into many small streams with air in between. This allows for the feeling of high pressure with less actual water consumption.

While drawing air from the room around the faucet isn't a problem in most residential and commercial facilities, it can be a concern in hospitals, senior care facilities, and medical labs. Room air can contain bacteria and when mixed with water it could potentially contaminate drinking water. For this reason, "laminar flow" spray heads are recommended for use in healthcare facilities. Laminar spray heads provide a single, crystal clear, non-aerated, non-splashing stream that is most useful for high flow applications or healthcare facilities.

When the flow rate is too low to produce an aerated or laminar stream, a "multi-laminar" spray head is used to produce a miniature shower pattern to provide full, non-splashing coverage of the hands during washing. Multi-laminar spray heads are recommended for use in public restrooms. The final type of spray head is the "rain shower" device with numerous small nozzles that produce a wider, yet soft

stream of water that is divided into small drops for an appealing aesthetic effect.

It is important to note that flow rate requirements in the United States differ between residential and commercial applications. Higher flow rates are permitted for residential or "private" faucets in homes, hotel rooms, and private hospital rooms. Any other "public" or commercial installations are much more restrictive. Plumbing regulations and codes throughout the United States limit the flow rates of commercial faucets to 0.5 gpm, though higher flow rates are permitted for specific applications like surgical scrub stations. Even lower flow rate requirements exist for commercial applications that are certified to LEED v4 requirements or for CalGreen compliant installations in California. The flow rate can influence which type of spray head is chosen to maximize customer satisfaction.

Hard wired units can be configured with battery back-up power in case of power supply disruptions, and there are solar and water turbine technologies available to harvest energy from the environment to supplement other power supplies. Photo courtesy of Sloan Global Holdings, LLC

SENSOR FAUCET POWER OPTIONS

Several power options come into play when specifying sensor faucets. Hard wired units connect to the site electrical supply. Battery technology permits some sensor faucet installations without having to make an electrical connection to a central power supply. Hard wired units can be configured with battery back-up power in case of power supply disruptions, and there are solar and water turbine technologies available to harvest energy from the environment to supplement other power supplies. For all of these there is often an audible tone or light-emitting diode (LED) to signal when it is time to replace a battery and perform other diagnostics.

QUIZ

1. True or False: According to the CDC, proper handwashing is the single most effective means of preventing the spread of germs.

2. Which sensing technology operates when a user's hands reflect an invisible light beam, alerting the faucet to begin the flow of water?
   a. Active Infrared
   b. Capacitance

3. Which faucet flow device is recommended for use in healthcare facilities?
   a. Laminar flow spray head
   b. Multi-laminar spray head
   c. Rain spray head

4. Which of the following is a power option for sensor faucets?
   a. Battery
   b. AC Hardwire
   c. Battery supplemented by solar or turbine power harvesting
   d. AC Hardwire supplemented by battery back-up
   e. All of the above

5. True or False: A gooseneck spout is ideal for applications including medical, foodservice, wash sinks, and scrub sinks, as the design is out of the user's way when handwashing.

6. In what setting are faucets more prone to vandalism?
   a. Healthcare
   b. Education
   c. Executive
   d. Hospitality

7. Dodge Data and Analytics indicates that the specification rate for electronic sensor faucets was _____% and rising in 2015.
   a. 50%
   b. 10%
   c. 5%
   d. 26%

8. What is the maximum flow rate allowed for faucets to meet the CalGreen Tier 2 standard?
   a. 0.4 gpm
   b. 0.35 gpm
   c. 0.5 gpm

9. True or False: Under LEED v4, designers must employ strategies that in aggregate use 20% less water than the water use baseline calculated for the building (not including irrigation).

10. Which environmental regulation limits contaminants such as lead in drinking water from endpoint devices?
    a. LEED
    b. EPAct
    c. CalGreen
    d. NSF 372

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This article continues on http://go.hw.net/AR116Course1. Go online to read the rest of the article and complete the corresponding quiz for credit.

THE EFFECTS OF BUILDING MOVEMENT ON INTERIOR FINISHES AND SOLUTIONS

Presented by: TRIM-TEX DRYWALL PRODUCTS

LEARNING OBJECTIVES

After reading this article you will be able to:

1. Discuss the different types of loads that are applied to a structure, causing movement in the building.
2. Review the types of movement that may occur and how this will affect building components and their connections to each other over time.
3. Examine the effect of movement on interior finishes.
4. Identify solutions and steps that must be taken to prevent damage to building components from movement.

CONTINUING EDUCATION

CREDIT: 1 LU

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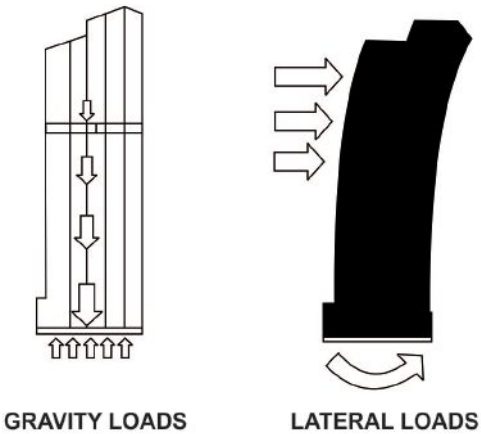
Use the learning objectives above to focus your study as you read this article. To earn credit and obtain a certificate of completion, visit http://go.hw.net/AR116Course2 and complete the quiz for free as you read this article. If you are new to Hanley Wood University, create a free learner account; returning users log in as usual.

By Paige Lozier

MOVEMENT IN BUILDINGS

The goal of building construction is to achieve a state of equilibrium among all the parts that make up a structure and the forces acting on it. Movement in buildings is caused by different types of loads being applied to the materials, connections, or assemblies of a building. As loads are applied individually or concurrently, changes take place in the shape of a building's components and their connection to each other. These changes can cause internal pressure, which in turn can cause some of the components to deform or fail, resulting in cosmetic or structural damage.

To prevent structural damage certain types of allowable movements, such as deflection track, are incorporated into the design of a building.



There are several types of loads that can have a significant impact on a building's structural integrity and the soundness of finishes.

These designs sometimes fail to take into account how the movement will affect interior and cosmetic surface finishes.

LOAD TYPES—GRAVITY AND LATERAL

There are several types of loads that can have a significant impact on a building's structural integrity and the soundness of finishes. These can be divided into gravity (vertical) loads and lateral (non-vertical) loads. Gravity loads include static and dynamic.

Static Loads, also known as dead loads, are the relatively consistent loads found in any building over time. They include the weight of the structure itself and the immovable components of the building such as partition walls, flooring systems, or mechanical systems.

Dynamic, or live loads, increase or decrease with the building's use and are usually of a shorter duration. They can include people, furniture, and vehicles. Building floors and roofs bear the live loads as they change day-to-day and seasonally. Environmental factors also contribute to the live load; rain, snow, or ice accumulation on a roof are examples of changing loading conditions.

Lateral loads include wind, seismic, impact, and environmental. All buildings move in the wind, which is primarily a horizontal load. Wind pressure on building facades causes sway or drift of the structure itself. The structural design, material rigidity, connection strength, building height, exposure rating, and dampening are all factors in how much "story drift" takes place as the load is applied.

Seismic loads, or earthquakes, cause a multi-directional movement to take place at a building's foundation. The building's inertia resists the movement as it travels vertically up the building, causing deformations in the structural and finished elements. Depending on the building's resistive and ductile qualities the deformations can be slight or severe.

Impacts loads are the sudden acceleration of component parts due to internal or external stresses. Collisions with large moving objects and blast waves can subject a building's systems to sudden deformation.

Finally, environmental loads such as frost heaves, rain water ponding, as well as snow, rain, and ice accumulation are all loads a building must be designed to resist. Failure to do so can result in foundational deformation and roof deflection or collapse.

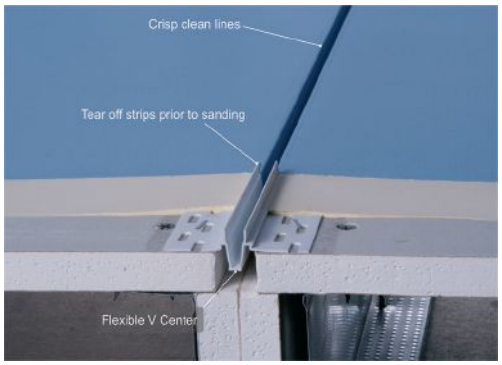
MOVEMENT TYPES AND THEIR EFFECT ON BUILDING COMPONENTS

Reinforcing corners and reveal beads not only provide protection to drywall finishes but can also add aesthetic design elements.

As buildings are subjected to various types of loads, movement will inevitably occur. The types of movement include in-plane, out-of-plane, deflection, thermal expansion and contraction, and hygrometric expansion and contraction. Other types of movements are building racking, building settling, and building creep.

In-plane movement occurs as a force is applied to a component in the same direction as its dominant section. An example is a gypsum panel moving along a surface on its face. Out-of-plane movement occurs when a force is applied perpendicular to the dominant face of a component.

Dead and live loads cause deflection (bending) in floors and roofs. This is the bending of joists, trusses, or rafters associated with loaded structures.



As a general rule control joints should be spaced no more than 30' apart.

Thermal Expansion and Contraction

All materials expand and contract when the ambient temperature changes. This change in size occurs at a material's edges, which can cause stress to occur when vulnerable materials meet and apply pressure to one another. Interior components experience less expansion and contraction than exterior ones due to a more controlled temperature. Never the less, interior components need to be able to accommodate the overall expansion and contraction of the building as it changes temperature due to environmental changes throughout the day and seasons.

Thermal expansion and contraction is most prevalent on long runs of wall or ceiling materials. As a general rule control joints should be spaced no more than 30' apart. Also, due to differing coefficients of expansion, control joints should be placed where differing materials meet.
Source: USG Gypsum Construction Handbook

Hygrometric Expansion and Contraction

Depending on a component's materials, as it takes on or loses moisture it can expand and contract. As an example, wood swells when exposed to excessive moisture, and shrinks as it dries. Even kiln dried lumber can continue to dry enough, post installation, to contract and cause deformation of interior finishes. The same is true for gypsum panels.

Racking, Settling, and Creep

As force is applied laterally to a building, the components experience stress to move horizontally and in an over-turning direction. This is called building racking. This lateral and rotational movement is realized by the building swaying to one side, which is called "story drift".

Building settling occurs when there is a gradual or sudden subsidence of a portion of the supporting soil under a building which results in a differential settlement of its foundation. This causes external walls, internal partitions, and support members to shift and can cause damage to structural and finished elements.

Most building construction components exhibit signs of subtle deformation over time. Creep is when those components gradually change shape in response to consistently applied forces over a protracted length of time. Creep in concrete, steel, and wood can sometimes be accounted for during the design of a building. Floors, roofs, and walls that experience higher than anticipated loading can develop creep faster than appropriately loaded ones. Creep is a common cause of cracks where interior walls meet the floor/roof above. This is known as a deflection crack.

Roof Truss Uplift

Roof truss uplift is the upward bowing of the roof trusses to which the ceilings are attached. Arched roof trusses, moving in response to moisture and temperature variations across the truss, can lift the building ceiling enough to cause nail pops or cracks at ceiling and wall junctures.

Roof truss uplift occurs when the bottom chord of the truss is exposed to significantly different moisture or temperature conditions than the rest of the roof truss. The differences in temperature, and perhaps humidity in the case of wood trusses, can cause the roof truss to arch upwards at its center, often seasonally as attic temperatures and moisture conditions vary.

Because the truss ends are secured to building's exterior walls—a location that resists outward

thrust—as the truss bottom chord wants to expand along its length, the force pushes it upwards into the attic space. Therefore roof truss uplift is usually observed at the ceiling-wall juncture of central interior wall partitions that run at right angles to the direction of the roof trusses.

Roof uplift can also be caused by wind loading. As wind moves along flat surfaces, such as roofs, it can create negative pressure, similar to an airplane wing. This negative pressure can result in an uplift force on the roof. Roof structures generally must be designed to resist both gravity (snow, dead loading) and uplift (wind, thermal) forces. This can result in a larger range of deflection.

MOVEMENT'S EFFECTS ON INTERIOR FINISHES

Movement can have a great effect on interior finishes, from cracking, crushing, degradation, and noise, to fastener imperfections and joint/surface defects.

Cracking

Cracking is the splitting of interior or exterior finishes and can occur as different building components move due to stress being applied to them. There are several types of cracking.

Joint cracking appears either directly over the long edge or butt ends of boards or panel systems, or may appear along the edge of taped joints. Joint cracking is often caused by structural movement and/or hygrometric and thermal expansion and contraction, or by excessively fast drying of joint compounds, adhesives, or other gap filling materials.

Field cracking usually appears as a diagonal crack originating from a corner of a partition or intersection with structural elements. Field cracking is also seen directly over a structural element in the center of a partition. It may originate from corners of doors, light fixtures and other weak areas in the surface related by the penetration.

Angle cracking appears directly in the apex of the wall-ceiling junction or interior angles where partitions intersect. It can also appear as cracking at the edge of paper reinforcing taped near surface intersections of wall sheathing systems. Angle cracking can be caused by structural movement or improper application of joint compound in a corner angle. Angle cracking is very commonly seen in cathedral and vaulted ceilings constructed of large dimensional lumber. The lumber shrinks on both sides of the cathedral putting stresses on the inside peak.

Bead cracking shows up along the edge of flanged components. It is caused by improper bead attachment, a faulty bead, or improper joint compound application in wall sheathing systems. To prevent cracking on outside corners due to the settling of wall partitions, leave a ¼" gap between the bottom of the bead and floor.

Crushing, Degradation, and Noise

Crushing can occur from the localized collapse of a material's inherent properties due to excessive point loading, or from a denser, more substantial material applying stress to its surface as it experiences movement.

Degradation is a breakdown of a material's finish, cohesiveness, internal structure, or performance properties. Degradation can result from the sudden or protracted contact, and subsequent friction, between materials as they experience movement.

Excessive or irregular noise can be created when two materials come in contact with one another through building movement. Noise can be irritating to a building's occupants. Sound proofing systems become less effective or even fail as materials, which are supposed to be separated, come into contact with one another and enable sound to be transmitted through their assemblies.

Fastener imperfections

Faster imperfections are a common result from building movement on finishes and may appear as darkening, localized cracking, a depression over fastener heads, or a pop or protrusion of the fastener or the surface area immediately surrounding the fastener. This is usually caused where framing or fastener application was improperly installed.

Joint/Surface Defects

Defects at joints usually occur in a straight-line pattern and appear as ridges, depressions, or blisters at a material's joints and edges. Imperfections may result from incorrect framing or joint treatment application at the location of the component movement.

To summarize, material assemblies need additional attention and care taken in regard to movement in the following areas of concern:

- At locations where in-plane seams between two materials meet.
- At changes in material or material geometry.
- At the reentrant corners of window or door openings.
- At the exposed corners of wall intersections where foot traffic or impact is expected.
- The perpendicular meeting of two materials where in-plane movement is expected in a normal direction from the first material to the other.
- Where nonstructural elements and finishes meet structural assemblies.

SOLUTIONS FOR PREVENTING DAMAGE TO COMPONENTS

Bracing assemblies, reinforcing corners, and allowing room for the movement of materials are the fundamental steps that must be taken to prevent damage to building components. The following are general recommended best practices for products and installation that can help minimize damage to interior finishes from movement.

That being said, the major cause of job site issues and poor performance after application is failure to follow a manufacturer's directions and architect's specifications. Proper detailing and specifications will ensure that products are installed per current, proven standards in lieu of outdated techniques.

Large dimensional lumber used in framing cathedral and vault ceilings require inside expansion beads to be installed.

Expansion Products

There are many products that can help to control movement and protect finishes when movement does occur, including furring strips and resilient channels, deflection track, deflection beads, expansion beads, corner beads, and reveals.

Furring strips and resilient channels should be used to isolate panel systems from other parallel wall systems to prevent the transfer of movement or sound from one to another. Flexible screeds and gap filling materials should be embedded in joints and at edges to absorb the differential movement of materials and prevent their failure through contact.

Corner beads and edge trim pieces should be used to reinforce the edges of interior finish materials as they meet to form corners and surfaces. Proper installation of adhesives, fasteners, and joint compound are also vital to reinforcing material corners. Specifying the proper corner bead is very important. Metal corner beads are still very commonly used but do not offer the rust-proof and impact protection that newer materials such as vinyl can provide.

You may want to consider installing deflection track at the head-of-wall to prevent loading and movement from upper floors, which may cause cracking on interior partition walls. This allows for a satisfactory appearance and prevents contact between two construction systems which are experiencing different loading.

Resilient Channels

For the prevention of ceiling cracking, the Gypsum Association recommends using resilient channels. As we discussed earlier, every building material undergoes some amount of dimensional change from temperature and moisture content, and therefore the building assemblies as a whole undergo this shrinkage and expansion as the moisture content and temperature of the materials change over time. The thermal and hygrometric coefficients of expansion are not the same for all materials, so the amount of dimensional change will be different for different materials. When two materials with significantly different coefficients of expansion, such as drywall and wood framing, are rigidly attached to each other stresses will build up in the materials as their moisture contents and/or temperatures change.

Visit http://go.hw.net/AR116Course2 to read more and complete the quiz for credit.

QUIZ

1 Which type of loads increase or decrease with the building's use and are usually of a shorter duration?
- Static
- Dynamic
- Seismic
- Impact

2 Which type of movement is caused by ambient temperature changes?
- Thermal expansion and contraction
- Hygrometric expansion and contraction
- Deflection
- Racking

3 True or False: Roof truss uplift occurs when the bottom chord of the truss is exposed to significantly different moisture or temperature conditions than the rest of the roof truss.

4 Which type of cracking appears directly in the apex of the wall-ceiling junction or interior angles where partitions intersect?
- Field cracking
- Angle cracking
- Bead cracking
- Joint cracking

5 Which type of expansion product should be used to reinforce the edges of interior finish materials as they meet to form corners and surfaces?
- Resilient channels
- Deflection track
- Reveals
- Corner beads

6 True or False: Resilient channels can improve the sound insulation of partition and ceiling assemblies.

7 True or False: Reveal beads are often used in multi-story buildings where typical poured concrete and truss framing systems can move a great deal.

8 Which expansion control products provide twice the movement and superior expansion control?
- Zinc
- Vinyl

9 True or False: There should always be a gap between sheets of drywall in order to accommodate expansion and contraction, but this gap must be supported and bridged by an expansion bead.

10 True or False: A control joint is not necessary in long walls that are themselves broken up by floor-to-ceiling openings such as windows or doors if the resulting un-broken areas are less than 30 feet.

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“Many universities today approach new building as if creating a campus was like playing fantasy sports—put together an imaginary dream team.”

The Campus as Petting Zoo by Witold Rybczynski, HON. FAIA

A friend who is a partner in a national architectural firm that does a lot of campus work recounted for me a conversation he recently had with the university architect of a leading public institution. That individual, my friend told me, referred to university architects as "curators of an architectural petting zoo."

An exaggeration? Consider the University of Cincinnati. Over the last decade, the university has commissioned buildings by Peter Eisenman, FAIA, Frank Gehry, FAIA, Bernard Tschumi, FAIA, Thom Mayne, FAIA, and the late Michael Graves. "The hope is that buildings by starchitects will turn the University of Cincinnati into a desirable, glamorous place to spend four years living and studying," writes Nikil Saval in a recent issue of *The New York Times Magazine*. Saval points out that Cincinnati's enrollment has increased and its place in the *U.S. News & World Report* ranking of universities rose—slightly—from No. 156 (2011) to No. 129 (2015). (The institution dropped to No. 140 in the 2016 ranking, after the *Times* article was published.)

Thanks to the architectural glam, what has risen more than slightly is the university's debt load, which is now $1.1 billion. "It's a financial gamble—one that many public institutions find themselves driven to make," Saval observes. "And it also threatens something more abstract but no less fundamental: that the university will turn into a luxury brand, its image unmoored from its educational mission—a campus that could be anywhere and nowhere."

Architectural Constancy

We didn't always build campuses this way. In 1894, the University of Pennsylvania, where I used to teach, appointed Walter Cope and John Stewardson as campus architects, and over the next two decades entrusted their local firm with one major building after another: a dormitory quad, the law school, the school of engineering, the veterinary school. The exemplary work—nine buildings in all—continues to define the architectural character of this urban campus.

Thayer Academy in Braintree, Mass.

Cope & Stewardson worked across the country: seven buildings at Bryn Mawr College in Pennsylvania, five at Princeton University in New Jersey, and 11 at Washington University in St. Louis. Although the firm more or less invented the style that came to be known as Collegiate Gothic, its prolonged relationships with its educational clients ensured that the character of the built results varied; the Penn quad was Jacobean, while the main building at Wash U. was, in the architects' words, "academic Gothic of the fifteenth century."

Assigning university building to a single firm used to be a common practice. James Gamble Rogers was consulting architect at Yale University, and he left a Gothic Revival stamp on that campus. Ralph Adams Cram and Bertram Grosvenor Goodhue rebuilt the U.S. Military Academy at West Point in a muscular Gothic style that Cram described as "between the Scylla of pictorial romanticism and the Charybdis of hard utilitarianism." Cram later served as supervising architect at Princeton, designed Sweet Briar College in Virginia (where he switched to Colonial Revival), and planned a new campus for Rice University in Houston, whose quadrangles and medieval Byzantine style have influenced architects to this day. Paul Philippe Cret adopted a classicized regional style at the University of Texas at Austin, where he was supervising architect for four decades and was responsible for no less than 19 buildings.

Architectural constancy was also visible on private preparatory school campuses, which often resembled miniature universities. Cram designed several buildings at both Choate (in Wallingford, Conn.) and Phillips Exeter Academy (in New Hampshire). Between 1894 and 1895, George Peabody of the Boston firm Peabody & Stearns built 10 buildings at the Lawrenceville School in New Jersey. The Lawrenceville campus was planned by Frederick Law Olmsted, and two decades later, Olmsted Brothers laid out the campus for the Middlesex School in Concord, Mass., where Peabody & Stearns designed most of the major buildings. While both campuses are centered on a sort of village green, the buildings at Lawrenceville are Richardsonian Romanesque, whereas those at Middlesex are Colonial Revival.

The idea that continuity is more important than variety persisted until the mid 1900s. Eliel Saarinen oversaw the development of the Cranbrook schools for two and a half decades; the result was one of the most beautiful campuses in the country. Ludwig Mies

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van der Rohe designed 20 buildings at the Illinois Institute of Technology (IIT), where he was campus architect for two decades. His IIT legacy was extended by Walter Netsch and Myron Goldsmith of Skidmore, Owings & Merrill (SOM). Netsch was also the lead SOM designer for the U.S. Air Force Academy in Colorado Springs, Colo. These exemplary campuses have been designated historic landmarks, and their individual buildings (the Cranbrook Art Museum and Library, Crown Hall, the Cadet Chapel) are widely recognized icons. Continuity works.

Thayer Academy

That was then. Today, most educational institutions have opted for the petting zoo model. The reasons are not hard to find. The architect selection process at many universities, both public and private, involves senior administrators as well as deans, faculty members, and donors, most with little or no experience of building design. "Let's try someone new" is a suggestion that appears hard to resist. There is also safety in choosing a known name; as they used to say in the early days of personal computers, "No one will blame you for picking IBM." In any case, what better way to impress students—and their parents—than to engage a celebrated architect.

There are exceptions. Thayer Academy is a private, co-educational, college-preparatory day school. Built on less than half of a 34-acre site (the rest is occupied by playing fields), the school is in the center of Braintree, Mass. Although there are historical buildings, the general impression is not of a consistent architectural style, but rather of a consistent sensibility. Over the last seven years the school has invested more than $40 million in construction. During this restoration, addition, and expansion, the school has stuck with a single firm: Eck | MacNeely of Boston.

It helps that Thayer has good architectural bones. The original building is an imposing Ruskinian Gothic pile with polychrome brickwork, finials, buttresses, and an imposing clock tower. It was designed in 1876 by Boston architects Henry Hartwell and Albert Swasey, another of whose notable works is the restored Academy Building in Fall River, Mass. In 1896, Hartwell (now partnered with William Richardson) returned to design Glover Hall, a large building whose bipartite composition is explained by its unusual program: laboratories flanked by two gymnasiums (for boys and girls). By then, fashions had changed and the style was robust Richardsonian Romanesque. In 1930, Frothingham Hall, an auditorium in the form of an English Gothic village hall, designed by Harper & West of Boston, completed the ensemble. Although built over the course of 50 years and stylistically dissimilar, the three buildings exhibit a strong sense of unity: red brick with limestone trim, steep slate roofs, compatible fenestration. Each faces—and helps to define—a large central green. The day I was there, the lawn was occupied by students playing Frisbee.

The next new building, the Southworth Library, appeared in 1965. In the forward-looking spirit of the optimistic postwar era, the one-story International Style pavilion with a flat-roof and an all-glass façade firmly broke with the past. A 1990s student center and sports facility was slightly more contextual, inasmuch as it used red brick, but its postmodern fillips—square windows, random moldings, cartoonish lintels—didn't really fit in.

Jeremiah Eck, FAIA, and Paul MacNeely, AIA, had done small projects at Thayer since the 1980s, but their relationship with the school was cemented in 2005, when they designed two large but very different additions. One is a seamless Romanesque extension containing biology labs at the east end of the 1896 Hartwell & Richardson building; it looks like something the original architects might have designed. The other is a modern-looking fitness center, added to the sports facility. The curved façade forms an

The Fish Center for Physical Fitness at Thayer

The Glover Advanced Science addition

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Tibbetts Middle School, Farmington, NM
Architect: FBT Architects, Albuquerque, NM

interesting counterpoint to the west end of Glover Hall, while a large cantilevered canopy provides a sheltered drop-off and waiting area for students.

In 2005, Thayer undertook a more ambitious project: an arts center with a 540-seat proscenium-stage theater that could function as a school meeting place, a performance space, and a venue for community gatherings. Eck | MacNeely, which specialized in residential work, had never designed a theater, nevertheless it got the job. Ted Koskores, who has been headmaster of Thayer since 2003, told me that he appreciated the on-going connection with the architects. "You can use specialists, but they are often simply applying a template instead of being sensitive

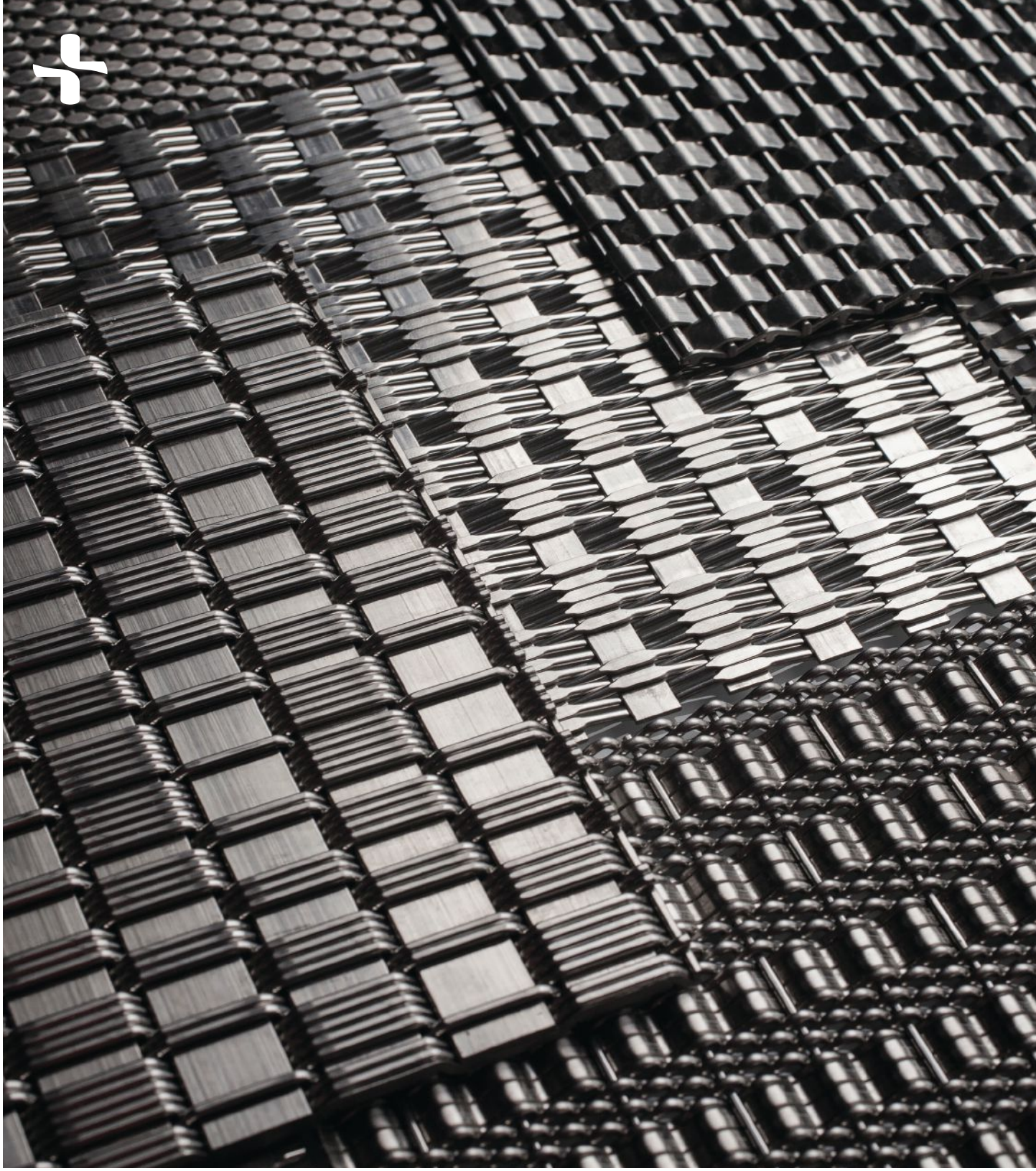
Thayer's Center for the Arts (left) and Frothingham Hall

to the local situation," he said. "We placed a value on a long-term relationship with architects who had proven themselves to understand and appreciate our vision."

The arts center is attached to Frothingham Hall. While the larger addition does not mimic the Gothic Revival style, it echoes the older building's gable front and its colonnade picks up the rhythm of the adjacent buttresses. The pitched roofs and dormers, and the brick and limestone exterior, create a sense of continuity, while introducing modern features such as generous glazing in the lobby. "One of the limitations of our Victorian buildings is that they are opaque—you can't see into them," Koskores observed. "We wanted our new buildings to have a greater sense of transparency." As part of the addition, Eck | MacNeely transformed the now-redundant auditorium of Frothingham Hall into a studio for the visual arts: painting, drawing, graphic design, and architecture. When I visited, a lone student was carefully building a model of a space frame.

Eck | MacNeely's next commission at Thayer was to answer the nagging question: What to do with the awkward library? Rejecting demolition, the architects gutted the building, preserved the Miesian sense of an open interior and the exposed waffle slab—a charming reminder of the 1960s—and added a new façade modulated by bay windows. The lower level was

WARREN JAGGER



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converted into an art gallery. The library project was followed by several interior renovations, as well as a master plan and improvements to the grounds (done in collaboration with the landscape architect Richard Burck Associates).

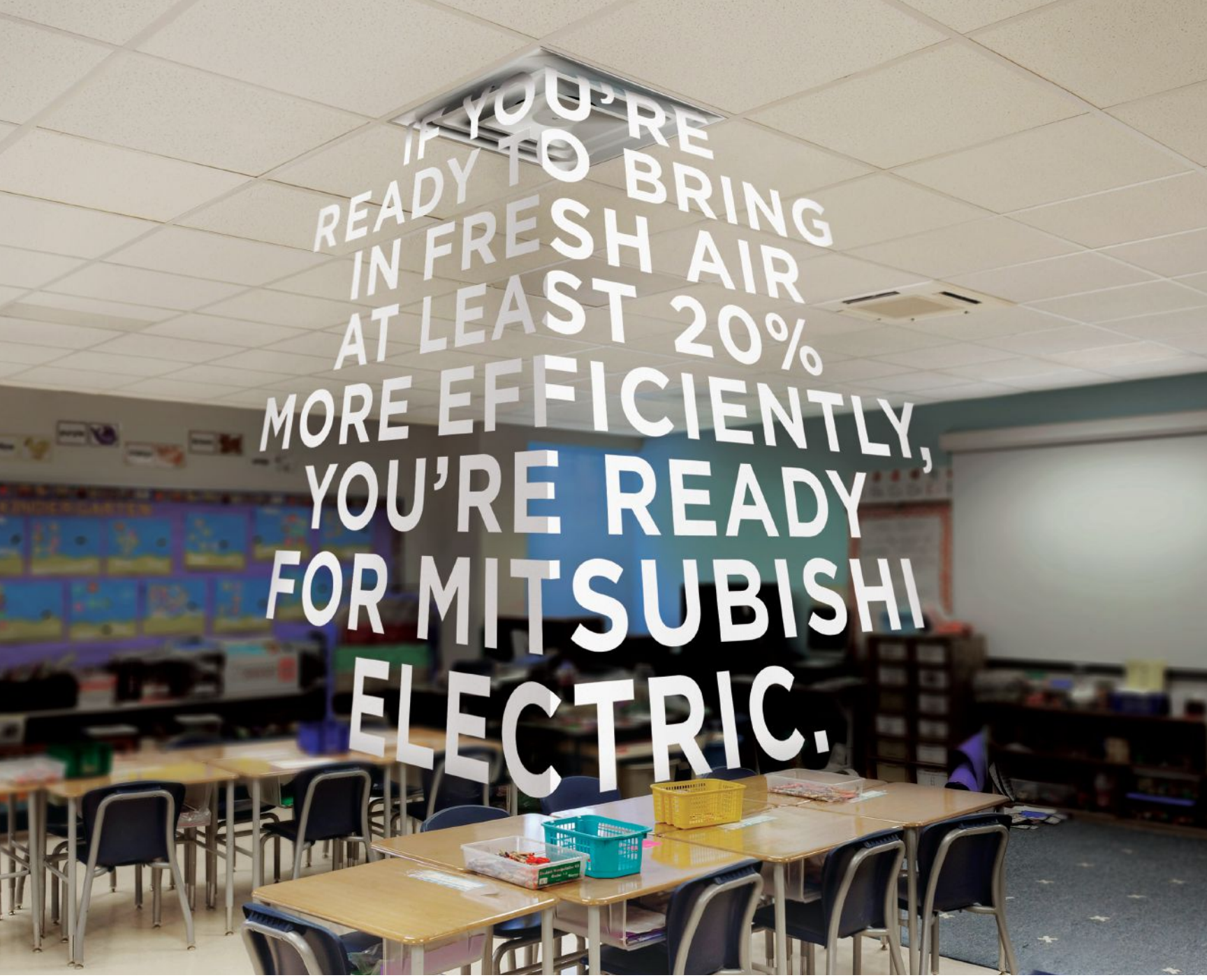
Thayer's renovated Southworth Library

ERIC ROTH

Eck | MacNeely has played the role of an old-fashioned seamstress: let out the waist a little, turn the cuffs, fix that frayed buttonhole.

A Campus Full of Feeling

The Thayer campus exhibits what Christopher Alexander calls a sense of wholeness. In *A New Theory of Urban Design* (Oxford University Press, 1987), Alexander described four features of how successful environments develop: they grow piecemeal; growth is often unpredictable; the resulting whole is coherent; and the whole is full of feeling. He was referring to cities and towns, but a campus is a kind of small town, and Thayer exhibits all these characteristics. Piecemeal growth was a factor from the beginning, and unlike some campuses—and like most towns—there was never a single overriding master plan or architectural style. An example of recent unplanned growth: the arts center was originally conceived as a freestanding building and only during the design process was the decision made to combine it with Frothingham Hall. While it is unlikely that Eck | MacNeely would have designed a brand new library as a one-story pavilion, their modification to the 1960s building has resulted in a surprisingly coherent solution. "Full of feeling" is harder to pin down,



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but the Thayer buildings, old and new, share a sense of broken-down scale, casual composition, and solid, unaffected materiality. They are all of a piece.

Eck | MacNeely junior partner Meredith Chamberlin, AIA, estimates that since the first built commission—a small astronomical observatory designed in 1985—the firm has carried out more than 30 commissions at the school, some of them very small. In many of these minor alterations, Eck | MacNeely has played the role of an old-fashioned seamstress: let out the waist a little, turn the cuffs, fix that frayed buttonhole.

Such alterations reflect Alexander's overriding rule governing successful urban growth: that every new building should contribute to creating—and strengthening—a sense of the overall whole. Each of the recent additions to the Thayer campus has responded to an immediate functional need (for a theater, a fitness center, a visual arts studio), but in fulfilling this need the new construction has also improved—one might say "repaired"—an exterior space, reinforced a pedestrian link, or enhanced a relationship to an older building. Simply good design, you might say, but it takes time to develop a deep understanding of a place in order to perceive such nuances—time and the consistent support of an understanding client.

Many universities today approach new building as if creating a campus was like playing fantasy sports—put together an imaginary dream team and the rest will take care of itself. This is a short-sighted view. There are many subtle advantages to an extended client–architect relationship. The architects become intimately familiar with the place—not just the physical environment but the way it is used and how the institution itself functions. The architects are not tempted—as are the designers of a single building—to put all their eggs in one basket. They understand that some buildings on a campus need to be more assertive—and some don't. There are some older details that are worth repeating; not everything has to be all-different, all the time. Universities and colleges need to realize that they are not merely building buildings, they are building places, and a successful place should exhibit, in Alexander's terms, a sense of organic wholeness—hard to achieve in a petting zoo.

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“So much, in fact, has Stern become identified with Yale that it’s almost difficult to imagine one without the other.”

The Dean’s Parting Show by Ian Volner

There's an anonymous drawing in "Pedagogy & Place," the current exhibition at the Yale School of Architecture (YSA), purportedly sent to the school's dean, Robert A.M. Stern, FAIA, around the time he assumed his post in 1998. It features two images, side by side: on the left, the muscularly ultramodern Paul Rudolph structure from 1963 that houses the YSA; and on the right, a "renovated" version of the same, done over with classical columns and tacked-on pediments and swags. Its satirical message—that Stern, perceived by critics as an arch Postmodernist, would remake the school after his own historicist image—is as clear and keen today as it must have been nearly two decades ago.

But the unknown author of that visual broadside clearly missed the mark. As Stern, now 76, prepares to step down from the deanship this May, he presides over a program even more architecturally diverse and progressive than the one he took charge of before the turn of the millennium. And the iconic YSA building, while still a challenging and controversial one in certain circles, is in far better shape than it's ever been, following a $126 million restoration that may prove Stern's most lasting legacy to the school that's been his academic homeland since he began his studies there in the early 1960s.

"Our approach has been pedagogy without ideology," says the dean. Sitting in his orange-carpeted office, framed by the bush-hammered concrete that gives Rudolph Hall its rough, brooding glamour, Stern expanded at length on "Pedagogy & Place," which chronicles a century of architectural education at Yale. The dean organized the exhibition (until May 7) with co-curator Jimmy Stamp, a YSA graduate and a writer with the firm Stern founded, Robert A.M. Stern Architects (RAMSA). "It's a history of architecture in the 20th century," Stern explains, "but a special kind of history because of the nature of the school, which is unique among schools of architecture in that it has these attachments to fine arts and graphic design." Stern has remained committed to the conception of the YSA as an interdisciplinary workshop—an "American Bauhaus," as one segment of the show calls it—and that concept has ensured that the school's design thinking has remained fluid and pluralistic throughout his tenure.

The YSA's Evolution

Beginning as a department within the School of Fine Arts in the late 19th century, the YSA evolved under the supervision of a series of ambitious, forward-thinking directors into an intellectual incubator for the field at large. As the current exhibition spells out in a sequence of wall-sized, chronologically organized displays, every major trend that's swept through the profession—from the Beaux-Arts to Modernism, from Brutalism to PoMo—has passed through New Haven, often heralded by dramatic philosophical and political debates. In the late '60s, students rebelled at the rote exercises that clogged the curriculum, and banners and manifestos (culled for the exhibition from what Stern calls the school's archival "morgue") call for strategies of engagement and critique; by the '90s, the decay of the surrounding cityscape prompted a new emphasis on urbanism, attested to in drawings and diagrams that show the school turning outwards in its practical and theoretical focus.

As the show's title suggests, Stern and Stamp view these pedagogical developments as inextricable from the buildings in which they occurred. In the '50s, when the school was housed in the upper floors of Louis Kahn's Yale Art Gallery, "there were these collaborative studios revived by Kahn," Stern says, the building acting as a purpose-built vessel for the architect's open-ended approach to teaching. Years later, when the pre-eminent scholar Nikolaus Pevsner lambasted Rudolph Hall (then called the Art and Architecture Building) during its dedication ceremony, he signaled a break between the "high" and "late" phases of the modern movement. "I was there," recalls Stern. "Rudolph tuned beet red, and he said to [historian Vincent] Scully, 'I think I'm going to leave now.'"

Although celebrated today as a visionary teacher and designer, Rudolph, dean of the YSA from 1958 to 1965, relinquished his post during that turbulent period. Stern, on the other hand, will hand the reigns over to longtime faculty member Deborah Berke, FAIA, amidst an atmosphere of general institutional harmony. He has managed that feat in part by his embrace of disparate architectural attitudes, not the least of which is Rudolph's own: His complex, light-filled structure is "a building of great importance," says Stern, who saw to

Stern previews his "Pedagogy & Place" exhibit

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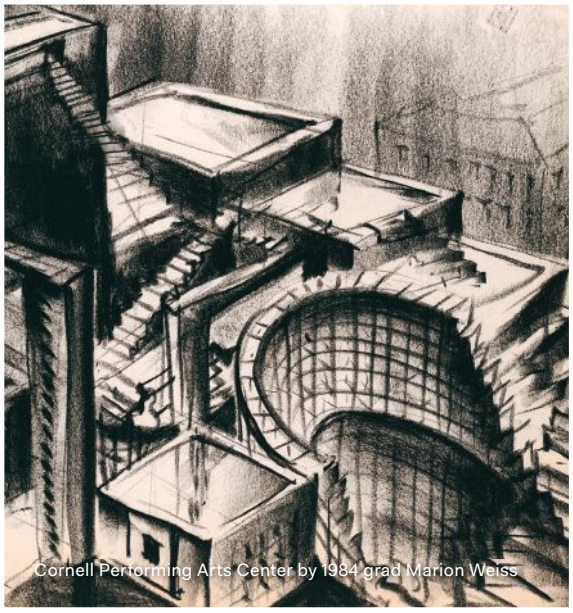
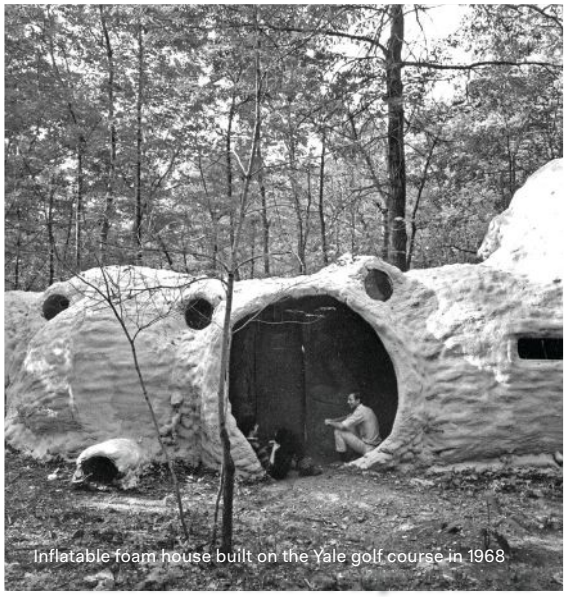
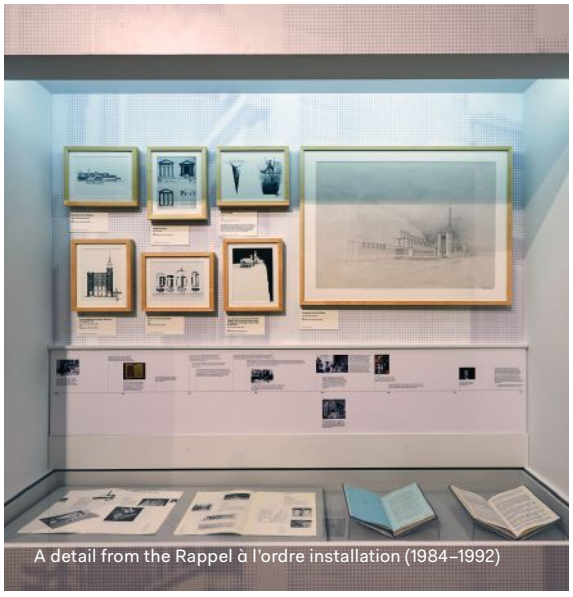
The title wall of the exhibition


Cornell Performing Arts Center by 1984 grad Marion Weiss


Inflatable foam house built on the Yale golf course in 1968


A detail from the Rappel à l'ordre installation (1984–1992)

it that the restoration was shotgunned to completion between 2007 and 2008 so that no YSA student missed the chance to study in it. Stern's open-mindedness has become integral to Yale's academic culture, evident in the visiting professors (Peter Eisenman, FAIA, Frank Gehry, FAIA, and Zaha Hadid, HON. FAIA, to name but a few) that he has helped hire.

So much, in fact, has Stern become identified with Yale that it's almost difficult to imagine one without the other. Certainly Stern hasn't exactly been eager to compose the coda to his Yale years: When it came time to compose the section of the exhibition dealing with his tenure, "I told Jimmy to write it," says Stern; his co-curator declined, and Stern managed to strike a suitably objective-yet-positive note.

Indeed, a couple weeks after the show's opening, the architects Elia Zenghelis and Marion Weiss, FAIA, and the historians Kenneth Frampton, ASSOC. AIA, and Anthony Vidler, were in Rudolph Hall's grand sunken conference room taking a break from an end-of-semester crit. When Stern appeared at the top of the stairs, everyone cast their eyes upward, as the dean greeted the audience from his banistered perch with a mock-pontifical air. He lingered there, plainly reluctant to leave.

"Some Breathing Room"

Stern and Yale won't be separated for long. As per university policy, the outgoing dean will take a semester off to give his successor "some breathing room," as he

CLOCKWISE FROM TOP LEFT: RICHARD HOUSE; COURTESY YALE SCHOOL OF ARCHITECTURE; COURTESY YALE UNIVERSITY LIBRARY MANUSCRIPTS AND ARCHIVES; RICHARD HOUSE

puts it, and then will likely resume the teaching duties he's performed at the school on and off since 1970. In the meantime, it isn't as though he'll have nothing to do: RAMSA has grown into an office of some 300 people, with the volume of commissions rising considerably during his tenure at Yale. "When I was asked to be the dean it was about the right time anyway to give some of the younger people in the firm some autonomy," recalls Stern; major projects in the office's recent portfolio, from entire neighborhoods in Hong Kong to private homes in the Hamptons, have been undertaken by veteran partners charged with heading up work on specific building types. (Employee retention is something of a house specialty: Senior partner Paul Whalen, AIA, has been with the firm since 1981; his colleague Daniel Lobitz, AIA, since 1986.) His periodic absences "have really given them a chance to fly," Stern says, "and I think that will continue," even with the nominal chief hanging around the studio two more days a week.

The opening of the Yale exhibition coincides with the publication of *City Living* (Monacelli Press, 2016), which features RAMSA's apartment buildings—further proof, if any was needed, that Stern's academic career hasn't slowed down his activity as a designer. The sumptuous projects in the book, often heralding back to the grand high-rises of the early 20th century, also serve as a reminder of Stern's own architectural tastes. The cartoonist who lampooned the dean all those years ago had reason to wonder what the YSA might become under his watch. But Stern, as ever, has shown that he is nothing if not adaptable, and the most significant personal imprimatur he's left on the school is a reflection of his own capacity for growth and change.

What the future holds for Yale—what Deborah Berke's panel in "Place & Pedagogy" might look like—is anyone's guess, but Stern says he'll keeping pacing the winding hallways of Rudolph Hall as long as they'll let him. "I can't imagine myself not teaching," he says. "But at some point my students are 25, and I'm … not."

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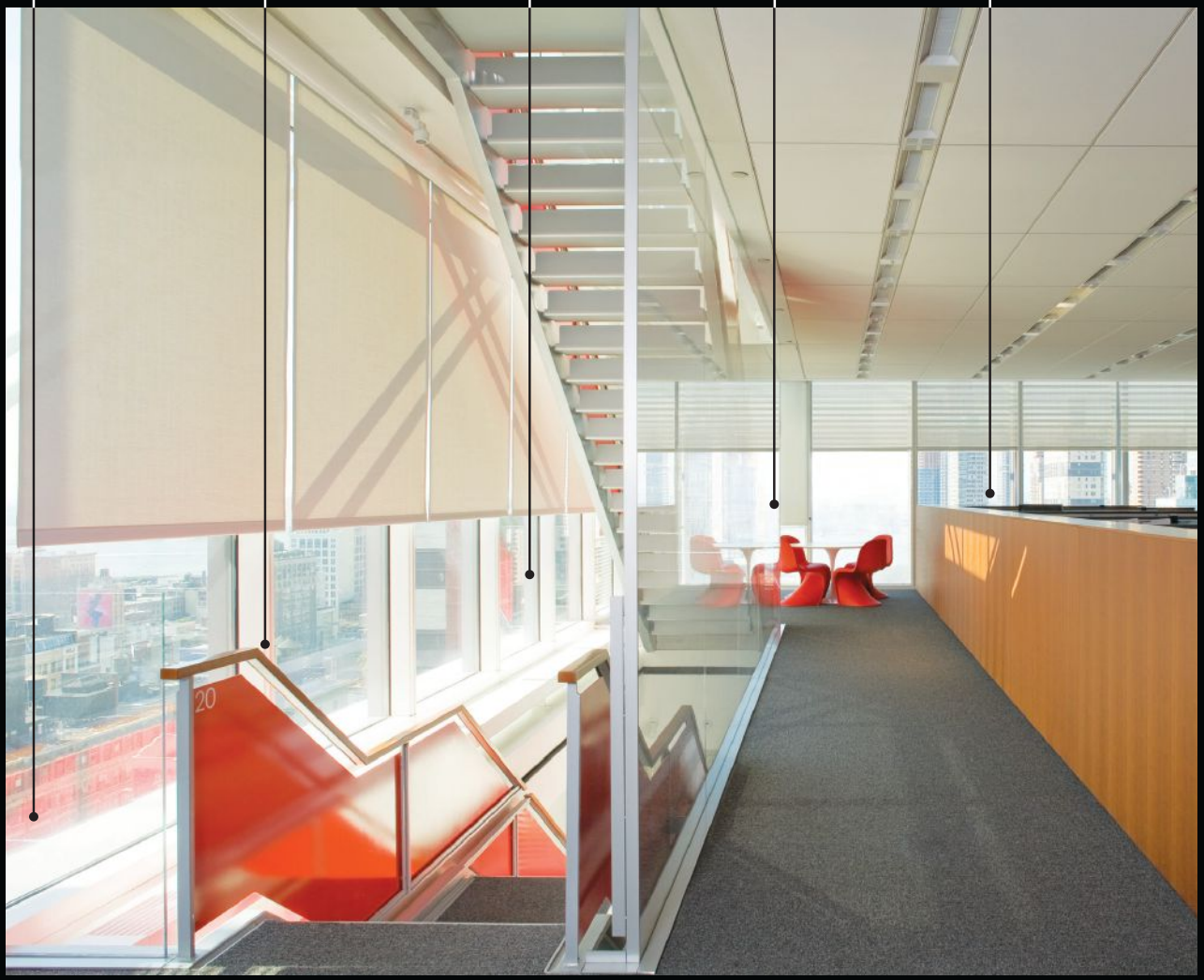

What's Next in 2016?

A Nonpartisan Election Guide for Architects by Alan Greenblatt

During a United States presidential campaign dominated by the discussion of terrorism, immigration, and economic inequality, there hasn't been a lot of talk about the built environment. Still, the candidates have offered some clarity about where they stand on some issues of vital importance to architects: energy, climate, taxes, and student debt.

As the two parties settle on their respective nominees and start drafting their platforms, they'll begin transition planning well ahead of the election. That will give outside groups a chance to educate and inform advisers about top priorities, says Andrew Goldberg, ASSOC. AIA, managing director for government relations and outreach at the AIA."We're not a single issue kind of organization," Goldberg says. "There are a lot of different policies at the federal level that impact the practice of architecture."

What follows is a summary of the major policy areas the AIA will focus on in 2016, as well as early hints of where the various presidential candidates stand on those issues.

Energy and Climate

Top Republicans are, by and large, skeptical about the impact of human activity on climate, if not downright hostile to the idea. Even those candidates who say they believe climate change is real, including former Florida Gov. Jeb Bush, New Jersey Gov. Chris Christie, and Ohio Gov. John Kasich, have expressed doubts about the degree to which humanity is responsible.

Following the recent congressional decision to allow exports of U.S. crude, just about any Republican administration would allow more drilling for oil, jump-start the Keystone XL pipeline, and eliminate President Barack Obama's Clean Power Plan, which seeks to limit carbon emissions from power plants. For instance, just before entering the presidential race, Texas Sen. Ted Cruz introduced a bill called the American Energy Renaissance Act that, in addition to promoting

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production and exports of oil and natural gas, would prohibit the federal government from regulating greenhouse gas emissions in any way. His bill has seen no action, but at a Senate hearing in December Cruz blasted environmentalists as "alarmists," claiming that there is no data demonstrating significant climate change over the past two decades.

Indeed, the AIA is preparing for a potentially difficult fight to protect the 2030 targets, made law in 2007 as Section 433 of the Energy Independence and Security Act, which require all new federal buildings and major renovations to be carbon-neutral by 2030. Legislation to repeal the targets has been repeatedly introduced over the past five years, most recently winning House approval in December as part of a larger energy package. The Senate will debate related legislation this year, but President Obama has threatened to veto any energy bill that would repeal Section 433. "Buildings are really the low-hanging fruit in sustainability," Goldberg says. "We don't want to go backwards on federal buildings."

The three Democratic candidates—former Secretary of State Hillary Clinton, former Maryland Gov. Martin O'Malley, and Vermont Sen. Bernie Sanders—uniformly support proposals that would promote both development of renewable energy sources and improved building efficiency. In 2013, Sanders introduced the Residential Energy Savings Act to help homeowners who want to invest in energy efficiency retrofits. The bill didn't pass, but Sanders and the other Democrats continue to promote similar ideas. Clinton has pledged to make clean energy and efficiency a federal priority, while also providing grants to states, cities, and rural communities that retrofit and invest in alternative energy sources. O'Malley wants to create a federal clean energy jobs corps to provide manpower to help communities create new green spaces and retrofit buildings. In November, a bipartisan commission on climate that O'Malley had established reported that Maryland was on track to meet a goal set early in his administration to reduce greenhouse gas emissions by 25 percent by 2020.

The AIA is also promoting the idea that, following disasters, the Federal Emergency Management Agency should give added assistance to states that have adopted stronger building codes. The Safe Building Code Incentive Act, sponsored by Florida Rep. Mario Diaz-Balart (R), would allow states to receive additional funding following disasters if they have modernized their building codes. States with codes that meet federal muster would receive 4 percent more in disaster relief funds, in addition to other technical and financial assistance that would allow them to implement mitigation efforts before disasters strike. New Jersey, meanwhile, has updated its building code and planning maps following Superstorm Sandy, but Gov. Christie has still been criticized for not embracing broader standards to ensure the safety of older buildings and guard against continued dangers from flooding.

Taxes and Business Development

For the most part, Republicans are inclined to simplify the tax code. Cruz, for example, would eliminate the current system of corporate income taxes, replacing them with a Business Flat Tax set at 16 percent. Donald Trump promises to limit taxes on businesses of all sizes—from struggling freelancers to the Fortune 500—to not more than 15 percent. Similarly, Ben Carson wants to limit taxes on income to 14.9 percent, while eliminating all tax credits. Florida Sen. Marco Rubio says he will cut taxes on small businesses to 25 percent, while allowing companies to immediately write off their new investment costs.

Most architecture firms are set up as "pass-throughs," meaning that instead of paying taxes as a corporate entity, partners pay individual income taxes. For those taxpayers, the Republican candidates would eliminate most deductions and credits, and they favor lower, flatter rates (though top earners would largely enjoy disproportionate gains). "The tax code's deductions, credits, and exclusions mean similarly situated taxpayers may have vastly different tax liabilities," Bush's campaign contended when the candidate announced his tax plan back in September.

Democrats, by contrast, are largely supportive of the aggressive use of credits. Clinton, who pledges not to raise taxes on middle-income workers, says she will provide "targeted" tax relief for small businesses, helping them rather than "corporations that can afford lawyers and lobbyists." She has proposed a 15 percent tax credit for businesses that share profits with workers, along with other credits for hiring entry-level employees.

In recent years, the AIA has been working to ensure that official Small Business Administration (SBA) rulings don't handicap architects. For instance, several years ago, the SBA proposed a new definition

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that would have classified 98 percent of architecture firms as small businesses, meaning that smaller shops would have been forced to compete with much larger firms for federal projects. The newly passed Stronger Voice for Small Business Act, which was rolled into last year's defense bill, enables firms to challenge new size definitions through an internal SBA process instead of resorting to legal action.

The AIA, which is nervous about whether tax credits for historic preservation and low-income housing will survive a broader tax overhaul debate, is supporting a bipartisan bill in the House that would extend funding for the credits for 10 years. Of the Republican candidates, one of the only supporters appears to be Kasich, who as governor of Ohio backed historic building credits, opposing an effort in the state Senate last year to freeze them.

In November, Oklahoma Sen. James Lankford (R), an opponent of preservation tax credits, playfully included Trump on his long list of "wasteful" government spending. Lankford pointed out that the developer had received a $40 million tax credit toward converting the Old Post Office Building in Washington, D.C., into a hotel.

Building and Design

Recently, there's been talk on Capitol Hill about weakening requirements for the State Department's design excellence guidelines (which the AIA helped shape). Leaders of the House Oversight and Government Reform Committee, concerned about cost overruns on projects such as the embassies in London, Mexico City, and Kabul, Afghanistan, have questioned whether the program emphasizes style over safety. Diplomatic security has been a paramount concern since the 2012 attack on the mission in Benghazi, Libya. (An effort by Cruz to launch a Senate investigation into the incident was blocked by Democrats in 2014.) Utah Rep. Jason Chaffetz (R), who chairs the Government Reform subcommittee on national security and is a critic of the design excellence program, has conceded that congressional Republicans cut funding for embassy security ahead of the Benghazi attack.

Department officials have defended the design excellence program, arguing that buildings tailored to their environments will fare better than cookie-cutter fortresses. While security is Job One, other factors such as energy efficiency and representing the country in a positive way remain crucial. "Design is not about pretty," Goldberg says. "It's about integrating all these things—not just aesthetics but how things work."

Meanwhile, in December, the passage of a long-overdue $305 billion transportation bill, which will provide funding for roads, bridges, and transit over the next five years, threatens to make infrastructure a forgotten topic during the campaign, even though it will remain an important issue for the next president. Cruz, Rubio, and Kentucky Sen. Rand Paul all voted against the package in the Senate.

On the other hand, Trump, during one of the GOP debates, said that the nation had spent $4 trillion "trying to topple" dictators—money that he believes could have more profitably been used at home. "If we could've spent that $4 trillion in the United States to fix our roads, our bridges ... our airports and all of the other problems we've had, we would've been a lot better off," Trump said. Following the derailment of an Amtrak train in Philadelphia in May, which killed eight and injured more than 200, Trump tweeted that he was the candidate best equipped to rebuild American infrastructure: "I know how to build, pols only know how to talk."

On the other side of the aisle, Sanders introduced a trillion-dollar infrastructure package in the Senate last year—more than three times the size of the law passed by Congress. Sanders wants to create an infrastructure bank and favors spending more than $700 billion repairing deficient roads, bridges, and transit systems. Both Clinton and O'Malley favor revival of the Build America Bonds program, which was created as part of the 2009 stimulus package, and which offered tax breaks and other incentives to investors in capital projects. In addition, Clinton has said that she would provide $25 billion over five years to fund a national infrastructure bank to leverage funds for priority projects around the country. Both Build America Bonds and an infrastructure bank are AIA priorities.

Student Debt

How to train a new generation of architects and keep them in the field? The AIA supports a bill known as the National Design Services Act, which would offer debt relief to students in exchange for community service. Loan forgiveness programs are already available for medical students, for example, but Colorado Rep. Ed Perlmutter (D), who is working on the bill with the

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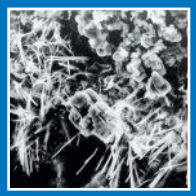

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AIA and the AIAS, says that graduating architectural students have no such ability to earn debt relief through professional experience.

With total student debt climbing close to the trillion-dollar mark, candidates in both parties have put forward proposals in response. Rubio, who himself carried student debt into his Senate career, emphasizes the need to promote vocational training. In a widely noted moment during a November debate, he said, "Welders make more money than philosophers. We need more welders and less philosophers."

Rubio has sponsored legislation that would allow forgiveness of loans greater than $57,500 after 20 years, with bigger loans forgiven after 30 years. He favors an approach that allows graduates to pay off debt by allocating a percentage of their income, with a $10,000 annual exemption. He also would create a system to allow individuals or companies to finance higher education bills, in exchange for a percentage of a student's income for a set period of time following graduation, whether or not the student works for the company that's financed the loans. "Allowing private entities to invest directly in an individual student is an alternative to student loans that will help make higher education more accessible," Rubio said last year.

Christie has also talked about a model that would allow graduates to devote a percentage of their income over a period of time to pay back private debt financiers. He also likes the idea of tax credits to pay down debt in exchange for community service. Carson has floated the idea of holding institutions of higher education themselves responsible for interest payments on student debt.

Cruz has also discussed his personal debt burden, but he has offered limited support to student aid programs. In 2013, he proposed cutting Pell grants, while increasing monthly payments for some loans by increasing the cap on income-based repayment plans. Conversely, Trump is against the idea of the government making any sort of profit from student lending. He told *The Hill* newspaper in July: "I think it's terrible that one of the only profit centers we have is student loans." Aside from promising to create more jobs for graduates, however, Trump hasn't specified what his plan would be.

All three of the Democratic candidates would increase federal support for higher education, making attendance at public institutions either a debt-free proposition or, in Sanders' case, tuition-free. Each of them wants current borrowers to be able to refinance their student debt at lower interest rates. "We must substantially lower, as my legislation does, interest rates on student debt," Sanders said in November.

And While They're at It

Other AIA priorities include creating federal and state "Good Samaritan" laws that would shield architects from liability when they work in disaster zones. Some of the home states of the presidential contenders offer such protections, including Florida, Maryland, New Jersey, and Texas, but New York, Ohio, and Vermont do not.

Moreover, with the federal government acting as the largest client for architects in the country, the AIA would like to see changes to procurement rules. A recent change in military bids, which limits the number of firms that have to compete in the final stages of costly competitions, was passed by Congress last year, as part of the defense bill. The same principle could be extended to the civilian side of government.

Making Your Voice Heard

The AIA will be holding a new advocacy event July 13–15 in Washington, D.C. The goal is to ensure that architects from around the country can make their voices heard by the presidential candidates as well as by members of Congress, whether or not they are running for re-election. The event will also offer training to help professionals connect with policymakers in their home states and cities—all the places where architecture is regulated, licensed, and affected by the broader policy landscape.

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Óbidos Technological Park Main Building
Óbidos, Portugal
Jorge Mealha Arquitecto

TEXT BY NATE BERG
PHOTOS BY JOÃO MORGADO

On the agricultural outskirts of Óbidos, Portugal, a small town about 50 miles north of Lisbon, a voided white square sits atop an undulating landscape near the intersection of Rua da Inovação and Rua da Criatividade. The square structure is the main building of the Óbidos Technological Park, a new complex of co-working offices for startups that aims to be, true to its purpose-built streets, the town's center of innovation and creativity.

Lisbon-based Jorge Mealha Arquitecto won the city-sponsored international competition to design the project in 2010. Completed in July 2014, the 44,089-square-foot complex comprises three structures: two single-story buildings topped with a square centerpiece, which principal Jorge Mealha describes as "a thin building levitating over the ground."

The two 11,000-square-foot first-floor buildings contact the square building at four main structural supports, each containing stairs and elevators as well as the piping, ductwork, and technical guts of the building. Two additional V-shaped concrete structures support the upper building as it projects over a central plaza bordered by the cave-like first-floor buildings and a gentle slope created from the dirt excavated to build them.

"The design strategy disguises the ground floor so you don't see it as a building," Mealha says. "So you don't have the difficulty of reading two buildings with two different principles working together."

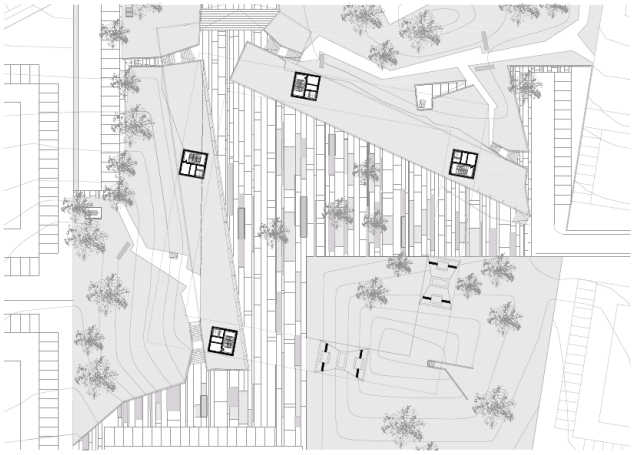
Clad in Cor-Ten steel and covered in grass, these first-floor buildings house shops, a restaurant, a multipurpose room, and a fabrication lab for the tech companies incubating above. The square volume contains more than 60 offices, averaging 215 square feet, which are accessed by a glass-lined hallway along the building's inside perimeter. Mealha calls this hallway a cloister, inspired by the many monasteries in the region, and it features views across to the hallway's three other sides and into the plaza below. A membrane of lacquered and perforated steel grating wraps the exterior, giving it an almost mechanical mask. At night, internal lighting bleeds out into the surrounding landscape.

The project's parameters called not only for facilities to nurture startups and techies, but also a new public space. "For us it was a strange question because they were asking for a main piazza in the middle of a countryside," Mealha says. "A piazza normally results as a point of balance between the forces within the city." Absent those forces, Mealha used differing forms to create that citylike intersection of mixed uses and building types. And as both an active space and a landmark, the building is a new center for the region.

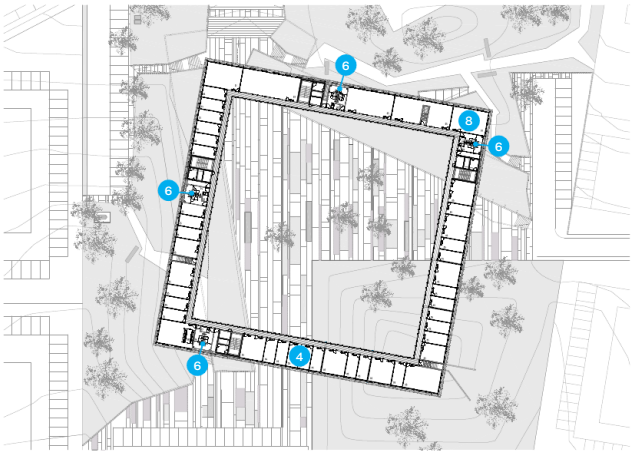
Previous Spread: Aerial view

This Image: View of building looking west

Intermediate-Floor Plan



Second-Floor Plan



First-Floor Plan

1. Restaurant
2. Meeting and multipurpose room
3. Retail
4. Office
5. Fabrication lab
6. Restrooms
7. Lobby
8. Meeting and training room

0 40 80

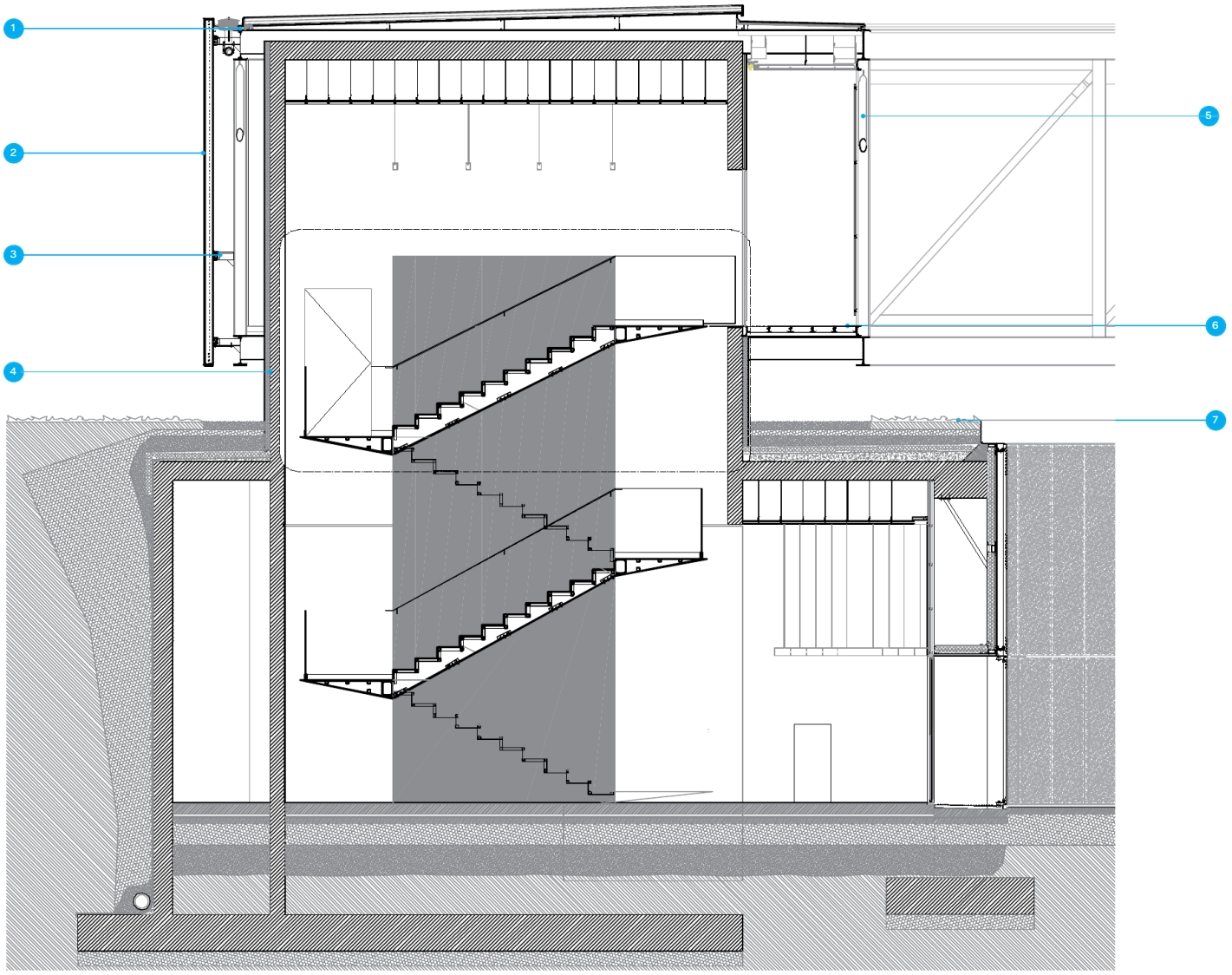
Opposite, Top: View looking south

Opposite, Bottom: View of plaza looking northwest

Above: First-floor lobby and reception

Above: Glazed hallway on second floor with view to central plaza

Staircase Detail Section



1. Sheet metal gutter
2. Perforated and embossed sheet metal grating, painted white
3. Steel profile
4. Cement board wall construction with polystyrene insulation
5. Steel structure
6. Embossed and perforated sheet metal grating
7. Green roof

0 2 4

View of Cor-Ten façade panels on first floor from plaza

Project Credits

Project: Óbidos Technological Park Main Building, Óbidos, Portugal
Client: Parque Tecnológico de Óbidos
Architect: Jorge Mealha Arquitecto, Lisbon · Jorge Mealha (principal); Andreia Baptista (coordinator); Carlos Paulo, Diogo Oliveira Rosa, Filipa Ferreira da Silva, Filipa Collot, Gonçalo Freitas Silva, Inês Novais (project team)
Structural Engineering: José Ferraz & Associados—Serviços de Engenharia e Consultoria (built project)
Electrical Engineering: António Ferreira, Pedro Ramos
Climatization: Luís Graça
Fire Consulting: Segurinis, Jorge Miranda (built project); Joaquim Viseu (base project)
Hydraulic/Acoustic/Thermal/Solar: S.E. Serviços de Engenharia
Landscape Architect: Mafalda Lavrador
Construction: MRG Engenharia e Construção
Size: 4,096 square meters (44,089 square feet)
Cost: €4.407 million ($4.735 million) including external spaces and landscape

Gordon Parks Arts Hall
Chicago
Valerio Dewalt Train Associates

TEXT BY EDWARD KEEGAN, AIA

PREVIOUS SPREAD: STEVE HALL/HEDRICH BLESSING

Previous Spread: Third-floor arts classroom

This Image: Exterior view from northeast

BARBARA KARANT

Valerio Dewalt Train Associates' Gordon Parks Arts Hall sails onto the University of Chicago's Hyde Park campus like a 21st-century luxury liner: its block-long bulk carefully crafted with a sleek profile whose expression meshes with the surrounding buildings, while still illustrating compelling forms driven by ideas about architecture and education. The building anchors the northern end of a multibuilding subcampus that houses three of the four grade-based "units" that comprise the university's pre-K–12 Laboratory Schools, which were founded by John Dewey as an experiment in pre-collegiate education.

Gordon Parks Arts Hall (GPAH) is the most recently completed portion of a comprehensive master plan for the Lab Schools that clocks in at more than 539,000 square feet, including new construction of an off-site early-learning center and renovation of the existing buildings (now nearing completion). Chicago-based Valerio Dewalt Train Associates' (VDTA) principal Joseph Valerio, FAIA, clinched the commission for the plan in 2008, when he gave the school's high-powered board a one-word answer for where to start their architectural explorations. "Research," he said.

"Joe went into great depth, contacting futurists and educators," says the school's director emeritus David W. Magill. The result was a six-volume 2009 report called "Future of Education: Research." The "Lab+" master plan positions GPAH as the principal new structure on the school's two-city-block campus. The "front" door for the complex has always been Blaine Hall, which faces the Frederick Law Olmsted–designed Midway Plaisance. Gothic limestone-clad structures to the south, east, and west, added piecemeal since 1903, are an ensemble of dormered and gargoyled buildings that form a piece with the university's larger campus, dubbed the "Gray City." But the north end of the Lab Schools' block always had a distinct role: Dewey built it at the outset, and conceived of its workshops as a "maker place." "We saw the opportunity to honor this legacy by creating a building for the 'makers' of the 21st century," Valerio says.

As a whole, the university (of which the Lab Schools are a part) has actively sought a more contemporary look to complement its older Gothic structures. Recent projects by Tod Williams Billie Tsien Architects | Partners (Reva and David Logan Center for the Arts), Rafael Viñoly Architects (Graduate School of Business), Diller Scofidio + Renfro (David M. Rubenstein Forum, in design), and Studio Gang (North Residence Hall and Dining Commons, under construction) all nod to this forward-looking initiative.

GPAH's three-story plan is based on a double-loaded corridor, with the large spaces of the Assembly Hall—a 750-seat theater-in-the-round that sits just inside the entry—and the black box theater on the south side of the structure and learning spaces along the north. First- and second-floor teaching spaces are devoted to music, with the third floor set aside for arts and media. The theaters, which rise the full height of the building, are clad in a simple vertical metal panel system and face a courtyard and the Lab Schools' 1962 International Style addition by Perkins+Will.

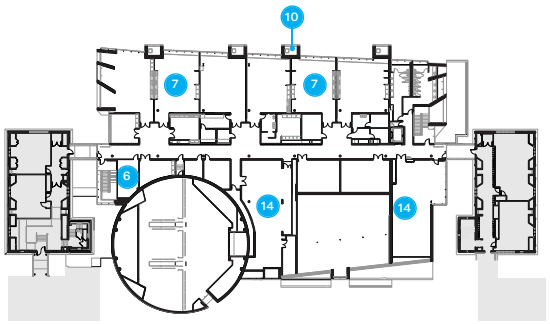
The building's palette is quite simple, limited to five materials: an exposed concrete frame, a VS-1 glass curtainwall system, metal panels (used as a return on limestone faces), metal roof decking, and limestone (requested by the client) that matches the complex's original Collegiate Gothic buildings. "We used limestone the least, but we wanted to get the most out of it," Valerio says. And whether it's the unusual pattern of three openings within the gabled entry façade or the vertical wall-mounted lighting throughout the corridors, seemingly random spacings are, in fact, based on the Fibonacci sequence: "We didn't want a random pattern," Valerio says. "It's a hidden number sequence that kids could discover."

VDTA's six volumes of research on contemporary education revealed the importance of the classroom as the fundamental space for structured learning and the need to foster eye contact between teacher and student. These are central to the program, with a series of generous spaces along the north edge of the building. But the classroom's pre-eminence doesn't downgrade the role of less structured interactions. The team's research notes that the most creative moments happen within the interstitial spaces.

Magill recalls that it was a conscious decision not to provide designed seating or otherwise structured spaces in the halls. "Kids will find these places, and then we can add accoutrements," he says. Valerio is particularly pleased with the role the western fire stairs have begun to play. The egress stairs are tucked within a glass-enclosed gable that faces a limestone dormer in the 1904 Belfield Tower, creating a bright space that visually connects old and new, inside and outside—and draws groups of students between and after classes.

At Gordon Parks Arts Hall, VDTA has reconceived Gothic for the 21st century. "A Collegiate Gothic building doesn't feel open and accessible," Valerio says. But by drawing upon elements loosely derived from its Gray City environs, including Indiana limestone, gabled forms, solar chimneys that mimic high Gothic piers, and delicate glazing that accentuates the vertical, Valerio has crafted a structure that feels of its time and its place, and offers a road map for the integration of diverse—and functional—architectural forms.

Third-Floor Plan



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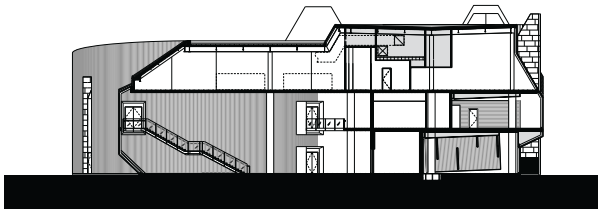
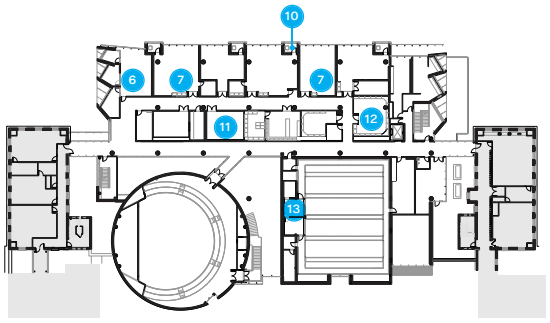
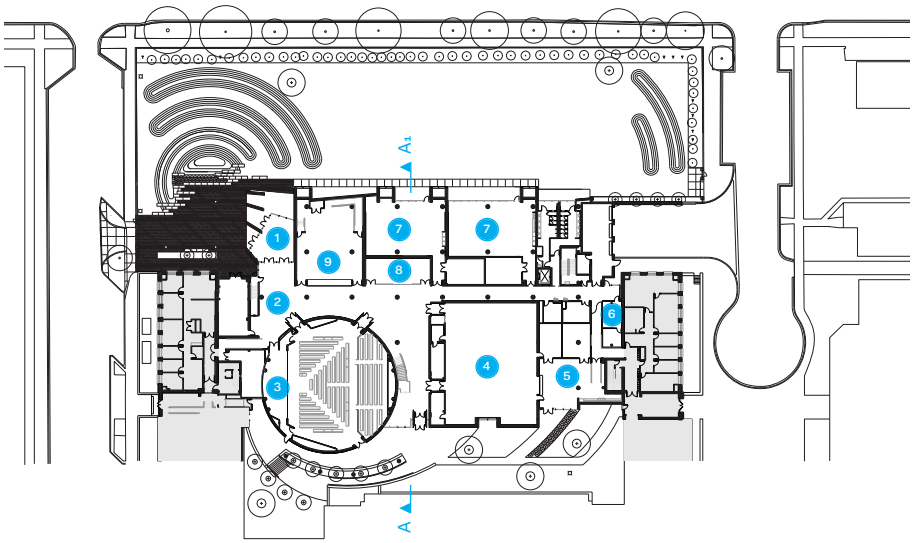


0 25 50

Second-Floor Plan

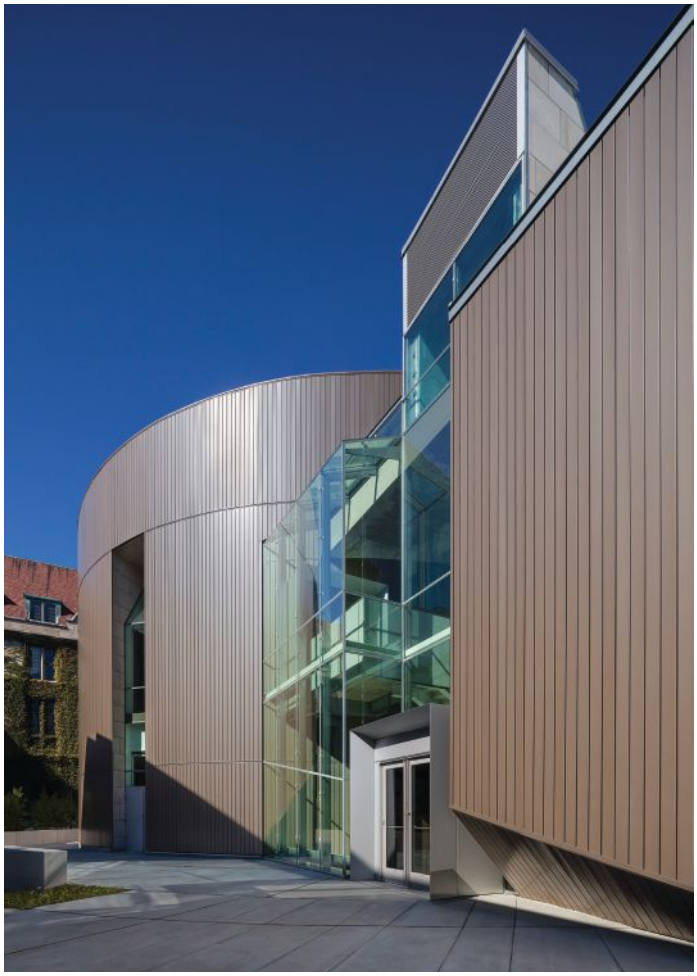


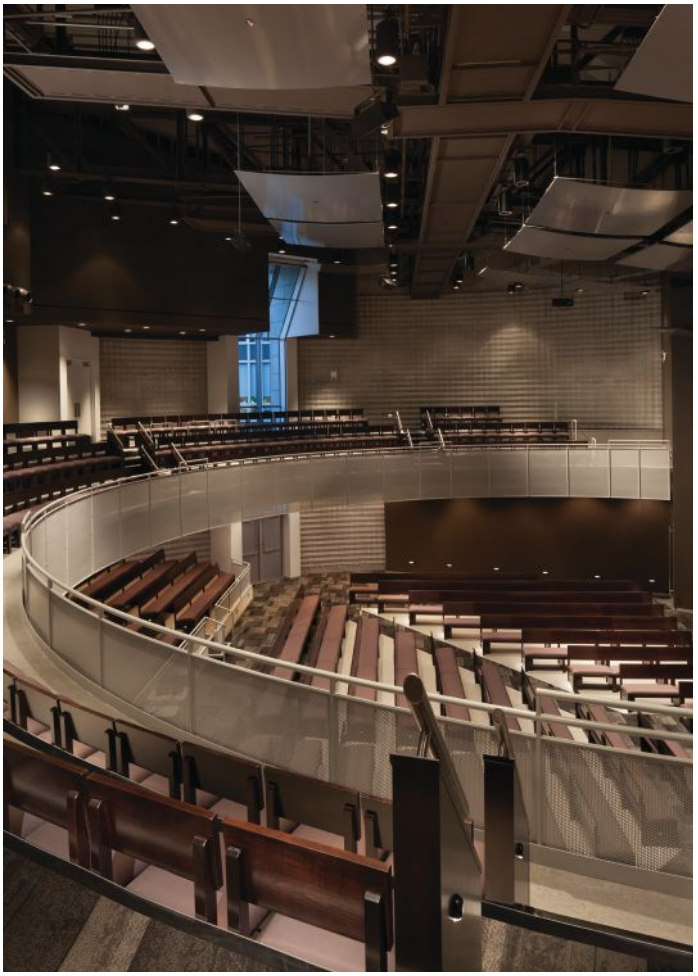
Ground-Floor Plan



1. Entrance
2. Lobby
3. Assembly Hall
4. Black box theater
5. Scene shop
6. Office
7. Classroom
8. Art gallery
9. Theater
10. Solar chimney
11. Recording studio
12. Dressing room/costume shop
13. Control room
14. Mechanical/electrical/plumbing

0 50 100 N





Above, Left: Exterior view from southeast, showing Assembly Hall volume

Above, Right: Assembly Hall interior, with seats for 750

Opposite: Ground-floor art gallery

STEVE HALL/HEDRICH BLESSING

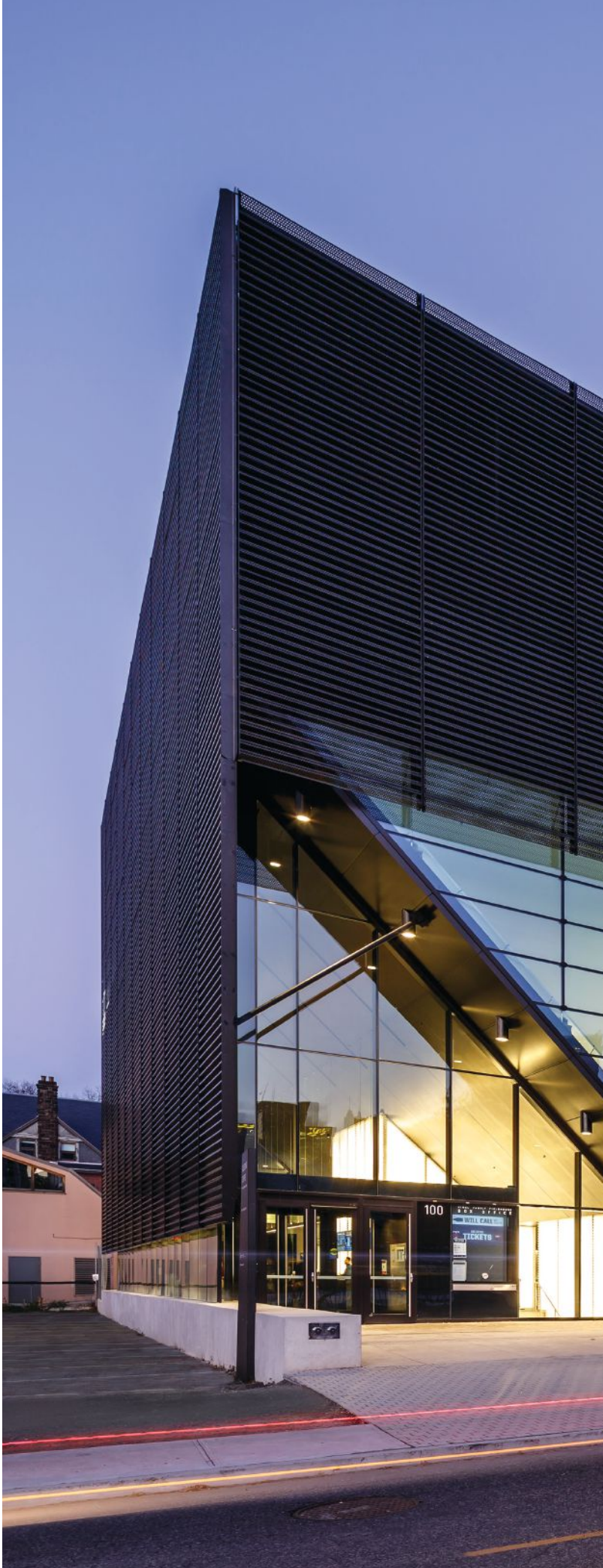
Lobby, with round Assembly Hall volume at center

STEVE HALL/HEDRICH BLESSING

Project Credits
Project: Gordon Parks Arts Hall, Chicago
Client: University of Chicago Laboratory Schools
Design Architect: Valerio Dewalt Train Associates, Chicago · Joseph Valerio, FAIA (design principal); Randall Mattheis, AIA (principal-in-charge); Sheri Andrews, AIA (project manager); Robert Webber, AIA (project architect); Steve Droll, AIA, Matt Gamache, AIA, Stephen Killion (project team)
Executive Architect: FGM Architects, Chicago · Joseph Chronister, AIA (principal-in-charge); Terrence Owens, AIA (project manager); Jack J. Krezel Jr., AIA (senior project architect); Anna Harvey, AIA, Michael Johnson (project architects); James Woods, AIA, (programmer/planner)
Mechanical Engineer: Arup
Structural Engineer: Rubinos & Mesia Engineers
Electrical Engineer: Primera Engineers
Civil Engineer: Environmental Design International
Geotechnical Engineer: Ground Engineering Consultants
General Contractor: Lendlease
Landscape Architect: Mikyoung Kim Design
Lighting Designer: Hugh Lighting Design
Sustainability Consultant: HJKessler Associates
Accessibility Consultant: LCM Architects
Theater Consultant: Schuler Shook
Acoustical/AV Consultant: Threshold Acoustics
Signage: Carol Naughton + Associates
Size: 90,000 square feet
Cost: Withheld

Goldring Centre for High Performance Sport Toronto
Patkau Architects and MacLennan Jaunkalns Miller Architects, associated architects

TEXT BY CAIA HAGEL
PHOTOS BY TOM ARBAN




GOLDRING CENTRE
FOR HIGH PERFORMANCE SPORT

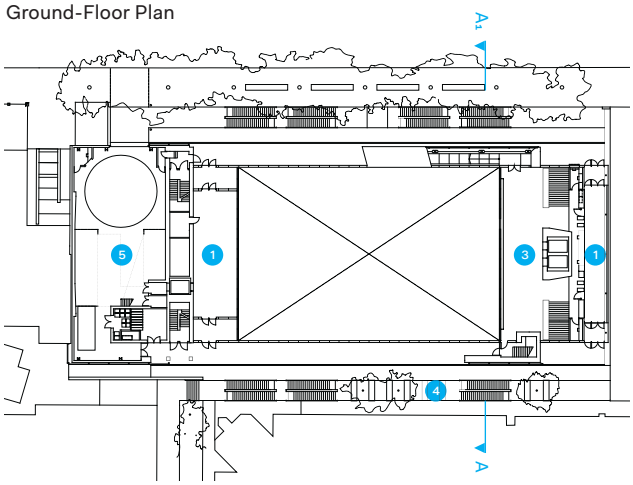
When Vancouver, British Columbia–based Patkau Architects and Toronto-based MacLennan Jaunkalns Miller Architects (MJMA) paired up to realize the glamorous new 140,000-square-foot Goldring Centre for High Performance Sport on the University of Toronto's (UoT) downtown campus, each firm brought award-winning expertise to the table: Patkau's in university work and MJMA's in sports projects. Located among the elite cultural institutions on Toronto's central and rarefied Bloor Street, Goldring brings a contemporary edge to the historic UoT campus—not just with its glowing glass façade but also with its concept of putting athletes on public view. "Goldring is a socially ambitious project," says MJMA's Ted Watson, noting that while Toronto is a sports-crazed city it's not one where sweaty training rituals are often on display—certainly not down the street from the patrons of the Royal Conservatory of Music and the like. "This breaks with the tradition of the introverted sports facility," says John Patkau, HON. FAIA, lending the building a reality-TV edge.

The vision for the voyeuristic facility stemmed from the fact that a full program of regulation basketball and volleyball courts, lobbies, training, and sports medicine facilities had to be stacked vertically to fit the compact urban site. First up, the courts: Moving the column-free Field House below grade meant that the north and south ends of the building had to support a 180-foot span using 23-foot-tall steel trusses. The two perimeter trusses, brought down to street level to connect to the cantilevered ground-floor slab, offer additional lateral support. The large steel trusses double as the cable-support for a high tensile glass wall, which adds stiffness to the entire structure.

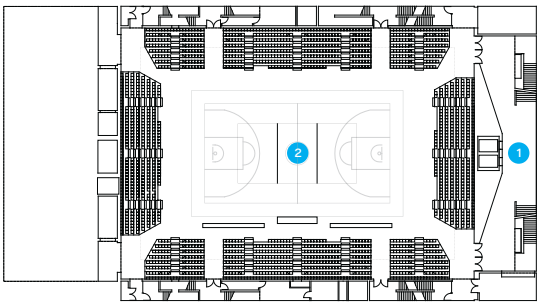
And that's where the voyeurism comes in: The east-side truss is left completely visible behind the cable-supported glazing, a transparency that allows the lobbies to look down into the basketball and volleyball courts, and gives the double-height Strength and Conditioning Centre a strong presence from the street. This visual showcase theatrically fulfills the objective of promoting health and wellness on campus.

"The primary functional spaces in the building feature large, clear areas of glazing to visually connect to the campus," Patkau says, while more private areas such as faculty offices, research labs, and medical clinic have windows that are veiled by a perforated corrugated aluminum cladding that doubles as sunshading. "Language and design had to be reduced to their essentials because of a tight budget," Watson says, but that wasn't a hindrance. Rather, it was "something that let us play with different expectations of the sports facility."

Ground-Floor Plan

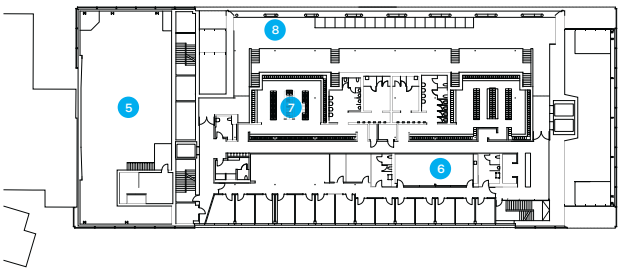


Basement-Level Plan

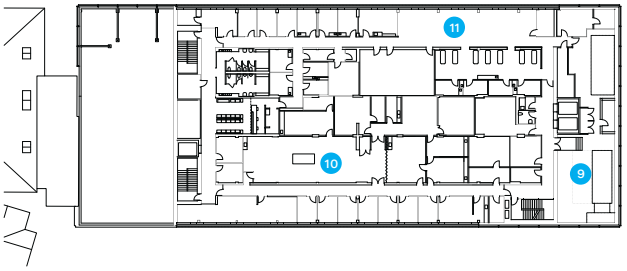


Previous Spread: East façade showing view into Strength and Conditioning Centre

Second-Floor Plan



Fourth-Floor Plan



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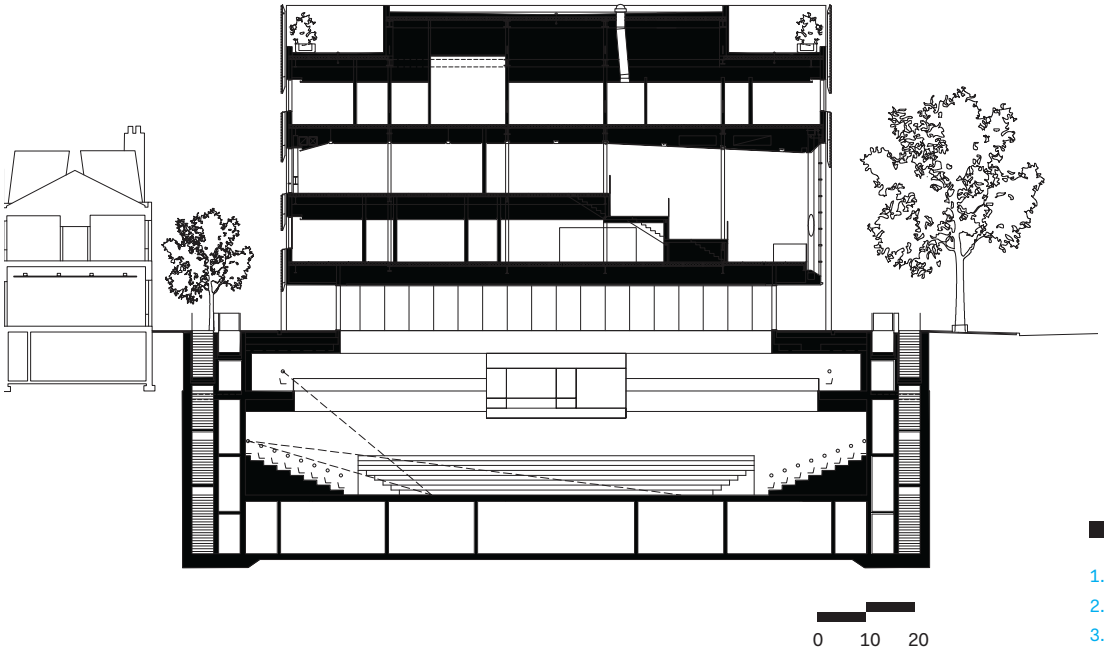
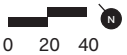
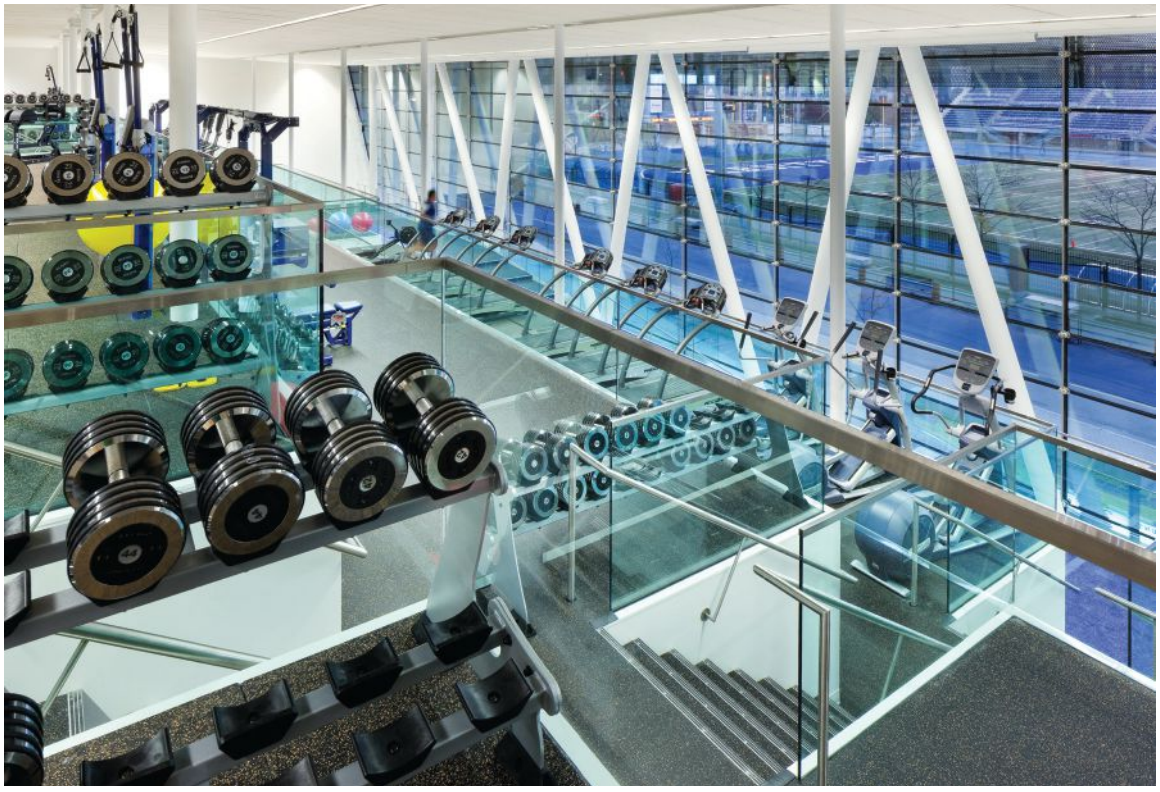


1. Lobby
2. Field House/playing courts
3. Lounge
4. Student Laneway pedestrian path
5. Service bay
6. Offices
7. Changing rooms
8. Strength and Conditioning Centre
9. Mechanical
10. Sports research labs
11. Sports medicine clinic

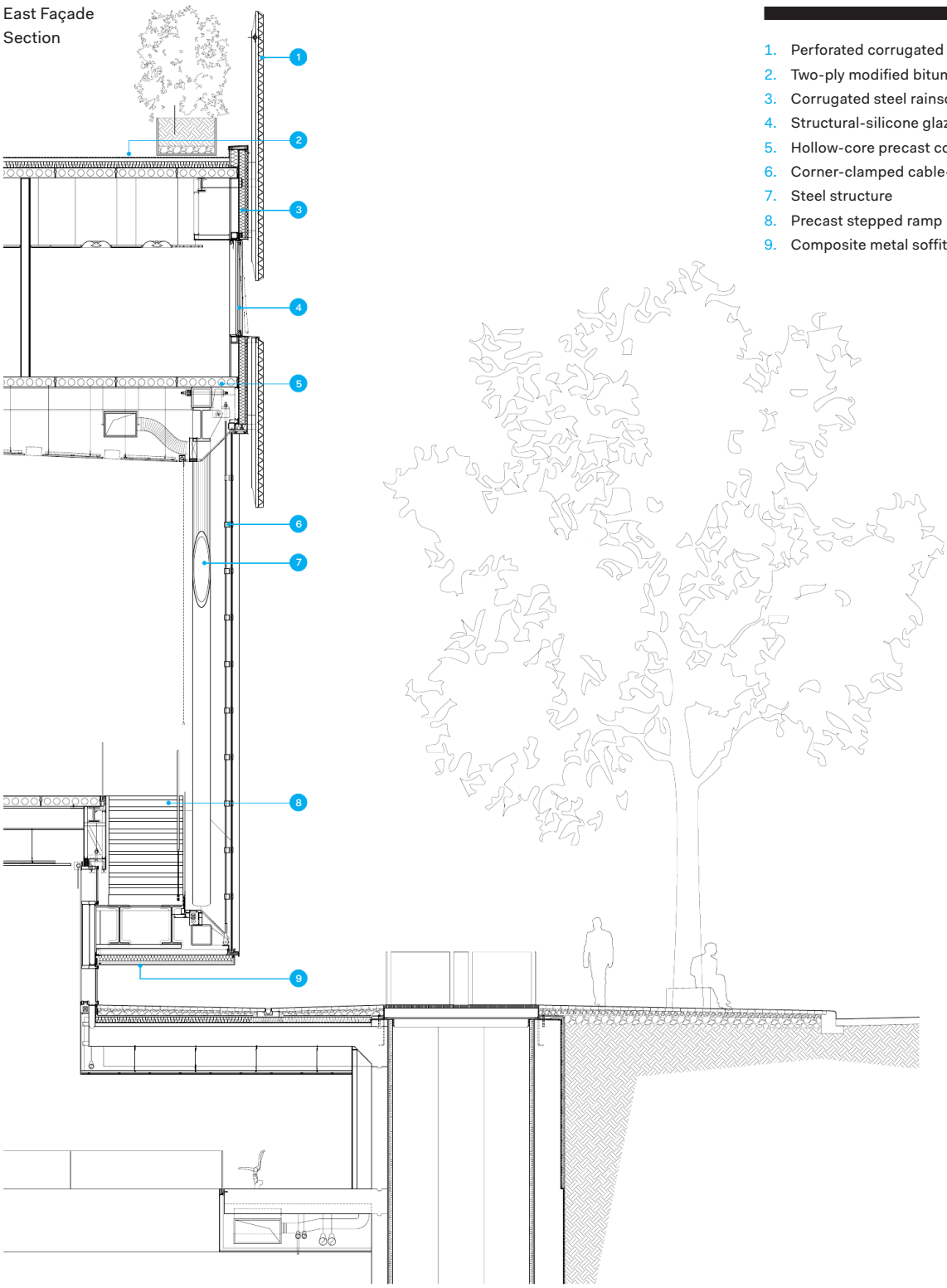




Top: Ground-floor lobby

Above: Three-level Strength and Conditioning Centre

East Façade
Section



1. Perforated corrugated aluminum
2. Two-ply modified bitumen membrane
3. Corrugated steel rainscreen
4. Structural-silicone glazed curtainwall
5. Hollow-core precast concrete deck
6. Corner-clamped cable-stayed glass wall
7. Steel structure
8. Precast stepped ramp
9. Composite metal soffit panel

0 2 4

Above: Field House

Opposite: Pedestrian path, called the "Student Laneway," lining west façade

Project Credits

Project: Goldring Centre for High Performance Sport, Toronto
Client: University of Toronto
Design Architect: Patkau Architects, Vancouver, British Columbia · John Patkau, HON. FAIA, Patricia Patkau, HON. FAIA, Shane O'Neill, Mike Green, Etienne Lemay, Tyler Brown, James Eidse, Marc Holland, Dimitri Koubatis, Thomas Schroeder, David Shone, Luke Sterm, Michael Thorpe (project team)
Architect of Record: MacLennan Jaunkalns Miller Architects, Toronto · Ted Watson, David Miller, Andrew Filarski, Robert Allen, Viktors Jaunkalns, Aaron Letki, Miguel Fernandez de Aguirre, Kristin Beites, Timothy Belanger, Razmig Titizian, Tamara Hains
M/E Engineer: Smith + Andersen
Structural Engineer: Blackwell Engineering
Civil Engineer: EMC Group
Builder: EllisDon
Landscape Architect: Plant Architect
Size: 140,000 square feet
Cost: $59.2 million Canadian ($42.03 million U.S.)

Arnhem Central Passenger Transport Terminal
Arnhem, Netherlands
UNStudio

TEXT BY KATIE GERFEN
PHOTOS BY HUFTON+CROW

"Everyone asks me how is it possible that this has been going on for almost 20 years," says Ben van Berkel, HON. FAIA, about his design for the Arnhem Central Transport Terminal, which was completed last November. The linchpin of a 79,500-square-meter master plan for public infrastructure in Arnhem, Netherlands—which includes not only the station, but also infrastructure and office spaces—the project began in 1998, two years after van Berkel's Amsterdam-based firm UNStudio secured the commission for the larger scheme. "It had to do with the complexity of the use of grounds and with intensifying the programs around the station," he says, noting that the challenge became "how could I uplift the quality of infrastructure in a far better way than architecture has been until now?"

When van Berkel's team started the planning process, he says that the clients "were surprised that as an architect I knew so much about the statistics of infrastructure, and that I loved to play with all these numbers." And his interest in organizing architecture around planning is a longstanding passion: "I have always had this interest from the beginning—maybe even when I studied architecture or before. There is always somewhere, someplace, in a project where you need to play with an interactive aspect of what architecture can be. I think a lot about movement."

The emphasis on how people interact with a space is evident in his design for the 21,750-square-meter (234,115-square-foot) central transport terminal. Tucked beneath a rolling panelled roof (which is seen best from the nearby Park and Rijn office towers UNStudio completed in 2005) are ticketing halls, parking for cars and bicycles, regional and local bus arrivals and departures, and access to train platforms to the north, among the sundry retail and dining establishments that pepper any transit hub. Yet with all of this complex and varied program, the one thing visitors will not see an abundance of is signage. The building gives travelers all the direction they need.

Upon entering, visitors are greeted by a sweeping main transfer hall that spirals up around a thin, central column. "I think it is so much nicer when you look around a curve," van Berkel says. "When you look back, you can see where your friends of family are, or where you have come from. You have much more communication with the people in the station." The ceiling changes from white concrete in this main area to wood lamella in offshoot hallways that lead to bus gates, parking, and a tunnel to the train platforms, helping to move and direct people through the space.

What is ever-present throughout is daylight—even in areas where you wouldn't expect it. In the glazed main hall, it reflects off of the polished ceiling, splashing bright tones across the surface as the angles of the sun shift throughout the day. Glass canopies over the outdoor train platforms (completed in 2012) filter light down onto commuters, and even in more enclosed spaces, such as the concrete regional bus boarding areas, windows are cut in to allow light and direct the eye to stairways and other forms of circulation to the rest of the station. To van Berkel, integrating daylight posed an interesting challenge of discovering new ways that "light could move you and direct you," he says. "It has a lot to do with atmosphere, but also the mathematics of supporting wayfinding."

Another means of orienting travelers in the space is the use of color throughout the complex: parking areas in vivid red, bus gates in a near-caustic yellow. "I love to work with color for wayfinding—I even do it in my office," van Berkel says.

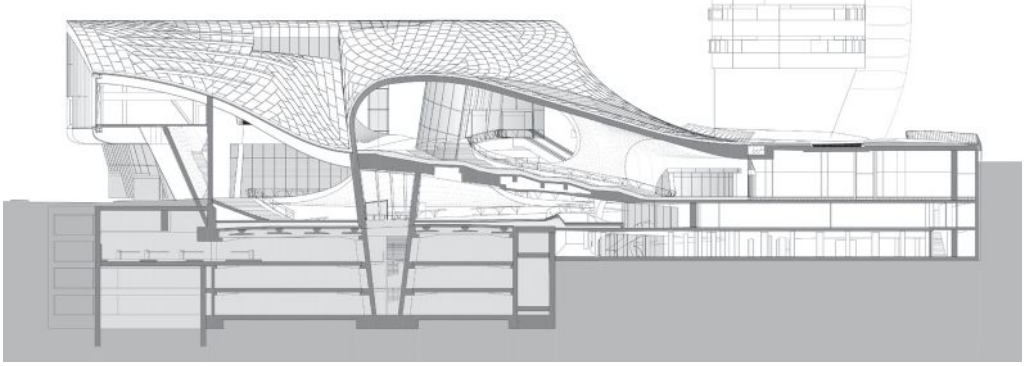
Though the design process was a long one, the core ideas and forms of the project have remained since the beginning. "I believe so much in working with the larger details of a project, like how I could combine a station with parking and all the different grids," he says. "If you work instead with 20 small details or ambitions, you can sometimes overdo it."

Some details changed over time, such as the transition from a concrete to a steel structure to allow for a more slender central column in the transfer hall, but, van Berkel says, "you can go back to renderings from the mid-1990s and be surprised how much similarity there was between the design at that time and the end result." He compares his approach to that of controlling the composition of a painting: "If you have three aspects of a painting, and you execute them really well, then it doesn't matter if there are other elements that are revised again or taken out."

One guiding influence for the design of the station, and the larger plan, was the desire to create a new point of arrival for the city of Arnhem. "Since World War II, they have been looking for a new identity. It is a city of fashion and art," he says. And one inspiration for capturing this sense of the theater of arrival was Grand Central Terminal in New York: "If you have a well-lit morning and light comes in, it is so dramatic, so beautiful," he says. "That is what I was after."

What he didn't want was the utilitarian experience of New York's Penn Station. "I am so critical of Penn Station," he says. "I did lots of study about the whole area and the connections to the city and the station." And even before New York Governor Andrew Cuomo's recent announcement of a new renovation plan, van Berkel made an invitation: "Hopefully the people who have a life of thinking around Penn Station, [will] visit the theater of the Arnhem train station."

Section A–A1



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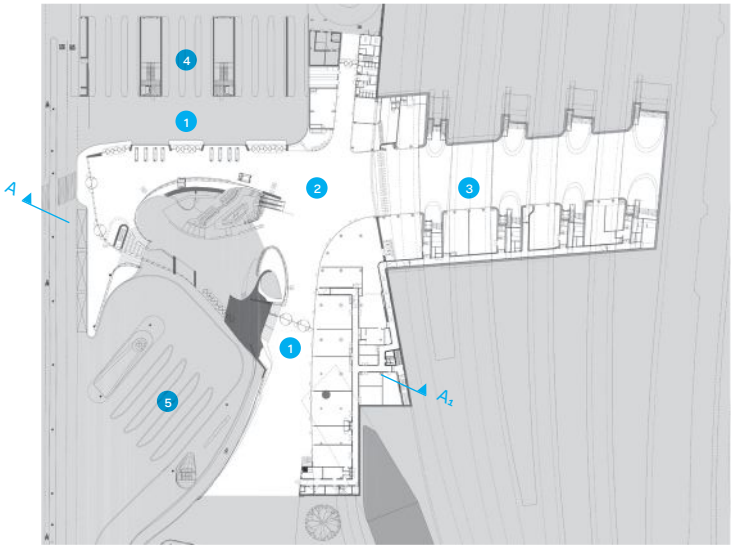
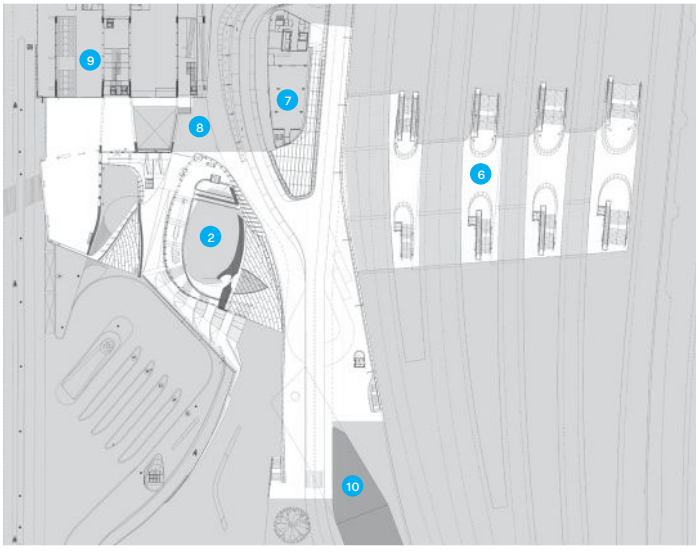
Ground-Floor Plan



Second-Floor Plan



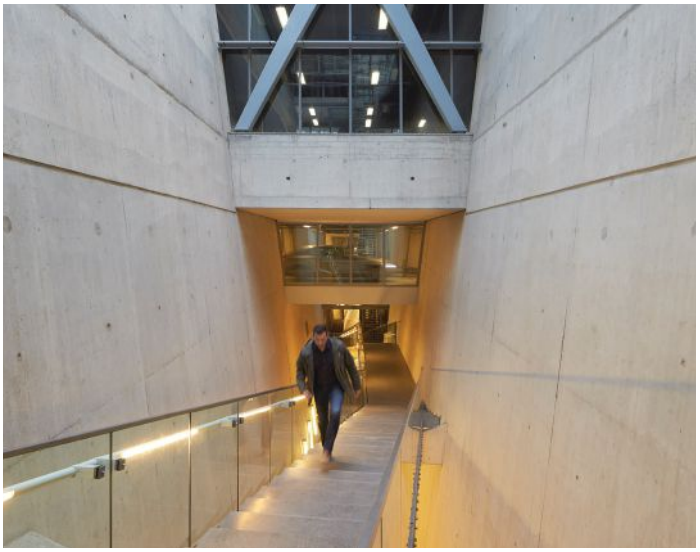
1. Entrance
2. Transfer hall
3. Platform tunnel
4. Bus terminal (regional buses)
5. Bus square (local buses)
6. Train platforms
7. Office tower
8. Elevated office square
9. Horizontal offices
10. Office tower, future development

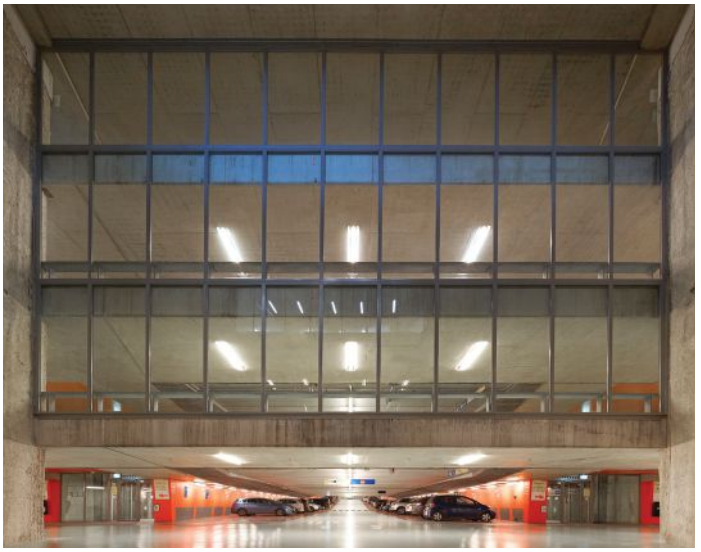
0 50 100 N

Previous Spread: View looking west

Entry plaza with view of regional bus parking


77 dejs in Arnhem
tijdelijk podium en café
GWK





Top, Left: Bicycle parking

Top, Right: Transfer hall circulation

Middle, Left: Stairway and lightwell

Middle, Right: Parking level

Right: Bus terminal loading/unloading

Opposite: Access to train platforms

Main transfer hall

Project Credits
Project: Arnhem Central Passenger Transport Terminal, Arnhem, Netherlands
Client: ProRail B.V.
Design Architect: UNStudio, Amsterdam · Ben van Berkel, HON. FAIA, with Arjan Dingsté; Misja van Veen, René Toet, Marc Hoppermann, Kristoph Nowak, Tobias Wallisser, Nuno Almeida, Rein Werkhoven, Marc Herschel, Sander Versluis, Derrick Diporedjo, Ahmed El-Shafei, Matthew Johnston, Juliane Maier, Daniel Gebreiter, Kirstin Sandner (project team)
Structural Engineer: Arup (transport terminal, design and tender phase, public transport terminal phase 1 & finishes of pedestrian tunnel); Van der Werf & Lankhorst (bus station, parking garage, and office square, design and tender phase); Arcadis (pedestrian tunnel, tender design, engineering and construction phase); BAM Advies & Engineering (public transport terminal phase 2); ABT (public transport terminal phase 2)
M/E/P/Installations: Arcadis (design and tender phase); BAM Techniek (engineering and construction phase); Unica (engineering and construction phase)
Fire/Life Safety: DGMR Bouw BV
Lighting: Arup
Wayfinding: Mijksenaar
Tender Specifications: ABT
Contractor: Besix-Welling (structure of pedestrian tunnel); Bouwcombinatie BAM Ballast Arnhem Centrum VOF (public transport terminal phase 1 & finishes of pedestrian tunnel); BBB, BAM & Ballast Nedam (public transport terminal phase 1 & finishes of pedestrian tunnel); Bouwcombinatie OV-Terminal Arnhem (public transport terminal phase 2); BCOVTA, BAM & Ballast Nedam (public transport terminal phase 2)
Size: 21,750 square meters (234,115 square feet)
Cost: Withheld

Residential:
See-Through House
Santa Monica, Calif.
Koning Eizenberg Architecture

TEXT BY AARON BETSKY
PHOTOS BY ERIC STAUDENMAIER

Hank Koning, FAIA, and Julie Eizenberg, FAIA, of Koning Eizenberg Architecture eschew grand theories and expressive modes of design. The façade of the 3,100-square-foot house they designed on 12th Street in Santa Monica, Calif., is, according to Eizenberg, "just the outline of what you could build according to zoning and setback requirements." That the white stucco face, etched against the California sky, recalls a barn in a manner that evokes the open, rough-hewn character of the house's interior, while alluding to and abstracting the various gambrels and gables of the eclectic group of its surrounding houses, is, she says, a fortuitous accident.

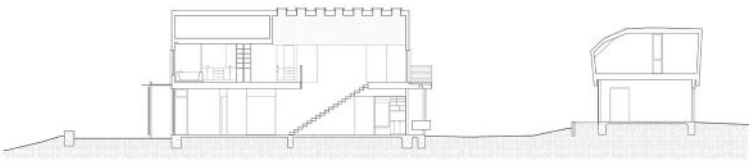
The clients wanted something more than the one-story Spanish Colonial Revival bungalow they owned around the corner, and less than the McMansions that are rapidly replacing similar neighborhood structures. The wife grew up in a traditional Quaker home in Philadelphia, the husband in a Los Angeles midcentury modern house. They wanted, according to the wife, "something simple, not too large nor too cold; a place where I could always feel part of the family even if we're all off on our own."

Eizenberg and Koning's solution was to make the house appear as a single, unified mass, cladding its sides with shingle shakes that will weather in time. The open-plan ground level includes a living area with a heated concrete floor and plain plaster walls. This room runs the full length of the house to the rear garden and steals "borrowed views," as Eizenberg calls them, through windows shaded and sheltered from the street with movable panels of ipe wood slats. Past a kitchen island and a counter suspended in a bay window, the space opens to the rear. To either side of the living room, the architects added "saddlebags," (borrowing Charles Moore's term) that contain a study and TV room to the south and an entry, toilet, and pantry to the north. Both the staircase to the upper floor and the front of the kitchen island are covered with pegboard, which Eizenberg imagines may host either art or creations by the clients' children.

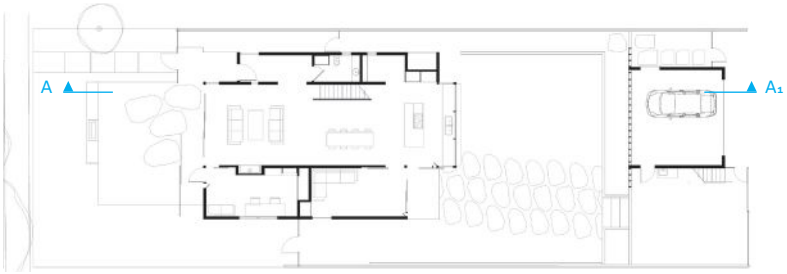
Upstairs, the three children's rooms line up to the south of a high, skylit corridor and gathering space, leaving the north side for one shared bathroom and a utility space. The master suite takes up the floor's west side, gaining views over the street and beyond. A guest suite occupies the space above a garage at the back of the rear yard.

Modesty and simplicity guide the house's design, from the arrangement of rooms to finishes and straightforward detailing. The house is familiar in its shapes, modern and functional in its forms, and comfortable in its materials. "I never bought that styles, whether modern or historical, had an ethical value," Eizenberg says. "We just want to build what works. This is a house where we would want to live."

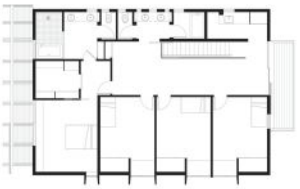
Section A-A₁



Ground-Floor Plan



Second-Floor Plan



Previous Spread: Stairs fashioned from Weyerhaeuser's Parallam PSL beams and finished with a pegboard rail connect the main floor with living quarters above.

Right: White-painted smooth, troweled stucco coats the exterior.

Bottom: Sliding ipe wood-slat panels mounted to steel frames offer shade and privacy when needed.

This Page: Extech cellular polycarbonate wraps the lower level of the freestanding garage and guest suite.

Project Credits
Project: See-Through House, Santa Monica, Calif.
Client: Withheld
Architect: Koning Eizenberg Architecture, Santa Monica, Calif. · Julie Eizenberg, FAIA, Hank Koning, FAIA, Nathan Bishop, Jesse Baiata-Nicolai, Jennifer Rios, Troy Fosler (team)
Structural Engineer: Parker Resnick Structural Engineering
Contractor: William Kent Development
Landscape Architect: Kathleen Ferguson Landscapes
Lighting Designer: Oculus Light Studio
Surveyor: Becker & Miyamoto
Geotechnical: Ralph Stone and Co.
Size: 3,100 square feet (main house); 800 square feet (accessory building); 7,500 square feet (total lot area)
Cost: Withheld

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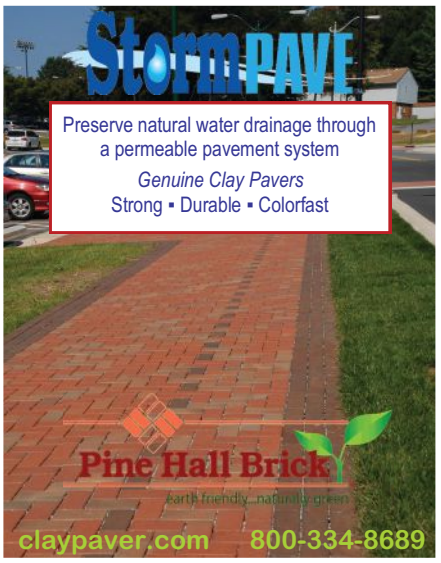

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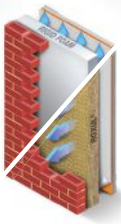

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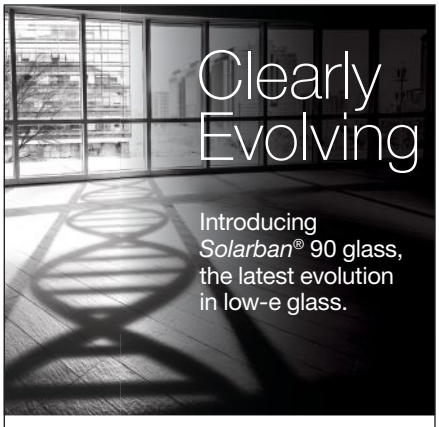

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Editorial: The Diversity Imperative

The AIA put equality at the top of its agenda this year with two big moves: the naming of Denise Scott Brown, HON. FAIA, and Robert Venturi, FAIA, as co-recipients of the 2016 Gold Medal, and the establishment of a Commission on Equity in Architecture. Both are laudable—the former as an acknowledgment of past wrongs, the latter as being rich with potential for future right action. The timing's good too. Equality is a perennially important issue, but never before in my lifetime has the national conversation run so hot on issues of gender, race, religion, sexuality, and the many other ways we define ourselves and people around us.

The 2016 Gold Medal decision addresses decades-old sexist affronts, in which Scott Brown was rejected as Venturi's co-recipient for the Gold Medal and the Pritzker Architecture Prize. The husband-and-wife team has been of epochal influence and ought to have been a shoo-in, but was denied because both programs stipulated a single winner. Instead, Venturi was offered the two awards without Scott Brown. He declined the Gold Medal but did accept the Pritzker in 1991 because of its $100,000 purse and its value in helping win commissions. Understandably, Scott Brown skipped the ceremony in protest.

The Pritzker rule seems to have changed since then. Jacques Herzog, HON. FAIA, and Pierre de Meuron, HON. FAIA, won together in 2001, and Kazuyo Sejima and Ryue Nishizawa did so in 2010. Yet a 2013 petition led by Harvard graduate students Arielle Assouline-Lichten and Caroline James to retroactively add Scott Brown to Venturi's laureateship went nowhere. Jury chair Peter Palumbo explained why in a response letter: "A later jury cannot re-open, or second guess the work of an earlier jury, and none has ever done so."

Days after the Pritzker jury rejected the petition, the AIA board voted to amend the requirements for the Gold Medal, making it winnable by two recipients practicing together. The effort, spearheaded by Kohn Pedersen Fox Associates principal Jill N. Lerner, FAIA, who was president of AIA New York at the time, cleared the way for the joint Scott Brown and Venturi win—and implicitly (and deservedly, I think) rebuked the Pritzker jury for its obstinacy.

The AIA's other big move, the equity commission, emerged from a resolution sponsored by the San Francisco and California chapters. Its aim is to jump-start diversification—in the wake of many well-intentioned but insufficiently productive efforts in the past—and "advance the ratio of underrepresented populations in the profession." Those familiar with the statistics will understand the necessity. Architecture remains an overwhelmingly straight, white, male, and Christian enterprise, in a nation that is increasingly less so. The commission has its work cut out for it, and deserves our wholehearted support.

Diversity has absolute value. Sheen S. Levine of the University of Texas at Dallas and David Stark of Columbia University concluded so after exhaustive research. In a recent op-ed piece in the *The New York Times*, they wrote, "Diversity improves the way people think. By disrupting conformity, racial and ethnic diversity prompts people to scrutinize facts, think more deeply, and develop their own opinions." Diversification is not only the right thing to do, it is the smart thing to do. Architecture will be better for it.

STEPHEN VOSS

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