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Making the Case

Editorial

he volatility of our financial markets blazed into view in October, as if someone had struck a match. While the immediate reaction of architects has been as hot-faced witnesses to a conflagration (we do not control the hedge funds or the investment banks), we recognize the effects of the fire sale, particularly for our clients. It goes without saying that getting the job remains the defining business challenge we all face.

In case you find yourself in meltdown, realize this: Clients need architects now more than ever. At a critical time, good design and superior physical facilities can give companies or institutions a vital, competitive edge—with their peers, with their customers, with their employees, with the communities that they serve. We architects can dare to say, "Trust me," because we speak with authority.

Our data can help you. For 11 years, the Business Week/Architectural Record design awards program has documented how architectural (and interior and industrial) design affects business. Examine this year's winners, which include building projects that made existing companies better places. Each of their stories has a lesson that is measurable.

At Elmpark, in Dublin, Ireland, the shared vision of architect and client produced a more sustainable workplace, complete with obligatory green roof and lighting scheme, in which the developer could ultimately sell power to his tenants. For Haworth in Michigan, a striking new building addition encouraged a 300 percent rise in customer visits, with a concurrent rise in sales. And in a third, at Alley 24 in Seattle, employees report extreme satisfaction, so much that actual sick days have decreased.

Whether reflected in worker satisfaction or productivity, design for business and institutional clients means more than signature buildings by glamorous architects. As an architect, you can help determine which materials and systems can make the most difference, whether to attract bigger crowds or to save energy. Perhaps you can help consolidate facilities from far-flung sites to a central building that will foster better communication among employees.

In good times and hard times, in addition to the inspiration that our work provides, clients respond to hard facts, suggesting that we present our architectural projects as solutions to their needs, ferreting out measurable

By Robert Ivy, FAIA

data (what the industry loves to call "metrics") that signify how actual designs made a difference. The burden may sound daunting, but look for information to back up your assertions.

Architects and clients recognize that the way we work has fundamentally changed, with a new workforce that increasingly functions off-site, that requires flexibility in the workplace for its changing social norms, for digital transformation, even for (shudder) "downsizing." We have found that good design literally enhances real estate value, at a time that real estate values have risen to the forefront of business consciousness. And design becomes a recruiting tool for all employees, particularly for the young.

Beyond all the hype about branding and marketing, we recognize that the world remains interested in architecture and design, even in a downturn. A well-conceived, well-executed project can help propel a company into a successful 21st-century business, by saving operating costs, attracting and retaining talent, or by building equity for the future, at a time that equity seems to be sliding downhill.

If you need further examples, turn the pages of this issue to the BusinessWeek/Architectural Record Awards winners or seek out our new publication for clients, HQ. Ironically, a difficult marketplace may be the best time to press the case for the power of design. Architects will need help in convincing clients to retain their services in the coming weeks; clients will need help, period; and our publications stand ready to make the case for both.

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Letters

Architecture of fear

Robert Campbell's Commentary on the Berlin Embassy project [October 2008, page 61] accurately describes the unfortunate architectural response of the United States to the threat of terrorism. both domestically and abroad. The Patriot Act effectively removed constitutionally protected civil rights and invited domestic spying. Airport screening invades personal privacy and costs millions while failing to protect the flying public. Video surveillance of public space in the name of security is rampant and increasing. Metal detectors were used at my son's recent high school graduation gathering. In almost every aspect of public life, the bogeyman of terrorism has empowered "security experts" to exploit irrational fears to impose illegal, ineffective, inconvenient, and costly limitations on individual rights. It should come as no surprise, then, that America's civil, and in this case international, architectural presence reflects this hostile, fear-based public persona. What does the architecture of freedom look like? Not the Berlin Embassy.

– George Hutchinson, AIA Minneapolis

Continuing education saga

I'm writing in response to a recent Web News story ["AIA Requires Sustainability in Continuing Education," September 4, 2008]. This is getting way out of control. When AIA members were first asked to vote on whether to have CE requirements (in the early 1990s), we were told that professionals were not necessarily going to have to sit in some classroom listening to mundane lectures from an academic, a peer architect, or sales rep, because we would always have the option for self-structured professional research. This is entirely appropriate, because practicing architects are the ones on the cutting-edge of design and technology, utilizing it every day.

We were also told that satisfying AIA requirements would automatically satisfy state CE requirements. Now the ability to satisfy requirements with research or self-study has been reduced drastically. As a professional with 30 years experience and licensed in five states, I spend an inordinate amount of time tracking units and making sure each state's requirements are met. Two states have requirements compatible with AIA, but track from July to July instead of December to December, as AIA does. I have to keep spreadsheets to track both AIA and the two states so that my credits are strategically timed to fit within both renewal sequences. Now a third state is proposing CE requirements: They want me to earn units from April to April and have HSW requirements that are greater than required by AIA. I now need another spreadsheet, for the third state, and 12 HSW units per year instead of eight. Sooner or later the other two states will surely get on the bandwagon and they will probably have yet different renewal dates and different requirements.

Now we have the AIA complicating things further by wanting us to provide and track four units each year in sustainable design. Oh, wow. Can we further envision a time when we will goose step to a requirement of three in category one, one in category two, four in category three, etc.? Do you think we will actually have time to run our practices, or do the AIA bigwigs think our purpose in life is to sit in classrooms rather than serve our clients, doing our own cuttingedge research, as we once did? – Louise Miles, AIA Milford, Delaware

Bad models

I believe ARCHITECTURAL RECORD has reached a crossroads where a serious debate must be opened regarding the touchy subject of architectural photography.

While the text is where readers' brains absorb the specifics that the reporter has chosen to divulge to us, the photographs are where we can spur off from rigid words and investigate the project on our own professional level, focusing on what we deem interesting. I have always felt that the photography that accompanies ARCHITECTURAL RECORD'S reports has ranged from average to outstanding. So it comes as a surprise to see such a poorly taken photograph grace the cover of your September 2008 issue.

The inclusion of four sadlooking individuals in the cover shot of your Interiors issue was not a good choice. Did having two couples, one on the left holding empty red wine glasses and wishing they were any place but there, and the other, sitting at the bar looking like they are discussing the mortgage crisis, improve the quality architecture the photograph is supposed to represent? What was the photographer's goal? To demonstrate that the bar can accommodate four disgruntled patrons? And it just got worse. When you delve into the article and look at the inside photos, you are distracted by the same outof-place individuals in different locations, but with the same empty red wine glasses. This is an insult to the architecture the photographs are supposed to express.

Does ARCHITECTURAL RECORD think that no one looks at the people in the photographs – even when they are so prominently displayed on the cover of the magazine? I would rather have seen a lesser quality photograph shot at night, featuring either an empty interior or a space full of real patrons, drinking and enjoying the beautiful interior design of the Downtown Bar.

– Victor B. Thomas, AIA New York City

A voice for Iran

As an Iranian-American, I am very much concerned when American media - even an old architectural magazine like yours - is not very reliable when it comes to Iran. In the news story "In a desert city, skyline grows ever higher" [August 2008, page 32], the writer, after describing Dubai as the dominating economic center in the Middle East (which is arguable), consciously or unconsciously gives us incomplete information. After he writes, "Few middle Eastern cities have towers that even approach the scale of those contemplated in Dubai," he names a 1,434-foot-tall building in Qatar which is not erected yet, and forgets to mention the 1,427-foottall Milad Tower erected in Tehran in 2007. While I am not the kind of person who really cares about how many tall buildings this or that country has, I highlight this issue because I have seen American media being loose with the facts about Iran when it might present a positive (or at least not a negative) face of this country. -Mohammad Ataei Via e-mail

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Record News

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Architects hit hard by financial crisis

The plunging financial markets in October, followed by unprecedented responses from the federal government, have many Americans bracing for a deep recession. In the architecture profession, however, the downturn has already arrived, according to a key measure of the market for architectural services.

As of August, the Architecture Billings Index (ABI), which the American Institute of Architects compiles in part from statistics provided by firms, had dipped below 50 for seven straight months, hitting 39.7 in March, the lowest score in the index's 13-year history. Anything below 50 represents a billings decrease. In contrast, the score rose above 50 every month last year; in fact, prior to 2008, the score had dropped below 50 on only one occasion (June 2006) in the past three years.

Next year looks even more dismal, according to a July report from the AIA's Consensus Construction Forecast Panel, which predicts retail and hotel building will fall 10 percent in 2009 while office construction plummets 12 percent. In response, the AIA recently established an online resource center to help architects weather these tough times.

The credit crunch has plagued every sector, particularly the commercial sector. While FDIC records don't yet show measurable reductions in construction lending through June, anecdotal evidence suggests fewer loans are being issued. Major banks such as Citi and Chase have gradually closed the taps, while other lenders have vanished altogether, including Lehman Brothers, which filed for bankruptcy protection in September.

Smaller regional banks, which

tend to be less leveraged, still seem to be lending money for development projects, especially if the project is nonspeculative. The tumbling stock market might actually increase some capital reserves, according to bank officials. "Deposits are up because of a flight to safety, and my bankers are looking for some place to invest them," says Joe DeHaven, president of the Indiana Bankers Association.

Still, fundamental problems pose long-term challenges for "the commercial sector, says Kermit Baker, AIA chief economist. Shrinking payrolls mean there's less need for new office space. And in terms of retail, if people cut back on shopping, why build stores? Plus, material prices for concrete, copper, and asphalt continue to be steep. "There is just less willingness to assume risk in this environment," Baker says.

The housing sector also is limping, as depressed home values are turning off developers, and buyers are struggling to secure mortgages. In August, the ABI's multifamily housing score was 40.8. well below 50, though up from its March low of 31.7. While the ABI doesn't measure the single-family housing sector, its numbers also are down. According to the AIA's second guarter Home Design Trends Survey, released in September, billings and inquiries for residential projects hit their lowest levels (38 and 37, respectively) in the survey's three-and-a-half-year history.

William Gati, AIA, principal of New York-based Architecture Studio, says the demand for the \$3 million luxury homes he was building four years ago is off by 60 percent. His practice will persevere because he has socked away money for



Despite the economic meltdown, projects such as CityCenter (above), in Las Vegas, are moving forward.

rainy days, he says, "but firms that are going into business now will be out of business soon."

A bright spot in the ABI this year has been the institutional sector, which has produced 50 or better ratings for 44 straight months. Even that sector is now vulnerable. Gerald Reifert, AIA, is a managing partner at Seattle-based Mahlum Architects, a 95-member firm that focuses almost exclusively on the institutional sector. His recent projects include university dorms and two hospitals. While he remains optimistic, these types of projects typically require bond financing, and thus voter support, and "people are nervous right now about money," he says. In fact, lack of financing for new schools in Portland, Oregon, where he has an office, has forced him to relocate some of his Portland employees to Seattle.

For public projects, taxpayer money isn't the only funding source jeopardized by the economic downturn. School endowments, which typically are invested in the stock market, can take a hit, says



Rebekah Gladson, AIA, campus architect at the University of California, Irvine.

Gladson, who's been practicing for three decades, sees a difference between this downturn and the early-1990s version. As she explains, materials, despite a drop in demand, continue to be expensive, largely because of overseas orders from Dubai, Shanghai, and Beijing. That market globalization does have upsides: Firms that diversify with international projects could fare better in a downturn. But as the U.S. financial crisis fans out to Europe, Asia, and beyond, many fear that even foreign markets might not provide a reliable refuge for architects. C.J. Hughes

Record News

Another makeover for South Street Seaport?

Although SHoP Architects partner Gregg Pasquarelli jokes that he's designed something to last "as long as the pyramids," he admits realistically that his ambitious proposal for redeveloping the South Street Seaport would unlikely be the area's final makeover. This Lower Manhattan district has been revamped seemingly every few decades since it was built on a landfill during the 1700s. And even during the best economic times, other high-profile architects, including Santiago Calatrava and Frank Gehry, have tried and failed to leave their mark here.

The Seaport's present iteration is the handiwork of the late developer James Rouse, who rehabilitated old buildings and built an enclosed shopping mall on Pier 17 during the early 1980s. But the mall failed to do as well as Rouse's other widely admired "festival marketplaces," such as Boston's Faneuil Hall. General Growth Properties acquired the Rouse Company in 2004 and shortly afterward approached Manhattan-based SHOP to rethink the Seaport's design.

Unveiled last June, the firm's proposed scheme retains the site's 4.8-acre footprint but frees two

acres of open space on Pier 17. The mall, designed by Benjamin Thompson & Associates, would be razed. The Tin Building, a landmarked structure that formerly housed the Fulton Fish Market. would move to the east end of the pier to frame a new plaza. A 42-story tower, containing a 286-room hotel and 78 condominium units, would rise near the Tin Building's current site at the northwest corner of the plaza. Its podium stretches south and adjoins two low-rise buildings containing 250,000 square feet of retail space and a 163-room boutique hotel.

In designing the buildings, Pasquarelli drew inspiration from the Seaport's maritime history: A terra-cotta screen, whose latticework pattern refers to fishnets



SHoP Architects' new scheme for

Manhattan's South Street Seaport,

which looks out on the East River,

calls for a 42-story tower and a

new plaza on Pier 17.

and sail riggings, will surround the largely glass-clad tower; steel floor joists will project from the sides of the boutique hotel, recalling cranes in a dry dock; and a wood screen, resembling the ribs in a boat hull, will cover the groundlevel shops. The overall goal was to create buildings that are distinct yet relate to each other, Pasquarelli explains. "If all the new buildings looked alike, the Seaport would be a monstrosity clipped onto the side of Manhattan," he says, "but if they were all completely different it would look like Disneyland."

His proposal is not without critics. Neighborhood residents object that a 495-foot-tall hotel/ condo tower might block their views and would set a precedent for more high-rises; in fact, the structure needs a zoning variance because building heights on overwater platforms are limited to 350 feet.

New York City's Landmarks Preservation Commission was expected to review the plan on October 21; its scope will include

> only the Tin Building and the low-rise structures, which fall within a historic district. The Department of City Planning and other agencies will begin reviewing the entire plan during the first quarter of 2009. If

approved, construction might start in 2010 and finish by 2014.

A General Growth spokesperson says that despite the current economic uncertainty, the company is committed to moving "full steam ahead" on the Seaport development, which it describes as its "top priority" nationwide. James Murdock

🍒 View additional images online.

Van Valkenburgh Associates and Toshiko Mori; Hargreaves Associates and TEN Arquitectos; and Gustafson Guthrie Nichol and Allied Works Architecture.

A selection committee, whose members come from the Hudson Yards Development Corporation and numerous city departments, plans to announce a winner this fall. Phase 1 of the project, running between West 33rd and West 36th Streets, is expected to be completed by 2013. *Tim McKeough*

View the five proposed schemes online.

Five designs for Hudson Park revealed

Five teams competing to design a new park for Manhattan's West Side recently unveiled their proposals. Led by the Hudson Yards Development Corporation, the Hudson Park and Boulevard project will cover 4 acres stretching from West 33rd to West 42nd Street, between 10th and 11th Avenues – an area presently occupied by a hodgepodge of buildings, rail lines, and roads leading to the Lincoln Tunnel. To the south, the park would connect to the Hudson



Rail Yards, a 26-acre mixed-use development that calls for office towers, residential buildings, stores, and parks to be built on a A signature feature of a scheme by Hargreaves Associates and TEN Arquitectos (left) is a pedestrian bridge edged by a ribbon of grass that curls like a roller-coaster loop over the walkway.

massive platform over existing train tracks. Both projects are part of an initiative to transform an uninviting, semi-industrial area into a popular live-work-play destination.

The five teams that submitted designs are Work Architecture Company and Balmori Associates; West 8, Mathews Nielsen, and Weisz + Yoes; Michael



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Record News

Foster reimagines a beachfront in Italy

Foster + Partners has designed a major new waterfront development for Rimini, Italy, a mid-size city located on the Adriatic Sea. The firm unveiled its proposal, a collaboration with developer Gruppo Gecos, in June after local officials invited ideas to improve the area.

The plan, which covers about 300,000 square feet, calls for a new seaside promenade, a 1,000-footlong pier, a hotel tower, and a museum for filmmaker Federico Fellini, famed director of *8 1/2* and *La Dolce Vita* and a Rimini native. It also extends an existing park to create a much-needed connection between the city and the water, says

Starchitects dream up new life for expo center

In April, attendees of the Salone Internazionale del Mobile strolled the vast corridors of the Fiera di Milano complex that has housed the furniture fair for the past three years. While traveling to the Massimiliano Fuksas-designed facility in Milan's outskirts, some may have noticed part of their old stomping grounds, the Fieramilanocity, located near the city center, is now a construction site.

In 2004, CityLife, a consortium of French and Italian companies, won rights from Fondazione Fiera



Towers by Hadid, Isozaki, and Libeskind may rise in Milan.



The scheme calls for a new pier and a glass-clad hotel tower.

Luis Matania, partner in charge. "The old city is very nice, and there's a green strip of a park that runs from the city center toward the seafront, but it stops about 200 meters short," Matania says. "We feel it's a shame that these two things don't work together, and our proposal is to continue that park right up to the seafront."

The theme of connection continues along the waterfront,

Milano to redevelop 2.7 million

square feet of the massive 4.3-

The plan calls for a mixed-use

a museum, and office and retail

for completion in 2014.

space. Construction is scheduled

Daniel Libeskind, and Pier Paolo

Maggiora are collectively mas-

ter planning the site, and each

will also contribute a significant

for instance, has envisioned six

Daniel Libeskind has designed a

contemporary arts museum.

number of building designs. Hadid,

apartment structures, while Studio

is a high-rise trio that is something

like an architectural dance party. The

three towers - designed by Hadid,

corkscrew-spin, gyrate, and assume

Urbanistically speaking, the project's most important feature

Isozaki, and Libeskind - seem to

a billowing C shape, respectively.

may be a grand piaza from which

the three towers radiate. Other

public amenities include a large

park, a school, and community

buildings. David Sokol

The project's visual centerpiece

million-square-foot exhibition center.

mega-project containing residences,

Zaha Hadid, Arata Isozaki,

where a canal currently bisects the beach. The Foster plan vaults that gap with the pier, which will run the length of the canal and continue into the sea – a move that has some historical precedence. "In early photos, we see that there was an old pier in this location," says Matania. "We wanted to draw on the past to make something that covers this canal, but also provide the modern-day version of the pier." The new pier will be partially covered with an undulating roof structure, evoking the movement of the sea, and will be populated by businesses such as cafés and gelaterias,

On land, the pier will be anchored by a glass, peanutshaped hotel tower expected to rise 25 stories. "Rimini is very flat, so this would give it an accent building," says Matania. The hotel's ground level will be dedicated to the Fellini museum, envisioned as a key attraction. Indeed, one of the project's main goals is to position Rimini as a year-round tourist destination.

City officials will decide this fall whether to move forward with the proposal. Construction could begin as early as next year. *Tim McKeough*

🔽 View additional images online.

"Fashionable" project reflects the new Milan

Historically a manufacturing town, Milan has transformed itself in recent years into a global city defined by the three Fs: finance, fashion, and furniture. Porta Nuova, now a giant construction site looming over the high street Corso Como, will reflect the new Milan.

The 71-acre, mixedused project is rising around the Garibaldi

train station, at the foot of Milan's arts district, Brera. When Porta Nouva, or "new gate," is completed in 2012, a highlight will be Città della Moda e del Design, or Fashion City, which includes a 107,000square-foot showroom building where fashion tenants will sell their wares, as well as a museum and school devoted to the subject.

Porta Nouva isn't all about glamour. The project weaves together the disparate neighborhoods Garibaldi, Varesine, and Isola with extensive pedestrian and bike paths surrounded by parkland.



The plan includes towers by Stefano Boeri.

That green space also reaches skyward at Bosco Verticale, a residential complex designed by Stefano Boeri that comprises a 24story and 17-story tower sporting a seemingly random arrangement of terraces. Approximately 900 trees and shrubs will be planted on these balconies, and irrigation will be delivered via a graywater filtration system. While all of Porta Nuova's buildings will be submitted for LEED certification, Bosco Verticale is emblematic of the effort to make Porta Nuova as sustainable as it is trendy. David Sokol

"Oldcastle Glass Vistawall" understood our sustainability requirements and helped us achieve 43% more energy efficiency than Oregon requires."

-Kent Duffy, FAIA, Design Principal-SRG Partnership





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Pushing the building envelope"

Record News

As Kazakhstan modernizes, so does its architecture

With a history tied to nomadic civilizations and a New York City-size population spread over more than 2million square miles of territory, Kazakhstan may not seem like the most probable site for ambitious urban architecture. British comedian Sacha Baron Cohen went so far as to depict the country as a backward nation of ramshackle hovels in his 2006 film Borat. But the reality of contemporary Kazakhstan may be more accurately embodied by the Palace of Peace and Reconciliation, a glass pyramid rising above Astana, the Central Asian state's capital.

Designed by Foster + Partners, the self-consciously monumental palace shoots up 200 feet from an expansive base, its soaring atrium lit by a large skylight at the apex. A meeting chamber, which hosts a triennial conclave of religious leaders, hovers just below the peak, allowing light to flow into the atrium though a large circle of glass in its floor. The pyramid was completed

In Aktau, a seawater-pumping system will cool buildings in a new central district (below). in 2006 at a cost of roughly \$61 million, and it became a symbol of Kazakhstan's rise from a former Soviet backwater to the region's economic leader.

Shortly after declaring independence from the crumbling Soviet Union in 1991, Kazakhstan moved its capital to Astana. Since then, the government has spent billions reaped from thriving oiland gas-industries to make the city into a showpiece - a "Brasilia in the Steppe," according to some observers. With oil prices reaching record highs earlier this year, the development boom has now spread throughout the country, attracting high-profile Western architects, such as Massimiliano Fuksas Architetto and Behnisch Architekten, despite the country's reputation for corruption and its poor human rights record. Common to many of the projects are designs intended to put forth a uniquely Kazakh identity, and construction schedules that mimic the world's fastest developing countries.

Astana will boast two additional projects by Foster + Partners in coming years. The first is a mixed-use complex called Abu Dhabi Plaza (the developer is United Arab Emirates-based Aldar Properties). The other is the Khan





The Khan Shatyr Entertainment Centre, by Foster, is planned for Astana.

Shatyr Entertainment Centre, a tentlike construction with a fabric skin suspended from a 500-foot mast. When it is completed, likely next year, the enclosure will have taken only about three years to build and it will be the city's largest structure.

Creating an urban park in a city where winter temperatures average near O degrees Fahrenheit, the 325,000-square-foot building will enclose retail, restaurants, cinemas, and a water park in an umbrella of transparent, energytrapping fabric made from the polymer ETFE. "It was clear that we would need innovative construction methods to enable such a large building to be completed within a short time frame," says Nigel Dancey, senior partner in charge of the project. "In essentially creating a giant tent, the design also resonated with the historic significance of the Yurt to the people of Kazakhstan."

Another project that draws design elements from Kazakhstan's nomadic past is taking shape on the other side of the country in the port of Aktau. The city was originally developed by Soviet Russia to support oil drilling in the Caspian Sea. Its stark series of numbered boulevards, designed to accommodate large military vehicles, are flanked by rows of low-rise, slab-style buildings. "The streets were not oriented toward people – just tanks," says Susie Kim, a principal at Boston's Koetter, Kim & Associates.

Kim's firm was commissioned by Millennium Development International to create a master plan for a massive expansion of the city to the north of the existing site. The plan gives Aktau a more human scale with a series of distinct, walkable neighborhoods that range from dense blocks to high-end, villa-style homes facing the sea. A basic model of mixed-use buildings surrounding public gardens recurs throughout the plan, which balances a sense of exclusivity and security with access to public space, Kim says. "It has expansiveness as well as enclosure."

The entire plan is anchored by a central district, featuring the skyline-defining New Aktau City Energy Tower and an innovative seawater-pumping system that will cool buildings and, via a series of canals, streets in the neighborhood. The architects modeled one of the district's most prominent public buildings, a glass-enclosed retail space named the Crystal Souk, on nomadic dwellings historically constructed in Kazakhstan. "Traditionally the only building that is their own is a round hut," says Kim.

Kazakh officials are pushing for a substantial portion of the city to be developed within a decade, though currently, only a single test block has been completed. "They're looking at Dubai as their precedent for speed," Kim says. William Hanley

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COMMERCIAL

Record News

Libya opens the door to American architects

RMJM's Global Education Studio (GES) is designing master plans for two separate university campuses in Libya - making it the first American architecture office to work in the North African country since the U.S. lifted sanctions against it in 2004. While RMJM is based in the United Kingdom, its Global Education Studio is headquartered in Princeton, New Jersey.

Both university projects are being funded by the Organization for the Development of Administrative Centres (ODAC), an arm of the Libyan government that is spending \$35 billion to improve the nation's infrastructure, diversify its economy, and generally enhance its quality of life. At 675,000 square miles, Libya is about three times the size of France.

The first GES project is a new 123-acre satellite branch of the 7th of October University, in the city of Bani Walid, located in a semi-desert region in the northwestern part of the country. The project calls for new buildings totaling 1.8 million square feet, including academic and athletic facilities, a student center, a library, and a mosque. The core of the plan is a quad composed of sunken, shaded courtyards surrounded by densely arranged "shardlike" buildings that house different academic programs.

In designing the plan, the architects first looked to the landscape. While sand dunes cover much of eastern Libya - the Libyan Desert is one of the most arid places on earth - Bani Walid is



RMJM's Global Education Studio, based in New Jersey, is designing a master plan and buildings (above) for the 7th of October University.

dotted with scrub vegetation. "Still, the climate is pretty extreme," explains Gordon Hood, GES director. "We were looking for a response that was both an environmental response to that climate as well as a cultural response." Hood says inspiration came from two key sources: the ancient oasis town of Ghadames, Libya, whose enclosed courtyards and tightly clustered buildings are "all about how to deal with sun, shade, and wind"; and the crystalline form of the desert rose, which is common in the area. "We blended these two ideas together to organize a highly functional program," Hood says.

In total, the new branch is expected to serve about 3,200 students. The master plan has received all necessary approvals, and construction is expected to begin in 2009, with a campus opening planned for 2010. The firm is also designing all of the buildings.

Following the approval of the Bani Walid master plan, the ODAC asked the studio to develop a master plan for a 222-acre branch of Al Asmariya University, to be located near Zliten, a small town on the coast of the Mediterranean Sea. Design work is just beginning, but the campus will likely serve about 4,600 students. RMJM expects construction to start in about a year and be completed within three years. Tim McKeough

timber frame with sandbag infill.

Luyanda Mpahlwa, 49,

and Mphethi Morojele, 45, are

principals of MMA, one of the

Africa. Their other projects

include the South African

few black-owned firms in South

Embassy in Berlin (2003) and

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South African firm receives humanitarian design award

MMA Architects, a South African firm, won the inaugural Curry Prize, a humanitarian design award established by the University of Kentucky (UK) College of Design and architect Clifford Curry and his wife, H. Delight Stone. The winner was announced on September 25 at the IdeaFestival in Louisville, Kentucky.

According to jurors, the firm won the \$100,000 prize for its "ingenious yet simple" design of a single-family home built for under \$7,000 in a poor community in Cape Town. Similar to the mud-and-wattle type of construction found in indigenous buildings. MMA's Indaba House features a two-story



MMA Architects won for its Indaba House (above).

> a cultural heritage project in Pretoria to commemorate apartheid victims.

The jurors for this year's Curry Prize were journalist John Hockenberry; architect David Adjaye; designer Renny Ramakers; prize founder Clifford Curry; and Michael Speaks, dean of UK's College of Design. Jenna M. McKnight

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Record News

Shopping malls not beneath Libeskind's "dignity"

After a decade of creating jutting projections for museums, Daniel Libeskind has attempted to redefine the look of another institution: the shopping mall. Called the Westside Shopping and Leisure Centre, the lowslung, 1.5-million-square-foot facility in Bern, Switzerland, is the first project of its type for the New York-based architect. It opened on October 8.

Like many of its mid-20thcentury suburban American counterparts, Westside features known international retailers

strung along enclosed corridors, with 70 stores across three levels, as well as a compact, 10-restaurant food court (McDonald's and Starbucks included). Also on the property, which lies on the city's western edge, is an attached 144-room hotel and 11-screen cinema, both designed by Libeskind.

Moreover, the \$440 million complex offers an 18-pool water park called Bernaqua Adventure Pool and Spa. At 575 feet, one of its three outdoor slides is Switzerland's tallest, according to the developer, the grocery chain Migros Aare, which is an arm of Migros, the country's largest employer.

Inside, sharp angles have a dramatic effect.





The 1.5-million-square-foot facility is in Bern, Switzerland.

Instead of locating the mall far from residential neighborhoods, Migros is attempting to create a residential enclave around it. Already standing on the property is a two-building, 95-unit senior complex, designed by Libeskind. Eventually, it will be joined by 800 new apartments on surrounding land, according to Franzisca Ellenberger, a Westside spokeswoman.

Details of the mall's physical appearance, too, seem a departure from tradition. The interior features Libeskind's trademark sharp angles and diagonal lines. Windows, many of them triangular, funnel ample natural light into areas that otherwise might have been bathed in fluorescent light; they also provide views of cow-dotted pastures. Also unexpected, perhaps, is the dark-brown robinia wood on the exterior.

Instead of being adrift at the end of a vast parking lot, like so many contemporary shopping centers, Westside sits on top of A1, a busy highway. Though there are 1,275 parking spaces, the mall also has a commuter train stop, which can be reached from downtown Bern in 8 minutes.

The pools at Westside will typically stay open until 10 p.m., movies could get out as late as 2:30 a.m., and concerts are planned for a permanent stage inside the mall. In these ways, Westside could become a round-the-clock social center, which might further help redefine its larger function, Libeskind says. "Architects for a long time thought malls were below their dignity," he says. "But if you bring nature and culture into the building, you can make it a radically different place." *C.J. Hughes*

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CIRCLE 29

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CIRCLE 31

Record News On the Boards

The redevelopment of Boston's waterfront has been a start-stop affair in recent years. Now, another project is planned for the area, and this one is particularly ambitious.

In May, developer Gale International filed a proposal for Seaport Square, a 23-acre mixed-used development featuring 19 buildings designed by Studio Daniel Libeskind, HOK, and CBT Architects, among other firms. The 6.5million-square-foot, \$3.5 billion undertaking - one of the largest development projects in Boston's history - amounts to an attempt to create an instant urban village, complete with housing, offices, hotels, shops, parks, and cultural venues. The plan also includes two schools and a library, and some 6,500 parking spaces located mostly below ground. Kohn Pedersen Fox designed the initial master plan, and ADD Inc. later refined it. "It's textured and scaled to its surroundings, but the buildings are fairly modern," says ADD associate principal Tamara Roy, AIA.

The site, which contains mostly surface parking lots and access roads, has been the focus of wrangling between a succession of



The revival of a scenario first envisioned some 30 years ago could yield Boston's tallest residential building. Simon Property Group in March unveiled plans for a 47-story luxury condo tower atop its Copley Place Mall in the historic Back Bay neighborhood. The proposed project, designed by Elkus Manfredi Architects, also calls for adding approximately 115,000 square feet of commercial space to the upscale retail center.

The site, adjacent to Copley Square – which boasts H.H. Richardson's Trinity Church (1877), McKim, Mead & White's Boston Public Library (1895), and I.M. Pei and Henry Cobb's John Hancock Tower (1976) – calls for an architectural balancing act, the creation of a signature high-rise that doesn't overwhelm its august forerunners or the surrounding low-rise residential blocks. "We're trying to create a neighbor



owners and the city. The current mayor hopes to build a new city hall there.

Some residents say the public presentation of the Seaport Square project last spring hit many of the right notes, but they are wary of what they see as a preponderance of upscale housing, and a commercial district that is car-centric. Drew Volpe, board member of the local community group, the Fort Point Neighborhood Alliance, says he would prefer that the plan have a more pedestrian scale and historic character. "It would do a lot," he says, "to make it feel like a neighborhood instead of an office park." *Ted Bowen*

that is extremely sensitive," says Howard Elkus, principal of Elkus Manfredi Architects.

While considerably smaller than the 60-story, 790-foot Hancock Tower, the new 570-foot-tall building would be a commanding presence. The curvilinear glass-and-steel tower, with setbacks on the upper floors, would rise from a glass-andmasonry base. It would contain 660,000 square feet of residential space, plus an additional 60,000 square feet for shops, restaurants, and an enclosed garden. The plan also calls for adding 55,000 square feet to the mall's 115,000-squarefoot anchor store, Neiman Marcus.

Elkus, the projects' lead designer, is no stranger to the Back Bay neighborhood. He was principal in charge for The Architects Collaborative – a defunct Boston-based firm founded in 1945 by Walter Gropius and several young architects – when it designed the Copley Place Mall in the early 1980s. It was "a paradigm of smart growth for its time," Elkus says, adding that the project included residential units when it was first imagined in the mid 1970s.

The proposed tower, while different in scope, is a resurrection of that initial concept. Elkus says it will help densify "Boston's urban fabric," noting that the location is ideal given its close proximity to Back Bay Station and existing parking lots. *Ted Bowen*





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News Brief

The respected Portugese archi-

tect Álvaro Siza is the recipient of the 2009 Royal Institute of British Architects (RIBA) Gold Medal, which honors a body of work amassed over



Siza will receive the 2009 RIBA Gold Medal.

a lifetime that has had an international influence. Siza will receive the award at a ceremony in February. "He's a very complete and profoundly thoughtful architect, and it's high time he got the RIBA Gold Medal," says RIBA president Sunand Prasad. This is not Siza's first prestigious award: He won the Wolf Prize in 2001 and the Alvar Aalto Medal in 1988, as well as the Pritzker Prize in 1992.

Speaking from his office in Porto, Portugal, Siza said the RIBA award announcement "was a surprise, but a good surprise." The 75-year-old architect says he doesn't plan to quit practicing anytime soon. "My ambition is to go on working, [not for] 100 years, as Niemeyer," he says, "but, well, some time more." Zach Mortice

On October 11, RIBA announced

the winner of another prestigious award: the 2008 Stirling Prize. This year's honor goes to Accordia, a housing complex in Cambridge, England, designed by Feilden Clegg Bradley Studios, Alison Brooks Architects, and Macreanor Lavington. The other



Winner of this year's Stirling Prize.

five finalists were Bijlmer Station, by Grimshaw and ARCADIS Architecten; Manchester Civil Justice Centre, by Denton Corker Marshall; Royal Festival Hall, by Allies and Morrison; Westminster Academy at the Naim Dangoor Centre, by Allford Hall Monaghan Morris; and Nord Park Cable Railway, by Zaha Hadid Architects with Patrik Schumacher.

Jack Pringle, former RIBA president, told the UK-based *Architects' Journal* that while Accordia is "fabulous to look at and very sustainable," his heart goes out to Hadid, who has been on the Stirling short list for three years. "She is one of the country's best architects," he says, "and I think somebody like her should win the Stirling Prize." Jenna M. McKnight

The John D. and Catherine T. MacArthur Foundation revealed on September 23 the recipients of its 2008 MacArthur Fellowships, commonly known as the "genius grants." Among the 25 winners are engineer and architectural preservationist John Ochsendorf, and stage-lighting designer Jennifer Tipton.

The annual fellowships provide each recipient \$500,000, paid in quarterly installments over five years, to use as they please, with no strings attached. Winners are selected for their "creativity, originality, and potential to make important contributions in the future," according to the foundation.

The selection process is shrouded in secrecy: Anonymous nominators are invited to submit candidates, and a 12-member selection committee, also anonymous, makes the final picks. *Tim McKeough*

Alpolic/frhelps this vorld-class performing arts center thuly dazzle.

After three years of construction, and an even longer period

of controversy, the Museum of Arts and Design opened the doors to its new home on September 27. Designed by Brad Cloepfil, principal of Allied Works Architecture, the 10-story, 54,000-square-foot facility at Two Columbus Circle in Manhattan is the result of a massive renovation of a 1964 building by Edward Durell Stone, FAIA.

The building became the flashpoint of a bitter preservation battle once plans to alter it were announced in 2002, after the

for \$17 million. Writer Tom Wolfe, architect Robert A.M. Stern, and Yale scholar Vincent Scully were among the well-known personalities who urged for protection of its facade. Others, though, dismissed the structure's architectural significance.

museum bought it

Chief among them was Ada Louise Huxtable, former architecture critic of The New York Times, who in the 1960s famously called it "the die-cut Venetian palazzo on lollipops" and continued to pan the building until construction of the Cloepfil project began in 2005.

Though the \$90 million redesign didn't change the site's footprint, it significantly altered the building's exterior. A white marble surface has given way to a skin made of 22,000 terra-cotta tiles, whose iridescent glaze reportedly took two years to develop. Cloepfil



The MAD's new home opened on September 27.

also added bands of two-foot-wide windows. Creating ways to usher in natural light without sacrificing too much exhibiton wall space was a major challenge, Cloepfil says, but nothing like the larger one of tackling such a highly charged commission. "It would be hard to imagine," he says, "a project more controversial, with more scrutiny, than this." C.J. Hughes

The Emergency Economic Stabilization Act of 2008,

commonly called the Wall Street Bailout Bill, which passed through Congress in early October, contained several items of interest to architects and their clients.

One is a five-year extension, to 2013, of the portion of the Energy Policy Act of 2005 that gives building owners a deduction of up to \$1.80 per square foot for "greening" new or existing commercial buildings. For public buildings, the designers, not the owners, may claim the deduction. The law also extends, to 2016,

the tax credits for 30-percent of solar investments. The credit for businesses now applies to public utilities, and for residential solar installations, the \$2,000 cap has been removed.

Moreover, the law provides new renewable-energy bonds - allocated to public power providers, cooperatives, and governments - to finance facilities that generate electricity from clean sources. New bonds to help state and local governments reduce greenhouse gas emissions and new tax credits for research and development also are in the mix.

Andrew Goldberg, the American Institute of Architects' senior director for federal affairs, hopes the incentives will propel the green-building movement. "One of the biggest barriers to green building is the initial cost," he says. "When the economy is not strong, this is even more of an issue." B.J. Novitski

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For and about the emerging architect

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Scalar Architecture's Spanish principal, Julio Salcedo, has a worldview of what architecture can be, which is why his firm brings European ideas and an understanding of what Americans appreciate to the drawing table. His designs and practice strategies are keeping him busy here and in Europe. Free Green also knows that there's more than one way to distribute good design - the Web site is giving away plans. View more from these talented young entrepreneurs online in Design and Work. Do you think giving away plans makes it harder for architects to figure into the equation? Respond at construction.com/community/forums.aspx.

Design

Scalar Architecture: Urban scale, small world



Julio Salcedo, principal of architecture firm Scalar Architecture, is taking back the word generic. He uses the word freely, and too him, especially when coupled with the term generative, it doesn't mean bland and personalityfree. "I see it as a mode of design that

seeks to create many combinations and manipulations from a few simple elements and forms." Salcedo, whose four-person practice is based in both New York City and Barcelona, says that finding the sparks necessary to ignite the right combinations between

those elements is the key. "The Dutch have built many good examples with this idea," says Salcedo. "And it's one of the two poles in the continuum that I've been trying to work within - the other being a very specific, tailored design that cannot be duplicated."

Creating a practice that revolves around two poles is literal as well as philosophical for Salcedo, who works as much in his native Madrid as he does in the U.S., his adopted country. After graduating from Rice University and Harvard's GSD, Salcedo went to work for SOM in New York. "There are a lot of opportunities for a young architect at such a large firm," he says, "but after awhile I wanted to be responsible for more - for things like construction administra-



Casa Lasso, Trasierra, Spain, 2004

This 1,700-square-foot house on Spain's Northern Atlantic coast intertwines structure with the landscape to form a figure eight along the site's longest diagonal, and align itself with the movement of the prevailing winds.

tion, for example." Leaving SOM, he went to work for smaller and smaller firms. "I went from an office of 400 to one of 25, then four people, then out on my own." He worked solo on a project in Spain, then got offered





edge condition between city and nature, extreme climate, and soil-and-site contamination.

a teaching position at Harvard, which brought him back to the U.S. and led him to start Scalar in 2001, a firm that, he says, "starts with architecture as a base, but can cross-pollinate with all kinds of collaborators."

To that end, Salcedo calls Scalar an "interdisciplinary" firm and is excited to be

Hamar Railway: Planting Seeds,

With Mark Brossa, Scalar has embarked on a

project to create a railway to connect a city center

with a somewhat isolated region. The first phase

of this project is an exploration of how to capitalize

on the status quo: the region's isolation, an open-

Hamar, Norway, 2012

working both in the U.S. and Europe with urban designers, landscape designers, and others in related fields. "In the U.S., your firm's success is based on your 'track record,' " he says, "while in Europe, every

archrecord2

public project becomes a competition that young firms can possibly win. Creating a track record can take 20 or 25 years here, so I'm lucky that my biographical information gives me those European connections."

And those connections are proving valuable. Scalar has several projects on the boards, both "specific" and "generic/generative." Salcedo's vision for part of Madrid's bid for the 2016 Summer Olympics is on a short list of 15. (Madrid is one of four cities in the running.) Working with urban designer Mark Brossa, Scalar is designing a railway to connect a city center with an isolated suburb in Norway, to be completed in 2012. And back home in New York City, the firm is renovating a town house for a researcher that will include a vivarium to house a turtle and amphibian collection along with a study, library, and residence.

"We're hungry for work," says Salcedo, "and as such a small firm, we don't have the luxury of not being completely involved in every project we take on. It's refreshing and exciting." *Ingrid Spencer*



Olympic Sunflowers, Madrid, Spain, unbuilt

Scalar's sustainable vision for the main entrance, press center, and service areas for the Olympic Village in Madrid, for the city's 2016 Summer Olympic candidacy, is on a short list of 15. The design emphasizes an iconographic and functional convergence of architecture, landscape, and urbanism.

Work

Free Green: Giving it away



Two years ago, archrecord2 profiled Ben Uyeda as his team from Cornell competed in the Solar Decathlon [http://archrecord. construction.com/archrecord2/work/0602/solar-Homes.asp]. Following the competition, team members

Free Green has plans

for several home styles

Smart Box (1 and 2), a

1,000-to-2,220-square-

foot home, and Simple

Villa (3), a 1,600-to-

and users choose from the list.

available for free download, including

formed Zero Energy Design (Independence Energy Homes), a collaborative effort among architects, engineers, and financial experts to design green residential architecture. While ZED has been successful – they've worked on over 56 projects in the U.S. and other countries – statistics show that architects are engaged for less than 5 percent of the single-family homes built in the country. Uyeda and his team wanted to make a larger impact, so they "began to look for a model that would allow us to move laterally and apply our energy-modeling, design, and financial expertise directly to the masses."

In April 2008, this model became reality with the launch of *Free Green*, an open source design Web site that provides construction documents, specifications, and renderings for green homes – all available for free download.

It seems like a radical approach, especially given the stigma associated with "catalog plans." And nothing really comes for free – or does it? *Free Green* avoids charging for downloads by generating revenue through green-products advertising and by incorporating these products into the specifications for the house designs.

Architects and designers submit their work for review and subsequent posting on the site; and though they are not paid for this, the exposure is an exciting prospect for emerging designers. Uyeda explains,



2,600-square-foot house. Product and material manufacturers

pay the company to have their products specified into the plans,



will be rated and their portfolios reviewed by peers. Another benefit of *Free Green* is that designers

and builders can use it as a tool for studying construction details and incorporating them into their own work. So far, more than 10,000 stock plans have been

> downloaded, making *Free Green* one of the largest stock-plan suppliers in America. Interestingly, about 70 percent of the downloaded designs have been Modern.

Free Green hopes to succeed where prefabricated housing has failed to catch on with the general public. "Mass-publication, not prefabrication, is the architect's role in improving the state of housing," is the mantra of Uyeda and his team. Top green blogs, including

Treehugger and Inhabitat, seem to agree: "They are charging exactly what most people are willing to pay for design: Nothing," *Treehugger* notes. While this may often be the case, it calls into question the implications of architects "giving away" their work for free as well as inviting plagiarism. Is *Free Green* pricing designers out of the building equation? *Murrye Bernard*

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CIRCLE 43

Bucky lives! Why Fuller matters more today than ever before

Critique

In the summer of 1967, my mother and I traveled to Montreal to see the Expo. The main attractions were Safdie's Habitat and Bucky's great dome. How different they were! Habitat was stolidly gravitational, a weighty pile of boxes dramatically deployed but thoroughly, traditionally compressive. And like much of Modernism, Habitat was bound to a happy image of Mediterraneaity, the prismatic forms of villages sculpted in the sun, the same font of tectonic delight that so thrilled Le Corbusier; it aimed to be the ultimate merger of the Mediterranean and the megastructure.

Bucky's dome, by contrast was tensile and light, a gossamer thing with a synergetic structure that was virtually not there. It was Habitat turned inside out, a global enclosure with its particulars subsumed beneath its organizing whole, rather than aggregated to create the whole itself. If Habitat's surfaces were meant to be awash with greenery, the breathing dome produced its own climate and grew its garden indoors. Into this space of potentiality, things were simply inserted - factories, "standard of living packages," exhibitions, radars, airplanes.

The two projects were united, however, by one of the sturdiest tropes of Modernity, the idea that the conjunction of architecture, technology, and mass production had the potential to resocialize the project of building, to direct

Michael Sorkin runs Michael Sorkin Studio in New York City. **By Michael Sorkin**



Fuller's giant dome served as the U.S. Pavilion at Expo 67 in Montreal.

scientific efficiencies to redress the problem of shortage, especially of housing. For Safdie, the idea of those factory-built boxes shipped and stacked promised urban densities on the quick, in a form at once radical and familiar. But it was a heavy industrial vision, demanding massive investment and highly centralized organization.

Bucky's lifelong quest for mass-produced housing came from another direction. His most innovative work along these lines - the series of prefab houses beginning with the 4D House (patented in 1928) and culminating in the Dymaxion Dwelling Machine (patented in 1946) - had as its predicate a winnowing of materials and a simplification of erection that had more to do with kit building than the assembly line. The entire Dymaxion house was to be shipped to its site in a big tube that contained all its elements, none of which weighed more than

10 pounds, allowing the whole thing to be put together in a few days by one person. Indeed, the weight of the house itself was a svelte 6,000 pounds, in contrast to a traditional house of similar size, tipping the scales at 300,000 pounds. Doing more with less was an abiding credo for Bucky but one that ramified far beyond the less-is-more aesthetic of Modernist minimalism. His genius at such paring down continues to secure his relevance.

In this preoccupation with the weight of things, from cars to planets, Bucky was concerned not simply with economy but with shortage. Although this commitment is sometimes derided as so much mystical palaver, Bucky was an authentic pioneer in the movement for global ecology: His career was dedicated to making global systems both legible and logical, to "reforming the environment, not reforming man." This is clear throughout his copious – if often

baroque - writing, as well as in the projects and research he inspired. One of the most important (and lucid) of these - still very much worth reading - is John McHale's The Ecological Context, of 1969. Before he met Bucky, McHale was an artist and a leading light of the British Independent Group. described by Reyner Banham (also a member) as the "Father of Pop." McHale's interest in Fuller dated from the '50s, part of his general fascination with the intersection of technology and culture and of his broader penchant for futurism. He joined Fuller at Carbondale in the '60s, participating in the massive World Resources Inventory project and eventually striking out as an extremely rigorous and pioneering analyst of global ecology, a bridgebuilder - like Bucky - between spheres of knowledge and action.

I took another trip a little later in 1967 (this time without mom), to Haight Ashbury. It was, after all, the Summer of Love, and San Francisco was the place to be. One of the most commanding artifacts in the recent retrospective of Fuller's work at the Whitney Museum was a film showing Bucky holding forth to a young crowd in Golden Gate Park at the height of those halcyon days. I never did hear one of Bucky's marathon orations, but this tape gives a good hint at his mesmerizing power. There he sits, a gnomic, grandfatherly presence in a black threepiece suit and watch chain, among the flower children, entirely at home. It's a question-and-answer

Critique

session and Bucky is remarkably succinct, compassionate, persuasive, and smart. He bounces babies on his knee. His answers are satisfying, whether he dilates on the history of specialization, the pernicious character of the nation state, the need to turn global resources away from warfare and toward constructive activity, or questions of tetrahedral geometry, the formal quantum of the universe for Bucky. In every sense, this was a man thinking outside the box, gently drawing others along.

Although he was all the rage with the counterculture, Bucky has long had an ambiguous relationship to the architectural profession and its canon. It may be his polymathic project that engendered this; the comparison with Leonardo, whom nobody would simply call an architect, is apposite, if slightly generous. But Bucky surely has more in common with an Edison than a Mies: He was an inventor, mathematician, geometer, cartographer, ecologist, manufacturer, industrial designer, moralist, epistemologist, world systems thinker - a concatenation of abilities that sometimes produced architecture but found its way there through nonorthodox working methods and winding trains of thought. His architecture did not emerge from the profession's traditions but developed as a series of consolidations of other approaches; architecture was a solution, not an objective.

One of the few to appreciate his work consistently was Banham who, in *The Architecture of the Well-Tempered Environment* got it just right, citing: "Paul Valery's contrast between Eupalinos, the architect, and Tridon, the shipwright. The former was preoccupied with the right method of doing the allotted tasks, and deploying the accepted methods of his calling, and seemed to find a philosophical problem in every practical deci-



A cluster of Dymaxion Dwelling Machines form a model community.

sion. Tridon, on the other hand, applied every technology that came conveniently to hand, whether or not it was part of the shipbuilding tradition, and treated the sayings of philosophers as further instruction on the direct solution of practical problems." Bucky – who early imbibed a nautical tradition and whose late project for a floating Habitat was called "Triton City" – fits this description to a T. This made it tough for the profession to internalize him as one of its own.

The cool reception surely also stemmed from the fact that Bucky authentically delivered on Modernism's promises, that he pulled its chestnuts from the fire. revealing its product to be far less than it claimed. In Theory and Design in the First Machine Age (1960), Banham deploys two telling visual comparisons, the first between Corbusier's villa at Garches (1928-30) and Bucky's Dymaxion House (1927-30). Corb's familiar work embodies its Modernity via entirely representational means - through its starkly planar composition, its free plan, its slim pilotis hoisting it above the ground plane. Fuller's house, on the other hand, is authentically radical in its suspended construction, its use of light, nontraditional materials, and its organization around a premanufactured mechanical core - form following function to the point of defamiliarization. On the very next page, Banham contrasts a design by Gropius for the body of the

1930 Adler Cabriolet with Bucky's Dymaxion car of 1933. The Adler looks thoroughly antique with a few minor modifications around the margins; Bucky's car looks, and acts, like the future.

Fortunately, Fuller's influence exceeded the architectural profession's boundaries. His domes were received not simply for their celestial iconography (the first picture of the "whole earth" was not taken until the '60s), but for their astonishing practicality and their suggestively communal style of enclosure. Bucky pursued the construction of various "geoscopes," meant, like his undistorted Dymaxion Maps, to model the world and display quantitative information about it. (He had hoped his Expo dome would do this, but the technology wasn't yet there.) He was, in project and proclamation, constantly hectoring us Earthlings to pilot our spaceship by gathering all possible navigational data to control - to take responsibility for - our collective destiny.

The insistence that thought, that the universe, was recursively patterned was at the core of Bucky's investigation and beliefs, his metaphysic. The main artifact of this quest was geometry and the centrality of his four-vectored organization has received posthumous vindication in the discovery of "fullerences," carbon allotropes structured like geodesics that are keys to the world of nanotechnology. Here, too, is a lesson for

architecture today, which largely continues to be at a loss for its mission. Modernism foundered theoretically in its unstable oscillations between formal invention and the creation of new styles of human subjectivity. One was not really radical, while the other was intrinsically beyond its ken (if not its hubris). Bucky asked a more interesting question: "What can I do for my fellow man that doesn't take away his freedom." Instead of falling into the sterility of Modernist politics, Bucky looked beyond architecture to the macro-scale of the global systems and flows that produced the criteria for building and to the micro-scale of the geometric organization of space that provides the efficient substance of construction. A Platonist in his gut, he knew that ideas produced the meaning of form.

I find Bucky more and more inspirational, especially for the freedom of his research. Two projects done with Shoji Sadao in 1960 make the point. The first of these is the much-ridiculed dome over Midtown Manhattan, criticized either as "impractical" (how to buff the glass, how to get the traffic through) or as simply a megalomaniacal expression of an environment overly controlled. Such criticisms miss the project's simple point: The membrane has a surface area approximately 1/64 that of the aggregated exteriors of all the buildings within it, and Bucky argued that the larger the dome, the greater the energy conserved. The Manhattan dome is simply rhetorical, a device to describe the environmental inefficiencies of standard practice.

Likewise, the Cloud Nine project for a series of sphere cities floating in the atmosphere is both an acid dream and the embodiment of a simple set of physical calculations, suggesting that if we could build such giant geodesic balloons, they would hang stably, fresh moons lightly pinioned by elemental forces. Bucky surely knew that the magic in the universe was there for the figuring out.

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Books

The Green Braid: Towards an Architecture of Ecology, Economy, and Equity, edited by Kim Tanzer and Rafael

Longoria. New York: Routledge, 2007, 374 pages, \$150.



A disturbing picture emerges from The Green Braid, a selection of academic essays on sustainability published over the past 15 years by the Association of Collegiate Schools of Architecture, academic architecture's clearinghouse. The discipline's best thinking, as presented here, appears paralyzed by complexity and isolated from the larger currents within the profession. The editors, evoking Thomas Kuhn's treatise on scientific revolutions, predict a revolutionary shift in academic architectural paradigms, and picture a "green braid" of integrated solutions to environmental, social, and economic problems. But they provide scant insight into how all of this could be accomplished.

Someone should tell the academy it's been scooped: The sustainable design revolution is in high gear, and the solutions aren't elegantly holistic. Designers are tackling the problems they know how to solve, such as energy, storm water, and toxicity, instead of struggling to correct all of society's ills. Practitioners, not the cognoscenti, have led this unprecedented grass-roots revolution, and academia evidently isn't paying it much mind. Despite the U.S. Green Building Council's pervasive impact on practice and codes, it merits two sentences by a single interested writer, Ellen Dunham-Jones; Chicago's leadership is mocked without reference to its groundbreaking environmental efforts; even the movement toward carbon-neutral campuses goes unmentioned, although more than 550 colleges have signed on to the commitment.

This is not to say that there aren't terrific individual pieces in this collection - too many, in fact, for me to mention. "Good-bye, Willis Carrier," by D. Michelle Addington, provides a fascinating and surprisingly readable critique of traditional air-conditioning; one wonders what developments have transpired in the decade since she wrote it. Jyoti Hosagrahar's analysis of how chaderi, India's courtyard houses, have evolved in response to changes in the weaving industry is meticulously researched and thought-provoking, as is Lisa Findley's sensitive piece on Renzo Piano's Cultural Center in New Caledonia.

But the lack of an engaged and realizable sense of purpose is disturbing. The academies, after all, constitute architecture's primary vehicle for training and research, and scientists warn that we are running out of time to address our global environmental crisis. With buildings centrally implicated in the problem, the academic design intelligentsia shouldn't sit this one out. Laurie Kerr

Sorry, Out of Gas: Architecture's Response to the 1973 Oil Crisis, edited by Giovanna Borasi and Mirko Zardini. Montreal: Canadian Centre for Architecture, 2008, 235 pages, \$50.



Published to accompany an exhibition offered earlier this year by the Canadian Centre for Architecture, *Sorry, Out of Gas* recounts efforts by architects to loosen oil's stranglehold during the last fuel crisis. The shortages of the 1970s triggered research and development, improved technologies, and sparked social experiments described here in documentary photographs, transcripts, original writings, and ephemera. The topics – passive and active solar energy, thermopane, underground construction, and integrated systems – were chosen "for their continued relevance today," write Borasi and Zardini.

Yet the book doesn't spell out the relevance for us today of either the small-scale, counterculture efforts of the 1970s to harness sun, wind, and other technologies or of why they lost momentum. The reader is left to extrapolate from such stated facts as the following: When the 1973 and '79 crises waned (though we were warned they would recur), government's attention shifted, and so did the public's. In 1979, as a gesture and example to the nation, Jimmy Carter introduced a solar water-heating system for the White House. Offices everywhere lowered their thermostats and frugality became the order of the day. In 1986, Reagan had Carter's solar panels removed and the country was on its way to energy-hogging SUVs and McMansions.

It's hard not to infer that government must take a lead or, at a minimum, set examples. Had government and leading institutions taken energy independence seriously after the immediate crisis passed, we would be way ahead of the curve today. Gas at \$4 a gallon now forces the issue. This volume is an informed review of where we left off. Andrea Oppenheimer Dean

Unified Design, by Paul Brislin and Arup Associates. New York: John Wiley & Sons, 2008, 208 pages, \$45.

Every architect recognizes Arup as a global engineering firm whose ex-

Books



pertise has made possible many of the architectural icons of the past 50 years. What many don't realize is that Arup supports an architectural arm – Arup Associates–an independent, multidisciplinary practice, founded in 1963 by Ove Arup, who sought to fulfill his radical vision of what today we call "holistic, integrated design."

Organized into three thematic sections, *Unified Design* is equal parts manifesto and monograph, featuring essays by several distinguished critics. The book begins with "Unified Thinking," an explanation of the firm's philosophy or quest to make architecture relevant to people. To this end, the office embraces what director Dedan O'Carroll calls "complexity theory."

"The World of the Senses" argues that architecture's visual impact overwhelms the other senses and describes how Arup Associates' White Lotus School, in the northern Himalayas, engages all of one's faculties. To a large extent, this is because the community participated in the design process. The 15-year-old school maintains the area's material traditions, cultural identity, and religious traditions in what the architects call "whole-life sustainability."

In the last section, the reader sees an agile approach that moves

the design process beyond current rhetoric about multidisciplinary integration. "Collaborative Engineering" is a collective essay describing how Arup's architects and engineers work side-by-side in a single studio, and team members contribute beyond their typical roles. The success of this approach can be seen in highly technical buildings, such as London's Vauxhall Cross Transport Exchange, where advanced hybrid photovoltaic cladding combines ultra-thin silicon with monocrystalline technology in a single cell to maximize power generation from the cloudy London sky. Sara Hart

The Architecture of Adrian Smith, 1980-2006, SOM: Toward a Sustainable Future, by Adrian Smith. Melbourne, Australia: Images Publishing, 2007, 580 pages, \$75.

A quick *tour d'horizon* proves that great height is an instant means



of putting a place on the map. This monograph on the work of Adrian Smith, who has designed three of today's 10 tallest structures on earth, is a de-facto history of the elite supertall - towers that exceed 1,000 feet - a ferociously expanding building niche, particularly in the Middle East and Asia. With the Jin Mao Tower, a dazzling pagoda wrapped in a dense, elegantly wrought metal latticework, Smith reached the apogee of the standalone tower. The Burj Dubai, now the tallest structure of any kind, achieves its height with a tripodal



arrangement of three structural wings that deflect the wind like cutwaters. The Burj is rooted in Smith's earlier designs, notably the tripartite Tower Palace III in Seoul and the unbuilt telescoping form of 7 South Dearborn, in Chicago. Pearl River Tower in Guangzhou, China, the first skyscraper designed to produce its own energy, is now being developed by SOM, albeit with modifications to the original zero-carbon design by Smith and Gordon Gill, who left SOM in 2006 to start their own firm.

But Smith's work is not only vertical mastery. His master plans for Chicago's Lake Shore East and Millennium Park, which spurred a building boom, suggest that traditional notions of context are being redefined. In the face of burgeoning urban populations and environmental crises, Smith's most enduring legacy may be his conviction that the tall building – one that responds to the larger global context of a site's weather patterns, topography, and geological conditions – is the most efficient means of effecting a new urban paradigm.

Copiously illustrated with photographs, plans, and structural renderings, this book is simply beautiful. It is a paean to Smith's long career at SOM, and quite possibly, given the looped, squared, and intertwined forms of recent towers – the book may also mark the swansong of the monolithic skyscraper. Judith Dupré

Foster 40: 40 Years, 40 Projects/Themes,

by Norman Foster (author) and David Jenkins (editor). London: Prestel, 2007, 486 pages, \$200.

A few years ago, Prestel published Norman Foster Works 4. A good book, it cost \$100, had 556 pages, was 9-by-12 inches, and 2 inches thick, and weighed 5 pounds.

Now Prestel has issued another Norman Foster book at twice the cost. As the title implies, this book covers Foster's whole career. It is slightly smaller at 8 inches square, 2 inches thick, with 530 pages. It comes in a box, and when you pull it out you discover it's really two books in one. Flip over a book and you can start on new material. One section presents 40 projects; the other, 40 themes. Oh, and the cover is shiny aluminum; I guess it's a metaphor for what lies inside.

If you start with the 40 projects, you get a one-page, self-congratulatory blurb about each work, and then some pages of beautiful photographs on shiny paper. If you start with the 40 themes, you get an alphabetically ordered array of categories - such as "Canopies," "History," and "Reflectors" - on matte paper, into which are slotted the various projects, illustrated in black and white, with mainly sketches. It's hard to know what determined the "themes," since they vary wildly in terms of levels of abstraction, and it's even harder to imagine that it was just coincidence



that there are exactly 40, or even why they are arrayed in alphabetical order. Typically, a few projects exemplify each theme, which makes it difficult to understand the projects themselves; you are constantly flipping the book over to look for the photos of the buildings that illustrate the themes.

I don't know if the Foster office designed the book, but if they did, they shouldn't quit their day job. Thomas Schumacher

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CIRCLE 47

Exploring the intangible at the Venice Biennale

Exhibitions

By Beth Broome

11th International Architecture Exhibition of the Venice Biennale 2008. *Curated by Aaron Betsky. Through November 23, 2008.*

If you come (naively) expecting to see a lot of architecture at the 11th International Architecture Exhibition of the Venice Biennale 2008 – as traditionally understood in tangible form – plan to leave disappointed.

This year, the Biennale's director and curator Aaron Betsky challenged participants to eschew the built environment and celebrate architecture's other, less tangible dimensions. "Architecture is not building," writes Betsky perplexingly in his foreword to the exhibition catalog. "It is the way we think and talk about buildings, how we represent them, how we build them." Entitled Out There: Architecture Beyond Building, the show presents a wide range of interpretations of Betsky's theme through installations, manifestos, and "utopian visions," or experimental work. Participants enthusiastically ran off with the theme (or didn't), as instructed by Betsky, to question reality and explore and experiment with architecture's enigmas.

Daunting at times because of its sheer magnitude, this year's exhibition, organizers note, is bigger than ever before, a fact that is not hard to believe, as one staggers through 30 international pavilions, scores of rooms, past hundreds of boards, models, and installations within the expanses of the Giardini di Castello and the



A series of bamboo poles harness wayward chairs in *Mock-Up*, *Beijing*, by Herzog & de Meuron and Ai Weiwei. The team brought in traditional builders to construct the piece on-site over the first few days of the show.

massive Arsenale (not to mention the dozens of related exhibitions and events scattered across the city). It does not come as a surprise then that, in spite of a general drift toward the topics of sustainability, alternative energy, and the landscape, the exhibition is characterized by a general lack of cohesion. This year's Biennale is not an orchestra, artfully blending a collection of scores to create a symphony. Rather, it is a cacophony of solo performances, a virtuoso violinist sharing the magnificent concert hall with a determined horn blower from the marching band. Visitors approach each pavilion or installation as if embarking on an entirely new experience.

A common complaint heard from exhibition goers is the preponderance of pedantic presentation and youthful enthusiasm – earnest attempts to address today's societal woes through well-meaning but complicated presentations that too

Exhibitions

frequently come across as so much homework. In an exhibition of this scale, the work has a matter of seconds to grab attention. Visitors seek out moments of clarity. The Japanese pavilion provides one. Here, architect Junya Ishigami has built a series of ethereal glass boxes housing living plants in the area around the pavilion, suggesting an architecture that bows to the natural environment. While rendering the exterior as a kind of interior landscape, the architect has left the inside space empty, save for a collection of delicately rendered graphite crayon drawings that cover the high walls from floor to ceiling. Drawn in a precise, though childlike manner, the scenes, accompanied by blunt, hand-written descriptions, depict fantastical environments, such as High-Rise House: "The upper stories are like a







vacation retreat where we usually don't go ..." (for a close-up view of Ishigami's drawings, see page 280). Indulging us with playful fantasy, Ishigami's almost-not-there work, teetering between the built and unbuilt environments, suggests the limitlessness of the architectural imagination.

Lacking a pavilion, Estonia plopped down in the middle of the Giardini a section of a full-scale gas pipeline painted safety yellow (with cameras in its hollow, projecting live images of exhibition goers to screens in the Arsenale). This provides a different sort of pause. Placed between the German and Russian pavilions, the pipeline comments on a controversial one actually proposed to connect the two countries.

ARCHITECTURAL RECORD has a particular connection to the U.S.

(1) To enter the U.S. pavilion, visitors pass through a vinyl scrim by Estudio Teddy Cruz that represents a border wall between the U.S. and Mexico. (2) Minimalism to an extreme: The interior of the Japanese pavilion is empty, save for delicate pencil drawings lining its walls by architect Junya Ishigami. (3) Around the Japanese pavilion's exterior, Ishigami has installed a number of lighter-than-air greenhouses.

pavilion – having organized its exhibitions for the past two Biennales (2004 and 2006). We were glad

to only have to watch with bated breath this year as the 2008 team worked to beat the clock and put together their exhibition in about two months. Commissioner William Menking, editor of The Architect's Newspaper, and cocurators Aaron Levy and Andrew Sturm, assembled a group of 16 architects, urban researchers, and activists for the show. The pavilion demonstrates how these individuals have reacted to contemporary social problems and conditions by, among other things, observing and actively engaging with communities. Entering the pavilion through a photocollage digitally printed on vinyl scrim by Estudio Teddy Cruz [RECORD, October 2008, page 240], depicting the contrasting sides of the U.S.-Mexico border, one is confronted by a small vegetable garden, a model from Alice Waters's Edible Schoolyard project, designed to educate students on nutrition and the origins of food. Inside, socially conscious projects abound: Design Corp's migrant housing, Rural

Studio's animal shelter, Deborah Gans's portable human shelter, and Laura Kurgan's Spatial Information Design lab, which illustrates the relationship between demographics and the penal system. The relevance of the highlighted projects is easy to grasp and, though a tighter focus may have been in order, the pavilion effectively demonstrates how social problems and conflict can lead to experimental architectural solutions.

With NonArchitects/Interviews, the Brazilian pavilion sets out to show "the side of those who use instead of the side of those who create." The pavilion's main room is dominated by simple panels of text along the walls that present excerpts from 86 interviews of everyday citizens: chefs, taxi drivers, psychoanalysts. Though at first glance the room, with all its placards, is about as inviting as the DMV, the excerpts draw you in, bringing to life vivid memories, sensory experiences, and hopes, underscoring how place helps form the basis for who these individuals are and, by extension, why we are who we are.

The Italian pavilion is perhaps best saved for last, because a visit there is like going down the rabbit

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Exhibitions

hole. With its sights focused on "experimentation," the pavilion wends you through the contributions of 55 firms, starting with six "Masters of Experiment," including, among others, Gehry Partners: Herzog & de Meuron, with artist Ai Weiwei; and Morphosis. The proliferation of boards, models, and installations sucks you deeper into the labyrinth of the disjointed pavilion. Past the I Ching reader, you might find solace in American architect Ben Nicholson's Studies of Labyrinths, happiness from Los Angeles's Ball-Nogues Studio's wispy wave made of pink cord, or amusement in European filmmakers lla Bêka and Louise Lemoîne's Koolhaas HouseLife, a film that follows a busy housekeeper on her tour of the leaky Bordeaux retreat Rem Koolhaas designed 10 years ago. But enough already! It seems like the Italians just don't know when to stop!

If you visit the Arsenale after the Giardini, after a very pleasant 10-minute walk through the city, you will be much relieved to be able to turn off your GPS and float along the linear path of the complex's Corderie, a dramatic and extremely long 16th-century masonry building originally used for fabricating rope for the Venetian Navy. The starting point of this part of the exhibition is the Hall of Fragments (by David Rockwell, with Casey Jones and Reed Kroloff), an interactive piece that plays with images and color from iconic films by employing infrared cameras to track visitors' density and movement to create fractal images on large convex screens. From there one walks sequentially through a collection of 20-something seemingly disconnected installations, including Asymptote's sleek Prototyping the Future: Three Houses for the Subconscious. A few rooms on one finds Coop Himmelb(I)au's Feed Back Space - a science-fiction construction incorporating glass





(1) Zaha Hadid's *Lotus* is a compressed "room" with areas for sleeping, sitting, and storage – exhibition goers are welcome to lounge on the piece. (2) Asymptote envisioned three houses as subjected to high velocity. (3) Coop Himmelb(I)au's *Feed Back Space* projects visitors' heartbeats into the cavernous Arsenale.

globes and scaffolding (the bastard child of The Robot from *Lost In Space*?). Zaha Hadid's swoopy limegreen *Lotus* follows, described in the exhibition catalog as a "system of enfolded furnishings through which one can seduce and engage the immediate and the more distant world." Farther on in the procession is Greg Lynn FORM's *Recycled Toy Furniture*, which took home the Golden Lion for



Best Installation Project, although it looks pretty much as it sounds. Hot on its heels is Barkow Leibinger's *Nomadic Garden* – a topography of oversize drill-bitlike metal tubes on a sprawling base, which visitors can reconfigure.

Somewhere in the middle of all this, perhaps in Philippe Rahm Architectes's surreal micro-climate landscape of chili peppers and nubile nudes reclining on a heated plinth accompanied by a man lethargically playing the saw (architecture as "a thermodynamic mediation"), the importance of enigmas fades away and you stop asking yourself whether or not it was all worth it. At this point, you are ready to exit this dream world and reenter the Venetian streets and their very real, embodied architecture in search of a nontheoretical, nonpolemical glass of wine. IN CASE OF CREATIVE EMERGENCY

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Managing the ever-moredistributed workforce

Practice Matters

When the Hudson Bay Company began sending traders to the New World in the 17th century, it developed protocols for managing a distributed workforce that are pertinent today. The small headquarters staff in London chose independent adventurers capable of self-sufficiency, but they provided mentoring and training. Importantly, the company stayed in communication - as best they could when annual letters to and from the traders arrived by schooner. The lesson learned? "We call it the balance of trust and control," says Cliff S. Moser, AIA, operations director of the Los Angeles firm Cadforce, which facilitates communications between U.S. architecture and construction firms and outsourcing teams in India. The traders were required to keep daily diaries, which became, in today's parlance, the "knowledge base" that enabled the Hudson Bay Company to gradually improve the operations.

PHOTOGRAPHY: © NASA TV/EPA/CORBIS

Despite vastly faster communication speeds, modern companies face similar challenges of trust and control with off-site workers. Each case is different, but the balance can be adjusted with the use of technology and an understanding of the cultural barriers created by geographic separation.

Outsourcing CAD work to India is only one (extreme) kind of distributed workforce. Every firm

B.J. Novitski writes about architectural practice and sustainability. She can be reached at bjn@efn.org. experiences some distancing daily, such as when a principal leaves the office to attend a meeting, or when an architect visits a job site for construction administration. Protocols for staying in touch via telephone or e-mail are relatively simple in these cases, but the situation gets more complicated when a long-term stint in a construction trailer is involved, or when a small group of designers occupies a satellite office, or when an employee "telecommutes" from a home office. Other examples of dispersed workers are temporary contract staff and even a firm's regular consultants. Regardless of the worker's relationship with the firm or how long a separation may last, the challenges are to maintain clear communications and to provide the remote workers ways to feel connected to the firm, both professionally and socially.

In at least one important way, the nature of modern work makes these challenges more pressing than they were even a few decades ago. Digital design processes demand a certain degree of standardization. Whereas the Hudson Bay traders could indulge in idiosyncrasies in work methods and still be effective, freestyle design documentation and communication is seldom acceptable. Computer-based design systems require strict adherence to standards, and individuals are responsible for keeping track of vast amounts of information. Sometimes just knowing where to find the latest version of a model or document can be challenging. Luckily, technology also contributes to the solution

By B.J. Novitski



through a range of organizational systems, collaboration tools, and effective communication media.

Overcoming cultural divides

One challenge that invites creative solutions is the social isolation that remote workers may feel. Moser recalls being in an outof-town construction trailer and receiving an e-mail notification from his firm about a free-lunch seminar later that day. Eventually repetitions of such messages eventually became unpleasant reminders of his remoteness from colleagues. Years later, now that he works to connect distant teams with each other, he tries to create virtual "free lunches," where people can "get together," by videoconferencing, for instance. to get to know each other in an informal setting. Even simple strategies, like e-mailing family or vacation photos back and forth, can overcome unfamiliarity, even when the disparate team members Judicious use of technology (and a little TLC) can help keep off-site staff from being isolated.

come from different cultures. When it comes time to iron out work-related misunderstandings, Moser says, having established social ties is invaluable because "it helps to be on the same boat going in

the same direction." In the case of Moser's outsourced Indian teams communicating with the U.S. staff, culture sharing involves, for example, each group learning about and celebrating the other's special holidays. Even between U.S. teams, where cultural differences are not so distinct, new means of informal sharing can ease communications that once relied solely on face-to-face meetings.

Even though remote teams can't give actual handshakes or receive many unconscious cues from body language, digital technologies can substitute for many other communication needs. E-mail is of course nearly ubiquitous in professional circles. Instant messaging (IM), no longer the domain of teenagers, can be a useful substitute for telephoning. Unlike a phone call, a person in the midst of a text "chat" can send a digital file, like a drawing, photo, or schedule to support the discussion. Like the telephone, but unlike e-mail, IM requires the vari-

Practice Matters

ous parties to be engaged simultaneously. Skype is an Internet-based instant-messaging system that also supports Voice-Over-Internet (VoIP), which is essentially a tollfree telephone service.

Videoconferencing can substitute to some extent for face-to-face meetings. One advantage it has over teleconferencing is that the body language present in actual meetings can also be perceived through the video screens. The GoToMeeting Web-based meeting service also enables videoconferencing participants to share live computer presentations or software demonstrations. As sound fidelity and screen resolution improve, high-end videoconferencing is being termed "telepresence," with the expectation that in the future the illusion will be so flawless that participants may forget that they are not in the same room with their distant colleagues.

Technology caveats

Even as existing technologies become more routine, there is still a lot to learn about when to use which ones. It's not uncommon for an employee to spend 15 minutes composing an e-mail message when the question can be answered in a 15-second phone call. And the moderating cues we pick up from each others' voices are notoriously absent from email. People can misunderstand hastily written messages and take offense where none is meant. Rich Nitzsche, AIA, principal and chief information officer of Perkins+Will says, "In this firm, we encourage people to pick up the phone instead of using e-mail. Some things shouldn't be communicated via e-mail, and problems can escalate. You end up wasting time defusing a tense situation that shouldn't have been tense in the first place."

Despite the semblance of togetherness that these technologies afford, Moser advises that it's

especially important, with remote teams, to be explicit about follow-up actions - who will do what and how will it get done - that are agreed to during virtual meetings. "In face-to-face meetings," he notes, "you can infer things through your communication, through eve contact or a head nod. But if you're on a computer chat, for instance, you may say something thinking the other person understands. But then when the other person doesn't do it, you read your notes and realize it wasn't very clear. You have to get a positive affirmation; a head nod isn't enough." Teams also need to be more explicit than normal. Moser adds, in defining closure: what the desired outcome is and how completion will be determined.

Collaboration opportunities

In addition to cultural connectedness, technology can support the much-needed adherence to common digital standards. SharePoint is an example of a Web-browserbased "collaborative work space," which supports organization of, and navigation through, shared documents. Moser says such a communal data area is important to distributed workers as a repository for uploads or new information. Regardless of where they are geographically, "a team member knows they can go there to look for an updated file and be able to see that it's the latest version." Newforma Project Center is project information management software that also supports design review processes for CAD and building information management (BIM) files. Disparate team members who may or may not be working with the same design software can review, mark up, and share updated design versions, and the software provides automatic version comparisons.

Some firms are developing "wikis," or shared knowledge bases that enable users with a minimum of

computer coding skills to add their own content. The online, user-written encyclopedia Wikipedia is the best known public example of this technology, but private groups can develop their own, as well. These Web-like pages provide a location for firm-specific information and collaboration tools. Perkins+Will has begun developing a wiki to share Revit details between its many offices. Staff members upload design details, and others in the firm can review and comment on them. Nitzsche has observed that acceptance of the technology among design professionals has taken time. He says, "It's interesting: you can put a technology out there and it'll sit fallow for a few years. Then suddenly it takes off, and the users can't live without it." He describes his introduction of new technologies as a "field-of-dreams approach." Build it and they will come, but it may take time before new processes gain acceptance.

Real and virtual meetings

Wimberly Allison Tong & Goo (WATG), which specializes in hospitality architecture worldwide, has offices on three continents. Maintaining intra-firm cohesiveness is so important that WATG expend a higher-than-normal budget actually bringing employees together. Firm chairman and chief information officer Lawrence Rocha, Associate AIA, describes the "summits" held each year for a variety of subdisciplines such as graphic designers, IT specialists, or human resources experts. Rocha explains, "People from each office around the world come together in one place to discuss standards, efficiencies, goals, and budgets and to share techniques and solutions. We've found it really does bring the company a lot closer together in terms of feeling like one global firm." Despite the use of sophisticated communication media, Rocha adds, "We've discovered that it's going after work for a beer that really forms the bond between people so in the future they'll pick

up the phone and call somebody."

To reinforce these bonds between summits, WATG makes frequent use of videoconferencing, which they use for weekly meetings, firmwide presentations, and seminars for the smaller offices that don't have their own continuing education resources. Even though it is heavily used, Rocha predicts that videoconferencing won't become completely accepted until it becomes as easy to use as picking up a phone.

WATG has been successfully using a firm "intranet" for several years. Employees can go to this private, Web-like domain to find organizational news, download forms and reports, and learn about uniform company procedures. Rocha has seen it used as a collaboration "meeting place," where standardization emerges from a grass-roots level. He explains: "If standards in a certain area aren't established, someone will step up, get a group of people together from other offices, and together create the needed standard. We've found people accept the standards a lot more if they helped to make them."

One disadvantage to meeting "digitally" that Rocha has observed, is that the newer technologies are being embraced more readily by the younger generation than by their elders. So in these virtual meeting places, there are plenty of users seeking answers to design guestions, but there are fewer experienced professionals who can provide answers and guidance. Presumably this will change over time, as the oldest generation retires and the replacement senior staff members with design experience are also comfortable with the technology.

As globalization continues, the practice of working with geographically distant teams will remain unavoidable. And as the cost of transportation rises, bringing together teams in one geographic location will become less common. Technology demands greater design process coordination than in the past, but it also offers new methods for bringing virtual teams virtually together.



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Trade Show Review Udine · Promosedia

Dubbed the chair capital of the world, the northeastern Italian city of Udine hosted its 32nd International Chair Exhibition from September 13th through 16th showcasing the best the industry has to offer in terms of technology, innovative use of materials, and of course, design. *Linda C. Lentz*

 Svelte seating The Residential Chair of the Year, Frida by Odoardo Fioravanti, is an innovative mix of solid oak and thin molded plywood notable for its comfort, light weight, and slim, fluid form. Pedrali, Mornico Al Serio, Italy. www.pedrali.it CIRCLE 200
Hip hybrid The Punk chair by Studio Archirivolto, awarded Contract Chair of the Year, has a polypropylene base available in two neutrals and three brights topped by a backrest of transparent polycarbonate that comes in similar hues – allowing up to 25 color combinations. Gordon. New York City.

www.gordoninternational.com **CIRCLE 201 3 Comfy curvy** One of the show's Top Ten picks, Flex Too is a cantilevered gem by U.S. designer John Niero that features a springy, yet sturdy stainlesssteel tubular frame and an amply padded seat. ILS Collection, Manzano, Italy. www.ilscollection.it **CIRCLE 202**

4 Sea worthy Design team Lucidi Pevere's Randa is a spirited UV-resistant combination of highperformance nautical rope and chromed or lacquered metal equally suited to indoor and al fresco dining. Debi, San Vito al Torre, Italy. www.debi.it CIRCLE 203

5 Design study Created in 1937 by Gio Ponti for the Livianum department of literature at Padua University, the solid beech Livia chair has been updated in a range of trendy colors and stains, plus the option of an upholstered seat. L'Abbate, Tavagnacco, Italy. www.lacollection.it **CIRCLE 204**

6 Functional format An ingenious arrangement of modular seating and tables, Molecule by Stefano Bigi provides commodious seating for public and reception areas, then fits like a puzzle when floor space is required. La Cividina USA, Sea Cliff, N.Y. www.lacividina.com CIRCLE 205



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Snapshot



By Sebastian Howard

In the riparian Tanghe River Park in Qinhuangdao, China, a 1,500-foot-long swath of red fiberglass cuts through native grasses and poplars. By night, internal lights illuminate the structure, giving a surreal glow to what is during the day a well-used bench. The park, completed in 2006, is the work of Turenscape, China's largest landscape architecture firm.

Tanghe River Park is one example of an attempt to ease the growing strain along China's urban fringes. Estimates indicate that around 18 million people migrate to the cities each year, stressing infrastructure and catalyzing growth. To accommodate the influx of new residents, existing waterways are often diverted and replaced with concrete canals that allow greater drainage and more flood control than their natural counterparts. This model, according to Yu Kongjian, design principal and president of Turenscape, is "unsafe, bad for commerce and people. And it destroys the old urban fabric."

After Yu gave a talk criticizing the way that Chinese rivers were often carelessly channelized in the name of urban expansion, Qinhuangdao's mayor, Jian Ruiting, who was in attendance, asked Turnescape to design a "beautiful and ecological" riverside park for his city.

The site chosen for the project posed serious challenges – Qinhuangdao's recent growth to a city of roughly 2 million had left a section of the Tanghe covered in concrete for flood control, "destroying the riverbank and native vegetation." An impromptu garbage dump flanked another section of the river. After clearing the area of trash and concrete, Turenscape produced a design that treads lightly, preserving the native vegetation and minimizing impact by keeping visitors on paths to either side of the river. According to Yu, the design "keeps intervention to a minimum." Rather than controlling flooding with steep-walled concrete channels, Turenscape created a plan in which the park is expected to periodically flood (the boardwalk and bench are situated above the historic flood line). Flower gardens and a bicycle path weave through the park, which hugs the Tanghe's bank for almost a mile.

As Chinese cities rapidly expand in size and population, projects like the Tanghe River Park can serve as a much-needed oasis at the urban fringe.

Drawing the line in Qinhuangdao





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Good Design Is Good Business

Six stellar projects, from a theater to a small city, exemplify the benefits of thoughtful architecture

By Ingrid Spencer

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or the 11th year, ARCHITECTURAL RECORD and its sister publication *BusinessWeek* have teamed up to honor a select group of architecture firms and clients for collaborating on projects that prove design can do more than create inspiring structures and spaces; it can actually add to the bottom line. And that bottom line means more than increased revenue (although that figures in)—it can mean reduced overhead, better employee retention, changes in corporate culture, and creating a strong impact on a city or region. To make it to the finals, these projects had to be steps ahead of beautiful. The architects and their clients had to provide measurable results proving that their buildings have changed people's lives. These are dark economic times. And as we watch financial markets crash, burn, and struggle to recover, it's refreshing to know that these projects succeeded in their quest to show that good design is more than aesthetic—it's also good business.

This year, it's only six. And appropriately, in an election year that's all about change, these projects rise from a core attitude (on the client side) that reflects metamorphosis. From a theater in Washington, D.C., to a development in Dublin, Ireland, that's akin to a small, pedestrian-friendly city to a large office complex in Guangzhou, China, the projects all sought to leave a positive impression on their communities while revealing the clients' desire to communicate a forward-looking direction. Take One Haworth Center in Holland, Michigan. Obviously, Haworth appreciates the benefits of quality aesthetics, functionality, and craft. But with this building, Perkins+Will helped take design to new levels. The new headquarters was a strategic move to transform the culture of the company—from wasteful to sustainable. Revenue has grown, and customer visits to the new building have increased 295 percent. Coincidence?

Take Sidney Harman Hall, in Washington, D.C. The client, the Shakespeare Theatre Company, needed a performance space that showed its community it was broader and embraced all performing arts while still being committed to the classics. Can a building expand an audience? It has. Ticket sales have risen more than 50 percent since Diamond + Schmitt's design was completed.

Read on and you'll see. These clients have embraced the benefits of thoughtful, intelligent architecture. There's no controversy here. These buildings just work.

Contributing editor Ingrid Spencer writes about architecture and design from Austin, Texas.

BUSINESSWEEK / ARCHITECTURAL RECORD AWARDS

POLY INTERNATIONAL PLAZA Skidmore, Owings & Merrill

Poly International Center in Guangzhou, China, by Skidmore, Owings & Merrill (SOM) is a Class-A office park on the Pearl River Delta. The firm had already designed a successful building for the Poly Real Estate Group in Beijing, and the client's "expectations were fairly high" for the new project, according to SOM design partner Brian Lee, FAIA. "They wanted a piece of architecture with an identity, but it also had to be a performer."

Lee's team responded to the challenge with a pair of 30story offset-core towers. A three-story open veranda doubles as a refuge floor midway up the tower, and reduces live loads by allowing wind to pass through the tower. The lattice structure attached to the buildings' southern facade takes most of the lateral loads and, as an added benefit, reduces solar gain by about half (no small consideration in Guangzhou, where temperatures peak above 100 degrees Fahrenheit). The efficient frame conserved steel by around 15 percent, lowering the cost of construction.

The towers' narrow aspect ratio allows them to be largely daylit, and each floor has a small, dedicated engineering room, allowing tenants to control their own air-conditioning. Both strategies reduce utility costs. Elevators and restrooms are confined to the glass-clad offset core, and the uninterrupted, column-free floor plates give tenants maximum flexibility. The towers and several low-rise buildings enclose a green court designed by landscape architects SWA. Vegetation covers more area than the buildings' footprints.

One of the towers has already been sold as office condos; Poly International has retained the other as lease space. Lee notes that the real estate group's "lease rates are something like 20 percent higher than in similar developments in the area. From all indications, they're very happy." *Sebastian Howard*





Project: Polv

International Plaza, Guangzhou, China Key players: Skidmore, Owings & Merrill Client: Poly Real Estate Group

The towers' offset-core structure and open, column-free floor plates recall SOM's 1958 classic Inland Steel headquarters in Chicago, but Poly International features key updates on the Modernist model. BUSINESSWEEK/ARCHITECTURAL RECORD

WINNER

ELMPARK Bucholz McEvoy Architects

In South Dublin, Ireland, 12 slim buildings cluster near the Irish Sea. Elmpark Mixed-Use Development, designed by local firm Bucholz McEvoy Architects (BCMEA), includes apartments, office space, a hotel, hospital, conference center, restaurant, and a public garden complete with cafés and performance spaces. The term "mixed-use" seems insufficient to describe the development; rather, it is a small city.

Elmpark is some 40 percent denser than is normally allowed under Dublin law, but the project's sophisticated, sustainable design was approved by a city council that saw the virtue in this high-density, energy-efficient project. Stuttgart, Germany-based environmental engineering firm Transsolar collaborated closely with BCMEA to create this holistic project.

"We think of Elmpark as an energy field," says BCMEA design principal Merritt Bucholz. The narrowness and north-south orientation of the structures take advantage of daylighting and natural ventilation. Office structures use no mechanical ventilation or airconditioning and are heated entirely by wood pellet boilers.

Three on-site power generators reduce the inefficiencies associated with transporting energy over long distances; heat produced as a by-product of generating electricity is used to heat the pool. Bucholz notes that owner Radora Developments "has become an energy company, in a way," selling power directly to tenants. This stabilizes the cost of energy, says Bucholz. All of this translates to a 60 percent reduction in energy use.

Despite the size and number of buildings on the site – the largest of which are 8-stories tall – Elmpark is what the architects call a "legible pedestrian city." The buildings sit on risers that allow foot traffic below, while 7 acres of carefully landscaped gardens give the project a lighter feel than might be expected. "People expect a kind of relentlessness to it," says Bucholz, "but you don't get that walking through the project." SH

Project: Elmpark, Dublin, Ireland Key players: Bucholz McEvoy Architects Client: Radora Developments



The project's 13 buildings (above) are powered by an efficient on-site combined heat and power plant. Timber cladding (below) brings the massive buildings down to a pedestrianfriendly scale.

MORAN

PHOTOGRAPHY: © MICHAEL



WINNER

EDMUNDS.COM STUDIOS architecture

Until 2006, the staff of automotive-pricing-guide publisher Edmunds.com was spread over five floors in three separate buildings. The company had grown so rapidly during the dot-com boom, "It had no essence, no spirit. They didn't know their coworkers in the other buildings," says STUDIOS architecture design principal Christopher Mitchell, AIA.

In short, the company's offices inhibited open communication, which was counterproductive for a Web-based firm specializing in information sharing. After seeing the New York offices that STUDIOS had recently designed for Bloomberg [RECORD, March 2006, page 138], Edmunds.com's leadership commissioned the architects to create a new corporate headquarters in an existing development in Santa Monica.

When the company's owners met with the design team from STUDIOS, they made one thing clear to Mitchell's team: The space was "not for clients, and not for the car companies. It had to be for the employees first. Drop dead, bottom line." Mitchell and his colleagues got input from some 40 Edmunds.com employees, and the resulting headquarters features open space that encourages collaboration. There are few doors and no private offices. A new staircase, connecting all three floors of the headquarters, and a spacious great room, complete with a 70-foot Corian coffee bar, allow employees to move freely and congregate.

The building is at once spare and stylized, with zippy, horizontally banded wall panels recalling the supergraphics of the 1960s. Above all, it is utilitarian. Since moving into its new headquarters, Edmunds.com has increased revenue and employee retention, and it expects staff to increase by 10 percent in the coming year. It has been so successful that the company is poised to lease another floor in the building, which STUDIOS will also redesign. As Mitchell says, "We gave them the space, but they're harnessing it. We just gave them the right tool." *SH*



Project: Edmunds.com, Santa Monica, California Key players: STUDIOS architecture Client: Avi Steinlauf, Edmunds.com



Bright streaks of color and stylized group seating (above) liven up an otherwise spare design (left). Open meeting areas and a spacious staircase leading to all three floors (opposite) encourage collaboration among staff.



BUSINESSWEEK / ARCHITECTURAL RECORD AWARDS

ONE HAWORTH CENTER Perkins+Will

Haworth's C.E.O. and president, Franco Bianchi, knew that his company's new headquarters had to be more than just an office complex. Haworth, a design firm specializing in work-space solutions, needed a showroom and laboratory for displaying and testing its products in action. The new design couldn't just be a "face-lift" of the old building, says Bianchi. Perkins+Will principal Eva Maddox notes that Haworth wanted "an environment that would help them change their culture" from wasteful to sustainable, from fixed to flexible. "They went from being a furniture company to a work-space company," says Maddox.

The new headquarters was built on the site of Haworth's old headquarters. "We kept a lot of the existing structure in the end," says Perkins+Will principal Ralph Johnson, FAIA. Much of what was discarded in renovation was recycled or donated to schools. A three-story glass envelope replaced a concrete facade, giving 90 percent of employees access to natural light. To minimize heat loss in the Michigan winters, the triple-glazed windows were used in the atrium, and a green sedum roof covers the building.

Bianchi sees an integral relationship between the parts and the whole of the office. The company's goal, he says, isn't "developing great objects that stand alone, but creating great interiors that come from great parts," all of which fit into the space. Nearly all of the building's interiors are composed of Haworth products: "Our design team worked very closely with theirs," notes Maddox.

One Haworth Center is designed to accommodate visitors, who, on seeing the company's products in use and in context, have driven up sales in the past year. The new building itself seems to be a draw – customer visits are up some 300 percent so far this year compared to 2007. For Bianchi, "This is not just a building"; it is an ethos in glass and steel, a shift from outmoded models of the workplace. Maddox adds, "The architecture enabled a culture shift." SH



Project: One Haworth Center, Holland, Michigan Key players: Perkins+Will Client: Haworth

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Shared spaces have increased fourfold as a percentage of area in One Haworth's new headquarters. Daylight from the atrium spreads through most of the building.

a Mint

BUSINESSWEEK / ARCHITECTURAL RECORD AWARDS

WINNER

ALLEY24 NBBJ

A 2-acre, mixed-use, LEED-certified development near downtown Seattle, the NBBJ-designed Alley24 covers a full city block and includes 180,000 square feet of office space, 28,000 square feet of retail space, and 172 residential apartments. From the outset, owner Vulcan Real Estate and NBBJ worked to create a green project that would attract a "creative class" of architects, graphic designers, and the like.

The development is the first of many planned in South Lake Union, an area that design principal Brent Rogers, AIA, describes as "a snapshot of all of Seattle's history." In a nod to this neighborhood's varied character, NBBJ wanted to avoid creating a homogenized superblock. By incorporating three historic building facades into the complex, and placing wide sidewalks on its perimeter, the architects gave Alley24 a sense of scale and a contextual quality that a building of this size otherwise might have lacked.

NBBJ tucked the structural core into the center of the build-







Project: Alley24, Seattle, Washington Key players: NBBJ Client: Vulcan Real Estate and PEMCO Mutual Insurance

> Alley24 is the anchor project in a planned redevelopment of some 60 acres in the South Lake Union area of Seattle (above left). The eponymous alley allows foot traffic through the project's heart (left).

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ing, creating open, flexible office space with 38,000-square-foot floor plates. An innovative raised underfloor air system is used in combination with motorized sunscreens and operable windows. The result is a building predominantly heated, cooled, and lit by the sun and wind. Tenants can even switch off the air-conditioning in their areas. Compared with a traditional HVAC system, energy consumption is cut almost in half, while air quality is improved. Tenants of the office space have reported that employees take fewer sick days and are more productive.

By all accounts, Alley 24 is a success – 95 percent of the apartments are occupied, and all of the office space is leased. "In the end, happy people do better work," says Rogers, "and design has a big impact on how people feel." *SH*







NBBJ occupies the first three floors of the office building (top and opposite, top). Automated sunscreens (left) and reflector blinds (above) alternately slow heat gain and allow daylighting.
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SIDNEY HARMAN HALL Diamond + Schmitt Architects

"A theater is a strange animal of a building," says Jennifer Mallard of Diamond + Schmitt Architects. While theaters always pose technical hurdles, in the case of the newly completed Sidney Harman Hall in Washington, D.C., there were unusual constraints and challenges, says Mallard, who was the project architect. To start, the theater is sited in a mixed-use building – the three stories owned by the Shakespeare Theatre Company lie immediately below the offices of a bricklayer's union. "They have different hours and routines, and there are acoustic isolation concerns." In some of the shows, "you have pyrotechnics going off below an office building." Then there was the request from donor Sidney Harman, who





Project: Sidney Harman Hall, Washington, D.C. Key players: Diamond + Schmitt Architects Client: Shakespeare Theatre Company

Harman Hall's glass skin (top and opposite, left), which admits light into the public areas and provides views out to the city (left and opposite, top right), is something of an anomaly among the stone colonnades characteristic of facades in the Federal Triangle.



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stipulated that his funds only support a multipurpose venue, not one that would exclusively show Shakespeare.

The solutions Mallard's team created were elegant and evidently successful. Harman's demand for flexibility proved to be a boon to the theater, which these days is often rented out by groups presenting everything from jazz concerts to chamber music. Although the new space is twice as large as the neighboring Lansburgh Theatre (also owned by the Shakespeare Theatre Company), each of the 775 seats in Sidney Harman Hall is "quite close to the stage." With the completion of Harman, the company effectively triples its capacity: The older Lansburgh can show one program, while the movable components in the Harman allow two shows to be produced on alternating nights.

Attendance was up by more than 25 percent in early 2008, and roughly 2,000 additional seats have been sold per show. Anecdotal evidence supports the numbers: "The Washington Ballet loves" the intimate space, according to Mallard, and the venue has been popular with the Washington Performing Arts Society. The hall has been in high demand since opening last year. "Its first year has been a phenomenal success," says Mallard. "It's been working overtime." *SH*



The acoustical system, seating, and stage itself (right) are configurable, allowing different types of performances on alternating nights.







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CIRCLE 72

"HERE WE GO AGAIN." We can almost hear our U.S. readers muttering this to themselves as they open another issue of RECORD devoted to impossibly exotic architecture in farflung places by foreign architects. Understandably, it seems that RECORD'S looking abroad for creative ideas affirms the perception that the U.S. is losing its edge in architectural innovation.

Many might grudgingly admit it's okay to publish international highfliers (Renzo Piano, Herzog & de Meuron, Zaha Hadid, et al.) who parachute down on U.S. soil to leave their architectural confections behind. Since their artifacts are in our own backyards, so to speak, we cannot exactly ignore them. And curiosity often trumps protectionism. But it's another thing for this magazine to cover architecture for quite different cultures, climates, and construction traditions, far from our shores.

While the majority of buildings that record publishes are by American firms, the magazine is open to showing work being done elsewhere–especially when it demonstrates an incomparable level of ingenuity and adventurousness. Even if the buildings shown on the following pages in Colombia, Brazil, Korea, and Japan arise from various circumstances, their endeavors conceivably could be reinterpreted and transformed for our own particular purposes.

Certain thematic approaches unite the following buildings in startling ways. Two projects seem to be attempting to make architecture almost disappear; one, the Kait Workshop at Kanagawa Institute in Atsugi, Japan, designed by Junya Ishigami, achieves an awe-inspiring ethereal structure through the elegant deployment of steel and glass. Outside, the architecture of the pavilion almost vanishes in reflections; inside, the attenuated columns unpredictably seem to multiply through-

out the space. Another project, Ewha Womans University in Seoul, designed by Dominique Perrault Architects, explores a dramatic topographical interaction with the site far beyond earth-berm architecture of the past.

A third project plays with the themes of monumentality-of a mountainous sort. Here, in the Parque Biblioteca España in Medellín, Colombia, Giancarlo Mazzanti has assembled three geodic masses to create a landscape in a barrio that is easily identifiable as a building, but not like one we have seen before. A fourth work of architecture, by the Portuguese architect Álvaro Siza, is in Brazil. The Iberê Camargo Foundation in Porto Alegre refines a Modernist vernacular on the exterior while employing the multilevel continuous spatial development of Adolf Loos's raumplan in its arrangement.

We are not proposing that all of the buildings solve their problems completely. At a close glance, Mazzanti's library bears marks of the difficulties of construction, a condition that even the exterior of Siza's concrete museum cannot avoid. Perrault's investigation of topography and architecture works best from the aerial perspective. A pedestrian walking down a long granitepaved ramp slicing through the site may find the hard surfaces of the path and the glass-and-steel walls overwhelm any sense of the building blending with nature. And for that matter, the glazing of Ishigami's workshop at Kanagawa Institute may seem to be a step toward the dematerialization that Mies pointed to, but also raises questions of privacy and glare on sunny days.

Nonetheless, the virtues of these projects warrant our attention. We can also benefit from looking closely at the ideas presented here from around the world to see if we can take their formal, technical, and programmatic inventions another step.

y Dominique Perrault Far From Our Own Backyard

BY SUZANNE STEPHENS

The 21,410-square-foot workshop anchors an exurban campus whose 40-year-old buildings are being replaced by new ones.

Junya Ishigami distills architecture to its bare minimum at the KANAGAWA INSTITUTE OF TECHNOLOGY WORKSHOP

By Naomi R. Pollock, AIA

ccasionally a building emerges that seems to transcend architecture's inherent limitations. Tokyo designer Junya Ishigami's Kanagawa Institute of Technology (KAIT) Workshop is one of those buildings. Articulated with minimal means—exterior walls of thin glass and interior clusters of slender white columns—Ishigami's ethereal structure is barely a building at all. While the transparent enclosure exposes everything inside, the delicate steel columns define scattered oases of open space, each one a different functional component. Awash in soft daylight admitted by glass bands overhead as well as the building's transparent envelope, Ishigami's meandering interior landscape creates the ambience of a tree-filled forest, not a college classroom.

A stellar debut, KAIT Workshop is the 34-year-old architect's first realized building after launching his practice in 2004 following a four-year stint working for Kazuyo Sejima. More recently, he authored Japan's pavilion at this year's Venice Biennale (page 77). Like the pavilion, the 21,410-square-foot workshop is modest in scale. Yet this single-story glass box is the centerpiece of the school's 32-acre campus, whose 40-year-old buildings are currently being replaced one by one. When this ambitious makeover is complete, the workshop will be visible from KAIT's main gate, where its 5,000 budding engineers and scientists pass each day. Located in Atsugi, an exurb 20 miles west of Tokyo, KAIT, like most Japanese universities, is a commuter school. Though Ishigami's parallelogram-shaped building gently challenges the rectilinear grid of pathways uniting the campus, it fits comfortably within the existing walkways encircling its site. The building has openings on all four sides, but its main entrance, indicated by an indented doorway and thin steel canopy, is closest to the campus gate.



Open to all KAIT students, the workshop accommodates nonacademic, creative pursuits ranging from molding silver pendants to assembling solar-powered cars. Daylight floods the building during school hours, while ceiling fixtures and task lamps enable the factorylike facility to operate long after classes end for the day. The one-room building contains 14 freely arranged, open spaces. These include a check-in area, denoted by an Ishigami-designed, donut-shaped counter, as well as specialized areas for pottery, woodworking, computer graphics, metal casting, and other media. There are also four multipurpose work spaces, a small supply shop, and an officelike alcove for the facility supervisors. Ishigami eschewed organizational devices, such as structural grids, proscribed circulation paths, and even walls (the closest lavatories are next door). Instead, he used rectangular columns, furniture of brown wood or white steel, freestanding HVAC units, and potted plants to modulate the whole 16-foot-high space.

"I wanted to create a building where it isn't clear if there are any rules at all," explains Ishigami. Yet it took a lot of work to reach this objective. In response to the client's request for many small spaces instead of one big studio, the architect started with a 13-foot grid of rectilinear columns but quickly found this framework too limiting. So he made incremental modifications to the pillars' positions, dimensions, and orientations. This enabled him to focus on qualitative criteria—such as the size and distribution of open areas and their relationship to one another—and to sculpt the space as if it were clay.

Naomi R. Pollock is RECORD's special international correspondent in Tokyo and the author of Hitoshi Abe, published this month by Phaidon Press.



A labor-intensive process that went on for three years, Ishigami's rigorous design phase required endless iterations involving 1,000 study models of various scales and drawings—both CADgenerated and, especially, hand-drawn—that enabled the fine-tuning of multiple variables at once. The completed building's 305 columns appear randomly distributed and arbitrarily shaped—290 variations of a quadrilateral—but were, in fact, very deliberately designed.

"Due to the complexity of the columns, it was important to keep the structural system as simple as possible," says structural engineer Yasutaka Konishi, a contemporary of Ishigami's who worked on





- 1. Lobby
- 2. Counter
- **3.** Work space
- 4. Wood working
- 5. Shop
- **6.** *Machine tool space*
- **7.** Casting space
- 8. Administration
- 9. Computer space
- 10. Print space

The interiors "borrow" scenery from the surrounding landscape (right), while creating a forest of potted plants and 305 steel columns arranged in irregular clusters that define a series of functional oases (bottom).







SANAA projects during his five-year tenure at Sasaki Structural Consultants. It consists of three main steel components: a conventional two-way roof frame, 42 compression columns for vertical loads, and 263 post-tensioned columns that carry horizontal loads like mini sheer walls. Though both types of columns are anchored with simple concrete footings, the compression and tension members connect to the roof frame with welded and pin joints, respectively. Because many of the supports do not align with the roof's 5-by-3-foot girder grid, Konishi inserted extra beams to bridge the gaps.

Despite their separate roles, the tension and compression members look the same to the naked eye. "I was striving for ambiguity even among the columns," explains Ishigami. But due to their oblong shapes, individual columns may appear different depending on the visitor's viewpoint—an illusion that compounds the intricacy of Ishigami's composition. Coated with white paint, each column is actually a slice of steel plate. Cut in various widths from slabs of three different thicknesses, each was tailored to the architect's exacting specifications. This unusual fabrication technique accommodated every permutation from the thinnest tension member, measuring 0.63-by-6 inches (16-by-145 mm), to the thickest compression member, measuring 3-by-4 inches (63-by-90 mm).

Construction was equally unorthodox. After workers put compression members and the roof frame in place, they suspended tension members from the girders but did not attach them at the bottom until after weighting the roof to simulate the snow load. "No one had ever built like this before," says Konishi. "I thought the building might sink or fall over." But when the weights were removed, the taut steel planes snapped into place and the roof popped up as expected. Made of steel deck with wire-reinforced-glass inserts, the roof tilts slightly to drain rainwater, and weighs as little as possible to handle earthquake forces. The designers put the exterior glass skin on a similar kind of materials diet. It's a mere 0.39 inches (10 mm) thick, but does require beefy glass ribs for vertical stability.

To blur the boundary between indoors and out, Ishigami eliminated all openings on the glass walls except for doors and a few small floor vents that draw fresh air supplied by roof vents. Like traditional Japanese borrowed scenery, the surrounding landscape serves as the backdrop for the interior. Inside, the columns function as abstract trees and potted greenery—each plant carefully selected by the architect—serves a bona-fide design role, not just a decorative one. By blending architecture and nature in a remarkably fresh and dynamic way, KAIT Workshop plants Ishigami solidly among those Japanese designers striving to reduce buildings to their bare minimum.

Project: Kanagawa Institute	General contractor: Kajima
of Technology Workshop,	
Kanagawa, Japan	SOURCES
Architect: Junya Ishigami +	Curtain wall: Asahi Building Wall
Associates—Junya Ishigami,	Roofing: Lonseal
Motosuke Mandai, project team	Paints: Kansai Paint Company
Consultants: Konishi Structural	Ambient lighting: ITL Company
Engineers; Izumi Okayasu (lighting)	Chairs and tables: Kodama Tec

ONLINE: To rate this project, go to architecturalrecord.com/projects/.



Álvaro Siza shows how architecture can be a journey at the IBERÊ CAMARGO MUSEUM

By Ruth Verde Zein and Clifford A. Pearson

iven an awkward site squeezed between an 80-foot-high cliff and a busy avenue, Álvaro Siza Vieira's design for the Iberê Camargo Museum (ICM) secures the building to its particular setting while reaching out both physically and metaphorically to a larger notion of place and culture. The first building in Brazil by the Pritzker Award–winning Portuguese architect, the museum houses the work of Iberê Camargo, a 20th-century painter who came from Porto Alegre, the city of 1.5 million in the south of Brazil where the museum is located.

To appreciate the ICM, one must understand both its physical and cultural context. Just as its site feels separated yet connected to the town around it, Porto Alegre has a complex relationship with Brazil as a whole. Closer to Montevideo, Uruguay, and Buenos Aires, Argentina, than to São Paulo and Rio de Janeiro, it enjoys influences from the entire region. Originally named Porto dos Casais (Couple's Harbor) for all the married people sent by Portugal to colonize the region in the 17th century, Porto Alegre hosted waves of immigrants from Germany, Poland, Spain, Italy, and other countries during the following three centuries, becoming a cosmopolitan melting pot in the process.

In the 1930s, collapsing coffee prices shifted power from the plantations around São Paulo and Rio de Janeiro to the cattle ranchers in Rio Grande do Sul, the state where Porto Alegre is located. At the same time, Brazilian Modernism began to assert itself with the patronage of enlightened intellectuals such as Rodrigo

Siza fit the museum and two one-story annexes on a tight site by stacking three floors of galleries above an entry level and putting parking for 100 cars under the avenue. Mello Franco de Andrade and work by architects like Lucio Costa. While architects in Rio de Janeiro—such as Oscar Niemeyer and Affonso Reidy—created sinuous, free-form buildings, and those in São Paulo—including Vilanova Artigas and Lina Bo Bardi—developed a Brutalist style, designers in Porto Alegre took a more pragmatic approach. In the 1980s,

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Porto Alegre's architects were again at the center of national debates, reinterpreting Modernism's rich Brazilian heritage and using it as a jumping-off point for new work. A similar approach drove the designs of their colleagues in São Paulo such as Pritzker Prizewinner Paulo Mendes da Rocha and a younger generation including Angelo Bucci, Alvaro Puntoni, MMBB, and UNA Architects.

During the past two decades, ties between the Brazilian and Portuguese design communities have grown, creating fertile ground for Portugal's most famous architect (and the winner this year of the Royal Institute of British Architect's Royal Gold Medal) to undertake a project on the western side of the Atlantic. Siza's biggest challenge with the Iberê Camargo Museum was dealing with the peculiar site—a narrow piece of land that had once been a quarry but enjoys excellent views of the Guaiba River. Siza has written, "Because of the steepness of the slope, the museum had to be developed as a vertical construction." So he arranged exhibition spaces on three floors around a tall atrium and put a café and teaching spaces in a pair of one-story annexes on the narrowest end

RECENTLY, BRAZIL HAS BECOME FERTILE GROUND FOR PORTUGAL'S MOST FAMOUS ARCHITECT.

of the site. Below grade, he connected the annexes to the museum and inserted storage, archives, and a small auditorium. Finding room for parking was particularly difficult. In the end, the architect was able to convince the client and the city to build a parking structure for 100 cars underneath the avenue.

A pragmatic Modernist, Siza creates memorable buildings by finding the vitality in their contexts. While responding to topography, as well as local materials and building culture, he also brings

Architect and critic Ruth Verde Zein teaches at MacKenzie University in São Paulo and is a former senior editor of the magazine Projeto. The building's distinctive arms (left and below) house ramps on the inside and help define an an intriguing entry plaza (bottom). The angled geometry continues in the lobby (opposite).









Ramps and corridors wrap around the central atrium (this spread) and extend beyond the main body of the museum, creating a cinematic experience of unfolding moments animated by light.







his own sensibility to every project. Rafael Moneo has praised Siza for his ability to "accept realities, knowing their ins and outs, and ... transform them from within."

For the ICM, Siza choreographed a series of unexpected moments, starting with an entry plaza that plays with ambiguous notions of outdoor space and enclosure. While the portion of the plaza leading to the café and the workshop building flows seamlessly from the sidewalk, the architect defined the plaza area adjacent to the museum with a trio of concrete arms extending overhead from the second, third, and fourth floors of the main building. The arms, which house ramps between the gallery levels, embrace the plaza below without ever touching it and create an outdoor room that reads as a vertical space open to the sky. Inside the museum, Siza carved out a second vertical void, this one serving as the central atrium for the poured-in-place concrete structure.

Although relatively small—just 88,000 square feet—the museum has a discreet monumentality that makes it impressive yet approachable. After entering, visitors take an elevator to the top floor, then walk down the spiraling series of ramps. Siza separated exhibition spaces from circulation, creating a double tempo:

THE BUILDING GIVES THE REMARKABLE IMPRESSION OF BEING LARGER INSIDE THAN OUTSIDE.

andante largo for the nine art galleries on three floors, and *allegro presto* for the movement along the ramps. He provided only a few windows in the circulation spaces, but each opening offers a carefully framed view of the river or the avenue. Using a version of Adolf Loos's *raumplan*, he varied the height of gallery floors, then negotiated these differences with the building's distinctive ramps. The clever sequencing of exhibition spaces on two sides of the central atrium give the building the remarkable impression of being larger inside than outside. While almost all surfaces inside the museum are



white, caramel-colored wood floors and strategically controlled daylighting give the interiors a warm, sensual glow.

The ICM bears a familial resemblance to other Siza works, but its bold approach to structure acknowledges the intelligence of Lina Bo Bardi and the Brutalist forms of other Paulista architects so different from the freewheeling designs of Carioca Modernism. It's a light and clear building housing the work of an artist whose work was sometimes dark. With its flowing ramps, it embodies Siza's view of architecture as movement, as a journey. Cinematic in nature, it takes visitors from grand spaces to tight corridors, from the practical to the extraordinary.

Project: Ibere Camargo Museum, Porto Alegre, Brazil Architect: Álvaro Siza Vieira— Álvaro Siza Vieira, principal; Barbara Rangel (before 2001), Pedro Polónia (after 2001), principals in charge; Michele Gigante, Francesca Montalto, Atsushi Ueno, Rita Amaral, project team Engineers: Gop, Lda—Jorge Nunes da Silva, Ana Silva, Raquel Dias, Filipa Abreu (structural); Raul Bessa (mechanical); Higini Arau (acoustical)

ONLINE: To rate this project, go to architecturalrecord.com/projects/.

An auditorium (left) and support spaces such as storage and archives are tucked below grade. Siza carefully framed views with the few windows he used along the ramps (opposite).







- **3.** Reception
- **4.** Bookstore
- 5. Atrium
- 6. Cafeteria
- 7. Mezzanine
- 8. Exhibition
- 9. Parking



FOURTH FLOOR



SECOND FLOOR





Giancarlo Mazzanti builds an icon to foster optimism in Medellín, Colombia, with his PARQUE BIBLIOTECA ESPAÑA

By Beth Broome

Ithough Medellín, Colombia, a valley metropolis of more than two million in the northern reaches of the Andes, is sometimes called the City of Eternal Spring, it is better known for its erstwhile reputation as Murder Capital of the World. It earned its nickname when drug lord Pablo Escobar and his minions made it the center of their business operations in the second half of the 20th century, and guerilla and paramilitary groups and street gangs proliferated in their wake. Though Escobar was "taken out" 15 years ago and the crime rate has dropped dramatically, Medellín has been fighting a long uphill battle to reinvent itself and gain back its reputation as a vibrant commercial and academic center.

Following in the footsteps of the country's capital, Bogotá, the city started developing a social master plan in the late 1990s. By creating infrastructure, architecture, and community programs, the government hoped to bring opportunity to the lower classes (to repay a historical social debt of inequity), improve the quality of life for all, and draw business and tourism to Medellín. Since the turn of the millennium, the city has been experiencing a building boom (guided

> The library is composed of three discrete forms, each housing a separate program element. Its presence has put the neighborhood on the map once again – this time for something it can be proud of.





Mazzanti took advantage of the prominent site, employing unusual forms and materials that make the building visible from great distances (above and opposite). The Santo Domingo Savio barrio is best accessed by way of a public gondola (visible above, on the horizon at left). The library (especially its computer labs) is a magnet - and refuge - for local school children (left).

most notably by Mayor Sergio Fajardo) of parks, housing, schools, libraries, and new public transportation—concentrated primarily in poorer neighborhoods—for which it has employed many accomplished designers from within the country.

In 2005, Colombian architect Giancarlo Mazzanti, whose firm is based in Bogotá, was awarded two public commissions by way of open competition, and has designed a pair of libraries, one in the neighborhood of La Ladera, the other the Parque Biblioteca España, whose striking, unorthodox form sits in stark contrast to the makeshift architecture around it in Santo Domingo Savio barrio.

Completed in 2007 at a total cost of about \$4 million, Parque Biblioteca España, which looks out over the valley from its hillside perch among simple brick and stucco structures, has a profound presence and has caused quite a stir, which has spread far beyond the neighborhood. At the end of the last century, the Santo Domingo Savio barrio was considered one of the most violent in all Latin America—so dangerous that the police pur-

portedly would rarely enter. Though much improved today (no longer dominated by a panoply of outlaws, it is now fairly safe to walk around), it is still an impoverished district. Few cars use the winding, narrow streets, so a strange silence pervades, penetrated by the rattling of homemade go-carts that children race down the hills. Most people enter the neighborhood by way of the new Metrocable, a gondola that serves some of the city's more depressed and inaccessible areas. Mazzanti responded to this most unusual site by building not just a public facility in a densely populated community, but also a point of pride for the neighborhood and a symbol for the larger city. The program requirements were straightforward, calling for a library, auditorium, classrooms, and administration areas.

Though the 11,500-square-foot library's three discrete, boulderlike shapes were informed by the rugged, mountainous terrain, they also help the building stand out from the surrounding neighborhood, emphasizing its monumental scale and muscular stance. The program is simply divided among the three masses: auditorium, library, and community center, which are linked by a rectilinear con-

UNTIL RECENTLY, THE SANTO DOMINGO SAVIO BARRIO WAS CONSIDERED ONE OF THE MOST VIOLENT IN ALL LATIN AMERICA.

crete podium at the main level. The various areas are entered through this "covered public square," which is topped with a wood deck, connecting the volumes at the next level and offering dramatic views down into the valley through the voids between the faceted mounds.

The facades' glazing is limited to small square and rectangular windows grouped in irregular patterns on axis or on a diagonal.







SECTION A-A



SECTION B-B



SECTION C-C



The library's three stone-tile-clad volumes are connected by a concrete base, which holds a lobby and is topped by a wood platform. The deck offers spectacular views out to the city through the voids between the building's massive, rocklike walls (opposite).

Auditorium
Library

beck
Event space
Classrooms
Day care
Offices
Reading room
Computer lab

13. Stair to deck

PHOTOGRAPHY: © SERGIO GOMEZ

Lockers
Restrooms
Backstage
Balcony

Community center
Main entrance
Lobby







The library viewed from outside (opposite, top). The auditorium's stadium seating follows the contour of the hillside (opposite, bottom left). A wood screen encloses a classroom (opposite, bottom right). The main entrance leads into the lobby, located under the deck (this page).

Daylight enters the library and community center mostly by skylights that run around the periphery of the roof and bring light into the broad floor-to-ceiling chasm between the poured-in-place concrete core and the steel-framed envelope, which is clad with dark stone tile. The library's core houses three stacked, double-height reading rooms, each ringed with computer stations in upper balconylike mezzanines that look down on the rooms below. At its uppermost level, an event space tops off the core. The community center holds a day care in one of the lower levels and, within the core, classrooms/workshops and an exhibition/event area. The auditorium is a simple white space lined in drywall with dark strips of acoustic fabric on the back wall and ceiling. Its stadium seating follows the steep contour of the hillside to which the whole building clings. The solitary source of daylight, a cluster of small windows, admits light into the backstage area. Limiting apertures to create an inward-looking building was an intentional move by Mazzanti. This "disconnects the people temporarily from their context," says the architect. "We wanted to take people from this poor community into another place and change their reality." And it works: In the pleasant interiors, animated

world just beyond the library's confines. Mazzanti employed simple materials, such as the dark stone tile for the exterior walls, which comes from the Bogotá area; a local

with children's activity, one quickly forgets the difficult realities of the

stone tile for the floors, commonly referred to as "*café pinto*"; and drywall. Oak paneling sheathes many of the interiors in the library core, and is accented with squares of lime-green laminated glass, while a dark stained patula pine wall system encloses the core space in the community center.

Though the library has only been open about a year and a half, it is already showing signs of aging. There is water damage around many of the windows, and some of the exterior tile, which is fastened to a fiber-cement-board substrate with rivets, has fallen off, while a white efflorescence runs down portions of the facades. These

LIMITING APERTURES TO CREATE AN INWARD-LOOKING BUILDING "DISCONNECTS THE PEOPLE TEMPORARILY FROM THEIR CONTEXT."

problems are largely attributable to the difficulties of public construction in Medellín. Among other things, Mazzanti says he had just three months for the design phase (which is typical for public work), and that construction deadlines were pushed—and corners cut—to complete the building in time for a visit from King Juan Carlos I of Spain who contributed a small sum toward the project (hence its name). Mazzanti, who says that he is working to make the necessary repairs, also acknowledges that pushing the envelope with the design may



have been a stretch for the government-assigned local work crews, which use low-tech construction methods and low-skilled labor.

Construction quality is one factor that has left the Colombian architecture community divided on the library, which won the 2008 Iberoamerican Architecture Biennial award and has grabbed the widespread attention of the international press. "The fact that it received an award has caused the first real uproar we have had in the architecture community for years," says one Colombian architect, explaining that some believe the library, among other things, is not representative of "Colombian architecture." But others question the existence of a single, authentic vernacular. "It's not so much a Colombian tradition as a Salmona tradition," says another architect, referring to the detailed masonry work that became the hallmark of the revered late Colombian architect Rogelio Salmona, a widely adopted approach with which Mazzanti does not actively identify. Instead, Mazzanti, who says he is "interested in understanding conditions that reflect what the world is today," maintains that inserting riskier, global architecture in this context was necessary to create the symbolic gesture he was after.

With the Parque Biblioteca España, Mazzanti set out to create an icon, and in this he has been successful. With its site, bold forms, and materials, the library is the most visible of the projects associated with Medellín's recent program to use architecture to effect social change. It has also helped catalyze a challenged community, especially its children, who flood the computer stations and play and socialize on the deck. Additionally, the building has created a pride of place, with boys even greeting visitors getting off the gondola by offering "architectural" tours. This is quite a change from the feared neighborhood of the recent past. Given all this, of course, it is incumbent on the city to maintain the building: Watching a symbol of hope fall into disrepair could have troubling consequences. It is critical that the powers that be in the municipal government have a continued interest in the Parque Biblioteca España and other programs they have helped bring into the small world of Medellín.

Project: Parque Biblioteca España, Medellín, Colombia Architect: Giancarlo Mazzanti Arquitectos—Giancarlo Mazzanti, principal; Andrés Sarmiento, Juan Manuel Gil, Fredy Pantoja, Pedro Saa, Gustavo Vasquez, Iván Ucros, project team Engineers: Sergio Tobon, Alberto

Aschner (structural)

Consultants: Mesa y Uribe Paisajistas (landscape); Scheder Lighting (lighting)

SOURCES Roofing: MeTecno Drywall: Colombit Conveyance: Andino Ascensores

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Dominique Perrault blends built and natural environments in a new campus center for the growing student body of Seoul's EWHA WOMANS UNIVERSITY

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A bird's-eye view d the Ewha Womans University campus center reveals Perrault's skillful crafting of the underground structure into the topography.

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Open to Seoul's Sinchon district, the new "valley" directs traffic up to the original campus (this page). A view from the stairs displays the center and city beyond (opposite).

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By Robert Ivy, FAIA

lurring the line between construction and topography, French architect Dominique Perrault's campus center for Ewha Womans University in Seoul, South Korea's trendy Sinchon district is seamlessly integrated into the sloping hillside it intersects. At the crux of the prestigious campus, this multitiered, multifunctional hive of activity anchors the site and creates a landscape of its own.

The unique site is particularly fitting for the school, which was founded by American Methodist missionary Mary F. Scranton in 1886 and named Ewha (*pear blossom* in Sino-Korean) by the emperor in 1887 for the abundance of delicate flora at its original location in the city's central Chong-dong area. Beyond poetic metaphor, however, necessity was the mother of this striking structural invention.

Primarily, the existing gated campus of traditional Collegiate Gothic structures, designed in the 1930s by W.M. Vories, the eponymous, Japan-based architectural design firm of Kansas-born William Merrell Vories, was becoming increasingly inadequate. Ewha had risen in prominence and size to more than 20,000 students—reputedly the world's largest private women's university. Yet, while its international student body continued to grow, most domestic students were living at home, many with 2-hour commutes, and the campus lacked sufficient study space or places to gather for long days at school. For those who did remain on campus, weekends proved disconcertingly lonely and detached. Moreover, the addition of a notable building would communicate the university's growing global connection.

Working with a task force, former university president Shin In-ryung established structural and logistical guidelines for the proposed facility. It would be embedded into the landscape, include bi-level parking and a commercial area on lower levels, and redefine access to the campus. It was also determined that the project would require a design by an established international architect. So in February 2004, invitations to compete for the project were sent to a select group of firms from which three finalists were chosen: Zaha Hadid, Foreign Office Architects (FOA), and Perrault.

Ultimately, the commission was awarded to Perrault for his scheme's sensitivity to landscape. According to the architect, his brief was "to expand urban activities into the campus." His solution was to rebuild the site's original topography, a hill with a slope; introduce the new building into the "constructed" hillside; then cover the building with a park. The result is both heroic and natu-



Daylight fills the atrium, via the glazed facade, passing into inner rooms through glass walls. A sprinkler system in the ceiling adds a note of color (opposite).

- 1. City access
- 2. Ramp
- **3.** Exterior valley
- 4. Stair
- 5. Campus access
- 6. Side doors
- 7. Center access doors
- 8. Theater
- 9. Cinema
- 10. Shops
- **11.** Café
- 12. Fitness room
- 13. Sunken garden



SECTION B-B

A State of the second

ralistic, depending on the viewer's perspective.

Remarkably, little changed from Perrault's original program. Crucial to his realization was the decision to bifurcate the concreteframed structure, dividing it into seemingly cloned halves by an immense rift, or "valley"—a strong assertion of contemporary intervention into the landscape. Ramped from its intersection with the street, this passage, lined with granite pavers, descends into the sliced reconstructed hillside, allowing access to the buildings along its route. It then terminates at a grand stairway that not only climbs up into the campus at the opposite end but serves as an informal seating area or, as

Perrault envisioned, an open-air amphitheater. Intended to be a link to the community and social space for students and visitors, this walkway maintains a controlled progression of height to width that points downward to the interior activities, and upward to the older buildings on the hills above.

Insulated glazed walls, supported by a polished, stainlesssteel-clad aluminum framing system notable for its perpendicular vertical fins, provide light to the lowest interior levels and animate both indoor and oudoor spaces with human activity. Intermittent doorways, signified by bold graphic numerals, provide the simplest of alterations to the otherwise continuous curtain wall.

Surmounting the binary structure, a green roof partially con-

ceals the large building footprints. At the outset, Perrault intended to plant trees in this overhead park, but the shallow depth of the soil would only permit grass and shrubs. Nonetheless, the constructed roofscape produces a natural effect with a stone path that meanders among plantings, artfully introduced mechanical elements (read chimneys), and stairs. It is difficult to understand if the park existed on the hillside, or if the hillside is entirely new. Indeed, the passageway can disappear from view, depending on where one stands on either side of the building, leaving only greenery merged with the campus landscape. Perrault, a proponent of below-grade structures—with built

EWHA HAD RISEN IN PROMINENCE AND SIZE TO MORE THAN 20,000 STUDENTS – REPUTEDLY THE WORLD'S LARGEST PRIVATE WOMEN'S UNIVERSITY.

projects like the French National Library in Paris and Velodrome and Olympic swimming pool in Berlin under his belt—feels there should be more research on the use of the earth, or landscape, as a viable building material like concrete or steel. "Usually nature is around the architecture," he says, adding that he and fellow architects should be "thinking about another kind of relationship with nature and soil." Within this trompe l'oeil–like setting, one will find a battery







Inner walkways connect and intersect on all levels (opposite). Level B-4 features clusters of doorways to the outside (top left). The stainless-steel-clad framing is marked by vertical fins (center). Daylit classrooms sport a subtle industrial style (bottom).

of much-needed spaces—enough to constitute "a small city," notes Yoonhie Lee, associate professor of the university's department of architecture, and a member of the original competition committee instrumental in the center's interior programming. No single programmatic element dominates, though the building tends to aggregate the noisier, more social activities on the lowest level, four levels beneath the roof. Like a commercial district, this level, B-4, contains a twinnedscreen art cinema, coffee houses, a gymnasium, restaurant, theater, art exhibition space, commercial banks, and retail outlets.

The higher you ascend, the quieter it gets, because, explains Lee, while classes are held here, one of the center's most important functions is to provide places for study. Formal, monitored librarylike spaces, with reserved carrels and desks, alternate with informal couches interspersed throughout, where students talk in small groups, review lessons, or simply socialize. A large, open staircase links upper and lower levels adjacent to the glazed curtain wall and seems to attract more student traffic on inclement days than the "valley" outside, which can seem daunting. While gravity-based drainage removes heavy monsoon rain, snowfall on the outer passage must be cleared by hand.

Of course, one benefit of building into a hillside is energy conservation. According to university sources, the thermal mass of the green roof and side walls sheltered by existing topography has resulted in a passive protection system that saves up to 25 percent of total energy costs as compared to conventional construction. Perrault also used a concrete core activation system, (aka in-floor HVAC made of piped heating and cooling under floor slabs) along with a "thermal labyrinth" system that optimizes air flow in the interstices between retaining walls and other structural elements to cool ambient air. And while the building's interior could have been dark and dingy, Perrault and his collaborators inserted light wells down through to the lowest inhabited levels, a strategy augmented by the glazing.

In terms of budget, the simple system and material choices, such as exposed-concrete columns, helped to deliver the building on time and within the financial strictures of the university. Even fireproofing, often prohibitive in such large open spaces, doubled as decorative elements in the otherwise muted interiors.

Clearly, Ewha Womans University took a bold step specifying a scheme that goes not up, but down. No less dramatic or memorable than the towers dotting the Asian landscape, the campus center makes a strong statement of the institution's commitment to the future, to its heritage, to its place in the environment, and to its students.

Project: Ewha Womans University	Engineers: VP&Green, Jeon and
Campus Center, Seoul, South Korea	Lee Partners (structural); Perrault
Architect: Dominique Perrault	Projets (architectural); HL-PP
Architecture	Consult (building services); CGE&C,
Collaborating architect: Baum	Seoul (civil); Rache-Willms
Architects	(facade); Jean-Paul Lamoureux
Landscape: CnK Associates	(acoustic); Himec (mechanical)

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The latest crop of campus buildings reflects student values while providing top-notch environments for study and research.







YALE UNIVERSITY SCULPTURE BUILDING AND GALLERY New Haven, Connecticut

KieranTimberlake inserts a set of buildings within an urban block and surrounds studios with a high-tech curtain wall.

ARIZONA STATE UNIVERSITY ISTB 1 Tempe, Arizona

Perkins+Will responds to climate and program with a sculptural composition that takes its cues from the path of the sun.

MIT PDSI

Cambridge, Massachusetts

Payette drops a mostly glassenclosed addition in the courtyard of a Beaux-Arts structure, creating a dynamic, daylight-filled space within.

By Joann Gonchar, AIA

f the recent proliferation of lists and rankings that measure the commitment of colleges and universities to sustainability is any indication, environmental stewardship is a high priority for prospective students. The nonprofit Sustainable Endowments Institute has a College Sustainability Report Card. Grist and Forbes magazines have published lists of the greenest schools. And college guides from test-prep companies Princeton Review and Kaplan include a category for environmental responsibility. These organizations and publications evaluate institutions on the basis of criteria such as course offerings, purchasing practices, and energy use. Naturally, new buildings play an important role, not only in the race to be dubbed the most environmentally friendly, but also in the quest to provide the best and most up-to-date facilities for study and research. This month's building types study examines a small sampling of such undertakings.

With its LEED Platinum–rated Sculpture Building and Gallery at the edge of Yale University's New Haven campus, KieranTimberlake transforms a former surface parking lot into a complex of three buildings and a parklike green space. In so doing, it helps repair the surrounding urban fabric. An extremely energy-efficient but transparent curtain wall envelops the main structure, providing controlled daylight well-suited for making art.

At Arizona State University, in Tempe, Perkins+Will responds to a very different program and climate with the Interdisciplinary Science and Technology Building 1. The 175,000-square-foot LEED Gold lab is made up of two interconnected sculptural volumes that frame a courtyard and have varied elevations that take their cues from the path of the sun.

The Massachusetts Institute of Technology did not pursue LEED for the project known as PDSI, which houses facilities for physics, the department of materials sciences engineering, spectroscopy, and infrastructure. Nonetheless, PDSI illustrates an undeniably sustainable approach. Instead of building entirely anew, Payette builds within a courtyard in a vast domed complex. In addition to increasing the density of MIT's building stock, it provides updated and more efficient mechanical infrastructure to a large section of the complex, and more important, it fosters social interaction and scientific collaboration.

Given the current economic uncertainty, it is anyone's guess if other ambitious and environmentally responsible projects like these will move forward on U.S. campuses. If the stock market plunges further and credit remains tight, the health of endowments, the largess of donors, and the ability of schools to borrow will surely be adversely affected. However, one can hope that institutions will build sustainably with whatever limited resources are available. If the sheer number of lists ranking schools on the basis of environmental policies and practices is an accurate measure, student appetites for all things green are unlikely to abate anytime soon.

One: YALE UNIVERSITY SCULPTURE BUILDING AND GALLERY

New Haven, Connecticut

KieranTimberlake inserts a daylight-filled, high-performance jewel box within an urban fabric, strengthening an arts hub. By Joann Gonchar, AIA

Architect: KieranTimberlake Associates—Stephen Kieran, FAIA, James Timberlake, FAIA, design partners; James Unkefer, AIA, associate in charge; Steven Johns, AIA, project architect Client: Yale University Consultants: CVM Engineers (structural); BVH Integrated Services (m/e/p, fire protection, civil); Andropogon Associates (landscape); Atelier Ten (environmental); Arup (lighting)

Construction manager: *Shawmut Design and Construction*

Size: 55,000 square feet (studio building and gallery): 131,000 square feet (parking garage) Cost: \$36.5 million (studio building, gallery, garage) Completion date: September 2007

SOURCES

Curtain wall: Schuco Glazing: Viracon; Kalwall Red cedar: Reclaimed Lumber Interior lighting: Zumtobel; Columbia Lighting; Axis Lighting; Kramer Lighting; Lighting Services Lighting controls and sensors: Lutron; Sensorswitch

ONLINE: Rate this project and access additional sources at **architecturalrecord.com/bts/**.

tobel; year after com *Lighting;* building would *ng Services* for the archite **sensors:** Paul Rudolph's Architecture E renovation by Gwathmey Sie One of th long-term goa

Yale University's sculpture program might be the only project that has won LEED Platinum from the U.S. Green Building Council without its design team even trying, jokes Stephen Kieran, FAIA. Shortly before construction began, consultants realized such a distinction, well above the client's target of Silver, was within reach. "We didn't sit around counting points," says Kieran, partner at KieranTimberlake Associates (KTA), Philadelphia. He credits the achievement to an integrated design process and a tight, 21-month schedule for programming through occupancy. "The ideas had to click and come fast. We didn't have time for second-guessing."

The \$36.5 million new home for

Program

This need for speed was a byproduct of the logistically complex shell game that is part of the university's \$500 million capital plan for the visual and performing arts: In its first year after completion, the sculpture building would serve as swing space for the architecture school while Paul Rudolph's 45-year-old Art and Architecture Building was under renovation by New York City-based Gwathmey Siegel & Associates.

One of the larger and more long-term goals of the university's roughly decade-long arts construction program is to increase interaction among the various disciplines. To that end, plans for the



sculpture facility included moving it from another part of campus to the site of a former surface parking lot a short walk from the Yale Repertory Theater, the Art and Architecture Building (now Paul Rudolph Hall), Louis Kahn's University Art Gallery, and his Center for British Art.

The project brief called for individual studios for graduate students and undergraduate sculpture majors, offices, classrooms, and a gallery. The building needed to include shop space for wood, metal, and nontraditional media, such as video. In addition, city regulations mandated that parking be included.

Solution

The architects responded to these requirements with a complex of three structures for the irregularly shaped site that occupies a large portion of a New Haven block. For a sliver of land that juts out toward a residential street, KTA designed a freestanding gallery clad in reclaimed cedar sympathetic to the At night, the glassclad studio building glows like a lantern.

scale and material of adjacent wood-framed buildings. For the part of the lot bordering a commercial corridor, they developed a 280car parking structure with retail space at

ground level. And at the block's core, on a portion of the site without street frontage, they inserted a fourstory, steel-framed box to house studios and support spaces.

Enveloping this studio volume is a translucent and transparent curtain wall that helped the building achieve Platinum, along with interdependent features such as an innovative displacement ventilation system and daylight dimming controls. The ultra-high-performance skin lets daylight pour into the interior, while providing a high insulation value. It consists of alternating bands of triple-glazed low-E vision glass and aerogel-filled spandrels. The south facade has a filagreelike horizontal shading system that mitigates heat gain and glare in summer but allows winter sun to penetrate.

The top three floors of the building are devoted to the studios, where finishes are primarily exposed structure: carefully detailed wide-flange steel sections with bolted connections, concrete



ARTS AREA PLAN











1. Sculpture

2. Gallery

3. Garage

- Studio Building
- 5. Jeffrey H. Loria Hall 6. University Art Gallery
- 7. Swartwout Building
- 8. Street Hall
 - 9. Center for British Art
- The studio-building skin is made of alternating bands of transparent triple glazing and translucent spandrels.



- 1. Studio levels
- 2. Wood shop
- 3. Classroom
- 4. Laser cutter room
- 5. Production studio



The south facade of the studio building (below) has a filagreelike shading system. The studio levels (opposite two) have a carefully detailed exposed wide-flange structure, metal-deck ceilings, and concrete floors. These levels were left open for the architecture students. However, the sculptors will have individual studios enclosed by drywall partitions.









10

THIRD FLOOR

- Exhibition
 Tunnel to gallery
 Editing studio
 Production studio
 Computer lab
 - 6. Storage
 - **7.** Laser cutter room
 - 8. Classroom
 - 9. Lobby
 - **10.** *Gallery***11.** *Offices*
 - 12. Wood shop





- 14. Terrace
- **15.** Individual studio
- 16. Crit space
- **17.** Seminar room



The separation of the project into gallery, studio, and garage (opposite, top right) allowed creation of a parklike green space. The gallery is clad in salvaged red cedar (opposite, bottom). Although it is a freestanding structure, the gallery is connected to the studio building through an underground ramp (opposite, top left). From the sculpture building's main stair landings on the second (right) and third floors, occupants have access to terraces. From the fourth-floor landing (below), students can look out over the gallery and its green roof.





floors, and 14-foot-high metal-deck ceilings. "We thought of the building as a contemporary loft with daylight everywhere," explains Kieran.

Commentary

During a recent autumn afternoon, a soft light washed over the interior, making the studios seem perfectly suited to visual endeavors. Even so, some of the architecture students, accustomed to Rudolph's idiosyncratic building, were reportedly dissatisfied with the almost Miesian rationality of the new structure.

For these temporary tenants, the studio floors were left open, with desks in the long side bays flanking a pinup area. Contractors are now making adjustments for the sculptors' move in January, installing partitions for the individual studios.

With these alterations under way, it is difficult to envision the character of the space the sculpture students will occupy. More clear is the positive contribution of the complex on its surroundings. It sensitively restores what Kieran calls "missing teeth" in the urban fabric. And the separation of the project into three volumes allows creation of a parklike green space and midblock path that is part of a string of alleys and courtyards, loosely connecting some of Yale's arts buildings.

However, one can't help wondering if the project would have been urbanistically stronger had the architects swapped the locations of the garage and studio building, inserting the parking structure in the interior of the block, and placing the pristine glass box on the street. Although the garage, clad in a basket-weave pattern of fiber-cement panels, is handsome, the academic building would have contributed far more vitality to the street.

But such an approach would have been "particularly disastrous" for a daylit building due to the exposure of the western portion of the site, says Kieran. Of course, architecture often involves tough choices. KTA decided to make performance a priority rather than focus on the way the project engages the commercial street.







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Two: ARIZONA STATE UNIVERSITY ISTB 1

Tempe, Arizona

Perkins+Will creates a LEED-Gold lab facility for a fast-growing campus in the Valley of the Sun. By Jenna M. McKnight

Architect: Perkins+Will-Ralph Johnson, FAIA, design principal; Michael Smith, AIA, managing principal; John Becker, project manager; Bryan Schabel, AIA, and Cengiz Yetken, AIA, senior project designers; Lewis Wood, AIA, project architect; Scott Allen, Bill Berger Yong Cai, Mary Guerrero, Jeff Olson, Cesar Pineda Michele Sainte-Starbuck, Lynette Tedder, Mariah Walters, project team Associate architect: Dick & Fritsche Design Group-John Dick, Darrin Orndorff, Staci Seyer, Becky Tomasek **Client:** Arizona State University **Consultants:** KPFF Consulting Engineers (structural); Bard, Rao + Athanas Consulting Engineers (mechanical); Brooks Engineers & Surveyors (civil); Logan Simpson Design (landscape); Battle McCarthy Consulting Engineers (sustainability); Jacobs Consultancy (laboratory)

Size: 175,000 square feet Cost: \$58 million Completion date: January 2006

SOURCES

Metal/glass curtain wall: Arcadia Sunscreens: C/S Group Lab casework: Fisher Hamilton Acoustical ceilings: Armstrong Furniture: Steelcase; Brighton; Krug Flooring: Armstrong; Interface Carpet; Nevamar

ONLINE: Rate this project and access additional sources at architecturalrecord.com/bts/.

In 2002, shortly after becoming president of Arizona State University (ASU), Michael Crow announced his plan to transform the institution into a research powerhouse. His thinking: Build great facilities, and world-renowned scientists will follow. The school swiftly embarked on a campaign to construct 1-million-square-feet worth of research space. As part of this boom, the university commissioned Perkins+Will to design the first of five Interdisciplinary Science and Technology Buildings. The 175,000square-foot ISTB 1 was to house a mix of researchers, from bioengineers developing medical devices to entomologists studying honeybees.

Program

ISTB 1 was to be inserted into the campus core, on a rectangular site bordering a busy street, and it needed to include research labs and support space, offices, and meeting rooms – a fairly straightforward brief. It also had to accommodate a 25-foot-tall nuclear magnetic resonance (NMR) spectrometer, used to examine molecules.

A layout that fostered collaboration was essential, as was flexibility, given that new discoveries could necessitate the reconfiguration of interior spaces. In addition, the building needed to respond to the harsh desert climate, and to achieve at least a LEED Silver certification. Concerns about rising construction costs also played heavily into the \$58 million project.

Solution

The architects aimed to create a highly pragmatic facility with sculptural flair. Given that labs typically are "insular," they also wanted to make the building "part of the life of the university," explains Ralph Johnson, FAIA, design principal.

The architects created two poured-in-place and precast-concrete volumes that together form an angular J-shaped footprint. The elongated western wing, which extends to the street, houses the labs; the smaller eastern portion contains offices. Both volumes frame a paved courtyard, where a landscaped bed is punctuated by three domed skylights that bring sunlight into a below-grade space. The designers embedded one of the skylights in a panel that opens to allow the NMR instrument to be lowered into its basement "suite."

The west wing is, for the most part, a rectangular block, topped with a 25-foot-high mechanical penthouse clad in corrugated metal. The east wing is more dynamic. Part of it sits on pilotis, creating a doubleheight shaded plaza on the south. Further enlivening this elevation is an outdoor staircase with glass balustrades and a glass-enclosed lobby. A heavily used pedestrian path cuts through the site's southeastern corner, which "opens up







Two concrete volumes form a J-shaped footprint, as the southern





A view from the northeast corner (left) reveals how the sculptural form of the east wing contrasts with the rectilinear west wing. The labs (bottom) feature open-floor plans and standard-size lab modules that can be

easily reconfigured. A second-story meeting room (opposite, top) in the center of the building provides a view of the recessed lobby, which is accessed via a doubleheight, shaded plaza on the south (opposite, bottom).





- 1. Courtyard
- 2. Walkway
- 3. Lobby
- 4. Open office
- 7. Loading area

5. Labs

6. Lab support space





20 FT.

the building a little more to student circulation," Johnson explains.

Varied facades take their cue from the sun. On the facility's west side, which contains unoccupied spaces such as storage rooms - and where solar penetration was a big concern - the architects employed mostly concrete. On the south, concrete slabs frame recessed windows, which are further shielded by horizontal sunshades. Other elevations feature aluminum louvers that help reduce glare and heat gain, but allow light to filter into the interior. According to Bryan Schabel, senior designer, natural light reaches 82 percent of the occupied space.

The facility's solar orientation helped it earn LEED Gold certification, ASU's first building to receive that distinction. Other green features include concrete with fly ash, local materials, and strategies that reduce energy and water consumption.

The interior, overall, feels environmentally and economically conservative. The color palette is subdued – gray, blue, and beige dominate – and finishes include ecofriendly carpet tiles in the offices, and concrete flooring in the lobby. Exposed ceilings in some areas further contribute to the interior's pared-down aesthetic.

Commentary

Given that lab buildings are rarely striking works of architecture, Perkins+Will is to be commended for designing a highly sustainable, utilitarian facility that has some verve. Creating two volumes, rather than one big box, was a clever solution: The office wing has an exuberant quality that nicely counters the bulkiness of the lab wing. The ample outdoor gathering space is another plus, as it invites passersby into the site, further energizing it.

The abundance of concrete is not particularly uplifting; a fountain would be a nice addition (and apparently was part of the initial scheme). Also, the interior could use a touch of color, via artwork or bright upholstery. Overall, though, ISTB 1 is a successful fusion of form and function – and a handsome addition to the ASU campus.





Three: MIT PDSI Cambridge, Massachusetts

Payette drops a new structure inside a group of buildings, creating a bold, interactive space while updating its century-old neighbors. By Josephine Minutillo

Architect: Payette—James H. Collins Jr., AIA, principal in charge; Charles Klee, AIA, project architect; Jeff DeGregorio, AIA, Ronald F. Blanchard, AIA, Sarah Radding, AIA, Surajit Nandi, Stephanie Schwarz, Deborah Abraham, Michael Wislon, Santiago Garay, project team Consultants: Imai Keller Moore Architects (associate architect for renovations); SEi Companies (now WSP Flack+Kurtz)(m/e/p/fp); Weidlinger Associates (structural) General contractor: Richard White Sons

Client: Massachusetts Institute of Technology

Size: 50,000 square feet (new construction); 75,000 square feet (renovated construction); 217,000 square feet (infrastructure improvements) Completion date: May 2007

SOURCES

Metal/glass curtain wall: Vistawall Chilled beams: Trox Resilient flooring: Nora Systems (rubber); Atlas Carpet Mills (carpet) Ceilings and suspension: Decoustics Limited (acoustical); Chicago Metallic Company (metal baffle); Armstrong Doors: Columbus Door Company (wood); Total Door (fire-control) Sliding privacy panels: Lumicor

ONLINE: Rate this project and access additional sources at *architecturalrecord.com/bts/*.

When the architects at Boston-based Payette suggested that the best and most efficient way to renovate a group of old buildings was to build a totally new structure within their walls, the client was understandably skeptical. And when your client is a collection of world-renowned scientists and mathematicians accustomed to being the smartest people in the room, you've got to really make your case.

But Payette isn't intimidated by brainy academic types. The firm has built countless research facilities, laboratories, and residence halls at top universities across the U.S., and as far away as Pakistan. The folks at the Massachusetts Institute of Technology (MIT), in Cambridge, Massachusetts, on the other hand, have had plenty of experience dealing with capricious architects, having recently completed several noteworthy, and controversial, campus buildings by Steven Holl, Charles Correa, and Frank Gehry.

Program

Facing the Charles River and surrounding the vast lawn of Killian Court at the heart of MIT's campus, the Main Group – a 1-million-squarefoot complex erected in phases during the early part of the 20th century – serves as an icon of the institution. Practically, however, the old, narrow buildings' outdated infrastructure and endless corridors could not support current



PDSI's mostly transparent structure was inserted into a courtyard of MIT's Main Group (above). The colorful terrazzo floor of the 20-foot-wide atrium between PDSI and existing buildings features designs by Sol LeWitt (opposite).

modes of instruction and research.

MIT's physics department, one of the largest in the world, was scattered throughout this complex and other, newer buildings. In desperate need of more and contiguous space, the department heads were faced with either a costly renovation of the Beaux-Arts structure (whose rigid geometry would still inadequately address the collaborative nature of their work), or building from scratch elsewhere. "The Main Group was becoming like an 'inner city' where only offices were left behind and research was going on in new facilities in the 'suburbs,' " explains Marc Kastner, dean of the School of Science. "We wanted to try and use it as it was meant originally - as an integration of science, education, and community."



Solution

Enter Payette, who provided the department with a radical third option. Its proposal to insert a new building – which would eventually be known as PDSI because it incorporates Physics, DMSE (Department of Material Sciences Engineering), Spectroscopy, and Infrastructure – inside the courtyard of the Main Group's eastern half was akin to



Renovated spaces in the existing buildings were opened up for light and views. Monumental columns gracing Killian Court are revealed from a lounge area converted from closed offices (right). Skylights were added (far right). A cantilevered staircase and glass-railed catwalks add dynamism to the infill building (below).









trying to build a ship in a bottle, or so everyone feared. The biggest concern was not only that the insertion would turn out poorly given the tight quarters, but that it would ruin the spaces abutting it by cutting off views and access to natural light.

But the scheme had several undeniable advantages, which eventually secured it the green light. Initially referred to as a technology tower, the project conceals all the necessary infrastructural upgrades inside the enclosed space of the courtyard, without having to put large air-handling and electrical equipment on the roof, where it would be visible from the street. Hidden behind the historic facades, the design was not subject to approval by Cambridge preservationists, who are famously tough on new construction. An existing 6foot-thick concrete foundation in the middle of the courtyard was manipulated to support the new building.

More than that, however, the project maintains the spirit of connectedness of the Main Group's original design, with a modern twist. Rather than noisy double-loaded corridors to which professors typically shut their doors, PDSI bridges the existing buildings in a dynamic assembly that promotes social interaction and scientific collaboration.

And far from being the dark, cramped space that many envisaged, PDSI is instead a light, airy building that provides enhanced

- 1. High-bay laboratory
- 2. Spectroscopy
- 3. Mechanical/electrical
- **4.** Demonstration group
- **5.** *Physics Theory Center*

Chalkboards, one of a theoretical physicist's principal tools, are located throughout the informal meeting areas and are made from authentic slate (below).







views and improved circulation for adjacent spaces. Wrapped on all sides in glass, including extensive skylights, the building's diaphanous facades are articulated by brisesoleils, operable windows, and translucent sliding screens. Metal baffles in the ceilings further that open feeling. PDSI is one of the first American buildings to incorporate highly efficient chilled beams, which are visible just above the baffles (see technology article, page 182).

Within the 20-foot-wide atrium space surrounding the new building on three sides between itself and the existing buildings are chases, catwalks, and cantilevered stairs to connect people and new technology. As part of MIT's Percent-for-Art program - which requires the inclusion of public art in new construction projects - the ground floor of this space is covered in vibrant panels designed by the late Sol LeWitt and executed in glass and epoxy terrazzo. Beneath it is a double-height laboratory space in which to run large experiments, a luxury at the center of campus. The upper floors are defined by the multilevel Theory Center, lecture rooms, labs, offices, and informal gathering spaces for discussions as well as classes.

Commentary

PDSI's "sphere of influence," as the architects refer to it, extends well beyond its immediate surroundings. From a technical perspective, the project delivers new mechanical and electrical infrastructure to the corridors of a large section of the Main Group, allowing individual spaces to "plug in" to those upgraded systems as they get renovated. But the project's success is far more palpable on a human level. Since its completion more than a year ago, the space is constantly alive with activity, from spontaneous chalkboard sessions to frequently changing art exhibitions featuring the work of professors and prominent artists. Despite a highly disruptive, two-year-long construction process, enthusiasm for PDSI has led to talk of future infill projects at the Main Group, with PDSI serving as a prototype.

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CELICION PRECAST

Architect of Record: KZF Design Design Architect: Zaha Hadid

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CIRCLE 81

For PDSI, a renovation and addition project at the Massachusetts Institute of Technology, Payette Associates chose passive chilled beams to supply cooling to low-occupancy spaces, such as offices.

C.C.
An Energy-Conserving Technology From Europe Makes Inroads in the U.S.

AMERICAN DESIGN TEAMS DISCOVER THE ADVANTAGES OF CHILLED BEAMS, A MECHANICAL DEVICE POPULAR ABROAD FOR MORE THAN A DECADE

By B.J. Novitski

n efficient HVAC technology known as "chilled beam," popular in Europe as well as Australia for more than a decade, is beginning to attract attention in the U.S. The oddly named mechanical device is not a structural beam and is sometimes not even chilled. Resembling a fluorescent light fixture, it is part of a ceiling-mounted system that can provide cooling, heating, and other building services. It uses far less energy than conventional variable air volume (VAV) systems, and some U.S. design teams are adopting it as one strategy toward creating better-performing buildings.



ACTIVE AND PASSIVE CHILLED BEAMS IN COOLING MODE

A key difference between chilled beams and conventional systems is that the former deliver cooling via water instead of air. Because water is many times more dense than air, it can provide equivalent cooling energy in a fraction of the volume. And the pumps that move the water require less energy than the fans that move the larger volumes of air. When asked how soon this technology will take off in this country, Donald Hagus, a senior vice president at WSP Flack+Kurtz in Boston says: "It's already begun. There are big benefits in horsepower savings, comfort, and quiet operation."

Passive but effective

PETER VANDERWARKER (OPPOSITE); COURTESY SMITHGROUP (THIS PAGE)

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IMAGES:

The simplest form is known as the "passive chilled beam." Chilled water is piped to a coil, which usually consists of aluminum fins on copper tubing within a perforated metal casing. There, it cools the surrounding air, which drops into the room. Natural convection drives the warmer, more buoyant room air up to the ceiling and into the casing, where it is cooled and naturally drops again. A small space between the top of the chilled beam and the underside of the structure allows the warm air to rise above the beam, turn, and accelerate past the fins of the heat exchanger.

Although the beams provide some degree of cooling by radiation, they differ from conventional radiant-cooling systems, which are often based on walls or floors chilled by embedded cold-water pipes. The latter types of systems cool occupants because heat naturally radiates from a warmer body (a person) to a cooler body (the chilled slab, floor, or other surface). Passive chilled beams, in contrast, must be high in the space because they transfer heat primarily through convection.

Without fans, passive chilled beams are virtually silent. There are no moving parts, so operational costs are lower. To top these advantages, manufacturers claim there is no sacrifice in comfort; indeed, they claim these environments are more comfortable than those served by forced, cooled air.

Obviously, this method of cooling does not provide any ventilation air, as VAV systems do. So ventilation is required in addition, but ducts can be smaller than usual. In applications where internal loads dominate the cooling needs, the savings on ductwork, air handlers, and

Chilled beams are either passive or active. Both types rely on convection for cooling, but active beams are integrated with the primary ventilation air supply.

fan energy can be substantial. Smaller ducts also mean that architects can design higher ceilings or lower floor-to-floor heights. The resulting savings can more than offset the initial cost of the chilled-beam units.

Because the overall ventilation volume is decreased, ventilation air can contain a higher proportion of outside air, creating a healthier indoor environment. And because there is no central air handler supplying super-cooled air, the wasteful practice of reheat is eliminated.

Chilled beams are typically not visually exposed but are covered by perforated enclosures. The units can be stand-alone, like suspended light fixtures, or they can be integrated with drop-ceiling systems.

B.J. Novitski, a contributing editor at ARCHITECTURAL RECORD, writes about architectural practice and building science. She can be reached at bjn@efn.org.

CONTINUING EDUCATION



Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/ AIA Continuing Education article. To earn one AIA/CES learning unit, including one hour of health, safety, and

welfare/sustainable design (HSW/SD) credit, turn to page 190 and follow the instructions. Other opportunities to receive AIA/CES credits in this issue include sponsored sections beginning on page 193.

LEARNING OBJECTIVES

After reading this article, you should be able to:

- 1. Discuss how chilled-beam technology works.
- 2. Describe the differences between passive and active chilled beams.
- 3. Explain the benefits of passive chilled beams over conventional cooling systems.



To avoid condensation and prevent mold growth, it's important that the temperature of the water delivered to passive chilled beams be at least 2 degrees above the room's dew point, typically between 57 and 60 degrees Fahrenheit. Because this is warmer than conventionally chilled water, a building's central chillers can be smaller and less expensive. Some buildings draw groundwater to supply the beams, and require little, if any, additional water chilling. Chilled beams can be used in very hot, humid climates as long as interior humidity is controlled. This can be accomplished by dehumidifying the ventilation air, although this would then limit the occupants' freedom to open windows for natural ventilation. If the humidity of outdoor air is not a problem, passive chilled beams are compatible with natural ventilation.

There is an art to positioning passive chilled beams to maximize performance and enhance occupant comfort, according to Carl C. Schultz, director of advanced building technologies with URS Corporation, in Columbus, Ohio. They can be placed parallel and adjacent to exterior perimeter walls to counteract the effects of solar gain, he says. "The rising warm air near windows that will naturally come in contact with the cooling element will increase the beam's effectiveness as a heat exchanger," says Schultz. He recommends that passive beams not be placed directly above workstations since the velocity is highest directly below the units. He adds that placing them directly above a heat generator, like a copy machine, reduces the capacity of the beams because the rising warm air counteracts the flow of cool air dropping from the beam. More of Schultz's insights can be found in "Next-Generation Cooling Is Looking Up," in the May 2, 2007, issue of *Engineered Systems* magazine.

One major hurdle for this technology in the U.S. is the initial cost of the units. Even though they are relatively simple devices, they are expensive because, until recently, they had to be imported, according to Hagus. "When we first investigated chilled beams, contractors weren't sure what they were or how to install them, so they charged a premium," he recalls. "Now that cost is coming down."

Hagus's firm worked with architects from Boston-based Payette to choose passive chilled beams for the low-occupancy spaces in the PDSI (Physics, Department of Material Sciences Engineering, Spectroscopy, and Infrastructure) Project at MIT, in Cambridge, Massachusetts (see page 172). Payette designed 50,000 square feet of new construction in a courtyard between three existing buildings, and renovated another 75,000 square feet to provide direct circulation links between the collaborating departments as well as additional programmatic spaces.

Rather than conceal the chilled beams with a metal casing or suspended ceiling, the architects took a "no-frills" approach and placed under them a visually porous ceiling of 4-inch high aluminum baffles, 4 inches on center. The "plenum" above gives ample space for natural convection, and







ARCHITECTURAL Design Awards

VMV systems because there are lever moving parts: the cost occasion. Evacuating, With active heaves, the chilled wark ca as much as h5 degrees below the roam's low point. The conting much as h5 degrees below the roam's low point. The con-

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occupants are less meny to ree courts. In spacing of beams throughout a space racks with ce put separity. I hav can be operated singly of yrounsed is outh not realised in structureleans, active chilled base Design Awards 2008

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SmithGroup chose active chilled beams (right) as part of the redevelopment of the Constitution Center (left), a 1960s-era Edward Durell Stone building, in Washington, D.C. The beams are expected to realize several benefits, including higher ceilings than would otherwise be possible.





Passive chilled beams cannot be used in heating mode since warm air will not naturally drop from the ceiling into a room. However, active chilledbeam units (left), which are integrated into the building's primary ventilation air system, can provide either heating or cooling, depending on the temperature of the water supplied to the coil.

the baffles mask the view of the supply-and-return piping. And despite a high first-cost for the beams, the project achieved net savings. "The chilled beams have few moving parts and no associated fan energy, eliminating a lot of ductwork, which meant cost and energy savings," explains Charles Klee, a Payette principal. "And we were able to go to a dedicated outdoor air system where the only air we're moving through the building is what's needed for fresh air, resulting in dramatic energy savings."

Passive versus active

In spaces with higher cooling loads, engineers can choose "active" chilled beams. These are different from their passive cousins, both in mechanical complexity and cooling output. Like passive beams, they depend on natural convection, but they are integrated with the primary ventilation air supply. This centrally conditioned air should be dehumidified, especially in humid climates.

In the operation of active chilled beams, warm room air rises to the ceiling and is drawn into the bottom of the beam by the temperature differential and the inductive effect of the primary air. Inside the beam, the room air is cooled by the coils, mixed with the ventilation air that is introduced at high velocity through nozzles, and discharged into the space through a diffuser. This induction is less noisy than traditional induction units. Active chilled beams require less maintenance than conventional VAV systems because there are fewer moving parts; the coils only need occasional vacuuming. With active beams, the chilled water can be supplied as much as 1.5 degrees below the room's dew point. The continuous airflow reduces the risk of condensation.

Unlike passive beams, active ones combine the cooling mechanism with ventilation air. But in both cases, the need for cooling large volumes of air is eliminated. Higher air velocities give the active beams more cooling potential than passive ones. But because the ventilation air is mixed with the cooled air within the beam before discharging it into the space, the discharge temperature is higher and more uniform than with conventional air-conditioning. Also, according to Hagus, the volume of moving air is 50 to 75 percent lower than with conventional systems. For all these reasons, occupants are less likely to feel drafts.

Optimum spacing of beams throughout a space varies with ceiling height and output capacity. They can be operated singly or grouped for zone control. Although not as silent as passive beams, active chilled beams are quieter than conventional VAV systems. Schultz notes: "Unlike passive beams, active beams can be placed directly over workstations and high convective loads, as these types of beams induce warmer room air up through their center and then disperse the air laterally across the top of the room."

SmithGroup architects and engineers chose active chilled beams for the massive redevelopment of the Constitution Center in Washington,

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A sciences building designed by Zimmer Gunsul Frasca for the California Polytechnic State University (above left) will have naturally ventilated offices and laboratories heated and cooled with active chilled beams. For the conversion of a hotel into the Empress State office building (right and above), in London, Wilkinson Eyre Architects chose multiservice chilled beams (left), which combine cooling, lighting, and sprinklers, among other features, in an integrated enclosure.



D.C. The 10-story, 1960s-era former Department of Transportation office building was originally designed by Edward Durell Stone. SmithGroup is engaged in a complete overhaul of the entire 1.4-million-square-foot building, which includes replacing Stone's white marble cladding with a glass curtain wall, reinforcing the structure to make it resistant to blasts and progressive collapse, and replacement of mechanical systems.

The chilled beams, installed on typical office floors, are expected to realize the benefits of lower energy consumption, greater occupant comfort, and higher ceilings without replacement of the structure. Said to be the largest U.S. installation to date, the chilled beams can be relocated relatively easily, promising future tenant flexibility. SmithGroup's use of chilled beams is part of its bid for a LEED Core and Shell Silver rating. Designers expect that the building, scheduled for completion in late 2009, will use 23 percent less energy than one compliant with the ASHRAE 90.1 standard.

"We looked at all the conventional solutions and kept coming back to chilled beam," says Washington, D.C.–based David Varner, a SmithGroup vice president. Selection of the technology permitted engineers to locate mechanical equipment in a rooftop penthouse rather than on each office floor, allowing more rentable space and a more flexible floor plan, he says. Successful tests with full-size mock-ups convinced the owner the system could work in the muggy Washington summer.

"Chilled" heating

Active chilled beams can also be used for heating, further confusing the terminology. The same unit can be used for both heating and cooling, the only difference being the temperature of the supply water. After the air is heated by the water-warmed fan coil, discharge velocity forces it down through the space to the occupants. Warm air won't naturally drop, so passive beams, which depend on convection, are not suitable for heating.

Manufacturers recommend using warm, not hot water. The standard domestic-hot-water temperature makes discharge air too buoyant. Ceiling height is also an important factor when using "chilled" beams for heating: The higher the beam, the lower the hot-water temperature should be.

Often a chilled beam unit works alternately in cooling and heating mode. This is the case for the five-level building planned for the Center for Sciences at California Polytechnic State University in San Luis Obispo, designed by Zimmer Gunsul Frasca Architects, Los Angeles. Offices and classrooms will be tempered with natural ventilation and radiant floors. But this is not feasible in the labs, where operable windows would jeopardize the internal pressurization that keeps contaminants from a possible spill from spreading to other parts of the building.

The same chilled-beam fan coil is used in both heating and cooling, according to Joseph Wenisch, project manager for Oakland,

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California–based Rumsey Engineers, ZGF's mechanical consultant. Four pipes run to each lab: chilled-water supply and return and hot-water supply and return. At each lab's entrance, a set of valves switch between hot and cold water. Only two pipes enter the room, with water temperature determined by that room's thermostat. Because each lab is its own zone, one can be heated while another lab in the same building is simultaneously cooled. "In office buildings, it's often not cost-efficient to have a thermostat in every room," Wenisch observes. "But in a lab, there are [already] so many controls, the thermostat isn't a big thing to add."

A compact package

A third category of chilled beam is "multiservice." These units, which can be either passive or active, can also be customized to contain any number of additional building-service systems, including lighting, building management system sensors, information technology cabling, and sprinklers. Understandably, these units are more expensive than the simpler ones, but they offer several advantages. The components can be fitted optimally into the casing so the whole is more compact than the collection of parts would be. Installation scheduling is made easier and potentially more reliable.

The U.K. firms, Wilkinson Eyre Architects and mechanical engineering consultant MG Partnership, chose multiservice chilled beams for the 2003 redevelopment of the 415,000-square-foot Empress State building in West London. Their choice was influenced, in part, by the need to

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INSTRUCTIONS

- Read the article "An Energy-Conserving Technology from Europe Makes Inroads in the U.S." using the learning objectives provided.
- Complete the questions below, then fill in your answers on the next page.
- Fill out and submit the AIA/CES education reporting form on the next page or take the test online at continuingeducation. construction.com/to receive one AIA/CES learning unit.

QUESTIONS

- **1.** All of the following are benefits of passive chilled beams over traditional VAV systems except which?
 - a. more cooling can be provided for less energy
 - **b.** chilled-beam units are more readily available in the U.S.
 - **c.** chillled beams produce fewer drafts
- **d.** cooling is quieter because there are no moving parts
- **2.** Passive chilled beams differ from conventional radiant cooling systems in which way?
 - **a.** they cool the air without the use of fans
 - **b.** they use cool water in pipes to accomplish cooling
 - c. they depend primarily on convection for cooling
 - d. they do not provide ventilation
- **3.** When warm air becomes buoyant and rises, this is an example of which principle?
 - a. condensation
 - **b.** induction
 - **c.** conduction
 - d. convection
- **4.** Which of the following statements is true?
 - **a.** chilled beams minimize use of fan energy
 - **b.** chilled beams rely primarily on radiation for cooling
 - c. chilled beams cannot be used in hot, humid climates
 - d. buildings cooled by chilled beams require reheat systems

fast-track the conversion of the 1959 hotel into offices. In this case, the integrated services included cooling, ventilation, lighting and associated controls, speakers, and sprinkler distribution. The tower is tricorn-shaped in plan, so the variety of orientations, as well as the low ceiling heights and mix of old and new construction, required a flexible approach.

By concealing the various services within the chilled-beam unit, the architects eliminated suspended ceilings, maximized floor-to-ceiling heights, and reduced ceiling clutter. Prefabrication of the integrated units supported the accelerated construction schedule. The casing was customized to minimize its visual obtrusiveness while accommodating the needed pipes and ducts and optimizing the discharge air-flow pattern. The beams are also designed to ensure tenant flexibility. Each has its own control valve. In the future, adding a sensor and wiring back to the floor outstation can provide any new zone with individual comfort control.

With all the benefits of chilled beams, which have proved effective for nearly two decades in other parts of the world, some engineers predict that it's only a matter of time before they come into widespread acceptance in the U.S. "I have become a convert of what I envision as perhaps the next big HVAC trend, which is to minimize both fan and reheat energy," says Schultz. "What VAV systems were to the past three decades, chilled beams or similar concepts could be to the next three."

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- 5. Which is a recommended placement for passive chilled beams?a. near windows
 - b. directly above workstations
 - **c.** above copy machines
 - d. embedded within the floor slab
- **6.** To avoid condensation, it is important that the temperature of water delivered to passive chilled beams be which?
 - a. at least 2 degrees below the room's dew point
 - b. at least 2 degrees above the room's dew point
 - c. at least 2 degrees below the outside air's dew point
 - d. at least 2 degrees above the outside air's dew point
- 7. Which of the following is true for both active and passive chilled beams?a. they depend on convection
 - **b.** they are integrated with the ventilation air supply
 - **c.** they can be placed directly over workstations
 - **d.** they can be used to provide heating
- **8.** The water supplied for active chilled beams can be below dew point for which reason?
 - a. they have more cooling potential than passive chilled beams
 - b. they need to discharge air at a cooler temperature than passive chilled beamsc. the continuous air flow from active chilled beams reduces the risk of condensation
 - d. occupants are less likely to feel drafts
- 9. How does heat from active chilled beams get to the occupants?
 - a. it is discharged at floor level
 - b. it naturally drops to the occupants' level
 - c. it is discharged with velocity to reach the occupants' level
 - d. it only warms the ceiling and never reaches the occupants' level
- **10.** Which of the following is a benefit of retrofitting an existing building with multiservice chilled beams?
 - a. they require less plenum space than conventional VAV systems
 - **b.** they reduce ceiling clutter
 - **c.** prefabrication of the integrated units can support an accelerated
 - construction schedule
 - **d.** all of the above

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Specifying Silicone Sealants: Providing Weather Sealing and Flexibility Between Building Components

Silicone sealants offer long-term durability under extreme weather and building conditions for both new construction and renovation applications.

Provided by Dow Corning Corporation By Peter J. Arsenault, AIA, NCARB, LEED-AP

In very basic terms, what is the primary role of a sealant? Fundamentally it is to keep unwanted water and air from infiltrating into a building, particularly along joints and seams of building materials. This function is compounded by the many different types of materials used on a building's exterior, all of which have different coefficients of thermal expansion. This means that as the temperature changes, the different materials move at different rates. For example, aluminum moves at twice the rate of glass and concrete. When these materials abut each other at window perimeters and other locations, a sealant that can accommodate the range of movement (expansion and contraction) of each of these materials is required to keep the joints, and subsequently the building, watertight. It is worth noting that this role of stopping water and air intrusion is the fundamental characteristic of a "sealant" as opposed to the decorative or interior finishing roles of "caulking."

INTRODUCTION TO SEALANTS

Properties of Sealants

In specifying sealants, there are some important properties that need to be considered.

• Adhesion: First, and perhaps most important, is the ability of the sealant to adhere or permanently "stick" to different types of

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Use the learning objectives below to focus your study as you read Specifying Silicone Sealants: Providing Weather Sealing and Flexibility Between Building Components. To earn one AIA/CES Learning Unit, including one hour of health safety welfare credit, answer the questions on page 199, then follow the reporting instructions or go to ce.ArchitecturalRecord.com and follow the reporting instructions.

Learning Objectives After reading this article, you should be able to:

- Differentiate between silicone and organic sealant chemistries
- Explain the functions of non-structural and structural glazing sealants and select appropriate sealing systems for new construction and renovation applications.
- Specify appropriate requirements, products, and installation for weather-sealing vs. structural sealant joints.



building materials. Every sealant, depending on its formulation, has a different adhesion profile. Certain sealants adhere better to porous materials or substrates, while other sealants adhere better to non-porous materials. In many cases, the sealant manufacturer will require the use of a primer to enhance a sealant's adhesion to a specific material by acting as an intermediary between the adhesion properties of the sealant and the characteristics of the substrate material.

• **Modulus** is used in terms of sealants to identify the degree of elasticity that different sealants exhibit. This is important because it helps determine the stress-strain relationship between the joint and substrates. A high-modulus sealant is a stiffer sealant. This type of sealant usually generates more stress within the joint

and bond line during expansion and contraction or conversely resists high applied forces to reduce the deflection of the joint. High-modulus sealants are often used where strength is important, such as in structural glazing where a sealant is used to adhere glass to the outside of a building. A low- or ultra-low modulus sealant has high elasticity that allows the sealant to expand with minimal force. Typically these sealants are used with substrates that may be sensitive to high stress (EIFS, composite cladding systems, etc...) to reduce the potential for damage to the substrate during joint movement. Medium modulus sealants bridge the realm of available sealants and are commonly used in weatherseal applications; but, can be used in structural applications depending on the needs of the application and performance characteristics of the sealant.

- Movement capability is usually a function of modulus and indicates the ability of the sealant to perform through the life of the joint dependent on the expected movement of the joint. Typically, high-modulus sealants have lower joint-movement capability and low-modulus sealants have higher movement capability. Lowmodulus sealants used for weather sealing may have movement capability of up to +100 percent expansion (stretching) and -50 percent contraction (compression) of the original joint width. Movement capability is determined through the ASTM C-719 test method.
- **Durability.** A sealant may have excellent physical properties, initially, but what will happen to those properties after 5, 10 or 20 years on the building? Also, what effect will temperature have on the sealant's movement capability and modulus? The ability of a sealant to be durable enough to still provide air and water infiltration protection over time is clearly an important property to consider.

Distinction Between Organic Sealants and Silicone Sealants

Among sealants, there are two broad categories of sealant chemistries:

- Organic sealants use a chemical polymer backbone consisting of *carbon*-based or organic polymers (-C-C-O-C-C-). Examples of organic sealants include single and multi-component polyurethane sealants, polysulfide, acrylic and silyl terminated polyether or more commonly MS or modified silicones. These sealants do *not* contain silicone polymer.
- **Inorganic sealants** are the other type of sealant. An inorganic sealant does *not* have a carbon based or organic backbone, thus is a *non-carbon*-based polymer (-Si-O-Si-O-Si-). Silicone is an example of an inorganic sealant because it uses a polymer which links silicon and oxygen atoms. This is called siloxane or silicone.

Why is sealant chemistry important? It comes down to how the chemistry of each type of sealant performs on a building when it is exposed to UV rays from the sun. In the presence of UV light, a carbon based polymer or organic sealant will change properties and degrade over time. The Si-O bond of a silicone polymer, on the other hand, is stronger than the rays of the sun and will *not* degrade over time. There is not enough energy in ultraviolet (UV) light to degrade the Si-O bond of a silicone sealant.





This photo shows the negligible impact of weathering on a silicone sealant (left) versus the degraded impact on an organic polyurethane sealant (right) after 3000 hours of accelerated weathering, which is equivalent to 3 to 6 years of actual outdoor weathering.

Polyurethane sealants are one kind of commonly used organic sealants. They typically exhibit desirable initial properties in terms of adhesion, modulus, and movement and are readily available. However their durability over time is limited or even weak in that they degrade noticeably in the presence of UV light found in sunlight. This degradation may take several forms. In most cases, the sealant gets stiffer, reducing it's modulus as it ages. Since joint movement continues to occur in the building however, the sealant commonly fails cohesively, or tears within itself. As the polyurethane continues to harden, the sealant may also put more stress on the substrate material, causing adhesive failure of the sealant, or substrate delamination or spalling. The surface of the polyurethane sealant can also chalk, craze or crack. These surface cracks can propagate through the sealant and cause it to fail. A form of polyurethane sealant failure common in the 1990s is called reversion. In this instance, the polyurethane sealant initially cures and displays normal sealant properties; but after exposure to UV light, the polymer reverts to an uncured sealant state. The material appears to turn into chewing gum in the joint and no longer performs as a flexible sealant.

DRAWING COORDINATION

Joints in building materials that require sealant installation are typically shown on drawing elevations, plans, and details. It is important, therefore, that the joint design is properly thought through and that sealant details are shown on the drawings. Basic guidelines for the design of weatherseals are reviewed in such places as ASTM C-1193 and other industry documents. The most common and best performing joint design uses an hourglass-shaped sealant profile. This joint shape is effective because the sealant depth of half of the joint width reduces stress on the sealant. The



Typical "hourglass" shaped joint showing material substrate on either side filled first with a non-adhering backer rod then with sealant that fills the joint cavity with a slightly recessed front. Note that the sealant adheres only to the substrate material.

hourglass shape allows for maximum contact with the building materials along the sides of the joint. This reduces stress on both the sealant and the building material. In all cases, there should be at least ¹/₄-inch contact on each joint surface in a moving joint. And the sealant should be installed to allow adhesion to only the two sides of the joint and not the third side, namely the back of the joint. Backer rod or bond breaker tape can be used to prevent such three-sided adhesion.

Other common joints include: fillet joints, where two perpendicular joints abut each other; bridge joints, which are typically used for restoration over failed weatherseals; and double weatherseals, commonly used in modern commercial construction.

SPECIFYING SILICONE SEALANTS

Using the basic background information above, many architects are choosing to specify sealants predominantly or even exclusively made from silicone. Using the standard "three part" format, such a specification will need to address the following information.

Part 1 — General Requirements and Standards

Putting the specification section in context, the points below focus the sealant work of a construction contract on high quality, long term performance.

- **Coordination with other trades.** Sealants are used to fill the gaps between other materials. It is worth noting and cross-referencing the specification sections that address those other building materials such as concrete, aluminum window frames, masonry, Exterior Insulation and Finish Systems (EIFS), etc.
- **LEED and green building coordination.** Sealants need to be made from low amounts of or no Volatile Organic Compounds (VOC) in order to comply with LEED requirements for indoor air quality. In addition, a properly sealed building helps to assure that the projected energy performance is actually achieved.

- Quality Assurance. Material and manufacturing quality assurance is based on manufacturing information and warranties. Installation is based on the skill and experience of installers. It is appropriate to specify requirements for both the material and the installer, therefore, to be sure that a quality job is produced.
- **Testing standards and references.** The relevant standards come from ASTM and SWRI. (See the on-line portion of this article for more information.)
- **Pre-construction compatibility and adhesion testing** (also may include mock-ups). Due to the critical weatherization nature of sealants and their long term requirements, it is more than appropriate to specify testing of the sealants before they are installed in the building. Testing should be done on joints of the actual building materials being used and witnessed by the specifier.
- Submittals. Product information should indicate full compliance with all specification requirements. Substitutions or use of "or equal" organic sealant products should be disallowed since they are not equal in terms of long term durability.
- Warranty. Manufacturers' and installers' warranties are reasonable to specify for at least 20 years.

Part 2 — Silicone Sealant Products

Typically, the deciding factor on which type of silicone sealant product to specify is based on the application, i.e., what types of materials are being sealed and what type of use.

New Construction Applications

- General weatherseal applications. For sealing common building materials, (concrete products, metals, etc.) general purpose sealants with the following characteristics are typical:
- Ultra-low-modulus (+100 percent expansion /-50 percent contraction) joint sealant best for porous substrates and high joint movement locations.
- Medium modulus, (±50 percent expansion and contraction) general weatherseal sealant
- **Higher modulus**, lower cost Sealant (±25 percent expansion and contraction) for less critical general weatherseal applications.
- Concrete sealant (±50 percent expansion and contraction) a primerless product providing adhesion to most porous substrates, specifically concrete joints.
- **Primers.** There are many types of primers including film-forming primers and chemical treatment primers. The correct primer must be used appropriate to the application. Refer to the sealant manufacturer's guidelines for compatibility with both the sealant and building material types.
- Sensitive substrate applications. The single greatest negative voiced against silicone sealants is that they can stain a building. Staining is caused by non-reacted plasticizers or fluids in the sealant that can leach out of the sealant after it cures. Every sealant formulation, whether silicone or organic, is different. Any poorly formulated sealant can stain. Therefore, if staining is a concern, require that the sealant manufacturer test its sealant on an actual sample of your project's materials in accordance with ASTM C-1248. You should ask for the results and a non-staining

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warranty from the manufacturer since silicone sealants that are specifically formulated for sensitive substrates have been introduced to the market. These sealants have no non-reacted ingredients and have been found to be non-staining on even the most porous marbles. Additionally, some sealants generate a surface during cure that imparts a smooth matte finish that helps minimize dirt pick-up by the sealant. This reduced dirt pick-up surface minimizes streaking on adjacent substrates, such as metal panel systems, and keeps the building looking cleaner, longer.

- Exterior Insulation and Finish Systems (EIFS) applications. Silicone sealants have been broadly accepted for use with EIFS because silicone offers long-term durability, high movement capability and low modulus, particularly in cold temperatures. These features should be clearly specified and coordinated with the EIFS specification.
- · Silicone surface coating applications. In addition to joint sealing, a broad weather seal coating over a surface is sometimes called for. A silicone elastomeric coating can be used on porous substrates such as poured or precast concrete, stucco, EIFS and brick. Silicone elastomeric coating is a water-based emulsion of silicone polymer. This product is similar to other acrylic elastomeric emulsions with the exception that the polymer is silicone instead of acrylic. Like acrylic elastomeric coatings, silicone elastomeric coating is 50 percent solids by weight and can be easily applied by roller, brush or spray. The coating is applied to a dry film thickness of 10 mils. Being water-based, the coating is VOC compliant. A silicone elastomeric coating, like a silicone sealant, offers long-term silicone flexibility. Since silicone is also inherently very permeable, water vapor is allowed to easily permeate the coating, allowing the building to breathe, while the silicone provides a tight seal against liquid water. Finally, silicone is also inherently fungus and mildew resistant which is particularly useful in high-humidity environments.
- Parking structure applications. Silicone sealants designed especially for parking structures are available for use in expansion joints, control joints, cove beads and vertical joints. These joints experience high UV exposure and high movement. Silicone sealants perform best under these conditions. Silicone sealants are available in two-part fast-cure formulations for dynamic joints on parking decks. For other joints, one-part self-leveling or non-sag sealants may be appropriate.
- Non-structural glazing applications. Glass and glazing sealing such as glass-to-glass butt joints, silicone cap beads from the glass to the window frame, and internal seals in the window system are often overlooked but are often very critical to weather sealing. Many glazing systems provide for a window drainage system that can effectively control water when it enters the window system. The key is to be sure that such water control systems don't allow water or air infiltration to move into other parts of the building. Silicone is the best product to provide long-term window drainage system performance and guard against unwanted infiltration.



The world's first four-sided silicone structural glazing project. The metal ornamentation is for decorative purposes only, and does not provide structural support.

- Structural glazing applications. In structural glazing, silicone plays a different role and is used primarily for its strength as opposed to its weatherseal properties. In structural glazing, the sealant acts an adhesive, adhering the glass to the framing structure of the building. The sealant must be strong enough to allow windload stresses on the glass to be transferred to the structure but it must also be flexible to allow for differential thermal movement between the glass and metal and the sealant must have a long life. For these reasons, silicone sealants are the only sealants that can be used in structural glazing. It is common, then to specify such structural glazing sealant either directly with the glazing specification or in a separate section devoted to the specific needs of this type of system.
- **Protective glazing applications.** As a result of events like hurricanes, protective, laminated glazing has grown in popularity. New code requirements often dictate that glass openings remain intact during such events. To meet these requirements, a silicone sealant is often used to retain the laminated glass during missile impact and cyclic wind loads on the windows. Numerous window systems that use silicone sealants and laminated glass have successfully met these requirements. Further, the use of silicone sealant to anchor a protective film or laminated glass into a framed opening can help prevent flying glass debris from entering or falling from a building and injuring people. Similar to structural glazing applications, the specification for such sealant may be with the glazing or in a separate specialty section.

●Continues at ce.ArchitecturalRecord.com.

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Program title: "Specifying Silicone Sealants: Providing Weather Sealing and Flexibility Between Building Components" (11/08, page 195). AIA/CES Credit: This article will earn you one AIA/ CES LU hour of health, safety, and welfare credit. (Valid for credit through November 2010). Directions: Refer to the Learning Objectives for this program. Select one answer for each question in the exam and fill in the box by the appropriate letter. A minimum score of 80% is required to earn credit. To take this test online and avoid handling charge, go to ce.ArchitecturalRecord.com

1.	Which type of sealant will be best suited to allow it to expand with minimal force on	6.	Which silicone sealant applications would typically be provided in a separate
	the substrate building materials?		specification section from weatherseal applications?
	a. High modulus sealants		a. Non-structural glazing systems
0	b. Medium modulus sealants		 b. Structural and protective glazing systems
	c. Low or ultra-low modulus sealants		c. Window installations
	d. All of the above		d. None, since they should all be in the weatherseal specification section
2.	What happens to organic (carbon based) sealant in the presence of ultra-violet light	7.	Under normal circumstances in an existing building, the use of precured,
	over time?		pre-formed sealants do not require that the existing sealant be removed.
	a. It will cure and become a better sealant.		a. True
	b. Its properties will change and it will degrade.		b. False
	c. Nothing, since it is not affected by UV light.		
	d. It will change color.	8.	The first step in installing a silicone sealant is to:
			a. install a primer.
3.	Adhesion of sealant can be controlled by preventing three sided adhesion using:		b. clean the joint.
	a. backer rods or bond breakers.		c. install a backer rod.
	b. non-porous materials.		d. install a bond breaker.
	c. Primers.		
	d. None of the above	9.	Silicone sealant field adhesion testing should be performed
			a. by ASTM according to published testing standards.
4.	Silicone sealants can help contribute to LEED certification compliance through:		b. by the manufacturer prior to shipping the sealant.
	a. low VOC content for indoor air quality.		c. by the contractor to verify adhesion and track workmanship.
	b. renewable materials and products.	D .	d. by the Owner after the project is complete.
	c. meeting projected energy performance		
	d. Both A and C	10.	A sealant schedule can be used in specifications in order to:
			a. be sure that only one manufacturer is used.
5.	Silicone sealants have been broadly accepted for use with EIFS, particularly in cold		b. identify the sequence of work for installing sealants.
	temperatures, because:		c. communicate and summarize sealants specified on a particular project.
	a. they have long term durability.		d. help with drawing coordination.
	b. they have high movement capability.		
	c. they have low modulus.		
	d. All of the above		

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The American Hardwood Advantage: Carbon-neutral Materials for Today's Zero Tolerance Goals

American hardwoods help offset global warming and benefit the built environment by reducing carbon dioxide emissions.

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reen building is more than the latest buzz word. Construction industry stakeholders are increasingly regarding green building capabilities as critical to their success in the marketplace. According to construction industry consultant FMI, in 2001, \$3.4 billion of green nonresidential construction had been put in place; by 2008, that figure had increased nearly seven fold to \$21.2 billion. In green building, the overriding objective is to reduce global warming — and, among other things, that means using natural materials that emit less or no carbon dioxide in their production. Though the move toward limiting fossil fuels is on, many want to accelerate the process by doing their part to curb greenhouse gases without waiting for industry giants to deliver electric cars and clean electricity. Accordingly, as businesses and organizations recognize that greenhouse gas emissions from their activities have an adverse environmental effect, they are increasingly making commitments to becoming carbon neutral, or generating no carbon emissions. That goal can take many avenues. This article will discuss what it means to be carbon neutral, and how American hardwoods can benefit the built environment as carbon-neutral materials.



American hardwoods make a sustainable, high-design statement at London Design Festival in this pavilion created by David Adjaye.

WHAT IS CARBON NEUTRALITY?

Carbon neutrality is a voluntary mechanism that picks up where legislation leaves off, as entities from homes to air travel to public events are not adequately addressed by global climate policies,

CONTINUING EDUCATION

View of the learning objectives below to focus your study as you read The American Hardwood Advantage: Carbon-neutral Materials for Today's Zero Tolerance Goals. To earn one AIA/CES Learning Unit, including one hour of health safety welfare/sustainable design (HSW/SD) credit, answer the questions on page 205, then follow the reporting instructions or go to ce.ArchitecturalRecord.com and follow the reporting instructions.

Learning Objectives After reading this article, you should be able to:

- Define carbon neutrality
- Discuss the various carbon offset methods
- · Evaluate the role of American hardwoods in a carbon-neutral building

such as the Kyoto Protocol. While the idea of corporate carbon neutrality dates back to the mid-1990s, it wasn't until relatively recently that a critical mass of companies began making highprofile commitments to carbon neutrality.

Being carbon neutral refers to generating neutral, meaning zero, total carbon emissions — or that any carbon a facility does emit is counteracted or offset by positive environmental actions. In order to go carbon neutral, an organization must first take an inventory of the emissions it generates, and then reduce these emissions to the extent possible, purchasing "carbon offsets" to counteract any remaining emissions, with the ultimate goal being net zero emissions.

Generally, direct emissions sources must be reduced and offset completely, while indirect emissions from purchased electricity can be reduced with renewable energy purchases or other carbon offsetting strategies. Direct emissions include all pollution from manufacturing, company-owned vehicles, and reimbursed travel, livestock and any other source that is directly controlled by the owner. Indirect emissions include all emissions that result from the use or purchase of a product. An organization may offset its carbon emissions by paying a third party to remove the carbon dioxide emitted from the atmosphere by planting trees or funding carbon projects that ideally lead to minimizing future greenhouse gas emissions; reasoning suggests that because greenhouse gases have a global impact, an investment to reduce emissions elsewhere — even halfway around the world — has the same climate benefit as if it were made locally. Carbon offsets are typically measured in tons of carbon dioxide equivalents and are bought and sold through international brokers, retailers and trading platforms.

Though many activities can generate carbon offsets, they generally fall into three main types:

- Renewable energy projects, including wind farms, or installations of solar, small hydro, geothermal, and biomass energy.
- Energy-efficiency projects, such as cogeneration and methane capture from landfills or livestock.
- Reforestation projects or other types of agriculture that sequester carbon dioxide from the atmosphere in the form of woody biomass. There are four general means by which agricultural and forestry practices can reduce greenhouse gases.

First, emissions can be avoided by maintaining existing carbon storage in trees and soils. Carbon storage can be increased by tree planting. Greenhouse gases can also be decreased by converting from conventional to conservation tillage practices on agricultural lands, and by substituting bio-based fuels and products for fossil fuels, such as coal and oil, and energy-intensive products that generate greater quantities of carbon dioxide.

According to carbonfund.org, "Of the three main types of offsets (renewable energy, energy efficiency and reforestation), reforestation is the only one that actually removes carbon dioxide from the atmosphere and puts it somewhere else, i.e., into the mass of a live growing forest. Also, scientists know that deforestation is responsible for about 25 percent of climate change, making reforestation a vital part of reducing emissions, while providing time to transition to a clean energy economy."

Carbon neutrality is not without its critics, however. Opponents may argue that by purchasing carbon offsets,

CARBON NEUTRALITY AND DESIGN The building sector accounts for nearly half of all annual green-

house gas emissions in the United States. Over the next 25 years, carbon dioxide emissions in the building sector are projected to grow faster than any other sector, with emissions from commercial buildings estimated to have the fastest growth rate — 1.8 percent a year through 2030. In view of the situation, the move is on to design carbon neutral buildings that use substantially less energy, reduce greenhouse gas emissions and create spaces that are healthy and comfortable — all at market rates.

The U.S. Green Building Council (USGBC) awards Leadership in Energy and Environmental Design (LEED) points for sustainable buildings. According to the USGBC, the average LEED[®] certified building uses 32 percent less electricity and saves 350 metric tons of carbon dioxide emissions annually — a promising start. And LEED "Innovation in Design" points are now being awarded when building products and materials are certified as "carbon neutral" by a reputable, independent third party. Products and materials are climate-neutral when there are net zero greenhouse gases, such as carbon dioxide, from the entire life cycle of the product.

In May 2007, the USGBC joined with the American Institute of Architects (AIA), the American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE), Architecture 2030, and the Illuminating Engineering Society of North America (IESNA) to finalize a memorandum of understanding that encourages the design of net-zero energy buildings, with the ultimate goal of carbon-neutral buildings by 2030. Carbon-neutral buildings use no energy from external power grids and can be built and operated at fair market values. To reach the energy reduction goal, the organizations agreed to define the baseline starting point for their common target goals as the national average energy consumption of existing U.S. commercial buildings, as reported by the 2003 Commercial Building Energy Consumption Survey (CBECS). This data is a set of whole-building energy use measurements gathered by the DOE's Energy Information Administration, which can be used to determine a national energy use intensity using kBtu/sqft-yr as the metric.

organizations and businesses are doing little more than buying their way out of doing their part in curbing global warming. Some dismiss carbon neutrality, decrying the promises made by carbon offsets as hollow claims and that solar panels and the like, while positive environmental steps, cannot put carbon from petroleum, natural gas and coal back into the earth.

On the flip side, realistically, it is difficult for an organization or business to eliminate all of its emissions. The move to carbon neutrality does offer green-minded entities an opportunity to reduce their environmental footprint and begin to generate a positive global climate impact. It is a matter of changing behavior — developing an emissions inventory can help an organization pinpoint the extent of its environmental impact, which can ultimately lead to emission reductions.



The meeting room at Aldo Leopold Center, a LEED-platinum, carbon-neutral building, features cherry and oak flooring and red maple and cherry chairs.



In October 2007, the USGBC named its first-ever LEEDplatinum, carbon-neutral building. The 13,000-square-foot Aldo Leopold Legacy Center is located in Baraboo, Wisconsin, on 80 acres of "worn-out farmland." The net-zero energy building, which produces over 110 percent of its annual energy needs, was designed by Kubala Washatko Architects, Inc., of Cedarburg, Wisconsin. The center makes substantial use of hardwood: its columns and beams were harvested from native trees that the Leopold family planted to improve their land, and a sustainable forest on the center grounds made a substantial contribution to the structure's carbon neutrality analysis.

Hardwood's contribution to a structure's carbon neutrality and environmental soundness is a decided plus. However, designers have a long history of specifying woods for their warmth, beauty and their striking aesthetics; now architects are showcasing hardwood in unconventional situations. American tulipwood appeared in a dramatic international application. David Adjaye, one of the United Kingdom's leading architects, created a pavilion at London's Southbank Centre as part of London Design Festival 2008's Size and Matter initiative. The 8-meter by 5-meter elliptical structure is formed of two circular chambers made of American tulipwood. Visitors first entered the smaller chamber and then passed into a wider space with a view of the London Eye. Adjaye selected American tulipwood for its inherent flexibility, strength, attractive grain and varying hues of pale yellow through mid brown. Although tulipwood's working properties make it suitable for a wide range of uses, it has not generally been specified for external applications or such large scale projects.

Adjaye wanted the tulipwood to be used in its natural state and allowed to age and go grey over time with exposure to light. In order to achieve this, American Hardwood Export Council found a new treatment process using hot oil (natural vegetable oil), involving a vacuum pressure process. This two-part hot-oil treatment process, developed by Osmose in the UK, is a brand new environmental technology. All the tests confirmed that the tulipwood can be treated and will be suitable for exterior use. Further testing is under way to ensure the production suitability of the use of treated tulipwood for external cladding and other outdoor applications.

REGIONAL SOURCING — HELPING THE CARBON-NEUTRAL BALANCE

Regionally sourced hardwoods can make a real contribution to a project's sustainability. LEED grants green points for regional sourcing — those products extracted, processed and manufactured within 500 miles of the construction site. Local sourcing means that transportation costs are minimized, which saves money and petroleum resources, and creates less air pollution. Further, by purchasing local or regional American hardwood products, markets are created for hardwood trees, which in turn encourages landowners to manage their forestland in a sustainable way.

The LEED-Platinum, carbon-neutral Aldo Leopold Legacy Center is a prime example of effective regional sourcing. "Forest health was the foremost standard in planning and conducting the hardwood harvest at the Leopold Center. Most hardwoods came from a 20-acre oak woodland on the Leopold Memorial Reserve about two miles from the site," says Ecologist Steve Swenson of the Aldo Leopold Foundation, noting that the two major uses of American hardwoods in the Leopold Center were flooring and siding.

Architects specified some 8,000 board feet of exterior oak siding. The inch-thick boards are untreated. When exposed to the elements, oak typically weathers at a rate of about a quarter inch per century, according to the U.S. Forest Service's Forest Products Lab. Natural weathering has already begun to grey the exterior of the new building, reflecting the weathered look of the famous Leopold "shack." In addition, two porches were built using black locust for both the decking and railing. "Black locust is a non-native species in this part of the country, and it's naturally rot resistant, so we removed it from our native hardwood stand and eliminated a need for treated lumber," says Swenson.

Some 1,500 feet of cherry flooring was used in the formal meeting hall. The tongue-and-groove cherry flooring is 3/4-inch thick and 3/4-inches wide. "The cherry has the rich colors and wild whorls that the species is renowned for, and the rich shade of the cherry floor continues to deepen as it oxidizes," says Swenson, explaining that more durable white oak was used in the foyer, which is approximately 800 square feet. The tongue-and-groove oak flooring is 3/4-inch thick and 5 1/4-inches wide. "This oak has great grain, swirling around many knots, reminding us that these were smaller trees harvested to open up the forest canopy around older, larger oaks."



Local oak was harvested for the Drobish's traditional Pennsylvania barn.

The hardwoods also were used in tables made with white oak, bookcases and interior doors made with cherry, two counter tops made with thick slabs of cherry, which actually retain the curves of the trees, as well as Windsor chairs made from red maple and cherry, and exterior doors made from white oak. The diversity of uses made it possible to utilize the "whole tree," Swenson notes. The best, clearest, most stable, knot-free wood is on the outside of the log, in this case used for oak furniture, and cherry veneer, furniture, and flooring. Center material provided oak flooring and cherry for the core material of interior doors. To produce these materials and the finished products, the architects worked with a local sawmill, a local cabinet maker, and two local furniture makers.

Regional sourcing also was important for the Drobish family of Kennett Square, Pennsylvania, who wanted a traditional Pennsylvania barn. The project, which made ample use of oak from a local Pennsylvania forest, started with shop drawings in August 2005. The raising took about a month and was finished in January 2006 by Hugh Lofting Timber Framing, which crafts timber frame structures, including architectural trusses, great room additions, whole home timber frames, commercial inns, pavilions and barns. Downstairs, oak in the Drobish barn totaled 11,500 board feet; upstairs, an additional 15,741 board feet. "The Drobish family selected green oak for their barn for a number of reasons but, most importantly, because it is strong, long lasting, and of local provenance," said Hugh Lofting, who is one of a handful of woodworkers in the country responsible for the revival of the art of timber framing in the United States. Hugh studied timber framing methods across cultures, and his work is influenced by European, Asian and American techniques. "We have made a commitment to operate our company in a sustainable manner, and we encourage our clients to think about sustainable-building practices as they design their new homes and structures," adds Lofting.

WHY HARDWOOD IS CARBON NEUTRAL

Environmentalists generally agree that hardwood is a carbon-neutral substance. While living, trees sequester and store carbon in their cellular structure. In fact, nearly 50 percent of the dry weight of a tree is carbon. Because hardwoods grow to be large trees, they lock in substantial amounts of carbon. However, as the tree becomes overly mature it start to release carbon, thus sustained harvesting and processing of mature trees sequesters carbon as finished wood products and start the sequestration of carbon in the form of new trees.

So conversion of wood into products such as structural beams, window frames, furniture, and doors, contributes to the long-term removal of carbon dioxide from the atmosphere, helping to reduce global warming. Long-term management of U.S. hardwood forests for sustainable timber production makes a significant contribution to carbon sequestration. Each year for the last 50 years, American hardwood forests stored around 110 million tons of carbon dioxide (excluding all harvested material). This direct contribution of America's hardwood

forests to carbon sequestration excludes the carbon held in longterm storage as a component of American hardwood products. With useful lives spanning generations, furniture, flooring, cabinetry and trim crafted of American hardwoods act as an additional carbon store for many decades.

Once dead, wood left in the elements rots and becomes a fire hazard. Whether in a fireplace or decomposing in the forest, burning wood releases a significant amount of carbon dioxide — the greenhouse gas also released by fossil fuels — that is reabsorbed by growing trees. Hypothetically, this cycle can be repeated indefinitely. There is no similar claim that can be made for fossil fuel.

It is worth making a distinction between the two major forms of carbon dioxide. *Anthropogenic carbon dioxide* is derived from fossil fuels use. Conversely, *biogenic carbon dioxide* is carbon dioxide generated from biomass. Unlike fossil fuel, this latter form of carbon dioxide is considered impact neutral. In other words, carbon dioxide gas emitted in wood combustion and processing is off-set by the carbon dioxide gas taken up by trees as they grow. Through the process of photosynthesis, carbon dioxide and water are taken from the atmosphere and soil for woody tissue production. During the process, oxygen is released back to the atmosphere. Further, woody biomass used for internal fuel requirements during the manufacturing process can be considered advantageous. ©Continues at ce.ArchitecturalRecord.com.

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1.	Carbon neutrality:	6.	In the United States, fairly well-established values for carbon sequestration rates are
4	a. is required in local building code.	-	available for most tree species.
L	b. is legislated by the Kyoto Protocol.		a. Irue
u	c. is a voluntary mechanism.	u	b. Faise
u	d. will be mandatory in 2012.		
		7.	Compared with 1953, in 2002 there were this amount of trees in U.S. forests:
2.	Nearly half of all greenhouse gas emissions in the U.S. are produced by:	<u> </u>	a. 50 percent less
	a. automobiles.	<u> </u>	b. 30 percent less
	b. manufacturing.	<u>u</u>	c. 40 percent more
	c. the refinery sector.	u	d. 98 percent more
	d. the building sector.		
		8.	Wood flooring was shown to have:
3.	The USGBC and other groups recently finalized a memorandum of understanding		a. no emissions for carbon dioxide.
	with the ultimate goal of:		b. no emissions for methane, nitrogen oxide and other particulates.
	a. carbon-neutral buildings by 2012.		c. moderate emissions for particulates.
	b. carbon-neutral buildings by 2030.		d. heavy emissions for methane.
	c. an increase in carbon offsets.		
	d. net-zero carbon emissions instead of offsets by 2015.	9.	Current rating systems rely on this certification system to verify that the wood comes from a sustainably managed forest:
4.	Nearly 50 percent of the dry weight of a tree is:		a. SFI
	a. water.		b. American Tree Farm System
	b. woody matter.		c. FSC
	c. carbon.		d. Green Tree
	d. biomass.		
		10.	Sustainable design recognizes that:
5.	Biogenic carbon dioxide is generated from:		a. quarter-sawing is superior.
	a hiomass		b. FAS is superior.
0	h fossil fuel use	ō	c. rift-sawing is superior.
	c automobiles		d. no sawing method is superior over another.
	d. fires		

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hile visiting the recent Architecture Biennale in Venice, I had lunch at a small trattoria. It was on the ground floor of a centuries-old corner building at the far end of the Castello district beyond the Giardini. The time was noon. The sunlight filtered through the trees on the campo outside, in through the lace-trimmed windows, spilling across the floor onto the checkered linens (yes, they were checkered) from the open doorway. The local white shimmered with a golden effervescence. The colors of the spaghetti and insalata were rendered vivid and true. All was right with the world-and the scene.

Thanks to the time of day and locale, this simple Venetian eatery did not require the usual tricks of the trade employed by designers to evoke an aura in less picturesque restaurant and hotel sites. Typically, an architect or interior designer is called upon to play Pygmalion and craft the very identity of a hospitality venue via materials, furnishings, and, above all, lighting.

In his book Learning to See: A Matter of Light (published 2008 by the Illuminating Engineering Society of North America), prolific lighting designer Howard M. Brandston notes, "Lighting can alter our perception of place." Indeed, each of the three projects that follow is defined by its lighting scheme. All share a similar program whereby a blank palette of pale or white surfaces becomes a canvas on which electrically generated light "paints" color and pattern, creating ambience in the deliberately spare environs.

In the case of the FUEL Café, Oklahoma City-based architect Rand Elliott and his team elected to stick with the basics. They developed a plan that took advantage of architectural products and techniques such as transparent glazing and layering, combined with standard lamping and daylight. The results provided the casual, upbeat atmosphere the client desired for this cafeteria.

To fulfill the brief set for the interior public spaces of the Condado Plaza Hotel in San Juan, Puerto Rico, Rockwell Group principal David Rockwell tapped frequent collaborator Focus Lighting to devise a sophisticated programmable system capable of varying color and intensity as needed in the numerous general and intimate areas.

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LED-lit digital wall covering conjures Trafalgar Square at 24 London.

Finally, U.K.-based architect Julian Taylor turned to the latest technologies to achieve the chameleonlike vibe specified by the owner of 24 London for his multi-use, 24/7 club. Glowing super-size digital images of London greet guests as they enter, while farther inside, interactive surfaces project ever-changing natural and psychedelic scenes to entertain the eye of the beholder.

Beyond mere function, the lighting in these locations strives to tap into something that Brandston deems to be the responsibility of every designer: to awaken "an emotional response," one that is stimulated by culture, people, experiences, and preferences. In that regard, they are all as effective as that moment captured in a local trattoria in Venice. Linda C. Lentz

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Elliott + Associates infuses **FUEL Café** with a colorful vibe for an Oklahoma energy company

By David Dillon

hesapeake Energy is the largest natural gas producer in the United States, yet when the time came to name the new company café, Gas was obviously not an option. So Chesapeake defaulted to FUEL, and then hired Oklahoma City architect Rand Elliott to come up with a design that fit the name.

"The goal was to spice things up by creating a hip, high-energy place that could compete with the other restaurants in the area," says Elliott, principal at Elliott + Associates Architects.

Hip and high energy are the key words here. James Dean and

David Dillon, former architecture critic for The Dallas Morning News, teaches in the architecture school at the University of Massachusetts Amherst. He is currently writing a book about coastal Maine that has nothing to do with buildings. *Giant* notwithstanding, the energy business is no longer a bastion of swaggering wildcatters in splattered jeans and cowboy boots. It is a high-tech industry that attracts young, well-educated men and women who know how to spell *sophisticated*. Of the 2,700 employees at Chesapeake's Oklahoma City headquarters, 45 percent are women and 55 percent are under 35. This youth culture also happens to be a keen health-and-fitness culture that checks the nutritional value of every chicken wing and granola bar it eats. Chesapeake already had a comfort-food cafeteria called Wildcat—designed several years ago by Elliott + Associates—and was looking for a smarter, more adventurous alternative with, say, a Mexican-Mediterranean, Asian-fusion twist.

Elliott and his team started out with a bland, 4,000-square-foot space that used to house Chesapeake's accounting department. It had nat-

The red and green of the cooking island comes from imbedded LEDs, while the glowing rectangle on the far wall is edged with colored fluorescents.

FUEL





Daylight streams through laminated glass panels attached to the windows that, along with fluorescent gels in the ceiling, morph the white space into a kaleidoscope of color (top and bottom). ural light on three sides, but that was it for visual excitement. The ceilings were low, the floors gray, and the general atmosphere gloomy. The architects gutted it to create a clean, white space, essentially a large reflector, to which they added T8 fluorescents with color gels, LED lamps, and laminated-glass panels with polyester film. There are no computers, fancy fixtures, or any sophisticated dimmers. Yet from this barebones technology comes a stunning range of

intense color that complements the food being served: banana yellow and chili-pepper red, the cool pink of watermelon, and the deep purple of eggplant. The cooking island in the center of the restaurant is covered in red and green resin panels, like a floating Italian salad.

"It's a cliché that you need white light in a restaurant so you can see your food," Elliott explains. "Maybe for fine dining, but FUEL is not a white-linen and cut-crystal sort of place. Employees pop in for breakfast and lunch and then go back to work. It needed to be fiesta-like."

FUEL celebrates the interplay of color and daylight, with color being a starting point and first principle for Elliott instead of a decorative afterthought. He doesn't start out thinking, "I will make a red wall," but rather, "I will make something red and it may be a wall." Technology follows concept, in other words, and if it were up to him, all the light sources would be invisible. "It's all about results, not gizmos," he says.

The café has as many moods as the day: soft and welcoming in the morning, bright and upbeat at lunch, subdued in the late afternoon. And the light is multidirectional. It streams through laminated-glass panels, bounces off walls and floors, and zips across ceilings in vibrant fluorescent stripes. Even mechanical chases are light sources. The glowing rectangular boxes at opposite ends of the café, with their green and blue LED lights, hide the exhausts from the prep kitchen below. Everywhere colors intersect and overlap, turning the interior into a Fauve painting.

But FUEL is more than a hip design statement; it is part of a strategy to enrich the corporate culture. By providing fresh, healthful, cooked-to-order food, Chesapeake encourages employees to stick around at lunch instead of running off to Chili's or T.G.I. Friday's, with stops at the bank, dry cleaners, or drugstore in between. It is a way to boost productivity and promote in-house socializing without making employees feel that they're settling for less. Research institutions discovered long ago that the most important work often gets done in the in-between spaces: Cavendish Laboratory at the University of Cambridge, England, birthplace of modern physics, was primitive at best, but the lounges and tearooms were superb.

"FUEL has had a huge impact," says Lisa Phelps, Chesapeake's vice president for human resources. "This is a hard-driving, innovative organization, and the café, with its high-tech energy, reinforces that spirit."

FUEL now serves 250 meals a day, which is close to capacity. Moreover, Phelps says that some days it is so crowded, she can't find a table. Success with a twist, perhaps, but success nonetheless.

Project: FUEL Café at Chesapeake, Oklahoma City, Oklahoma Architect: Elliott Associates Architects—Rand Elliott, FAIA, principal; Bill Yen, AIA, Miho Kolliopoulos, AIA

General contractor: Smith & Pickel Construction Structural engineer: Mark Eudaley Engineers M/e/p: Determan Scheirman Lighting consultant: Smith Lighting

SOURCES

Terrazzo floor: EnviroGlass Products Laminated glass panels: Craftsman Glass



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A wavy teak ceiling canopy sets off the warm hues of the lobby, which evoke the tropics, and provides accent and general illumination via MR16s that change color to suit the hour (this page and opposite, inset).

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Rockwell Group and Focus Lighting illuminate San Juan's **Condado Plaza** Hotel

José Fernando Vázquez-Pérez, AIA

he Condado Plaza in San Juan, Puerto Rico, designed in 1960 by Morris Lapidus as the Hotel Ponce de León, was built as the last of the major hotel projects on San Juan's "golden strip." While Lapidus is well known today as a pioneer of "experiential architecture," the Ponce de León was one of his most sober endeavors. Ironically, it took a set of new ambassadors of "architecture-as-experience" to make it really shine.

The building sits on a privileged site, a small headland at the northwesternmost part of the Condado district, bordered by the Atlantic Ocean on the north, the Condado Lagoon to the south, and views of the landmark Caribe Hilton Hotel and 17th-century Fort San Gerónimo to the west.

The original project, although elegant and modern, was no Eden Roc—a famous example of Lapidus's midcentury hotels in Miami Beach, Florida. And formal sympathies aside, Ponce de León had architectural shortcomings from the beginning. The lobby, raised above grade and shadowed by a massive structural overhang, had an ineffectual relationship with the street, which required visitors and guests to traverse an impersonal, inclined carport to enter the hotel. Furthermore, Lapidus placed the main entrance off to one side, directly facing the reception desk, a location that did not capitalize on daylighting or ocean views.

Forty-six years later, after eight name changes, innumerable owners, various face-lifts, and the construction of two additional buildings, the now-tired complex was purchased by Blackstone/LXR Hotels.

> "By this time the whole thing, and particularly the lobby, looked very dark, generic," states Raúl Bustamante, the hotel's general manager who oversaw the project. "We wanted it to be more contemporary and more appealing to the senses," adds Bustamante. So the new owners brought in the office of Leo A Daly to remodel the rooms, and then David Rockwell who, according to Bustamante, was hired to "reconceive the hotel's public spaces and persona."

> Rockwell, of W Hotel and Kodak Theatre fame, already knew a thing or two about drama. "This is a case where we really felt like the spectacle was going to be provided by the people moving through it, so the architecture is really the setup for that," he explains. And while his solutions were remarkably simple, the visual results are inversely elaborate. His 1-2-3 punch involved reopening ocean views,

José Fernando Vázquez-Pérez, AIA, San Juan–based architect, freelance writer, and teacher, is a founding partner of the firm URBANA: Arquitectura/Diseño.

РНОТОGRAPHY: © ТНОМАЅ НАRT SHELBY



installing indoor gazebos, and artfully resurfacing all the floors, walls, and ceilings. Yet he held everything together with an elaborate illumination choreography, mostly composed of quartz halogen downlights, xenon indirect lighting, and ample use of RGB-LED's for accent.

Intimate "gazebos" (above) feature shear drapes lit from above. The teak canopy casts an amber glow next to the bar (right).

The automated lighting system divides

the lobby into clustered areas that can be individually controlled from a master station, and synchronizes color and intensity to blend natural daylight with electric illumination. The scheme works because it was conceived from the start as part of the architecture. "There's no way you can get this type of project by [just] assigning lighting to a lighting designer, because the architecture itself is about lighting," asserts Rockwell, who teamed up with illumination specialist Focus Lighting. "I've been working with Focus on and off for 29 years. It's a very special collaboration we have, and that's what works so well about it."

Although the regained ocean transparency isn't an evident design feature, as it seems to come naturally to the space, visitors are immediately struck by the lobby's welcoming layout with its rich tropical hues, cubelike indoor "gazebos," glowing columns, and luminous registration area.

"After talking to people who operate hotels and clubs in San Juan, we developed a lobby where rooms nestle inside rooms, so there's a big kind of public space with different scales of intimacy as you move through it," states Rockwell about the role of the cubicles, which function as a series of semi-enclosed platforms that frame water views and serve as gathering places during the day and party booths at night. The design-



ers underlit the structures to create an ethereal effect, and provided privacy inside with illuminated drapes that seem to glow when closed.

Likewise, the designers took their cues from one of the city's familiar forms when it came to integrating the hotel's existing square columns. "Focus and Rockwell shared an interest in striking a balance between traditional Puerto Rican colors and textures, and a more simplified Modern sleekness," says Paul Gregory, principal at Focus Lighting. Moreover, adds Ken Ventry, a lighting designer with Focus, "We didn't want to simply use candlelight or table lamps as light sources, but to let a column take the place of a table or floor lamp, [thereby] reinterpreting the design



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elements through the use of light." Thus, the radiant columns, with their rectilinear patterns and mysterious glow, recall the candlelit lanterns typically used in local restaurants, but are transformed here to an architectural scale. The designers created this distinctive effect by mounting discreet vertical rows of low-voltage

The reception area delivers a continual light show with its backlit glass mosaics and curvilinear, LED-lit desk (above and right).

light strips (concealed from view by a reveal) that emit their seductive glow from within a cavity behind a geometric arrangement of slender gaps—the result of a clever decorative cladding created by projecting detachable, pregrooved, lacquered panels out from the original structural columns.

Color, material, and texture converse throughout the rest of the lobby, where wooden accents and blood-orange furniture contrast with pale terrazzo floors and white walls. This neutral backdrop helps to highlight the project's most seductive juxtaposition: a curvaceous, illuminated glass front desk, with a glow that changes in color and intensity throughout the day, and a monumental, colored-glass mosaic right behind it. The massive desk, lined with LEDs around its base, lights up the whole reception area, while the mosaic features small glass nuggets attached to a translucent glass backdrop mounted in front of a reflective surface, and illuminated from above and behind.

Of the hotel's architectural lineage, Rockwell says, "We didn't think too much about the Lapidus pedigree and made no deliberate references to it." That being said, he admits, "We did try to capture the 'Tropical-Modern' feeling of the space, and tap into the same tradition of playful fantasy that Lapidus was so interested in."



Project: Condado Plaza Resort and Casino Hotel, San Juan, Puerto Rico Architect/interior design: Rockwell Group—David Rockwell,

founder and C.E.O.; Gregory Stanford, principal; Henry Myerberg, architect; Michelle Biancardo, Jodel Narcisse, designers

Lighting: Focus Lighting—Paul Gregory,

principal; Ken Ventry, designer

SOURCES

Chandelier: Hudson Furniture Pendant: La Murrina Glass mosaic mural: Sicis Banquettes: Dine Rite Sofas: JC Furniture, Moroso Chairs: Moroso


















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CIRCLE 98



Julian Taylor Design Associates creates a blank canvas for the many faces of **24 London**

By David Sokol

ccording to British architect Julian Taylor, the recession of the early 1990s forced the design industry to a standstill. By mid-decade, though, England was pulling out of the slump, and for architects, nightlife commissions were driving the tugboat, Taylor points out. "Themed bars were a huge growth industry," he says. Indeed, when Taylor decided to open Hampshire, U.K.–based Julian Taylor Design Associates in 2000, leisure clients provided the bulk of the work. And as the world again stares down economic hard times, he believes top-end nightclubs, restaurants, and bars will prove to be a recession-proof part of the market.

That's because these spaces represent a fierce business. "Clubs have to reinvent themselves to keep up with the current trends," says Taylor. The reincarnation of Attica, a former destination in London's Soho, is a case in point. In the 1990s, celebrities like Donatella Versace swept through its unmarked doors, crowding onto the black room's tiny dance floor and sipping the house Cristal on tufted black leather seats.

But several years ago, club owner Marcell Allessi noticed what Taylor calls "a kind of return to disco" in nightclub trends. These days, the architect says, "Customers don't want designs to take themselves too earnestly, but to be fun like they were in the mid-'80s." Self-serious, though,

David Sokol, a New York-based writer, is a RECORD contributing editor.

The 24 bar is equipped with a DJ and lighting system that includes a DMX-controlled light desk – a command central for music, lighting, and projections. is exactly how one would have described Attica's midnight opulence. So, in order to maintain his pole position, Allessi commissioned Taylor to reinvent Attica as 24 London—a multidimensional venue that could play as a hip nightspot, corporate event space, or even a children's birthday party room over the course of a day.

Boasting spatial similarities with its predecessor, the plan of the new, 3,200-square-foot club roughly forms an L shape, with a bar and low-slung booths separated by translucent polyester curtains running along either side of the main volume. Between them, Panton chairs around candelabra-topped tables greet guests at cocktail hour. This furniture is then hauled away for late-night dancing.

"There was no intrinsic flaw," Taylor says of Attica's circulation, "but the look is completely different." And the difference between Attica and 24 London is literally black and white. Only resin-covered pebble flooring provides a counterpoint to 24 London's white walls; high-gloss white tables; and satin-finished, white laminate and Corian-topped bar.

Besides making 24 London appear like the antithesis of Attica, Taylor chose the all-white scheme because, he says, "You can change the entire flavor of the site with color." All of the white surface treatments were chosen for their ability to uniformly distribute colors from the cusSurrounding the club's lounge areas, white surfaces provide a clean backdrop on which to cast an ever-changing palette of colors and imagery (top spread). iBar-crafted designs frame glasses (opposite, middle). Matrix-style lighting is projected via iWall (opposite, bottom).



A high-resolution print of London's traffic runs along the 40-foot-long corridor wall, lit from below by a changing spectrum of LEDs set into a trough (left). tom LED-embedded wall washers—part of an off-the-shelf combined DJ and lighting system that includes a DMX-controlled light desk.

Moreover, Allessi may never have to renovate again, due to a technological element that permits endless reinvention. While mirror balls suspended from the coffered ceiling add a disco feel, 12 projectors and six infrared cam-

eras hidden in the ceiling's soffits enliven the walls with changing, interactive images. For instance, guests might see their shadows fan out in psychedelic colors; touch a wall of cascading, matrix-style numbers to start and stop the movement; or chase "goldfish" around the room at a daytime children's event. A single image can be programmed to cover the entire room, or different ones can be projected simultaneously.

To create this dynamic experience, the designers turned to Mindstorm, a London-based interactive-surface company whose product, iWall, uses embedded cameras to send images to a computer that, through a proprietary algorithm, recognizes hands, bodies, and other shapes. iWall then orchestrates the light to respond accordingly. Kenneth Siber, who cofounded Mindstorm with Thomas Jensen, says, "The principles of what we do are well known, but only recently were the components affordable enough for startup companies to play with them."



Taylor notes that iWalls are a good fit for the design: "The simple backdrop allows the lighting and the projections to be the focal point." The iWalls may be programmed for promotions and events, too, while the ambient LEDs change sequentially or are controlled via the light desk.

The socializing and potential revenue-generating opportunities of the iWall concept inspired Allessi to install another Mindstorm brainchild—iBar. This device uses similar tracking cameras and projectors mounted inside the bar's core to create motion graphics around hands and glasses placed on the surface.

The wave of the future? It appears that the technology—and its seamless integration into Taylor's design—may be responsible for the growth of the 24 concept. Allessi plans to roll out comparable franchises in other cities where clubs are battling for attention.

Project: 24 London, England Architect: Julian Taylor Design Associates—Julian Taylor, principal Lighting consultant: Into Lighting Design Technology consultant: Mindstorm General contractor: Cameron Black

SOURCES

Bar top: DuPont Corian Bar front and back: Formica Wall and ceiling paint: Dulux Flooring: Altro Custom furniture: Cameron Black Tables: Kartell, Formica Chairs: Panton



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Lighting Products



► Reflective thinking Studio Italia Design may be revered for its hand-made glass-blown products, but the Venice-based company has explored a different materiality with the Andrei collection of polished stainless-steel fixtures. Part of the company's 2008 collection, Andrei is available as a pendant, sconce, and floor lamp and features pleated mirrors that give off a fragmented reflection of the viewer. The lamp uses two 50-watt Halopar 16 lamps for uplighting, a 200watt Alogena lamp for ambient lighting, and a 75-Watt Halopar 30 lamp for downlighting. Studio Italia Design USA, Miami, Fla. www.sid-usa.com CIRCLE 207



◄ Glass act Offering an alternative to imported glass fixtures, lighting from Charles Loomis is U.L.listed and manufactured to order in the United States. Introduced at this year's NeoCon show in Chicago, the Paris chandelier (left) features blown-glass spheres inspired by effervescent champagne bubbles, while the Zaffiro sconce is adorned with a collection of cast recycled glass "stones" framed in stainless steel set among fragments of glass. Charles Loomis, Kirkland, Wash. www.charlesloomis.com CIRCLE 206



◄ Trad styles, modern demands ELA's Colony Series (far left) is a four-sided Traditional lantern that features a choice between four hood styles and three cage/mounting options for post-top and multi-arm, pendant, and wall-mount configurations. The del Parque fixture (left) is now constructed with a reflector optical system in either asymmetric or symmetric distribution patterns. New lens options meet specification criteria for Dark Sky jurisdictions and LEED project requirements. ELA, City of Industry, Calif. www.ela-lighting.com CIRCLE 208

► Tube of light The Ledra Kepler pendant (far right; near right, detail) is a 3-watt LED pendant made out of an aluminum tube. Compatible with any Bruck Lighting, low-voltage track system, 4" canopy, or 2" canopy with junction box, the Kepler fixture is offered in chrome and matte chrome finish. The Ledra Kepler sconce is made of aluminum, with illumination on either side of the tube. Powered with only two 3-watt LEDs, the sconce is ADA compatible. A driver is attached to the back of the sconce canopy for easy installation. Bruck Lighting Systems, Tustin, Calif. www.brucklightingsystems.com CIRCLE 209

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Lighting Products

► Rainbow brights Available with shades in a rainbow of colors, the Muse collection from Axo Light is well suited for hospitality projects, including bars, restaurants, and night clubs. The fixture's elegant form is created by a metallic structure wrapped in a silken, elasticized fabric. The collection includes a ceiling or wall light in 31½" and 47.2" diameters, and a pendant with a 31½" diameter that is available with a maximum distance from the ceiling of 59". The wall and ceiling models use three 100-watt A-19 incandescent bulbs or a single T5 (55-watt max), while the pendant uses a 150-watt G-40 incandescent or a 25-watt G-30 fluorescent. Axo Light, Danbury, Conn. www.axolight.it CIRCLE 210



► Subtly illuminating The SofTrace fixture from Day-Brite Lighting offers a concealed lamp center panel with efficiency in excess of 95 percent and total luminaire efficacy as high as 87 lumens per watt. An array of ballast factor options, stepped or continuous dimming, and lamp types (including T8, T5, T5HO, or CF) are available. Enclosure options include a diffuse ribbedacrylic or perforated-metal panel. Day-Brite Lighting, Tupelo, Miss. www.daybrite.com CIRCLE 211





Custom copper collection LaTienda USA offers a collection of original and custom copper lighting fixtures designed by metal artist Jose I. Morales. Handcrafted by artisans in the Dominican Republic, the collection includes electrified chandeliers, sconces, table lamps, ceiling mounts, and pendants. A selection of nonelectrified fixtures, including candelabras, candlesticks, sconces, torches, and lanterns is also available. LaTienda USA, Milford, Pa. www.latiendausa.com CIRCLE 212

► Bathing in light Ledon Lighting has collaborated with the Swiss bathroom furnishings manufacturer Fraefel to produce a light mirror that works as both a functional and atmospheric light source. Light is emitted via the sandblasted, screen-printed, lowprofile mirror surface. Once programmed, the end user can call up a range of lighting scenes. Available upon request from Fraefel with an approximate delivery time of 10 to 12 weeks. Ledon Lighting, Lustenua, Austria. www.ledonlighting.com CIRCLE 213



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Composite made of recycled materials catches the attention of the design world

Japanese architect Shigeru Ban's Artek Pavilion finally found a permanent home last June when Sotheby's auctioned off the structure as part of a sale of Important 20th Century Design. Originally hoped to bring in \$800,000 to \$1.2 million, the unit was purchased at the bargain price of \$602,500 by Sebastian + Barquet, a gallery for Modern and contemporary furniture based in New York City. The prefabricated pavilion, which has been exhibited in Milan, Helsinki, and Miami, was produced in collaboration with Finnish Modern furnishings manufacturer Artek and Finnish forest products group UPM. It comprises 21 modules, each consisting of a section of roof, wall, and structural elements forming an elongated exhibition space.

Originally built for the 2007 Salone del Mobile in Milan, the Space of Silence pavilion was designed by Ban using mainly one material: extruded profile out of UPM ProFi, a wood plastic composite made from 60 percent surplus paper and plastic left over from UPM's production of self-adhesive label stock. The floor of the pavilion was made of UPM ProFi Deck, the first commercial product made of UPM ProFi, which is ideal for outdoor use in garden decks, patios, boardwalks, and other applications.

Weatherproof and highly durable, UPM ProFi Deck requires no annual surface treatment – only periodic cleaning is recommended. According to UPM, ProFi does not contain any harmful chemicals, so it can be crushed and converted to new product, incinerated, or thrown out with regular trash (although it will not decompose).

UPM ProFi Deck can be worked with traditional woodworking tools to create a range of patterns and designs such as compass roses, Art Deco patterns, curves, and waves. UPM ProFi Deck also reacts to temperature like wood, with a thermal expansion of approximately 0.1 percent. The material's color (available in a natural palette) will change only slightly after several months exposed to sunlight because the material is virtually free of lignin, the natural wood molecule that turns gray when exposed to sunlight. A hollow core structure keeps the material lightweight and enables the use of hidden fastening and electrical cables that can be run unexposed inside the profiles.

Last April, UPM announced it plans to build a new mill in Karlsruhe, Germany. The plant, which will manufacture UPM ProFi decking boards mainly for the growing Central European market, is scheduled to start production in early 2009. UPM, Westmont, III. www.upmprofi.com CIRCLE 214

For more information, circle item numbers on Reader Service Card or go to **architecturalrecord. com**/products/.

Products Green Materials



► Metal backing added Nysan Solar Control,

a division of Hunter Douglas Contract, has added

a metalized backing to the company's

GreenScreen PVC-free solar-shading

external contract roller shades and

Solar Control systems. GreenScreen

Platinum's metalized finish helps

reduce solar gain and glare while

increasing outward visibility, and

CIRCLE 217

comes in four new colorways: Charcoal,

Bronze, Pewter, and Pearl. Nysan Solar

Control, Calgary, Canada. www.nysan.com

fabric designed for internal and

◄ Traceable bamboo Smith & Fong is now producing the world's first range of Forest Stewardship Council-certified bamboo plywood and flooring. Smith & Fong's certified products will qualify for the FSC Pure designation, meaning they are made of 100 percent FSC material from an FSC-certified forest and have been sold and/or processed by an FSC chain-of-custody certified company. No irrigation, pesticides, or fertilizers are used in growing the bamboo. Smith & Fong, San Francisco. www.plyboo.com CIRCLE 215





► PVC-free protection Manufactured in Youngstown, Ohio, by Boston Retail, ecoRigid wall and corner guards are made of a rigid PVC-free plastic called polybostylene. This recyclable material is a polymer made from a blend of thermoplastic monomers that is free of harmful chemicals, including Bisphenol-A (BPA). In addition, the product's preslotted base channel requires no adhesives, easing installation. Boston Retail, Medford, Mass. www.bostonretail.com CIRCLE 216

Manufactured by Gigacrete, Plastermax-ICF is an Greenguardcertified interior veneer plaster specifically formulated for direct application over ICF foam blocks. replacing drywall as a fire-rated barrier. According to the manufacturer, Plastermax-ICF is the world's first coating applied directly without lath that offers superior bonding, no VOCs, and 50 percent recycled content. The highly abrasion- and impactresistant finish consists of nontoxic, noncombustible natural ingredients. including limestone and recycled glass. Gigacrete, Las Vegas. www.gigacrete.

com CIRCLE 218

Plaster right over ICF





▲ Managing a "growing" issue Considered a "water hog," a single Western Juniper tree can consume 30 to 50 gallons of water per day. In fact, the trees have become such an obstacle that state and local governments have offered programs to help support their removal in certain areas. Jeld-Wen claims to be the first building-products manufacturer to adapt juniper for use on a national scale through the introduction of a line of interior and exterior doors. The doors feature unique knots and splits and a swirling grain pattern that works well with rustic, historic, and traditional styles. Jeld-Wen, Klamath Falls, Ore. www.jeld-wen.com CIRCLE 219





◄ New drywall option Serious
Materials has introduced EcoRock as
a "green" replacement for gypsum
drywall in residential and commercial
construction. EcoRock drywall is VOCfree, fully recyclable, and uses 85
percent less energy in its production,
according to the manufacturer. The
product will look, feel, perform, and
install the same as gypsum drywall, but
will be produced in a "no-smokestack"
plant that consumes little fossil fuel and
helps reduce greenhouse gas emissions.
Serious Materials, Sunnyvale, Calif.
www.seriousmaterials.com CIRCLE 220

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*Prefinished door supplied by door manufacturer

Products Briefs

► Art meets science For the newly renovated Calhoun College Math-Sciences Building in Decatur, Alabama, Montgomery-based PH & J Architects selected artwork fabricated in DuPont Corian by R.D. Wing. Utilizing 2D graphics and images and sophisticated software technology, the fabricator produced a series of science-inspired large-format (45" x 65") 3D Sculpted Reliefs using 1"-thick Whisper Corian. DuPont Corian, Wilmington, Del. www.dupont.com CIRCLE 221





◄ Hands-free exit The ADA-compliant SaniGrasp stainless-steel door pull is intended for use on public restroom doors, effectively eliminating the need to touch dirty door knobs after hand washing. SaniGrasp, which features an inorganic, silver-ion antimicrobial treatment, permits the use of the forearm instead of hands to open the door, minimizing the chance for cross-contamination of potentially harmful bacteria. Component Hardware Group, Lakewood, N.J. www.chgusa.com CIRCLE 222



▲ **Deluxe dining** Introduced during Eurocucina 2008, the Lignum et Lapis kitchen, designed by architect Antonio Citterio, is now available in 10 Arclinea showrooms across the country. The luxe kitchen system features benches, chairs, and tables made of plantation-grown, sustainably harvested Larch wood and stone work tops with integrated drip guards and basins. An adjustable, ceiling-mounted, stainless-steel canopy (consisting of two shelves) can be fitted with extraction units, a lighting system, indoor miniature greenhouse, and a food warmer. Shown at right is the kitchen's elegant retracting vent. Arclinea, Chicago. www.arclineachicago.com CIRCLE 223



► Bowl you over Tile designer Erin Adams collaborated with Mark Lacko, a designer and producer of cast-concrete fixtures and surfaces, to develop Borealis, a new glass-infused concrete object and surface collection. Borealis will include round tables in three diameters, vessels with glass inlayed rims, bowl sinks with drain recesses and glass-inlayed rims (left), mirror frames, and surfaces available in 22"-square and 24" x 36" rectangles. Erin Adams Design, Albuquerque. www.erinadamsdesign.com CIRCLE 224

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on-site. Surface is rock-hard and paintable. No

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for healthy, fire-safe feature walls.

Project: CSU Fullerton Recreation Center in Fullerton, CA Products: SuperLite II-XL 90 and 120 in SAFTI*fire* GPX Framing Architect: Langdon and Wilson Glazier: Woodbridge Glass Photo Credit: Jim Watkins

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This two-story separation wall uses SuperLite II-XL and SAFTI*fire* GPX Framing to protect the exit enclosure against fire, smoke and dangerous radiant heat for up to two hours. SuperLite II-XL combined with SAFTI*fire* GPX Framing provides unlimited design flexibility while maintaining the maximum in life safety and property protection. SAFTI *FIRST* was the *FIRST* to introduce advanced fire rated glazing technology to the US market and continues to be a leading manufacturer of fire rated glazing and framing for over 25 years.

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Products Briefs



◄ Ghostly glass Bendheim's Spirit Collection is a new line of safety laminated glass featuring a white translucent interlayer with various pattern and surface options. Suited for a range of commercial, residential, and hospitality applications, including wall partitions, curtain walls, balustrades, tabletops, and lighting, the glass ranges from ¼" to ¾4" in thickness and is available in large sheet sizes. The white interlayer is available in several degrees of opacity to accommodate customers' privacy requirements. Bendheim, New York City. www.bendheim.com CIRCLE 225

► Frame for low-rise and mid-rise projects

The Strong Frame moment frame is predesigned and manufactured, taking the legwork out of the design process and reducing installation time. Available in a variety of sizes up to 19' tall and 16' wide, applications include garage fronts for two- and three-car garages in one-, two-, or three-story buildings and balloonframing applications for tall, open-style rooms. Simpson Strong-Tie, Pleasanton, Calif. www.strongtie. com **CIRCLE 226**





a choice of performanceengineered leathers and suedes for commercial, retail, and institutional applications. Leef, Toronto. www.leef.ca **CIRCLE 227**

► Solar-power ready The Square D brand combination service-entrance devices from Schneider Electric provide home builders the flexibility to offer a solar-ready home for their markets, whether the homeowner has a photovoltaic array or not upon initial occupancy. The devices are suitable for use with a utility interactive inverter by featuring space for a back-fed inverter circuit breaker, along with current transformer mounting for current monitoring equipment. Schneider Electric, Palatine, III. www. us.squared.com CIRCLE 228



For more information, circle item numbers on Reader Service Card or go to architecturalrecord. com/products/.

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Products Resources On the Web



www.leescarpets.com/dnf

The Mohawk Group's Drag & Fly Webbased application provides architects and designers with a choice of carpet images from all of the company's brands (Bigelow Commercial, Karastan Contract, and Lees Carpets), which can be dragged and dropped into 3D renderings or CAD. Visitors must first download a free copy of the I-Drop software that is available on the site.



www.brownjordan.com

Brown Jordan's site isn't too "flashy" (there is a bit of animation on the landing page), but that's a good thing. The site works as an online catalog that showcases the companies line of highend outdoor furnishings. It features a custom design tool that allows visitors to change a product's fabric and finish options, and a product gallery that is searchable by collection, type, and architectural style.

www.gflegacyofgreen.com

In September 2000, GranitiFiandre became the world's first porcelain tile manufacturer to achieve the requirements of the UNI EN ISO 14001 Environmental Management System. The company's no-frills Web site is intended to help clarify the sustainable aspects of its surfacing materials, explain its worldwide corporate environmental stewardship, and offer a guide to understanding LEED.



www.lutron.com/bulbs

Lutron's easy-to-use, interactive site is intended to help both consumers and professionals find the best bulb for the job. A comparison guide features rollovers that explain the myriad differences (including efficiency, performance, and cost) between incandescents, screw-in CFLs, and halogen bulbs. Visitors can also click on links to find out more about Lutron's lighting control products.



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Products Resources On the Web



www.wausauwindows.com/ green/index.cfm

Wausau Window and Wall Systems' expanded Web site includes a Green Building section that gives visitors 24-hour access to the company's sustainable products and practices. The site's new content includes a range of downloadable references, including details on the recycled content for the typical materials comprising an aluminum glazing system.

www.vtindustries.com

VT Industries, a manufacturer of architectural wood doors, fine laminate countertops, and stone surfaces, has redesigned its Web site to be more user-friendly than the previous format, which had been patched together over the years. Specialized sections for architects allow them to quickly update their libraries, download specifications, register for continuing education courses, and view factory finish options.



www.sinapearson.com

For her redesigned site, textile designer Sina Pearson has connected more than 900 colorways to a sophisticated database that allows viewers to sort by color, collection, pattern, fiber content, finish, price, indoor vs. outdoor, name, number, durability, or sustainability. Visitors can download testing documents, cleaning instructions, or sustainability information from every specification page.



www.palaceofglass.com

Palace of Glass, a provider of highend art-glass installations based in Southern California, offers a database of images on its Web site searchable by either glass type (deep-carved, cast, stacke, etc.) or design. The site also serves as a great source of information on art glass in general, including a glass glossary, and illustrated chapters on the history of glass and modern types of glass.



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The National World War II Memorial, located in Washington DC, is a stunning tribute to the men and women who sacrificed their lives in order to preserve the American way of life. While this national masterpiece possesses many beautiful features, none is more breathtaking than the memorial's signature fountains.

While we obviously can't take credit for the beauty of this national monument, or the hard fought efforts of

those it honors, we do play a role in maintaining its splendor. Bilco supplied custom doors to provide access to the fountain's pump system. The extra effort made by Bilco to meet the challenging schedule was praised by the project's



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Dates & Events

New and Upcoming Exhibitions

"realities:united!"

Los Angeles

November 17-December 12, 2008 Electronic surfaces that carry sounds and imagery have long been featured in the work of the Berlin-based realities:united architectural studio. This show, which presents a selection of the firm's projects and approaches from the past 10 years, explores the intersection of art, architecture, and communication. At UCLA. Call 310-267-4704 or visit www.aud.ucla.edu.

XVI Quito Pan-American Architecture Biennale

Quito, Equador

November 17-21, 2008

Thirty years ago, the Colegio de Arquitectos del Ecuador, from Pichincha province, instituted the Pan-American Quito Architecture Biennale (BAQ). Every two years the event addresses architectural projects from the Americas. Hundreds of unpublished works from North, Central, and South America are featured in each BAQ. At Colegio de Arquitectos del Ecuador, Provincial Pichincha. For more information, visit www.baq-cae-ec.

Pierre Berge & Associes Auction of DuPont Installations and Designs Brussels

December 18, 2008 Pierre Berge & Associes will auction a selection of DuPont Corian installations and designs created for DuPont international events and exhibitions. Some of the designers include Sottsass Associati, James Irvine, Ron Arad, Zaha Hadid, David Rockwell, and Arik Levy. For more information, contact Olivia Roussev, Pierre Berge & Associes, oroussev@pba-auctions.com or call +32 495 74 63 62.

Atelier Bow-Wow

Los Angeles

February 5-April 5, 2009 This Tokyo-based architecture studio explores the use and function of space within urban environments. As working architects in Tokyo, Atelier Bow-Wow developed the term "pet architecture," small, ad hoc, multifunctional structures that make the most of limited space. For more than 10 years, they have also created "micro public spaces" within the framework of art exhibitions. The project will expand on the possibilities of a gallery space to relate to its surroundings and the urban environment. This is Atelier Bow-Wow's first solo exhibition in the U.S. At the Gallery at Redcat. Visit www.redcat.org or call 213/237-2800 for more information.

Ongoing Exhibitions

Thierry W. Despont: Through the Main Door New York City Through November 8, 2008 An exhibition of works by renowned architect and artist Thierry W. Despont. At Marlborough Gallery. For more information, you can call 212/541-4900 or visit www. marlboroughgallery.com.

Sub Object: Or Between Subject and Object Venice, Italy

Through November 14, 2008

The exhibition by Michael Schluder and Sergej Nikoljski focuses on the true nature of the lagoon city. The objects presented at the exhibition represent a new interpretation of the so-called passerellas, the small footbridges that are used in Venice during high water (aqua alta). At Place Campo San Francesco della Vigna. For more information, visit www.austria-architects.com.

Boom Towns: Chicago Architects Design New Worlds

Chicago

Through November 21, 2008 This show explores similarities and differences in the architectural responses to boom conditions across two centuries and two cities. Free and open daily, the exhibition includes photographs, drawings, graphics, models, and videos that encourage visitors to travel between eras and continents in order to consider how international networks of architects transform dynamic societies. At ArchiCenter. For more information, call 312/922-3432 or visit www.architecture.org.

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Dates & Events

Architects Fired Washington, D.C.

Through November 28, 2008

A group of celebrated D.C. architects turn their sensibilities to the medium of clay. The architects demonstrate their threedimensional ideas in earthenware, without the normal constraints imposed by budgets and building codes. At Cross Mackenzie Gallery. For more information about the show, call 202/333-7970 or visit www. crossmackenzie.com.

Just In:

Recent Acquisitions from the Collection New York City

Through November, 2008

This installation of recent acquisitions, many of which are on view for the first time, represents the diversity found in contemporary design practice, with a focus on the latest innovations in architectural, industrial, and graphic design. Highlights include videos and drawings of Diller Scofidio + Renfro's ephemeral mist construction, the Blur Building. At the Museum of



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Modern Art. Call 212/708-9400 or visit www.moma.org.

April Greiman: Does It Make Sense? **New York City**

Through December 13, 2008

One of the first American designers to embrace digital technologies, April Greiman has explored the intersection of art, design, and architecture for more than a quarter century. The School of Visual Arts (SVA) honors Greiman with the Masters Series Award and retrospective exhibition. At SVA. Call 212/592-2010 or visit www.sva.edu.

Oyler Wu Collaborative Los Angeles

Through December 14, 2008

Motivated by the desire to occupy the SCI-Arc gallery in a way that exploits the spatial potential of the existing venue, this Oyler Wu Collaborative installation is intentionally situated in the territory between tectonic expression and functional performance. At SCI-Arc gallery. Call 213/613-2200 or visit www.sciarc.edu.

Daniel Burnham's Plan of Chicago Chicago

Through December 15, 2008

This exhibition, a preview of the citywide celebration of the Burnham Plan Centennial that begins in January, presents 32 of these prized illustrations from the Department of Architecture and Design's collection in five separate and insightful rotations. The exhibition offers an extraordinary opportunity to view these historically significant and artistically exceptional documents that, because of their fragility, are rarely displayed publicly. At the Art Institute of Chicago. Visit www.artic.edu.

New York NOW

New York City

Through December 2008 New York NOW celebrates the diversity of

the AIA New York Chapter and Center for Architecture membership by displaying nonjuried submissions of member projects. The exhibition will include works of all scales: small. large, commercial, residential, public, private, interiors, historic preservation, engineering, landscape, and urban design. The exhibition presents the depth and breadth of professional activity and the variety of its impact. The resulting dialogue between different practitioners

encourages a deeper understanding of what is happening in the New York architecture and design world now. At the Center for Architecture. Call 212/683-0023 or visit www.aiany.org.

Eero Saarinen: Shaping the Future Minneapolis

Through January 4, 2009

The short but prolific career of Finnish-born American architect Eero Saarinen, whose masterpieces of 20th-century design include the soaring Gateway Arch in St. Louis and the TWA Terminal at New York's JFK Airport, are showcased in his first major museum retrospective. At Walker Art Center and the Minneapolis Institute of Arts. Call 612/870-3131, visit www.walkerart.org or www.artsmia.org.

Smart Home: Green + Wired Chicago

Through January 4, 2009

A show that showcases Michelle Kaufmann's functioning three-story sustainable "green" home – built on the Museum's east lawn – that will be outfitted with amazing technologies for the 21st century and a variety of environmentally friendly materials. This marks the first time that a museum has built a fully functioning exhibit home of this kind on its grounds. At the Museum of Science and Industry. Call 713/684-1414 or visit www.msichicago.org.

Shanghai Transforming Chicago

Through January 9, 2008

Shanghai Transforming captures a snapshot of China's second-largest city. With its seemingly boundless potential, Shanghai is providing architects and urban planners with unprecedented opportunities to rethink their work. The exhibition, featuring graphics, photographs, and maps from architect Iker Gil's forthcoming book, analyzes the past and speculates about the future of a city in transition. By approaching Shanghai from the perspectives of economy, culture, and politics, Shanghai Transforming delivers a multifaceted study of city building. At ArchiCenter. Call 312/922-3432 or visit www.architecture.org.

+Housing: 2008 AIA New York "Designs for Living" Exhibition

New York City

Through January 19, 2009 This exhibition focuses on eight current housing

developments that illustrate mixed-use hybrid design, public uses combined with and financed by housing. At the Center for Architecture. Visit www.aiany.org.

Ours: Democracy In the Age of Branding New York City

Through January 30, 2009

The exhibition is a multidisciplinary investigation of democracy as a consumer brand. Timed to coincide with the final stages of the American presidential elections, the show also seeks to reflect on the electoral process in this country. At the Anna-Maria and Stephen Kellen Gallery at the Sheila C. Johnson Design Center at Parsons The New School for Design. For more information, visit www.parsons.newschool.edu.

Vertical Cities: Hong Kong/New York New York City

Through February 2009

Examining the evolving identities of the world's most strikingly similar vertical cities, the exhibi-

tion uses photographs, film, architectural drawings, maps, and large-scale models to convey Hong Kong's character: its iconic skyline, a crowded commercial core with multilevel traffic, a network of pedestrian bridges, and vertical shopping malls. The unifying theme is density, exemplified by the city's uniquely slender towers on tiny lots, or the monumental apartment blocks of 50 to 60 stories or taller, multiplied by the dozen in New Town housing estates in the New Territories. At the Skyscraper Museum. Call 212/945-6324 or visit www. skyscraper.org/verticalcities.

Dreamland: Architectural Experiments since the 1970s New York City

Through March 2, 2009

The 1970s saw an explosion of architectural thought and experimentation, with the city, and New York especially, becoming a screen for the projection of architectural fantasies and utopias. This installation includes documentation of built projects that resulted from these innovative ideas, including such traditional building types as single-family houses and skyscrapers. At the Museum of Modern Art. Call 212/708-9400 or visit www.moma.org.

Lectures, Conferences, and Symposia

Kengo Kuma & Associates: Kengo Kuma New York City

November 3, 2008

Known for not sticking with any particular architectural style or building material, Kengo Kuma and Associates was established in 1990 and is

3 different applications

Dates & Events

currently working on residential, commercial, and institutional projects in Japan and abroad. Introduced and moderated by Kenneth Frampton, Kengo Kuma and Associates will be featured as part of the fall architecture lecture series at Cooper Union, the Great Hall. Call 212/353-4195 or visit www.cooper.edu.

West 8: Adriaan Geuze

New York City November 18, 2008 With several recent and current projects, many commissioned through international competitions, Amsterdam-based West 8 won the competition to design the Governors Island Park and Great Promenade. West 8 principal Adriaan Geuze will lecture at Cooper Union, the Great Hall. Call 212/353-4195 or visit www.cooper.edu.

Coop Himmelb(I)au: Wolf Prix New York City

November 20, 2008 Internationally acclaimed practice, Coop Himmelb(I)au continues to keep its original



4th Session of the World Urban Forum Nanjing, China

November 3-7, 2008

The World Urban Forum was established by the United Nations to examine one of the most pressing issues facing the world today: rapid urbanization and its impact on communities, cities, economies, and policies. The World Urban Forum is a biennial gathering that is attended by a wide range of partners, from nongovernmental organizations, community-based organizations, urban professionals, and academics to governments, local authorities, and national and international associations of local governments. At Nanjing Convention and Exhibition Centre. Visit www.uhabitat.org/wuf.

The 7th annual Fire Station Symposium and Fire Station Design Awards Program Charlotte, N.C.

November 3-5, 2008 This symposium is staged by the Fire Industry Equipment Research Organization (F.I.E.R.O.) offering an array of topics, speakers, and exhibitors. For further information and entry details on the awards program, visit www.fierofirestation.com.

Justice Architecture: Sustainability/ Design/Delivery/Practice San Francisco

November 5-8, 2008

This conference will address a broad spectrum of issues that affect the planning, design, and delivery of justice facilities. Through presentations that are related to the conference theme, conference participants will explore the sustainability, design, delivery, and practice. For further information, visit www.aia.org/aaj.

Tom Wiscombe: Founder, EMERGENT, Los Angeles Los Angeles

November 5, 2008

Tom Wiscombe is an architectural designer based in Los Angeles. In 1999, he founded EMERGENT, an organization dedicated to architectural research. Tom Wiscombe was senior designer and





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project partner at Coop Himmelb(I)au for more than 10 years, and the right-hand to principal Wolf Prix. He was in charge of various internationally renowned projects, including the Dresden UFA Cinema Palace, the Lyon Musée des Confluences, and the Akron Art Museum. Most notably, Wiscombe was Senior Designer for BMW World, Munich, which has been hailed as one of the most important buildings of the 21st century. At SCI-Arc gallery. Call 213/613-2200 or visit www.sciarc.edu.

ARTiculations: Minicity, The Architectural and Urban Design of Convenience

Scottsdale, Arizona November 5, 2008

In this lecture, John Kaliski will explore the micro-urbanism of the mini-mall in the place of its birth, Los Angeles. Kaliski founded Urban Studio, Los Angeles, in 2000. Prior to private practice, he was principal architect of CRA/LA and also worked as a designer for Skidmore, Owings & Merrill in Los Angeles. The ongoing Lecture Series explores issues related to design, architecture, economics, and sustainability. At the Scottsdale Museum of Contemporary Art. Call 480/874-4666 or visit www.smoca.org.

Re-Imagining Cities: Urban Design After the Age of Oil Philadelphia

Nov. 6-8, 2008

New urban-design challenges will be explored in this symposium, focusing on urban design and development across the globe, from the rapidly urbanizing cities of Asia and Africa to the more developed world. With more than 70 speakers from around the globe, a range of issues critical to the future of urban design, including innovations in the way cities can be conceived, adapted, designed, developed and managed in a postcarbon world, will be addressed. At Houston Hall at the University of Pennsylvania. For complete details, visit, www.upenn.edu/penniur/afteroil.

2008 ACSA Administrators Conference: Design in the Curriculum, in the University, in the Economy

Savannah, Georgia

November 6-8, 2008

The Association of Collegiate Schools of Architecture (ACSA) Administrators conference features a variety of scholarly presentations, keynote sessions, and social events. At the Hilton Savannah Desoto. Call 202/785-2324 or visit www.acsa-arch.org.

Healthcare Design 08

Washington, D.C.

November 8-11, 2008

This conference is devoted to how the design of responsible built environments directly impacts the safety, operation, clinical outcomes, and financial success of health-care facilities now and in the future. At Gaylord National Resort and Convention Center. Visit www.aia.org/aah.

GEOSCAPE 2008: International Conference Living Landscape: Memory, Transformation and Future Scenarios Czech Republic

November 10-11, 2008

Landscape modeling has become a phenomenon studied from different points of view by all disciplines dealing with landscape. This interest is motivated not only by the desire for scientific understanding of the matter, but also by the actual demands of postindustrial society in the 21st century, which result from the necessity to stabilize the damaged natural ecosystems on one hand, and to find effective ways of landscape exploitation on the other. Conference sessions and topics include the ecological aspect of spatial-functional landscape heterogeneity; economic and social transformations: impacts to regional scale; perception of social changes; and landscape modeling and GVIS. For more information, visit www.conference.geoscape.cz.

Cecil Balmond: Solid Void Chicago

November 11, 2008

Cecil Balmond has transformed the role of the engineer in contemporary architecture with his unorthodox and visionary approach that merges architecture and engineering. Since the early 1980s, Balmond has collaborated with such important contemporary architects and artists working today as Toyo Ito, Anish Kapoor, Rem Koolhaas, Daniel Libeskind, and Álvaro Siza. Balmond has introduced innovative structural concepts that have resulted in some of the most challenging buildings in the canon of contemporary architecture. His long-standing collaboration with Rem Koolhaas has yielded an array of groundbreaking projects. This lecture is held on the occasion of Balmond's site-specific installation, Solid Void, on view at the Graham Foundation's Madlener House (4 West Burton Place in Chicago) from September 26, 2008, to February 14, 2009. At the Art Institute of Chicago. Visit www.artic.edu.

Daniel Mihalyo and Annie Han: Founders, Lead Pencil Studio, Seattle Los Angeles November 12, 2008 Annie Han and Daniel Mihalyo are Seattle-based

1 amazing solution

Dates & Events

collaborative artists who explore the intangible conditions of architecture. They were selected as an Emerging Voice in 2006 by the Architecture League of New York, named STRANGER GENIUSES in 2006, awarded the Rome Prize for architecture in 2007, and have completed residencies at the Center for Land Use Interpretation and the Headlands Center for the Arts. Upcoming museum installations include The Exploratorium, San Francisco; Weatherspoon Art Museum, Greensboro, North Carolina; and Boise Art Museum, Idaho. At SCI-Arc gallery.

Call 213/613-2200 or visit www.sciarc.edu.

Toshiko Mori: Works and Projects Lancaster, Pennsylvania

November 13, 2008

Toshiko Mori, FAIA, is the Robert P. Hubbard Professor in the Practice of Architecture and the chair of the Department of Architecture at Harvard University Graduate School of Design 2002 to 2008. She is also principal of Toshiko Mori Architect, which she established in 1981 in New York City. Mori taught at the Cooper Union



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School of Architecture from 1983, until joining the Harvard GSD faculty with tenure in 1995. She has been a visiting faculty member at Columbia University and Yale University, where she was the Eero Saarinen Visiting Professor in 1992. The lecture will be held at the Armstrong World Industries Corporate Campus. For more information, visit www.aiacentralpa.org.

Breaking the Green Ceiling: Affordable Housing Meets Environmentalism Brooklyn, New York

November 13, 2008

How can we bring green building and beautiful design into the low budget realm of affordable housing, and why is it critical for community development? Topics include locating affordable, well-designed green products; greening landscapes, streetscapes, and roofscapes; and creating jobs in the green building industry. At CUNY Graduate Center, Skylight Room. Visit www.whedco.org or www.aia.com.

The Architecture Foundation's Real Architecture: Autumn 2008 London

November 13, 20, 27, and December 3, 2008 Presentations on the most important architectural projects of today, from the tallest building in the world to a vision for a desert settlement, from a multi-award-winning London school to a Norwegian cultural center, will take place in two of London's most innovatively designed buildings. As the opener, a special presentation on the Stirling Prize-nominated Westminster Academy will take place in the academy itself, and the remainder of the series will be housed in the Royal College of Physicians. For more information, call 020 7420 9425 or visit www.architecturefoundation.org.uk.

Sanford Smith's 23rd Annual Modernism: A Century of Style and Design

New York City

November 14-17, 2008

With more than 60 international dealers, this annual fair is devoted to the European and American design movements of the 20th century. At the Park Avenue Armory at 67th Street. Call 212/777-5218 or visit wwwsanfordsmith.com.

Jan and Tim Edler, Principals of realities:united (Berlin) Los Angeles

November 17, 2008 In 2000, brothers Tim and Jan Edler founded realities:united (realU), a studio for art, architecture, and technology. The studio develops and supports architectural solutions, often incorporating new media and information technologies, with a major focus on architecture's outward communicative capacity. The pair has been honored with a number of architecture and design accolades. Their work has been shown at numerous international exhibitions. The lecture will be held in Perloff Hall at UCLA. Call 310-267-4704 or visit www.aud.ucla.edu.

Build Boston Convention and Tradeshow Boston

November 18-20, 2008

As the premier regional trade show and convention for the design and construction industry, Build Boston boasts 350 exhibits and more than 240 workshops, tours, and other professionaldevelopment opportunities. At Seaport World Trade Center. Visit www.buildboston.com.

Jennifer Siegal: Founder, Office of Mobile Design, Venice

Los Angeles

November 19, 2008

Jennifer Siegal is known for her work in creating the Prefab home of the 21st century. She is founder and principal of the Los Angeles-based firm Office of Mobile Design (OMD), which is dedicated to the design and construction of responsible, sustainable, and precision-built structures. At SCI-Arc gallery. Call 213/613-2200 or visit www.sciarc.edu.

Jürgen Mayer H., Principal of J. Mayer H. Architecture (Berlin) Los Angeles

November 24, 2008

Jürgen Mayer H. is founder and principal of J. Mayer H. Architecture, a cross-disciplinary studio that focuses on the intersection of architecture, communication, and new technology. Mayer H. has studied at Stuttgart University, New York's Cooper Union, and Princeton University. His work has been published and exhibited worldwide and is part of numerous collections. Mayer H. has taught at Princeton, Harvard, Columbia, the Berlin University of the Arts, Berlin's Kunsthochschule, London's Architectural Association and the University of Toronto, Patterns of Speculation: J. MAYER H., curated by Henry Urbach, will be on view at the San Francisco Museum of Modern Art from February 6 to June 14, 2009. The lecture will be held in Perloff Hall at UCLA. For more information, call 310-267-4704 or visit www.aud.ucla.edu.

The True, the Beautiful, and the Good: Reconsiderations in a Postmodern, Digital Era Kinds and Degrees of Truths New York City

November 25, 2008

In this unprecedented lecture series, worldrenowned psychologist Howard Gardner offers an extended reflection on the concepts of truth, beauty, and the good in the digital age, analyzing how a sophisticated understanding of the power and limitations of these concepts can come about. Peter Galison, Pellegrino University Professor in History of Science and Physics at Harvard University, leads a discussion with Gardner after the lecture. At the Museum of Modern Art. For more information, call 212/708-9400 or visit www.moma.org.

Fencetech '09 and Decktech '09 New Orleans

January 14-16, 2008

With over 9,000 fence, deck, and railing professionals expected to attend and more than 450 exhibitors, FENCETECH was recently announced one of Tradeshow Week's Fastest 50. From innovative gate technology to custom-made ornamental iron and traditional wood pickets, the world's top fence, deck, railing, and security professionals will find the industry's newest products at Fencetech '09 and Decktech '09. At the Ernest N. Morial Convention Center. For more information, visit www.FENCETECH.com or call 800/822-4342 or 630/942-6598.

The Design Build Architect Conference

Boston, Chicago, Atlanta, and Miami January 17, 2009, and March 28, 2009 The Design Build Architect Conference is a program developed for architects by architects. The conference strives to motivate design professionals to achieve greater degrees of success through the addition of deliverables. Incorporating "build" services into an existing design practice has the potential to better serve the client, fortify the practice, and revitalize the role of architect. At Harvard University, Northwestern University, Georgia State University, and Florida International University. For more information, visit www.Thedesignbuildarchitect.com.

The Urban Divide in Latin America: Challenges and Strategies for Social Inclusion

Gainesville, Florida January 28-30, 2009 The central theme for the 58th Annual Latin American Conference is social inclusion in Latin American cities. These issues comprise social and spatial equity, informal economies, access to

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November 18–20

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employment and services, economic expansion and capacity building, crime and violence, supportive urban systems, political representation, and sustainable development practices. At the University of Florida's Center for Latin American Studies Annual Conference. For additional information, visit www.conferences.dce.ufl.edu/LAS/.

Indiana Building Green Symposium

Indianapolis, Indiana

January 31-February 1, 2009 In Indiana, the green building movement is just beginning to take shape and gain momentum. Continuing upon the success of last year's inaugural symposium, the Indiana Building Green Symposium will emphasize green building economics, technology, and operational strategies that enable designers, builders, and owners to build green and maximize both financial and environmental performance, contributing to an improved bottom line as well as an improved quality of life. The program will include educational workshops and informative sessions intended to benefit a diverse audience, including construction professionals, corporate leaders, real estate developers, local and state policymakers, educators, and students. At University Place Hotel and Conference Center. Visit www.bsu.edu.

International Icon Expo: Concrete Exposition

Indianapolis, Indiana February 26-28, 2009 At the Indiana Convention Center. For more information about Icon Expo 2009, please visit www.iconexpo.org

Competitions

2009 Palladio Awards

Deadline: November 14, 2008 The eighth annual competition recognizes outstanding work in traditional design for commercial, institutional, public, and residential projects. Visit www.palladioawards.com.

2009 Latrobe Prize: Change that Matters

Deadline: November 14, 2008 Since the inception of the Latrobe grant program, the College of Fellows has awarded exemplary proposals selected by jury review for their promise to advance professional knowledge in architecture. This year's prize seeks







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design research proposals that go beyond invention to innovation: Change that Matters, Additional information is available at www.aia.org/latrobe prize.

The Smack Mellon 2009/2010 Studio Program

Deadline: November 14, 2008 Smack Mellon offers free studio space to eligible artists for a one-year period. Visit www.smackmellon.org for further information.

Discarded Dreams: Used Mattress Design Competition

Deadline: December 5, 2008 Architecture for Humanity and Rubicon National Social Innovations invite entrants to create innovative ways of converting used mattresses into useful products. The competition aims to encourage entrants to form groups capable of creating a consumer product, and a plan for production on a larger scale. For more information about the competition, visit www.openarchitecturenetwork.org/mattress.

IDEX: AWARD 2009

Deadline: December 8, 2008 This internationally recognized design award acknowledges designs that contribute to improving life for people. The award accepts nominations from all design disciplines, including industrial design, service design, architecture, and graphic design. The nominated design must be dated later than 2004. Visit www.indexaward.dk

From the Ground Up: **Innovative Green Homes**

Deadline: December 15, 2008 The goals of the competition are to foster the most advanced thinking about design, sustainability, and cost-effective building practices for the single-family house, and to elicit proposals that can be built based on the \$150,000 construction budget. Call 315/443-2256 or

visit www.soa.syr.edu/competition.

2009 Rudy Bruner Award for Excellence

Deadline: December 15, 2008 The purpose of the award is to discover places that embody excellence, not just in design, but in social, economic, and environmental contributions to the urban built environment. For further information, visit www.bruener foundation.org or www.bruenerloeb.org.

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32nd Annual SOURCE Awards: National Lighting Design Competition

Deadline: January 1, 2009

The competition is open to all lighting designers, architects, engineers, professional designers, and consultants who have used Cooper Lighting fixtures in a completed interior or exterior lighting design project. For information, call 630/513-8625 or visit www.cooperlighting.com.

Design for the Children Competition: Pediatric Health Clinic

Deadline: January 15, 2009

Open to students and professionals, this international design competition asks participants to explore the potential of future pediatric and prenatal clinics for East Africa. Entry is free, and our goal is to use the winning design as the basis for a pediatric and prenatal health center in Rwanda. For more information, visit www.designforthechildren.org.

USITT 3rd Annual Student Architectural Design Competition

Deadline: January 15, 2009

The Architectural Commission of the United States Institute for Theatre & Technology (USITT) has announced calls for entries for its third annual student Architectural Design Competition to design an "Ideal Theatre" on an academic campus. The competition is open to any U.S. or International architecture and theater student at an accredited college or university. Visit www.usitt.com.

2009 Metropolis Next Generation Design Competition

Deadline: January 30, 2009

This competition challenges designers to help cure our energy addiction. The winning design will be awarded \$10,000. For more information, visit www.metropolismag.com/nextgen.

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- Overwhelmed with information, but never have time to sort it out?
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The Architect's Hand



High-Rise House, Japanese Pavilion, 2008, graphite crayon on white painted chipboard.

Drawing on the wall

By Suzanne Stephens

The exhibition receiving the most raves at the 11th International Architecture Exhibition of the Venice Biennale 2008 (page 77) was a wee bit hard to see. Junya Ishigami covered the white walls of the interior of the Japan Pavilion with lyrically idiosyncratic hand drawings of nature and buildings, including the *High-Rise House* (above). Although young (born in 1974), Ishigami did not do it alone. He was helped by an entourage of 10 staff members and architectural students armed with graphite crayons, who spent six weeks filling the walls of the pavilion from floor to ceiling with whimsical drawings so light and delicate that they do not show up in most of the installation photographs. The ethereal exhibition, titled *Extreme Nature: Landscape of Ambiguous Spaces*, extended to the outdoors, where Ishigami had erected fragile greenhouse structures. The blurring of nature and building, along with delicate drawings and structures, are themes seen in the architect's work not only at the Venice Biennale, but in his buildings, such as his workshop at the Kanagawa Institute of Technology in Japan (page 124).