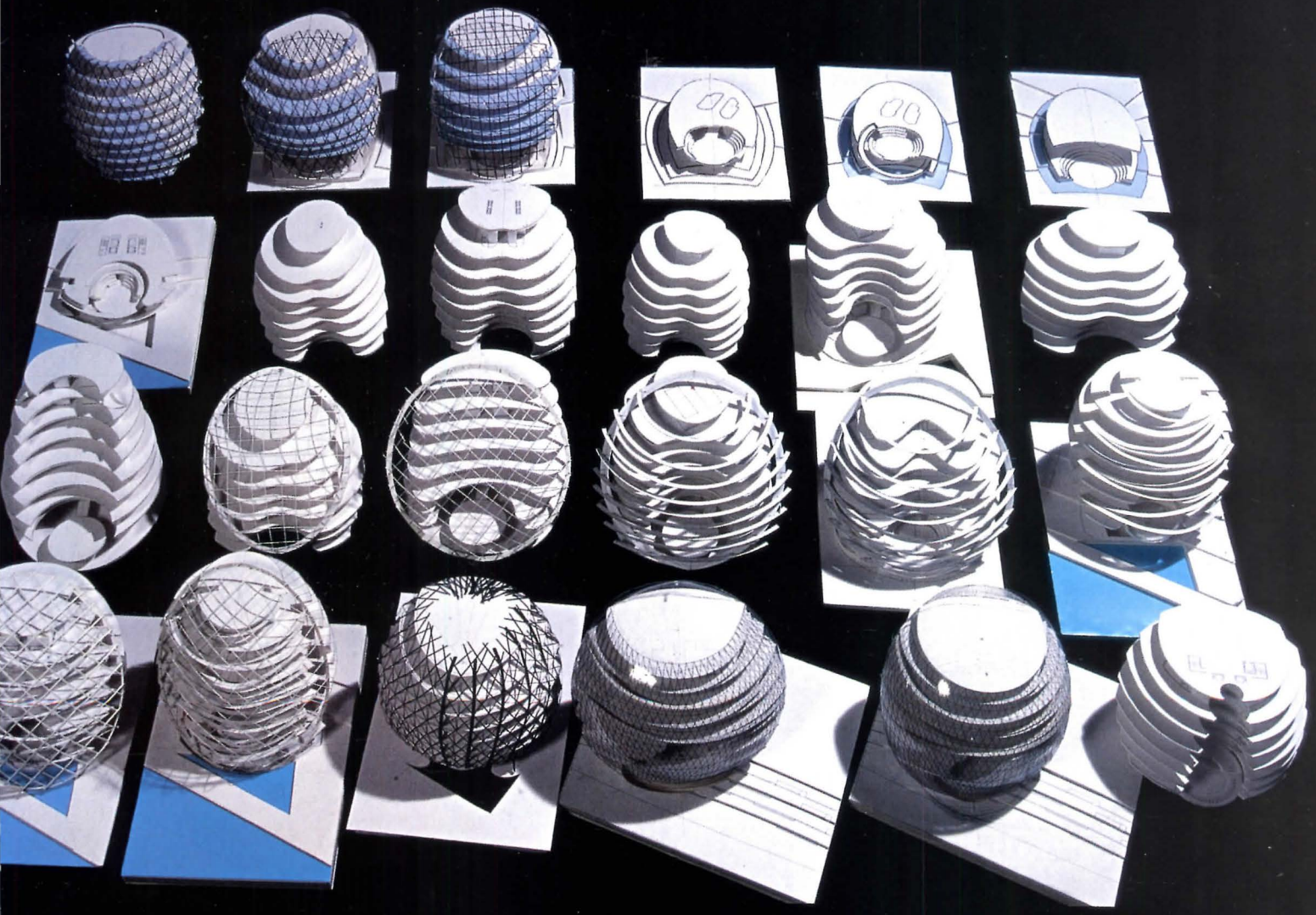
ARCHITECTURAL RECORD

SEEKING THE SHAPE OF GREEN
Foster and Partners' Design for London City Hall



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One Out of Nine?

Editorial

By Robert Ivy, FAIA

What if you got what you asked for? That happened when architecture and planning leaped to the forefront of media attention late last year. In a single, widely publicized unveiling at the Winter Garden of Manhattan's World Financial Center on December 18, 2002, seven teams presented nine schemes for the redevelopment of the former World Trade Center site, an intellectual exercise capturing headlines and air time around the globe. What did we get?

Regardless of the turn of events, the value of the architects' contributions cannot be overstated. Thanks to their commitment, suddenly we all had a ray of hope for a situation that has been hotly debated, politically compromised, and heading rapidly toward the dustbin of mediocrity. The city and the nation deserved better than business as usual. Finally, we have had a glimpse of a positive direction, though significant work lies ahead.

These solutions face strong hurdles. As Hugh Hardy, FAIA, coordinator of New York New Visions Plan Review Task Force, pointed out at a Lower Manhattan Development Corporation (LMDC) meeting, "Without a realistic program and method for development, and with the lack of leadership from above, the schemes present a quandary." The crux of the problem remains: No real client exists for the largely theoretical program and the commissioning institutions are ad hoc—subject to the governor's will or to the development community's parsimony. Will the projects ultimately belong to the public realm or to commercial interests? What will the roles become for leaseholder Larry Silverstein or mall owner Westfield America, not to mention the Port Authority of New York and New Jersey? How can visionary plans overlay the demands for transit, which has prompted the Port Authority to hurtle forward, building below grade? The powers-that-be are calling for solutions, when the best answers benefit from a longer view.

Several observations seem relevant. The architects engaged in these plans followed the rules, with bold assertions. While the LMDC allowed modification and reduction of its original demands to return all 11 million square feet of office space to the site, the remaining sheer bulk still produced gargantuan responses by each team. The plazas are broad; the buildings, sky-high. The proposed scale is daunting, a fact clearly evident in the images of plans by Foster and Partners, or United Architects, or Richard Meier's team, where jumbo structures are counterposed against the skyline. By analogy, the massive towers arrayed along New York's Sixth Avenue, including the McGraw-Hill building, typically contain 50 floors; more than one World Trade Center scheme doubles that height.

By the look of it, the future of the tall building seems assured. Four schemes propose the tallest buildings in the world. While one of the original towers reached 1,368 feet, Daniel Libeskind's garden-tower hits 1,776 feet, and one of the THINK group's schemes exceeds 2,000 feet. The questionable validity of such extremes is pointed out by the renderings, in which height and bulk loom against the existing urban fabric. The SOM group's cluster, by contrast—limited to 60 stories (940 feet)—elbows itself into the thick of Lower Manhattan without lording it over the skyline. Somehow, the tallest metaphor smacks of hubris.

Some of the work seems reactive, a term that demands clarification: The events surrounding September 11 had an unavoidable influence on the schemes. For that reason, Foster's office replicated twin towers, making them nevertheless the "tallest, strongest, safest" towers in the world. This urge to rebuild, and to rethink, dual towers arising from the ashes of the destroyed World Trade Center seems inevitable, but demands reflection. Would we have built twin structures otherwise? Should they figure in the shape of the emerging city, or should we seek new forms for a new century?

While twin towers incorporated memorial expression in their form, Daniel Libeskind suggested retaining a significant percentage of the foundation plane, 70 feet below grade, as a memorial plaza. And though it would present complicated structural demands, the slurry wall holds memory authentically and poetically, without resorting to sentimentality. Libeskind's proposal, which captured critical admiration, deserves consideration and selection for the potent way in which it responds both to history

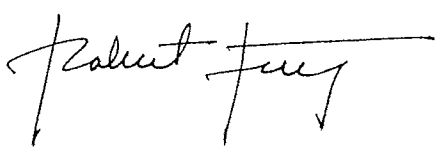
Editorial

and to the future. The asymmetrical, modulated skyline he designed reinforces and adds new forms to Manhattan without overpowering the city. Before leaping to acceptance, however, as in all of the proposals, individual elements deserve analysis, including the garden-laced sky tower, an attractive symbolic gesture but of questionable utility, or the forms of the Pennzoil-like office towers themselves.

Potent imagery from all of the proposals lingers, including THINK's third scheme's homage to the Eiffel Tower—a romantic, open armature reaching skyward. United Architects produced dizzying views of a delirious new Manhattan. The notion of an interlinked "city in the sky," in which both upper and subterranean floors of tall buildings house a public realm, with gardens and cafés, harks back to other urban visions (good and bad), including those of Antonio Sant'Elia's citta nuova, *or even John Portman's. The effects for the streetscape, however, remain problematic.*

Although it has largely been overlooked in critical discussion thus far, several teams devoted significant energy to sustainability, the larger subject of the current issue of this magazine. Foster and Partners produced a techno-marvel, dual-skinned tower, based in part on its work with the Commerzbank in Frankfurt, Germany, with interior gardens and operable window walls. THINK suggested harvesting high-level winds through turbines; Richard Meier's team captured sunlight through photosensitive glazing, which glows at night. Each idea demands scrutiny beyond the schematic.

At the RECORD *forum on January 7, architect Bernard Tschumi suggested that collage had been a potent 20th-century force but was unlikely to succeed unless done by a Braque or Picasso. However, by the publication date of this editorial, the LMDC and the Port Authority may have made their selections and tried to incorporate certain ideas into an urban plan. It would be difficult, if not impossible, to graft idea onto idea, scheme onto scheme. Short of a miracle, the result would be compromised. A better solution would be, after studying them all, to make a single choice (at this writing, the Libeskind scheme seems the most promising), allowing this one team to incorporate the best ideas into its own master plan, forging the design for a memorial plaza and the attendant public spaces and setting guidelines for subsequent development of commercial space, including office towers—a strong, clear shot at excellence for the years, and the unfolding ideas, to come.*



***From* The Descent**
by William Carlos Williams

The descent beckons
as the ascent beckoned.
Memory is a kind
of accomplishment,
a sort of renewal
even
an initiation, since the spaces it opens are new places
inhabited by hordes
heretofore unrealized,
of new kinds—
since their movements
are toward new objectives
(even though formerly they were abandoned).

No defeat is made up entirely of defeat—since
the world it opens is always a place
formerly
unsuspected. A
world lost,
a world unsuspected,
beckons to new places
and no whiteness (lost) is so white as the memory
of whiteness
With evening, love wakens
though its shadows
which are alive by reason
of the sun shining—
grow sleepy now and drop away
from desire

Love without shadows stirs now
beginning to awaken
as night
advances.
The descent
made up of despairs
and without accomplishment
realizes a new awakening:
which is a reversal
of despair.
For what we cannot accomplish, what
is denied to love
what we have lost in the anticipation—
a descent follows,
endless and indestructible

Letters

Votary public

Over the past few months ARCHITECTURAL RECORD has featured some truly ugly buildings in its Projects section, but the ING Group's dreadful new headquarters in Amsterdam [January, page 92], with its pig-shaped body and spindly legs, is definitely going to be hard to beat.

Only your Residential Section keeps me sane.

—Rupert Essinger
San Diego

The richest of times, the poorest of times

What a marvelously rich and painfully difficult time to be an architect, as your December issue so thoroughly illuminates. Here's my take on why.

Your editorial on Muschamp [page 17]—one you and other editors have no doubt been itching to write and many of us have been itching to read. He's a brilliant Technicolor writer on breathless, intoxicating architecture but does need to be balanced by a second, more sober *Times* regular who stirs up fewer "unanticipated, flaming cocktails" but is not afraid to throw the occasional Molotov. In any case, you were gutsy to focus an editorial on your own medium and on a fellow professional, rather than on architecture per se.

Then there's Robert Campbell's well-written critique [page 49] of endless innovation and needless change by architectural rebels without a cause. Once again, he punctures the soft underbelly of our field—the heady invention but "rootless confusion" that makes architecture avant-garde and exciting, but tends to marginalize us as frantic artistes in the long run. Change for change's sake, rather than timely and genuine change that truly punctuates time and place, is addictive fun but ultimately the low and easy road.

John Czarnecki's piece on clients "taking a leap of faith" [page 72] is also pithy. Our society is far more blessed with design talent than with clients who take advantage of it. The extra time, money, and patience to get things right is much rarer in the U.S. than Europe. Anything you journalists can do to enlighten, reward, and raise the bar for those who commission buildings in this culture is profoundly appreciated. Speaking of appreciation, we all need to remember that these clients are bigger risk-takers than their architects, even though the latter preen and strut their creative feathers so proudly and conspicuously.

Joseph Giovanni's "Ten Degrees of Modernism" [page 85] highlights some impressive emerging talent. Generally you need an angle and/or signature to make it with the media. In my day it was solar energy and regionalism; then it was theory; now it seems to be image and artistry. (Tomorrow it may hopefully be urbanism and ecology.) Design *is* more visually refined and sophisticated now, as well as more formally adventuresome and liberated—a true accomplishment of which to be proud. But this more specialized virtuosity and newfound celebrity have been bought at considerable cost—less knowledge and power on the construction site, diminished fiduciary clout and moral authority in the boardrooms of private and public clients, and flagging respect among day-to-day users of our buildings.

The articles on designing in outer space and in virtual space are provocative. The former because it brings into question the priority to build ultra-expensive communities in space when as many as 80 percent of the people on earth are estimated to live in poverty. Ironically, virtual architecture may be the way out of this moral dilemma: Let our most talented and visionary designers inspire us by constructing the costly, never-dreamed-of worlds with electrons, much as novelists do with words and moviemakers with celluloid. Then we may have enough human and natural resources to construct more good architecture and urbanism on earthly ground.

It is easy to pine for simpler days and first principles. However, I don't see anybody or any force on the scene that is strong enough to get us back to the basics of "commodity, firmness, and delight" or a contemporary interpretation of "health, safety, and welfare." The wake-up calls on our excess, compulsive change, and individual self-expression—issues your articles have brought into relief in different, even conflicting ways—will continue to come from an increasingly disgruntled and militant developing world that simply won't put up with our snowballing levels of consumption, aggrandizement, and self-indulgence; nor will our ecosystems tolerate them.

Magazines like yours can help us see beyond the trendy immediacies of the present while keeping us abreast of best practices in the profession. Thanks for getting better at the former, while continuing to report on the cavalcade of new work.

—Doug Kelbaugh FAIA, Dean, Taubman College of Architecture and Urban Planning, University of Michigan

Youth, not wasted on the young

I applaud ARCHITECTURAL RECORD's commitment to the "youth" of our profession in the December issue. Your Archrecord2 section of your Web site, your monthly inclusion profiling our profession's younger members, and "Design Vanguard 2002" are a bold step in the right direction to include young designers, to build confidence and motivation, and to provoke healthy debate and criticism of the current state of architecture. After reading your introduction to "Design Vanguard 2002" [page 85], however, I am concerned that the entire focus of the article was on how the profession's youth, who are providing today's leadership, lack rigor and discipline and are overcompensating with blind optimism. One issue not fully demonstrated in this article is the current sustainability revolution successfully challenging our profession. Although I applaud the individuals presented here, I believe we are making huge progress in the products and processes we infuse into our designs, and that is underrepresented in "Design Vanguard 2002." The U.S. Green Building Council continues with it's exciting LEED rating system and is adding a rigor and discipline that our architect idols of yesteryear could only imagine.

I applaud the energy of the designers represented in your December "Design Vanguard," and I raise my glass for 2003 to cheer those designers and urge this profession to look deeper and understand that every conscious design decision we make on this planet can change our quality of life forever.

—Peter Levasseur, AIA, LEED, Ewing Cole Cherry Brott, Washington, D.C.

Corrections

In the January 2003 news story about the AIA and NCARB's accord with the ACE [page 29], the name and title of NCARB's executive vice president Lenore M. Lucey, FAIA, were incorrect. In the December 2002 news story about the rebuilding of Lower Manhattan's PATH station [page 26], credit for the station should also have included the Louis Berger Group and subcontractor RenderTHIS.com.

Send letters to rivy@mcgraw-hill.com. Letters may be edited for page fit.

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REBUILDING LOWER MANHATTAN

Architects at the forefront as they show Ground Zero aspirations

By John E. Czarnecki, Assoc. AIA

If it was unclear before, it became official on December 18: Architecture is now front and center as the focus of discussion regarding the future of the World Trade Center (WTC) site. Commissioned by the Lower Manhattan Development Corporation (LMDC) and the Port Authority of New York and New Jersey, seven teams of world-renowned architects presented nine proposals on that day in the Winter Garden of the World Financial Center in New York City.

In terms of architectural design presentations, this was a sort of Super Bowl rarely seen in the profession. All three hours of presentations were broadcast live on NY1, a local cable news station. Architects making their pitch included Lord Norman Foster, Greg Lynn, Daniel Libeskind, Rafael Viñoly, Peter Eisenman, Richard Meier, Steven Holl, and Charles Gwathmey. They offered a glimpse of what the future of the Ground Zero site could be, but at press time in mid-January it was unclear if any of their visions would become reality, or how the process would unfold.

The LMDC and the Port Authority were expected to develop a land-use master plan for the site by early February. That plan, developed by Stanton Eckstut, FAIA, working for the Port Authority, with Alexander Garvin, the LMDC's vice president of planning, design, and development, will likely include the footprint of one of the nine schemes that the architects developed. How the land-use plan will then be realized has not been spelled out.

Designs without client

The teams developed their plans based on a program from the LMDC and the Port Authority that has little variation from the uses that were previously on the site. The key exceptions are a call for a home for a cultural institution, a memorial, a park, and approximately 6.5 to 10 million square feet of office space compared to the 11 million square feet that had been in the WTC. The lack of a clearly redefined program for the site, reflecting the reality of a depressed market for Lower Manhattan office space, was increasingly troubling to the New York architecture and real estate communities after the latest proposals were unveiled. "They are starting with a design and hope to arrive at a program," Bernard Tschumi told *The New York Times* in a January 1 article.

"There are two minor impediments—there's no program and no client," Richard Kahan, the president of Urban Assembly and Take the Field, dryly stated in a January 7

RECORD presents in-depth coverage of the latest World Trade Center site designs by the seven teams.

- **The nine schemes, page 32**
- **"A Defining Moment for Architecture": Analysis by James S. Russell, page 46**

For updates on the planning of Lower Manhattan, visit www.architecturalrecord.com.

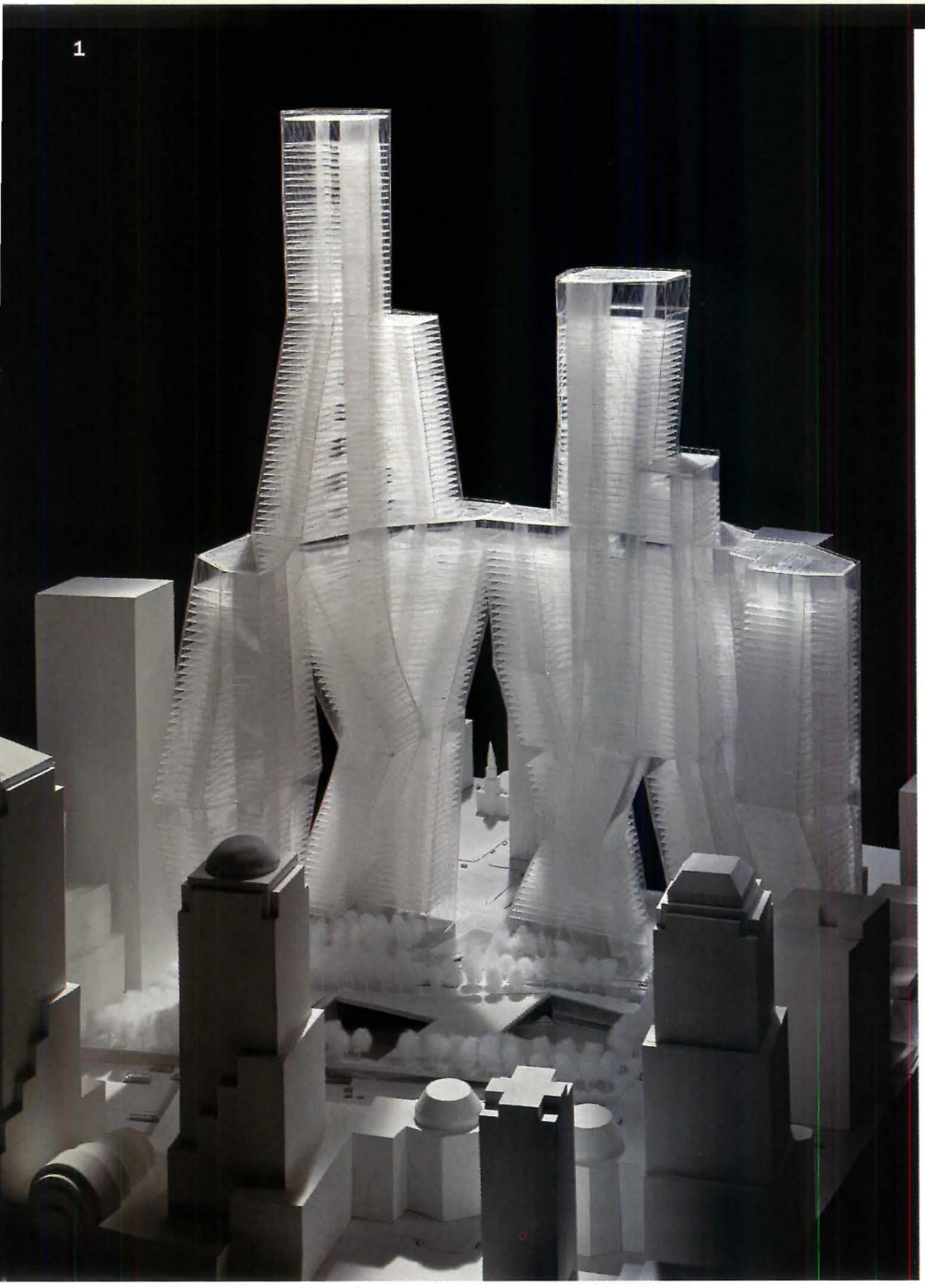
Presenting their schemes on December 18, 2002, were (top row, from left) Norman Foster, Steven K. Peterson, of Peterson/Littenberg Architecture and Urban Design, and Daniel Libeskind; (middle row, from left) Rafael Viñoly, of the THINK team, and Roger Duffy, of Skidmore, Owings & Merrill; (bottom row, from left) the team of Peter Eisenman, Charles Gwathmey, Richard Meier, and Steven Holl, and Greg Lynn presenting for the United Architects team. The presentations were made in the Winter Garden of the World Financial Center, and the designs were exhibited in that space through February 2.

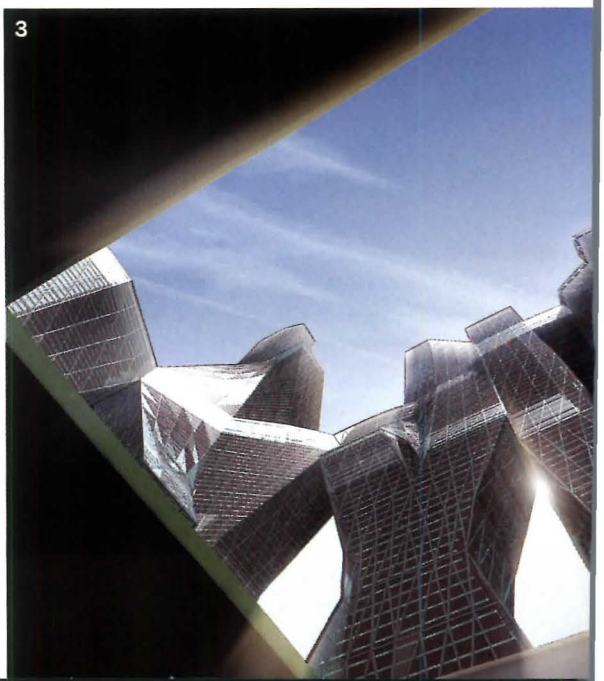
United Architects
Foreign Office Architects, Greg Lynn FORM, Kevin Kennon Architect, Reiser+Umemoto RUR Architecture, Imaginary Forces, and UN Studio

United Architects includes architects from New York, London, Los Angeles, and Amsterdam.

- Single building (1, 2, 6) that is really five structurally independent towers, the tallest of which is 1,620 feet tall
- Building includes more than 10 million square feet of space
- Towers (3, 4, 7) act as a curtain on the site, ringing the site, directing people to look up
- Skyway—a sort of "city in the sky" (5), with five floors of contiguous space at 800 feet above ground
- Areas of refuge every 30 floors in case of disaster
- Vertical sky gardens (5) are arranged every five floors throughout the complex
- A Sky Memorial will be atop one of the towers, and another memorial will be at the footprints below grade

forum called *Waiting for Ground Zero* sponsored by RECORD and moderated by editor in chief Robert Ivy, FAIA (see the news archive at www.archrecord.com for a complete story on *Waiting for Ground Zero*). The client, at least for the design study exercise, was the LMDC and the Port Authority, but developer Larry Silverstein still holds the lease for the WTC office space, and Westfield America, which operated the underground shopping, expects to rebuild the retail space. The LMDC does not have authority over the





land, which is owned by the Port Authority, an agency jointly controlled by governors George Pataki of New York and James McGreevey of New Jersey. New York architects have asked: If there is not a clear client, how can the LMDC expect great architecture?

RECORD's forum was one of many events and discussions held last month in New York City related to the latest proposals. New York New Visions (NYNV), a pro bono coalition of 21 architecture, planning, and engineering organizations, released a 42-page evaluation of the nine concepts in mid-January. The document can be found on the NYNV Web site, www.nynv.aiga.org. Hugh Hardy, FAIA, chair of the NYNV Plan Review Task Force, said of the plans, "If they are to be more than an illustration in an architectural history book, they must also be realistic—they must be able to be phased, to incorporate changing program needs and multiple participants over time, to fit within the context of the Lower Manhattan community."

And what is Beyer Blinder Belle (BBB) doing? The role of the New York firm has been diminished since it produced the first round of urban design proposals [RECORD, August 2002, page 23] for the site in July 2002. In a statement released to coincide with the December 18 unveiling, BBB stated, "The planning team led by Beyer Blinder Belle and Parsons Brinkerhoff continues to serve as consultants to the Port Authority, providing analysis and insight on planning implications of various concepts for West Street, as well as transportation studies related to commuter bus and ferry access to Lower Manhattan. BBB will provide consultation to Port Authority staff as they analyze the nine designs."

Prodigious amount of work

Six of the teams were selected in a process in which 406 teams had submitted to a call for architect qualifications. The seventh team, Peterson/Littenberg Architecture & Urban Design, had been working as in-house urban design consultants to the LMDC since spring 2002. Each of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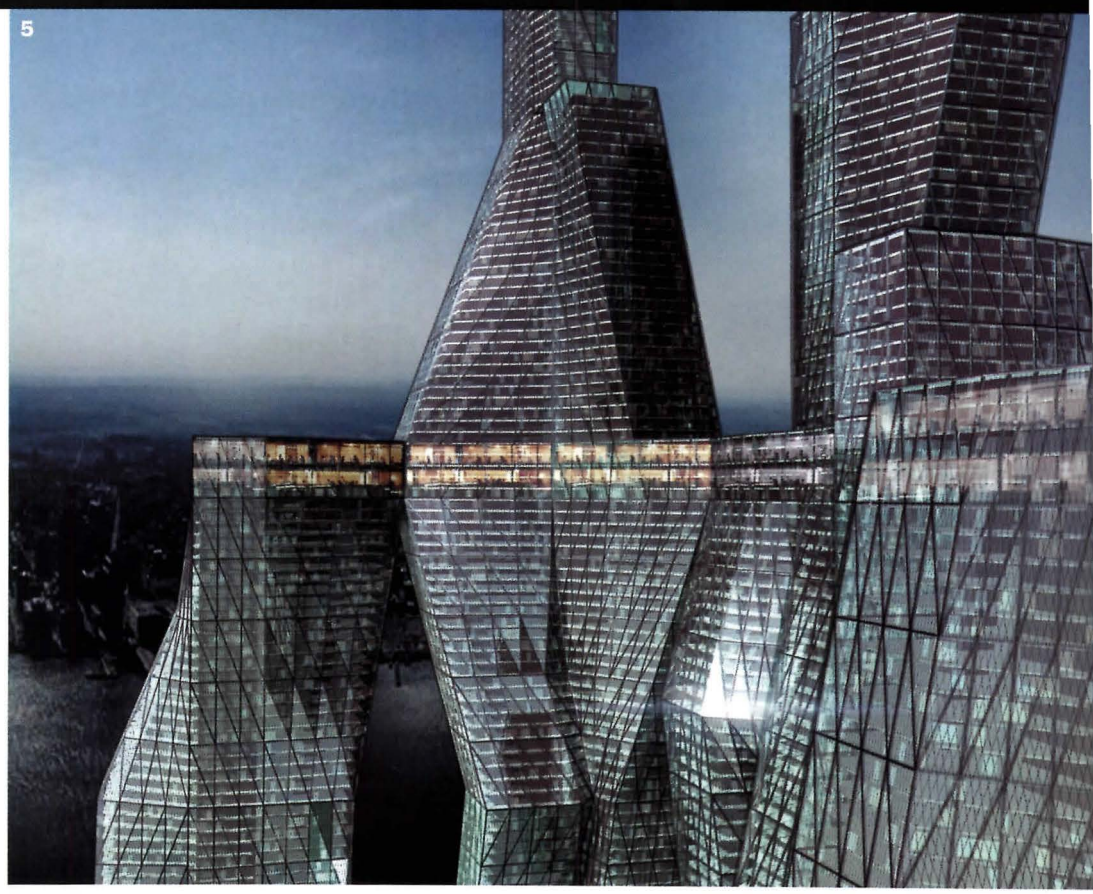
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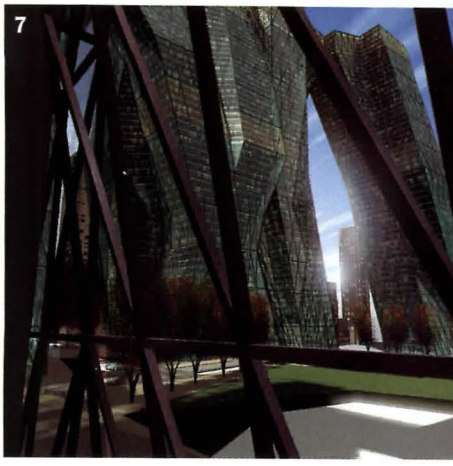
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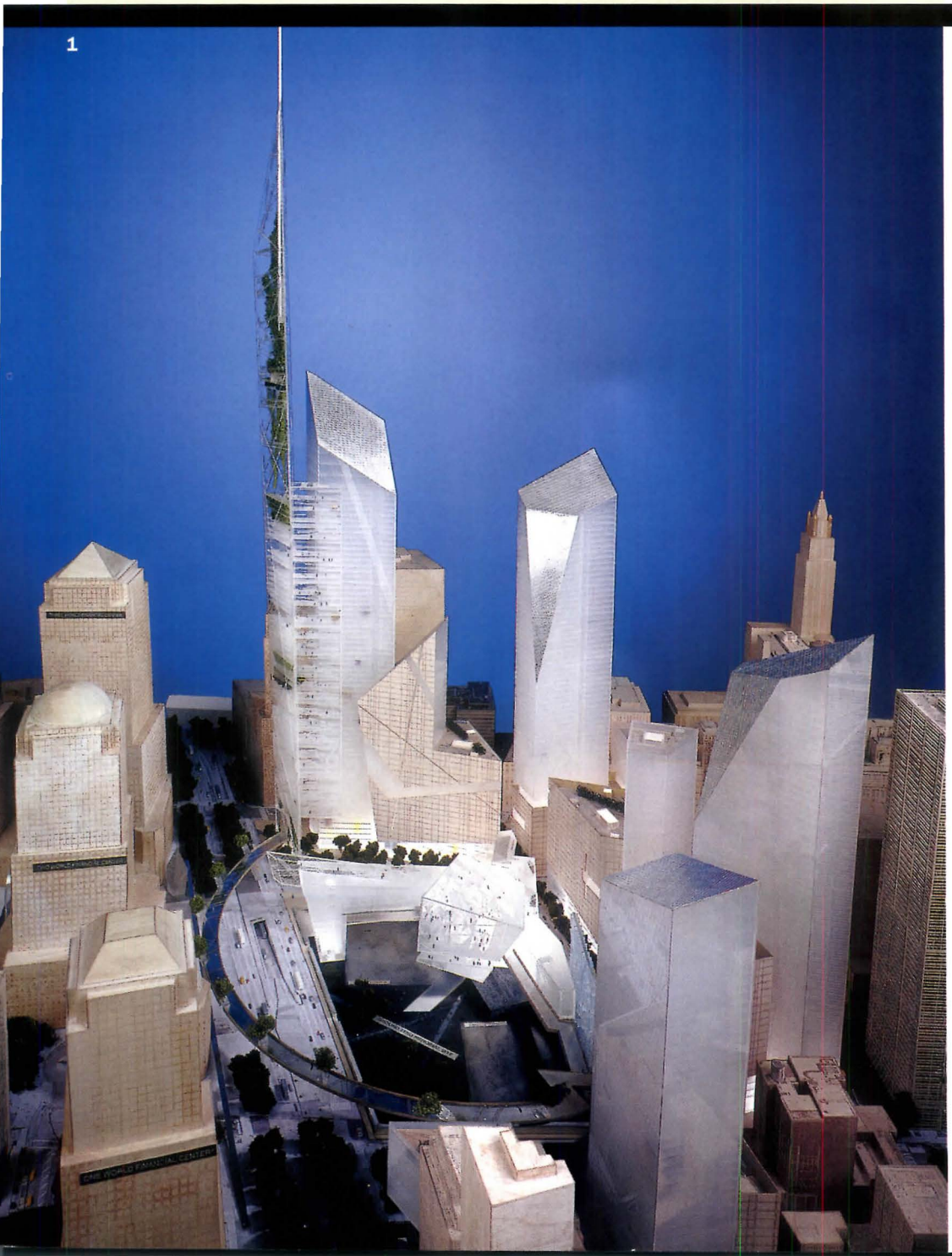
Studio Daniel Libeskind with Gary Hack, Hargreaves Associates, and Jeff Zupan

Berlin-based Daniel Libeskind is the only architect to implement the bare slurry wall as part of the design.

- Includes 1,776-foot-tall tower (1, 2) at the site's northwest corner with the "Gardens of the World" at the top
- Memorial space (6) that is some 70 feet down on bedrock foundation with slurry wall visible to the west
- Museum will serve as the entrance into memorial (6)
- Two public spaces: Park of Heroes and Wedge of Light (4)
- An elevated walkway (1, 5) would serve as a memorial promenade encircling the memorial site
- A performing arts center is included
- A rail station concourse (3) links PATH trains, subways, hotels, the performing arts center, offices, and retail
- Buildings are situated for a ray of sunlight to show on September 11 each year from 8:46 A.M. to 10:28 A.M.

the seven teams produced their proposals in 11 weeks and were initially paid a stipend of only $40,000, although some teams spent well over $500,000 developing their schemes. The LMDC has since authorized an increase in the amount paid to the teams to a sum not to exceed $1.35 million in the aggregate. Each team produced models, drawings, computer renderings and animations, and some produced videos. The work was on display in the Winter Garden through February 2.

Are there clear favorites among

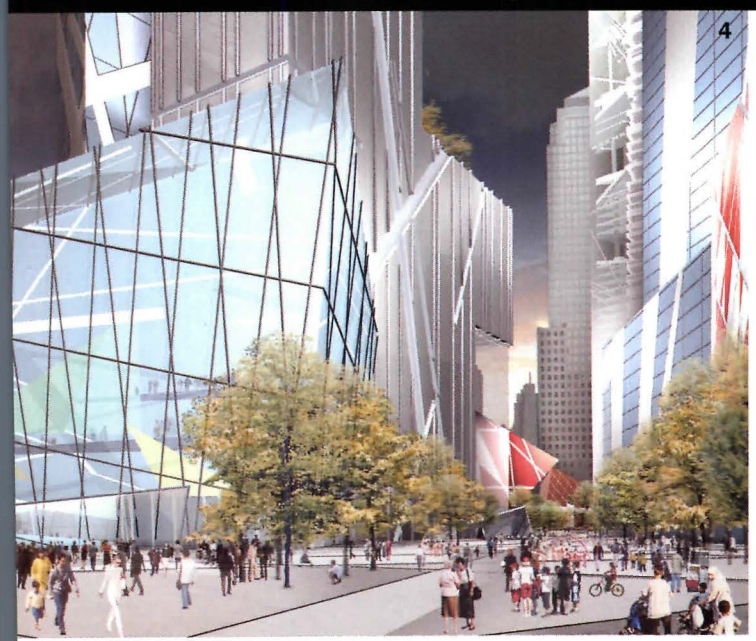


IMAGES: COURTESY STUDIO DANIEL LIBESKIND

the schemes? Not necessarily, although the Foster plan—the only one to have what appears to be twin towers—leads in two national polls. An online CNN poll that asked people to vote for a favorite garnered nearly 300,000 votes through mid-January. Foster and Partners received 24 percent of the vote, followed by Think and Libeskind (18 percent each), United Architects (14 percent), Peterson/Littenberg (12 percent), the Meier team (9 percent), and Skidmore, Owings & Merrill (SOM), with 5 percent of the vote. A similar *Newsweek* online poll had more than 101,000 votes through mid-January. The schemes by Peterson/Littenberg and Foster and Partners each received 22 percent of the vote, followed by Think and United Architects (15 percent each), the Meier team (14 percent), Libeskind (8 percent), and SOM (4 percent).

Tall statements

Although the teams came up with widely divergent designs, a number of them had common elements. All of the proposals respect the footprints of the twin towers in some way—a few propose leaving the tower footprints alone with only a glass-bottomed water feature. The LMDC called for "a tall symbol or structure that would be recognized around the world," and all of the teams incorporated at least one. In fact, four called for the world's tallest building or structure. Many of the plans also propose "green" spaces or gardens at upper levels in the towers. In descending order from the tallest, the tall structures are by Think (2,100-foot-high Great Hall tower), Libeskind (1,776 feet), Foster (1,764 feet), United Architects (1,620 feet), Think (1,600-foot open-lattice World Cultural Center structure), Peterson/Littenberg (two 1,400-foot-tall buildings), the Meier team (1,111 feet), and SOM (940 feet). Think's Sky Park scheme proposes three tall buildings of any height based on market demand. Currently, the 1,483-foot Petronas Towers, in Kuala Lumpur, are the world's tallest buildings, and the 1,813-foot CN Tower, in Toronto, is the world's tallest freestanding structure. The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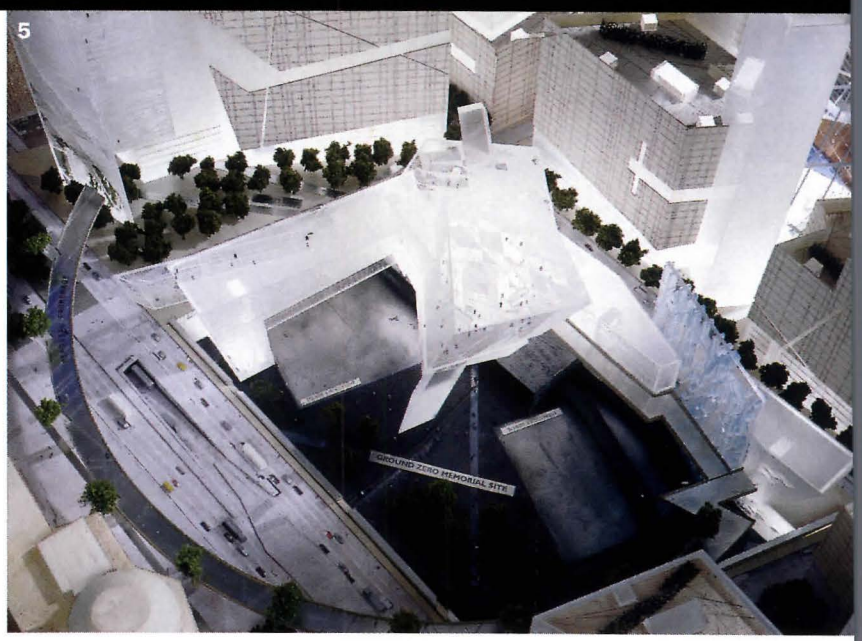

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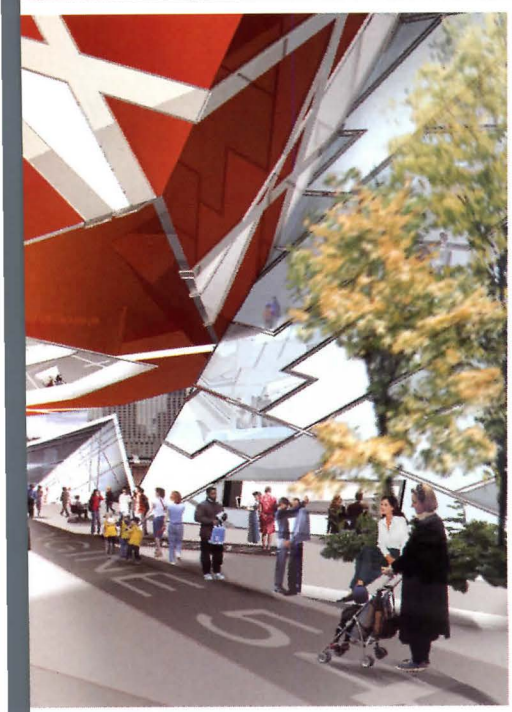


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THINK
Rafael Viñoly Architects, Frederic Schwartz Architects, Shigeru Ban Architects+Dean Maltz, Ken Smith Landscape Architect, William Morrish, Janet Marie Smith, and Rockwell Group

This team, led by New Yorkers Viñoly and Schwartz, is the only one to develop more than one scheme.
- THINK developed three designs: World Cultural Center, Sky Park, and Great Hall
- World Cultural Center (1, 2, 3) has two 1,600-foot-tall open latticework towers with cultural facilities set within
- World Cultural Center towers (1, 2, 3) are built above and around the World Trade Center footprints
- Sky Park (4, 5), surrounded by three towers, is a 16-acre park above cultural facilities and a transit hub
- Great Hall (6, 7, 8) is a free-span, glass-enclosed, 13-acre public room adjacent to a 2,100-foot-tall tower
- With the Great Hall (6, 7, 8), two glass cylinders surround and protect the footprints of the twin towers

WTC twin towers were, respectively, 1,368 and 1,362 feet tall.

While the proposed towers are tantalizing, they are also distracting from what has appeared to be the key purpose of this charrette exercise, which was to formulate a potential land-use plan at the ground level. And while evocative in imagery, forms, and in the scale of the towers, a number of the proposals were noticeably vague on details such as square footage of uses, what the underground portions of the site would look like, and


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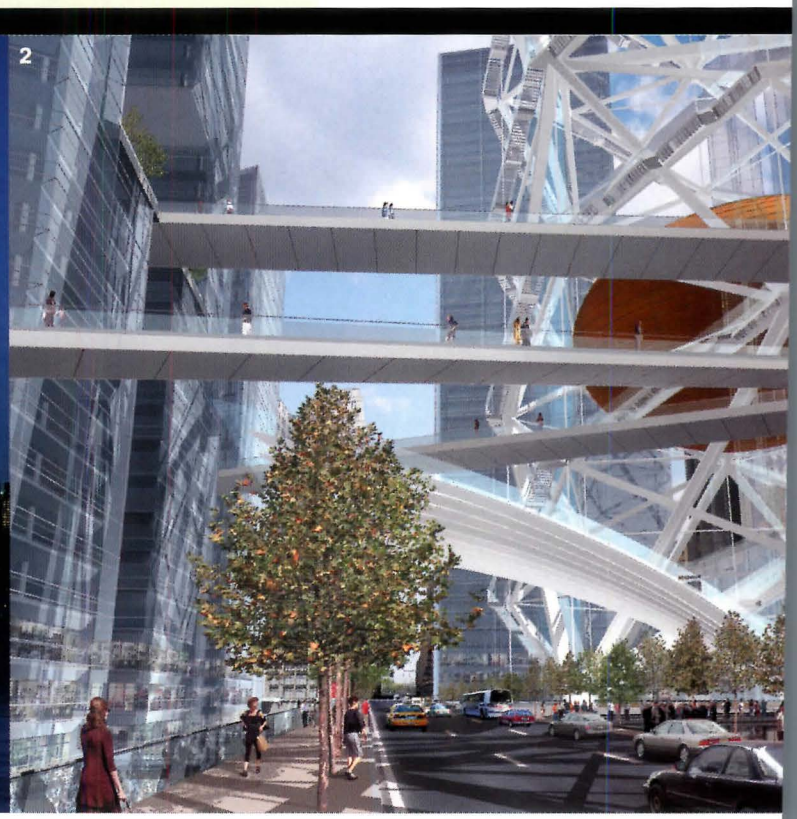
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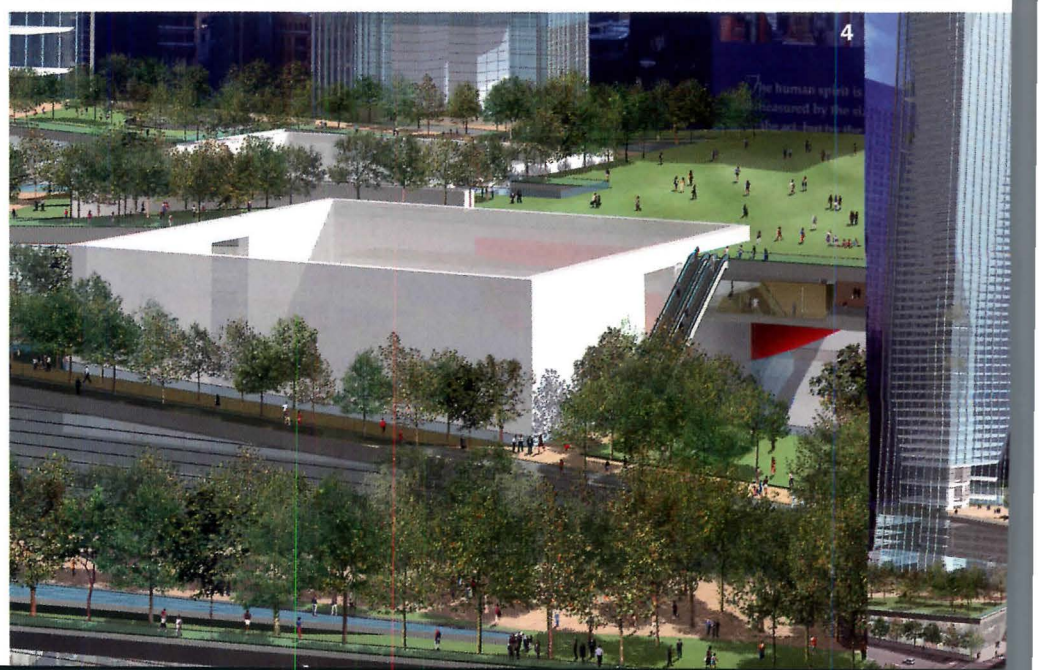
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IMAGES: COURTESY THINK

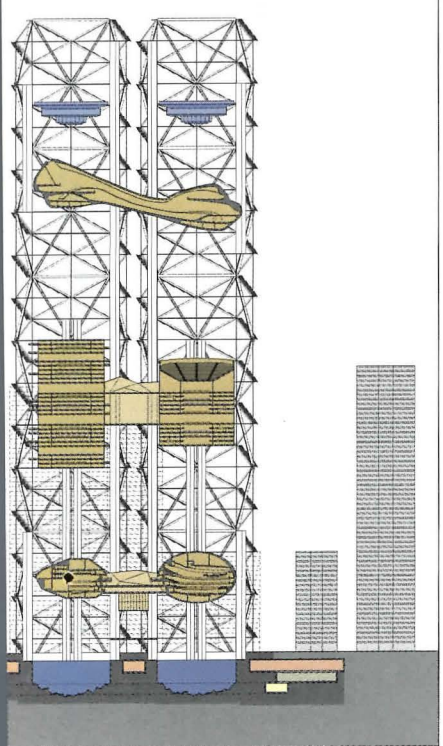
how a major transit station would be coordinated with the plan.

The nine proposals

The United Architects team, which includes Foreign Office Architects, Greg Lynn FORM, Kevin Kennon Architect, Reiser + Umemoto RUR Architecture, Imaginary Forces, and UN Studio, developed a proposal that would include the world's tallest and largest building: essentially five structures that torque and meet as one building with five floors of contiguous space at 800 feet above ground. United Architects conceived this as a sort of "giant cathedral" that is "a new kind of vertical city," according to the team. The team touts safety in this mammoth building, with 29 separate stairways that are connected by 43 safety areas of refuge. The memorial would reside in the vicinity of the twin tower footprints, and a Sky Memorial would look down on one of the towers.

Daniel Libeskind makes perhaps the most evocative use of the site's current condition: The slurry wall would be exposed on the west side of the site's foundation and a space for a memorial would be at this level, 70 feet below ground. Libeskind said, "The slurry walls are the most dramatic elements to survive the attack." Angular and asymmetrical buildings would ring the site, and the tallest would be a 1,776-foot-tall tower with gardens at the highest level. Libeskind's site includes two outdoor public spaces, the Park of Heroes and Wedge of Light. The Wedge of Light and surrounding buildings are positioned so that there will be unimpeded sunlight on September 11 each year from 8:46 A.M. (time of the first plane hit) to 10:28 A.M. (time of the second tower collapse).

The ambitious Think team produced three proposals (pictured on this spread). Led by Rafael Viñoly Architects and Frederic Schwartz Architects, Think included Shigeru Ban Architects + Dean Maltz, Ken Smith Landscape Architect, William Morrish, Janet Marie Smith, and Rockwell Group. One of their schemes, called World Cultural Center, has two 1,600-foot-tall latticework structures built above



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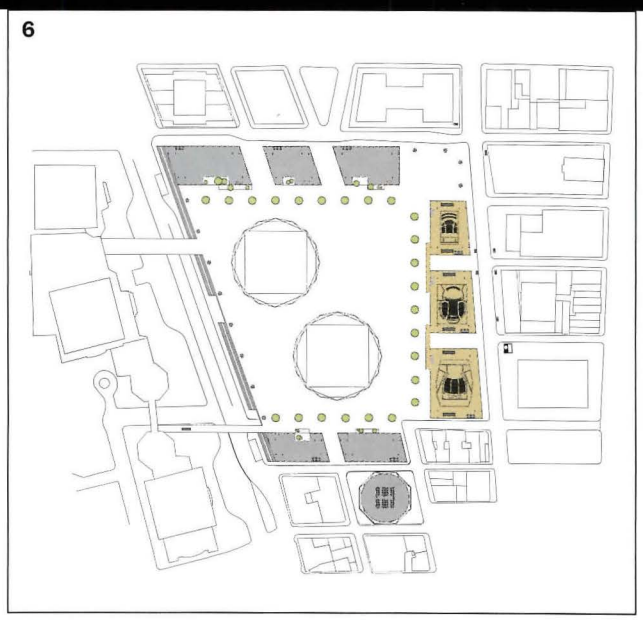

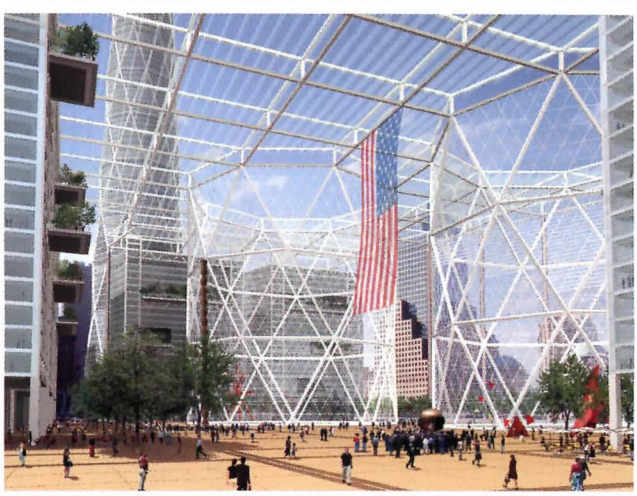

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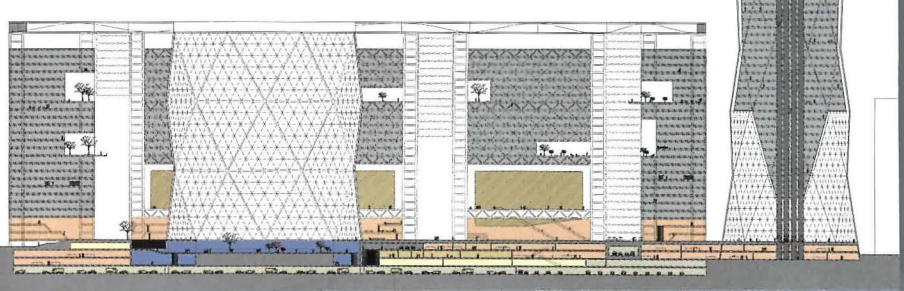


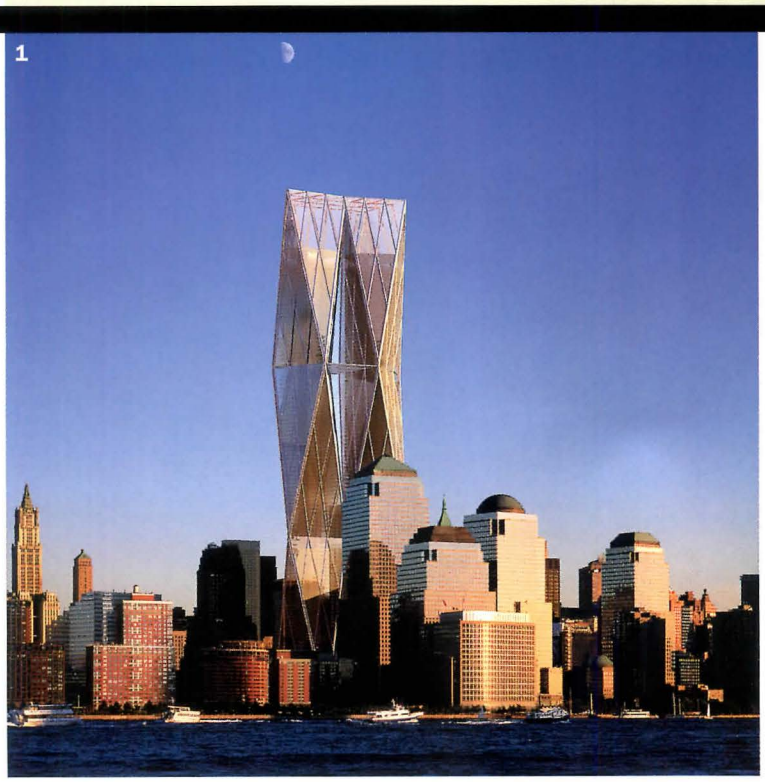
Foster and Partners

Following September 11, London-based Lord Norman Foster commissioned an expert multidisciplinary task force to conduct a study into the safety of tall buildings. The findings informed the Foster tower design.

- A "twinned" tower (1, 3) that "kisses and touches and becomes one," Foster explains
- Where the tower "kisses" at three points are public observation platforms and trees: parks in the sky
- Tower has 98 floors and is 1,764 feet tall: "the tallest, strongest, and greenest," Foster says
- Footprint of twin towers (2, 6) becomes site for memorial with monumental walls of steel and stone
- Foster considers three memorials: the tower voids, a 20-acre park (5, 6), and the new twinned tower itself
- The park (5, 6) extends to the Hudson River waterfront and Battery Park City, bridging over West Street
- A mass transit hub (4) connecting the PATH train, subway lines, and new airtrain links to airports
- Fulton Street and Greenwich Street will be extended (6)
- Liberty Street as a street market on the site (6)

and around the footprints of the twin towers. Cultural facilities and a memorial would be embedded in the structures. Nine office buildings would be phased on the site, ranging in height from about nine to 60 stories. This scheme is the only one of the nine that does not require a tall building with offices to create the dynamic skylight element that the LMDC requests.

Think's Sky Park plan has three towers that could be any height, but the architects suggested towers of 70, 90, and 110 stories along the eastern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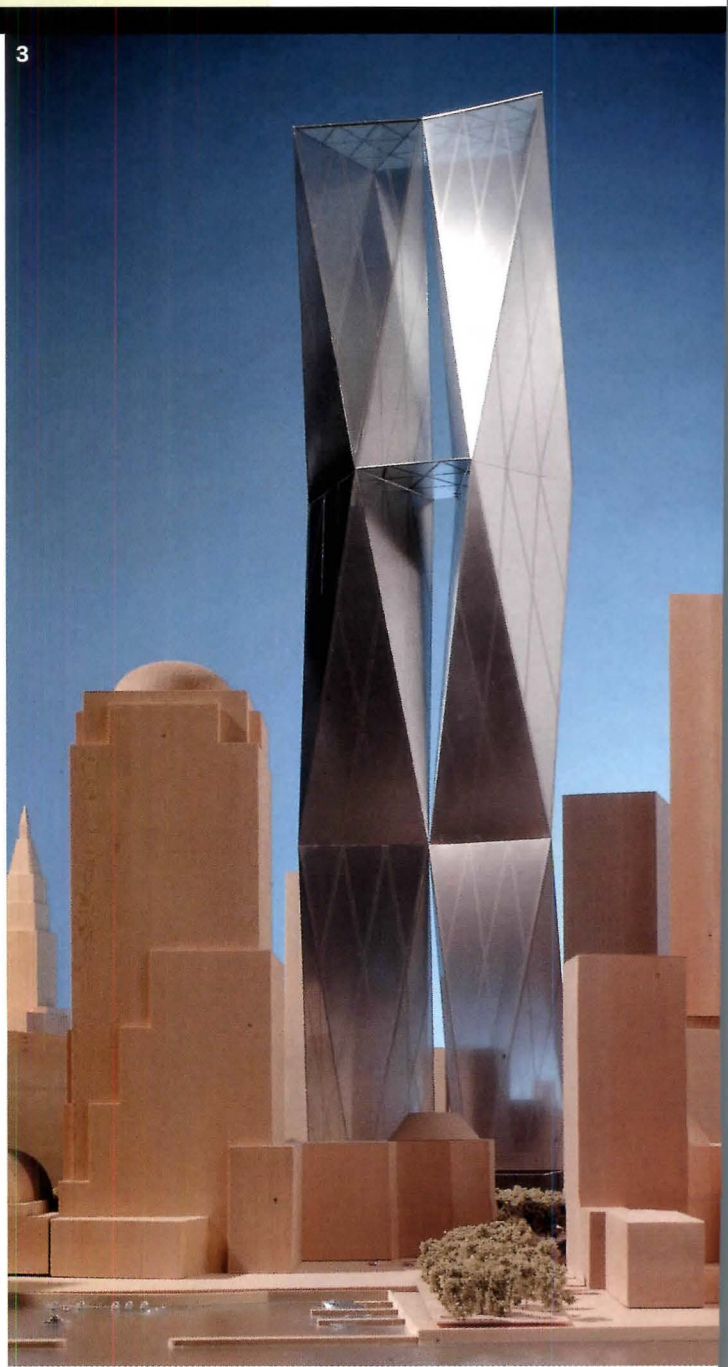
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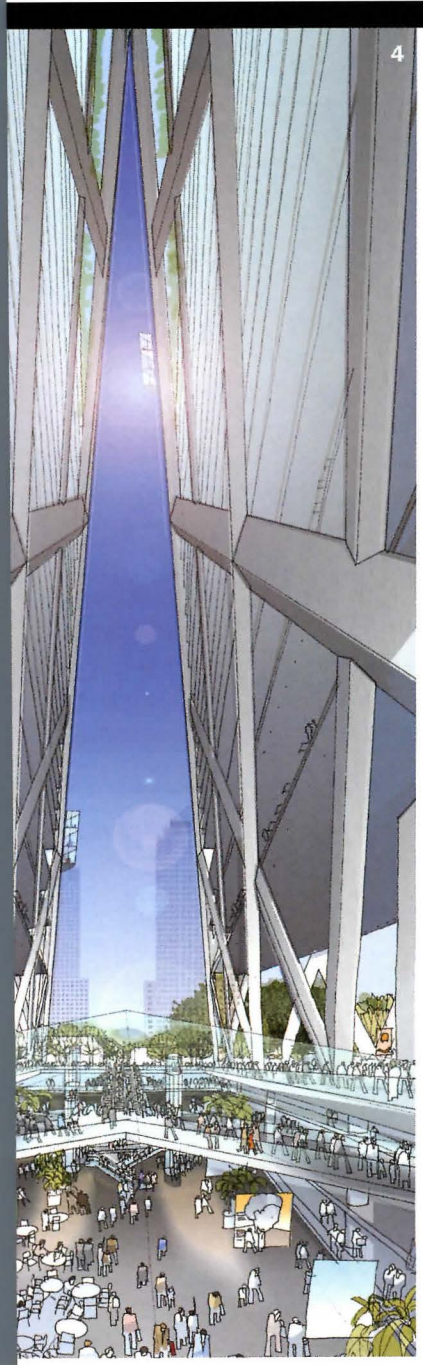
edge of the site. A 10-block, 16-acre public park with a 3-acre public green and amphitheater is 10 stories above ground level. The transit hub, as well as cultural facilities, retail, a hotel/conference center, and office space would all be under the park.

Think's Great Hall plan features a vast 13-acre, glass-enclosed public space that the architects call the Gateway to the City and the Great Hall of the Transportation Center—planned as the world's largest covered public plaza. The footprints of the twin towers, surrounded by glass cylinders, would be visible from the hall itself. At the southern edge of the site, a 2,100-foot-tall tower would include offices, a hotel, and a transmission tower. The architects would incorporate environmentally sustainable features into the Great Hall, although the details of how it would harvest electricity and use natural air to moderate the plaza's temperature were not spelled out.

Twinned tower that kisses

Foster and Partners created a proposal (pictured on this spread) that is dominated by what Foster describes as really one 1,764-foot-tall "twinned" tower that "kisses" at three points. At those points, there are public observation platforms containing green plants and trees. The tower features a dual skin for energy conservation, which Foster claims could provide natural ventilation 80 percent of the year. At the ground level, a park would bridge over West Street and connect to the Hudson River waterfront and Battery Park City. Walls of steel and stone would surround the footprint of the twin towers, which would remain empty voids.

Peterson/Littenberg's scheme has been called everything from the most "retro" or neotraditional to the most rational and understandable for a general audience. The firm's insider role in this exercise has been questioned, though, because the firm has been the LMDC's in-house urban designer for nearly a year and has also worked with Mayor Bloomberg to draft his "Vision for 21st-Century Lower Manhattan," unveiled in December 2002 [RECORD, January



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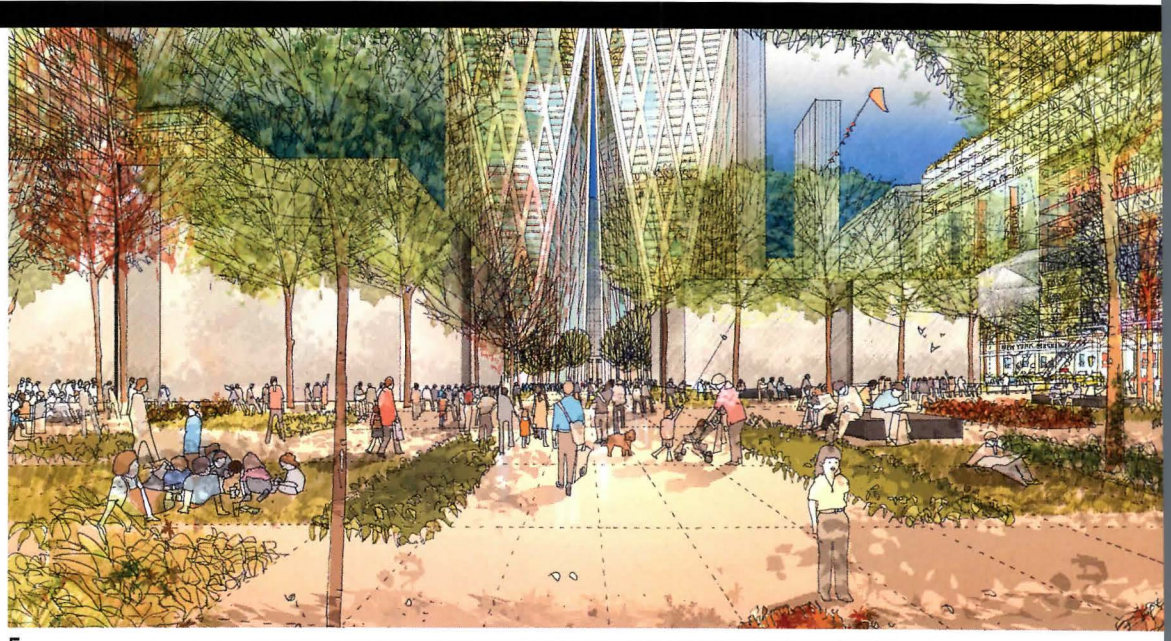

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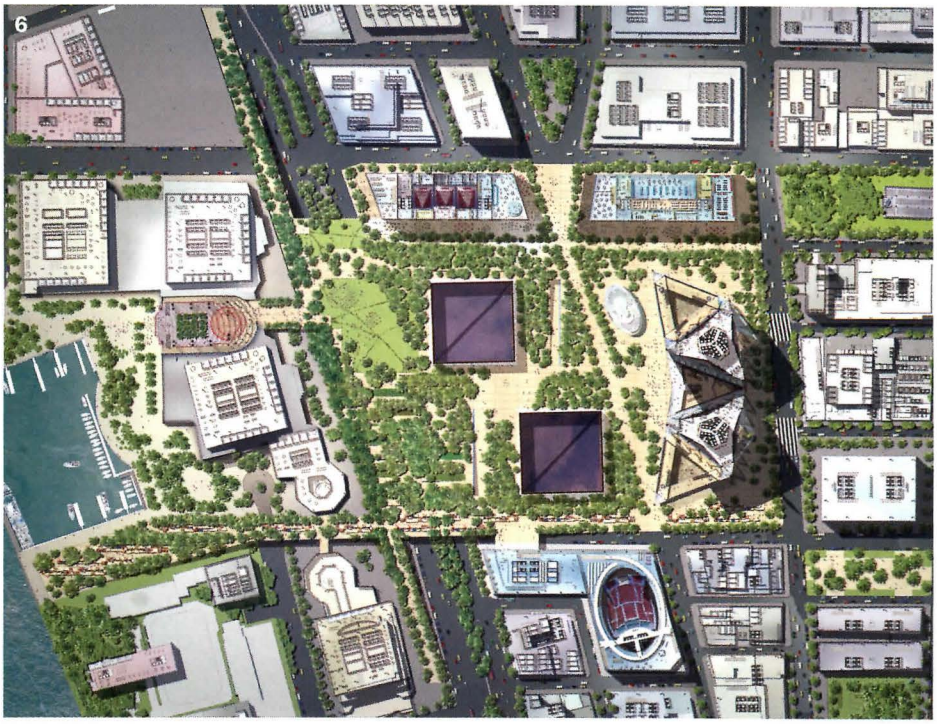

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(continued from page 39)

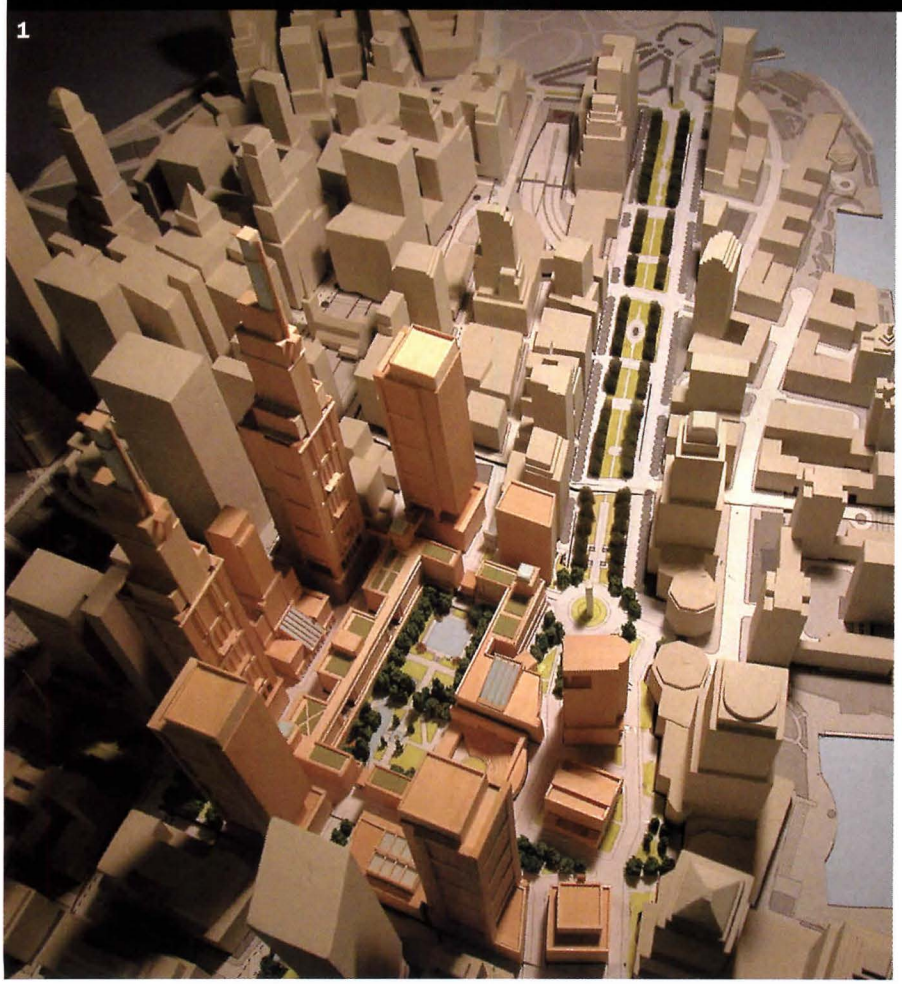
2003, page 36]. Still, the firm has its supporters. Daniel Henninger, a *Wall Street Journal* editor, suggested in a December 20 editorial that Barbara Littenberg be put in charge of the planning process.

The Peterson/Littenberg plan proposes seven towers surrounding memorial gardens. A transportation center sits between two 1,400-foot-tall towers on the eastern edge of the site. An amphitheater with 2,797 seats—one commemorating each of the victims—will be in the foot-

Peterson/Littenberg Architecture and Urban Design

New York–based Peterson/Littenberg, led by Steven K. Peterson and Barbara Littenberg, has been an in-house urban design firm for the LMDC since spring 2002 and was not selected in the international competition.

- Scheme has seven towers (1, 2, 3) surrounding gardens. The two tallest towers are 1,400 feet tall.
- Garden (4), sunk below street level, is a walled enclosure
- Public garden with an amphitheater in the footprint of the north twin tower
- Amphitheater has 2,797 seats—one commemorating each of the September 11 victims
- Museum is underneath the amphitheater, and main transportation building is between two tallest towers (1)
- West Street (1, 3) is a boulevard extending south to Battery Park
- Features 1.8 miles of new street frontage and 17 city blocks (1)
- Four theaters, a library, a school, and 500,000 square feet of housing included
- Includes one million square feet of retail and 8.5 million square feet of office space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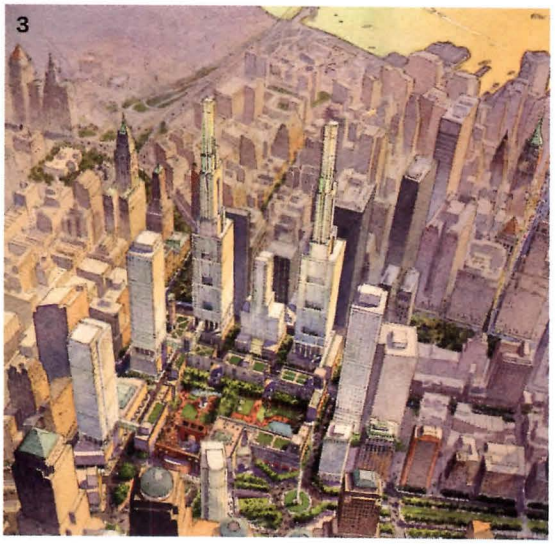
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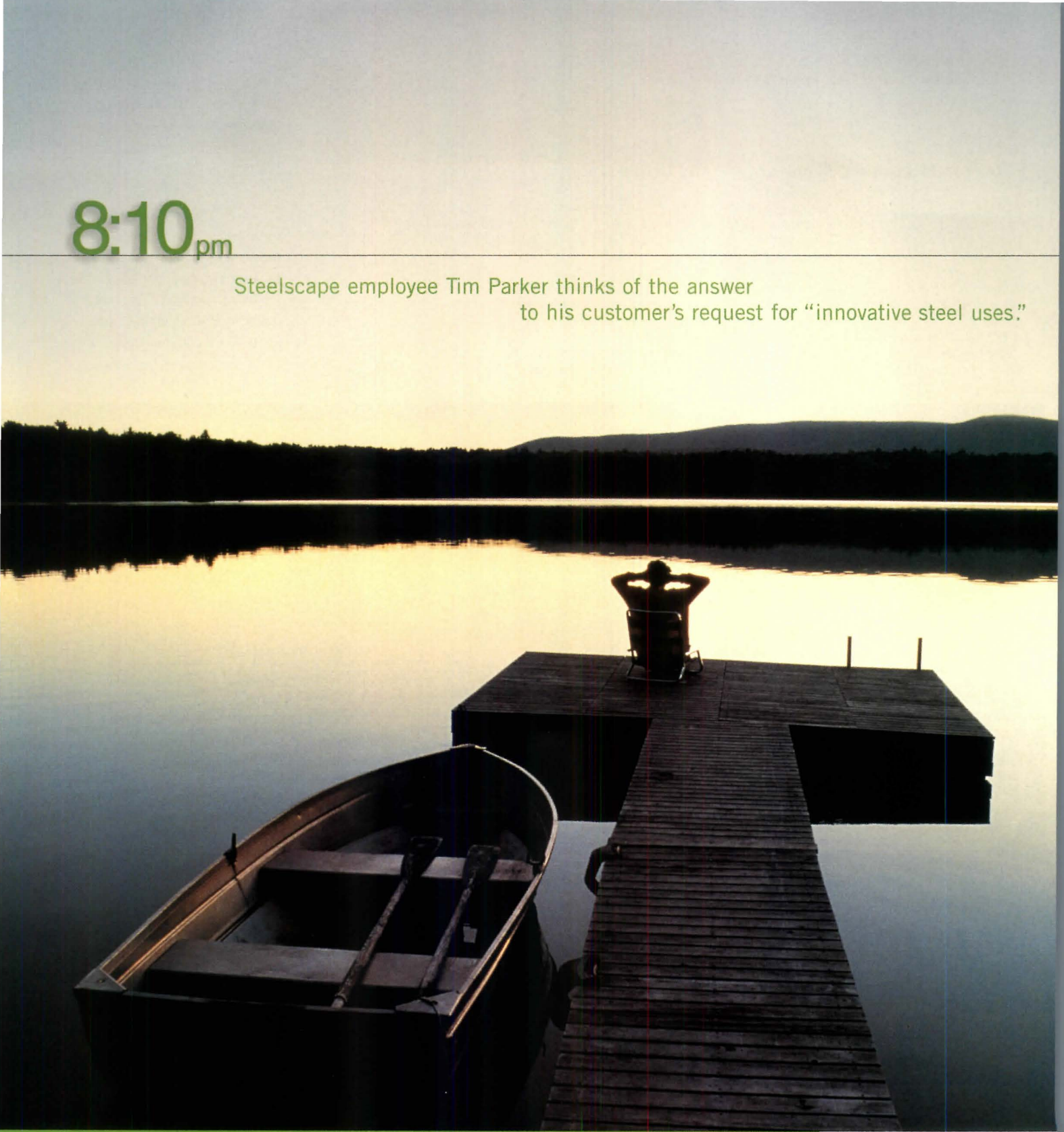
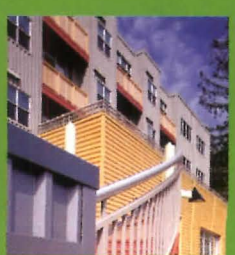
Steelscape employee Tim Parker thinks of the answer
to his customer's request for "innovative steel uses."





Innovation doesn't punch a time clock. It dwells in the minds of Steelscape employees 24/7. Even as the sun sets, something as humble as a dock inspires a fresh steel solution. Why not build that walkway, complete with steel stairs, railings, siding—even patio furniture—with steel? After all, Steelscape's ZINCALUME® is the ideal steel for innovative uses given its durability, edge protection and superior corrosion resistance. Get inspired. Get with the steel company that's in sync with your needs: Steelscape. 800.987.4727 www.steelscape-inc.com

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Great people behind great st

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(continued from page 41)

print of the north WTC tower.

SOM conscientiously put together a team that included mostly emerging voices in art, architecture, and landscape architecture. Their design called for nine buildings, each 940 feet tall with gardens at the top. The buildings would be connected by multiple ramps and people-movement systems.

The team of Meier, Eisenman, Gwathmey, and Holl attempted to express the sublime in austere building forms and landscape. The

Skidmore, Owings & Merrill (SOM)
with SANAA, Iñigo Manglano-Ovalle, Rita McBride,
Field Operations, Michael Maltzan Architecture,
Tom Leader Studio, Jessica Stockholder, and Elyn Zimmerman

SOM, which has designed the new 7 WTC tower for Larry Silverstein, worked with a team that included Field Operations, led by Stan Allen and James Corner, as well as a variety of artists.

- A dense grid of nine vertical structures (1, 5) that are all 940 feet tall
- Towers (3) will function as heat exchanger and actually contribute power to the city
- Gardens (4), 16 acres in total, at the top of each tower
- Various people-movement systems and terraces, multiple ramps on site (3)
- A reflecting pool with bridges is over the twin tower footprints; a light-filled transit hub (2) is integrated


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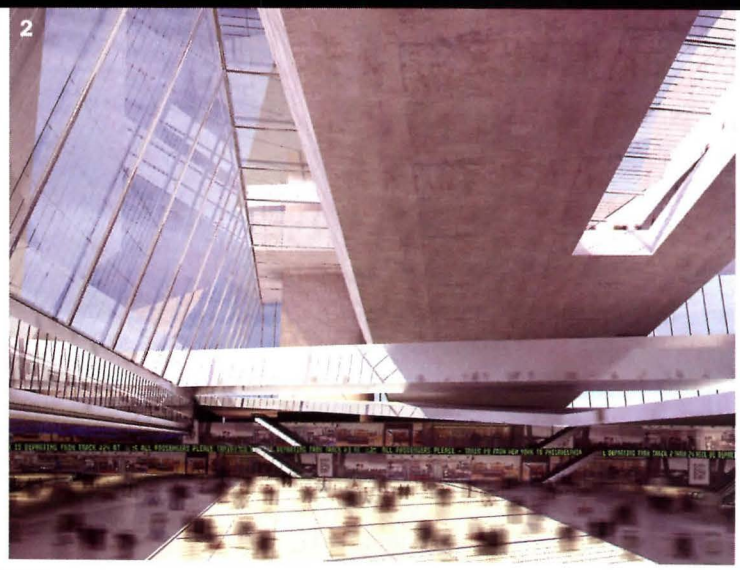
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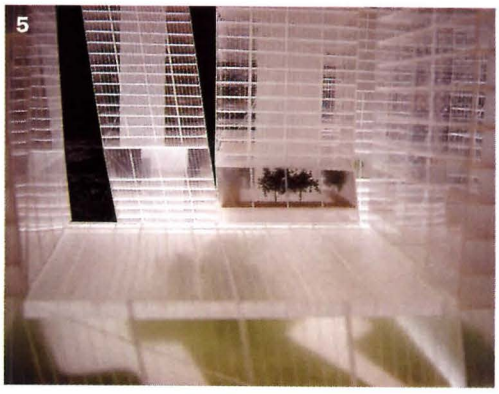
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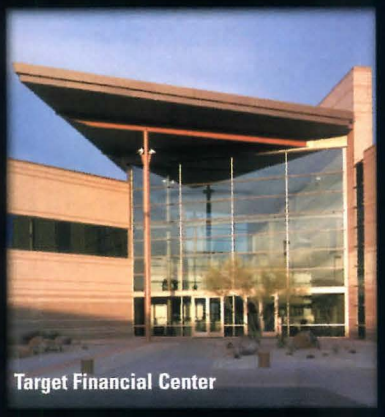
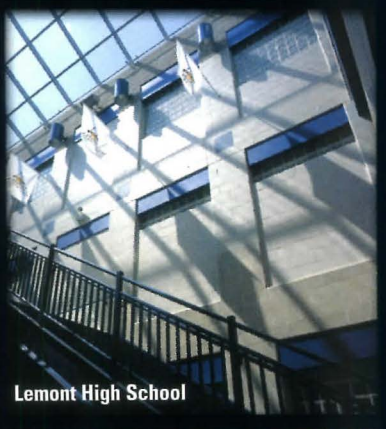


Target Financial Center



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REBUILDING LOWER MANHATTAN

Richard Meier & Partners Architects, Eisenman Architects, Gwathmey Siegel & Associates, Steven Holl Architects,

At the December 18 unveiling, Meier began his team's presentation by saying: "Ladies and gentlemen, we're the New York team. Some may also say we're the dream team, but we're very real."

- Two hybrid buildings (1, 2, 5) that rise 1,111 feet each; footprints occupy about 25 percent of the site
- Nine million total square feet of space for office, retail, hotel, convention, and cultural uses
- Interconnected "superfloors" (4) have large continuous floor space suitable for conventions, trading floors
- Buildings employ PV cell technology in wall to capture sunlight during the day and emit glow at night (3)
- Multiple memorials; twin towers footprints are shallow glass-bottomed reflecting pools (5)
- Final shadows cast by the towers delineated with special paving and dense linear rows of trees (5)
- At the top of the Church Street building is a memorial chapel and landscaped memorial observation terrace

(continued from page 43)

self-described "New York team" proposed two 1,111-foot-tall hybrid buildings with interconnected "superfloors" that have large, continuous space for conventions, trading floors, or other events. PV cell technology would be embedded in the exterior to capture daylight and emit a glow at night. On the ground, the twin tower footprints would be shallow, glass-bottomed reflecting pools, and the final shadows cast by the twin towers would be delineated with tree-lined extensions into the Hudson River. ■


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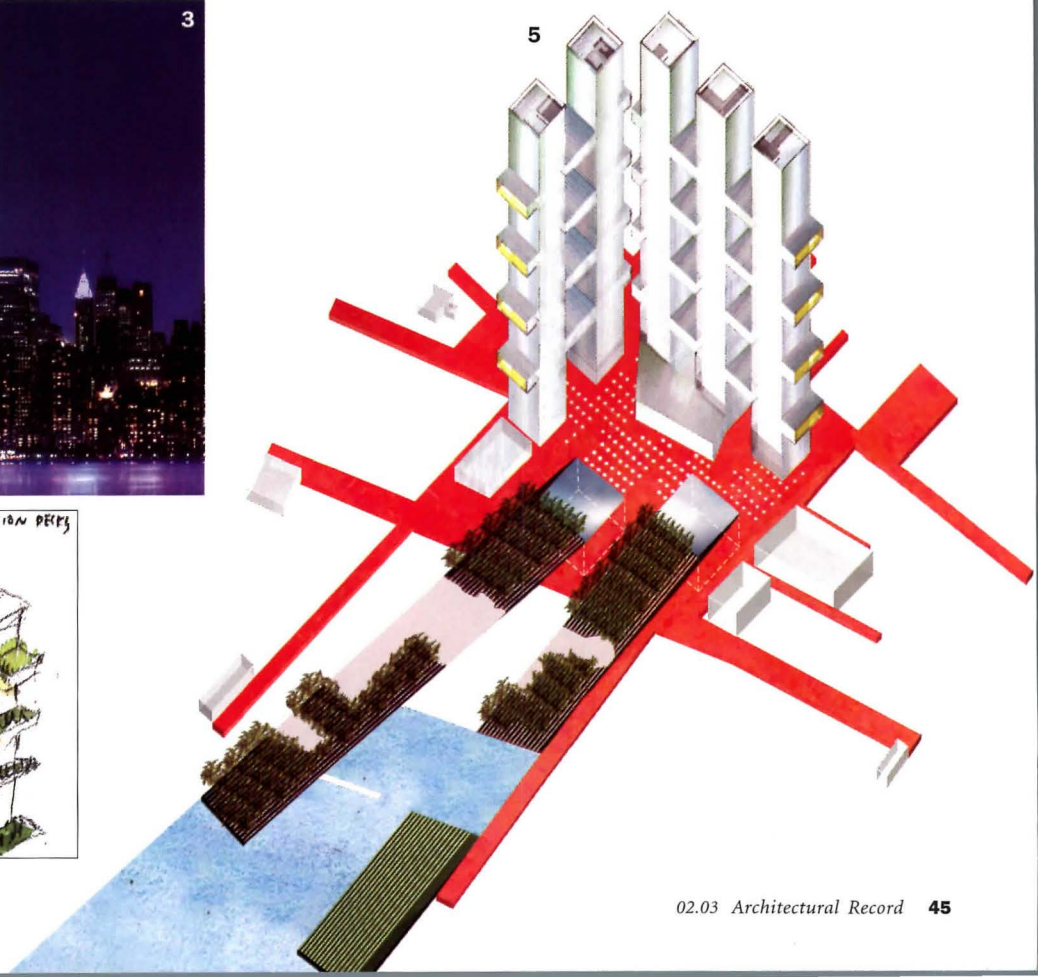
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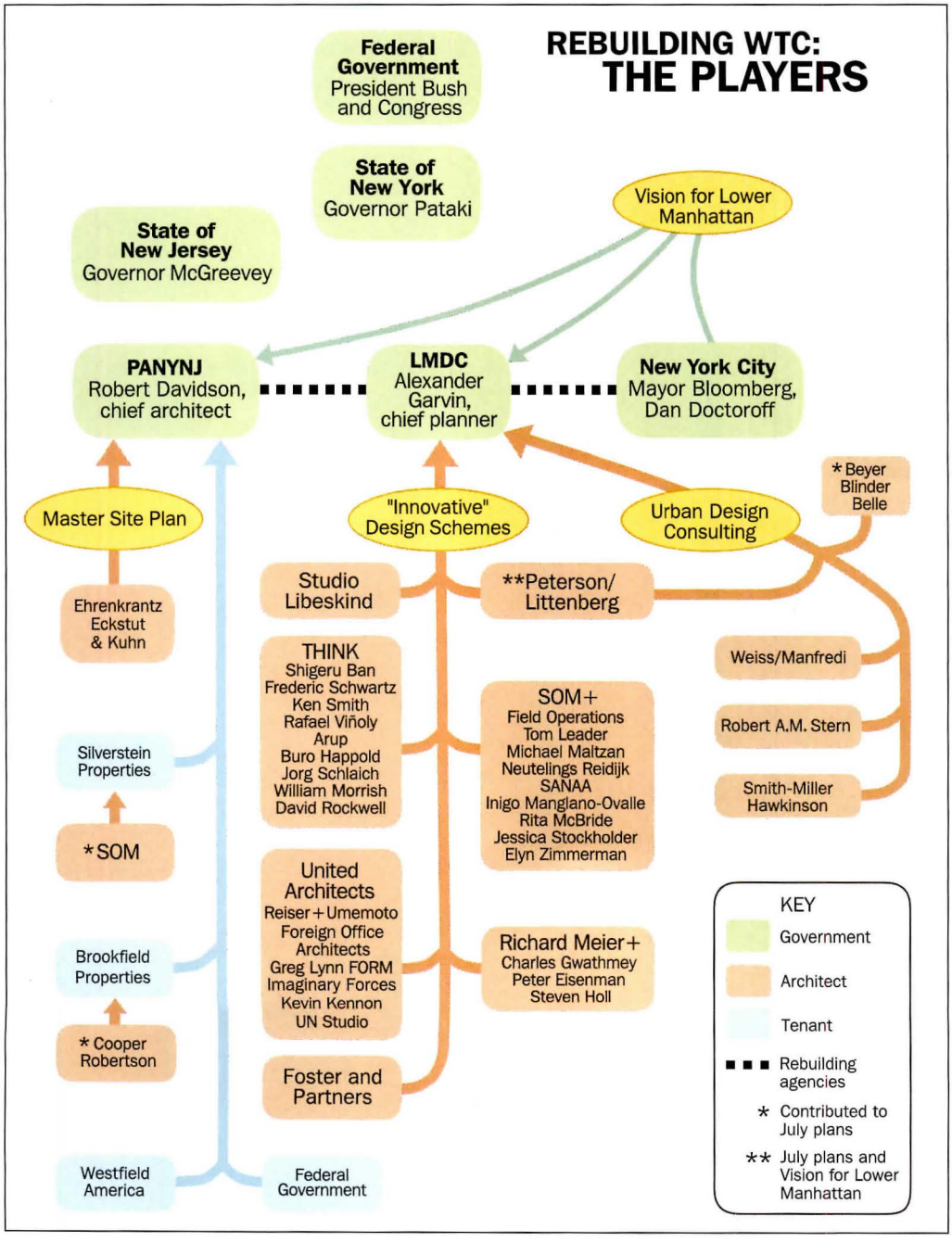
A Defining Moment for Architecture

ANALYSIS: Nine designs challenge New York to express the nation's values in the rebuilt WTC. Will it rise to the occasion?

By James S. Russell, AIA



Who is in charge? The muddy prognosis for the Trade Center rebuilding plans stemmed from a byzantine array of stakeholders and a lack of political leadership to set goals and create clear lines of authority.

As the seven teams of architects presented their schemes on December 18, 2002, the event was beamed live to television audiences worldwide. It appeared on front news pages everywhere the next day. The Lower Manhattan Development Corporation's (LMDC) Web site (renewnyc.com) was hit 6 million times in the following two weeks. As many as 70,000 people visited the exhibition of the plans in its first three weeks and dropped off 4,000 comment cards.

In short, the architectural plans for the rebuilding became an international media and popular phenomenon, unprecedented in architectural history. The uniqueness of the moment was not lost on team members, who, along with colleagues and well-wishers, celebrated the presentations a day later at a reception in the Winter Garden of the World Financial Center, where the ideas were exhibited. Relief at the end of an eight-week charrette was mixed with jubilation at the generally positive reaction to the proposals. The presence of architect-shunning government-agency heads and real estate developers underscored the significance of the event. At no other architectural exhibition could one imagine WTC leaseholder Larry Silverstein schmoozing with architect Daniel Libeskind. The normally courtly Alexander Garvin, LMDC's chief planner, ecstatically hugged startled design-team members.

It seemed, on December 19, that an architectural Rubicon had been crossed. Garvin gloried in the

fact that at last the potential of architecture and urban design had earned a respected place in the redevelopment process.

But this apparent triumph of the visionaries may only have brought to the forefront a battle of philosophic aims that has dogged the rebuilding from the beginning—a conundrum much larger than the staggering complexities of the site. The question is no less than whether and how the city chooses to use architecture as a public investment in its future and to express and nurture its citizens' ideals.

Progressive vs. quotidian

In the nation, and even the world, these questions perpetually simmer below the surface, but the controversy-dogged rebuilding process keeps boiling them over. One side of the divide is represented by the ideals that motivated the "innovative" (LMDC's term) teams' work: With the exception of Peterson/Littenberg, they aspired to what *New York Times* architecture critic Herbert Muschamp calls "progressive" notions of high design that attempt to inspire through a future-oriented aesthetic that is socially and technically innovative. These values were expressed in intentionally spectacular architecture that would use advanced construction techniques and building technology.

Recognizing the enormity of the attacks calls for such an unprecedented response, the teams' work collectively argued. The aesthetic expression of progress has always denoted (however naively) the potential evolution of human character toward a more responsible, egalitarian ideal—offering a reproach to the terrorist attackers. The "progressive" schemes included millions of commercial square feet, as requested, but proposed, in a startling variety of ways, to give prominence to public space, commemorative space, symbolic space, and spaces and forms representing public ideals. Far more than aesthetic exercises (as has been frequently asserted), this commitment is the key difference from the "pragmatic" redevelopment schemes presented last July.

The inclusion of the Peterson/Littenberg team was intended to mollify critics of the "progressive" approach, who see it as ignoring the tried and true means of citymaking: the constant evolution of a widely accepted language and aesthetic of building. Doesn't a city's unique sense of place, they argue, derive from a street, block, and building pattern that is understandable, incremental, quotidian, consistent?

Peterson/Littenberg's plans also gave enormous attention to public ideals and public space, proposing, for example, to extend a tree-lined visual axis south along West Street from the site. But they see the perpetual search for the new and different not as moving society out of a difficult present into a better future but as empty innovation for its own sake. Do we need—as Barbara Littenberg argued at the RECORD-sponsored January 7 forum on the plans, called *Waiting for Ground Zero*—to repeat the mistakes of the Modernist past perpetrated by hubristic, architectural gigantism?

Akin to the aesthetic divide is a pragmatic one: In America, where cities are built by market forces, do we dare put in place a plan that requires developers to depart—at times radically—from the rigidly prescribed spec-building criteria that have evolved over the past 20 years?

It is clear that many people involved at the Trade Center site, whatever their leanings, view the way the rebuilding plays out as possibly redefining architecture in the American public realm. These opposed approaches to rebuilding represent "a real crisis for architecture," says Littenberg.

And it is, perhaps, one for planning and urban design, as well. Because what looks to many observers like a spat about style—progressive versus neotrad—may portend reshuffled roles for once-discrete disciplines.

Planning vs. architecture?

The Port Authority of New York and New Jersey and the LMDC promised to deliver at least a street and parcel plan, with bulk guidelines, this month. Taking the work of the innovators into account has turned this task into a minefield, however. So many of the plans entail "polar opposites," Garvin says. Foster's plan leaves the tower footprints off-limits to visitors, while United Architects "want you to walk in and look up and have the sense of a future city," he explains. Commemorative opportunities abound in the scheme designed by a team led by Richard Meier. Libeskind has carved the largest memorial precinct of all, focusing on the slurry wall that kept the Hudson River at bay as the towers collapsed.

Plans by United Architects and Foster and Partners integrate the office-building concept closely with a transit hub. Several designs require raised plazas to bridge

CRITICISM: What Works and What Doesn't

A lot of people thought contemporary architecture was too cool and self-absorbed to contend with loss and that it had no language for inspiration. The plans presented December 18 changed all that. Two of the most vexing aspects of the schemes—their memorial proposals and their tall buildings—tested assumptions that have congealed into orthodoxy over the months.

Honoring the extent of loss in this tragedy has turned the memorial into the planning linchpin. Each team raised questions about the memorial even as they offered compelling visions for it.

Peterson/Littenberg drew up a pedestrians-only commemorative precinct, separated from daily city life by a layer of buildings and a high wall (image 5). Foster's plan erects a high wall around the footprints and accesses the bedrock 70 feet below by a monumental ramp system. It seems a good idea to remove the distractions of the city, to carve out a dignified, contemplative space. But can this void interrupting the daily life of the city be seen as anything but a scar? Can such a monumental place offer a message transcendent

West Street, tying the long-isolated Battery Park City and the waterfront back into the fabric of Lower Manhattan.

These strategies reflect a notion in many of these teams' minds that the architecture is the urban design. Libeskind says, "This takes New York and architecture where it needs to be—which is not separating urbanity from architecture. I think this is a change that has been brewing for some time. But here it looks explosively new." Indeed, in Europe and Asia, architects are frequently commissioned to do what in the U.S. would be classified as city planning or urban design.

Littenberg, who also worked on the discarded July plans, still feels strongly that "it doesn't matter how much architecture you throw at the site, you have to figure out the essential orientation to open space and the existing urban fabric. We assert that urban design happens before architecture."

Doing the urban design first is precisely the task Stan Eckstut has set for himself. As part of the ever-more byzantine interrelationships among stakeholders (chart, page 46), the Port Authority hired his firm, Ehrenkrantz Eckstut & Kuhn, to draw up the master plan for the site, in cooperation with LMDC's Garvin.

Eckstut is working with the same program the architects did, and he feels confident he can create a plan that would accommodate numerous future possibilities. "I am guided by principles," he says. "The context, first. We're recognizing the best of what's there, and interpreting what New York is. We're defining a system of public spaces and creating a distinct sense of place." And, he adds, "I'm not looking for a singular work of art."

Libeskind, for one, is not buying it. "Urban design done by a faceless office in the shadows doesn't make much sense to me. We are in a world of grown-ups and professionals. Only a bold decision will empower the citizens of New York to create a civic space to match their aspirations."

How bold can plans be?

Just how assertive or symbolic the rebuilding should be remained unanswered as Eckstut and Garvin rushed to create their plan. "In this ballet of billions, the pubic must decide what it is owed," observed Rafael Viñoly, member of the team called Think, at RECORD's forum. His team's three schemes represented three different levels of public commitment, from largely commercial to almost entirely cultural. None of them, added team member Fred Schwartz, "depend on office buildings to have meaning or as an iconic image."

The Think scheme offered a resonant response for those who believe it was not just people and buildings that were attacked, but ideas and values. Think's three schemes most clearly framed the all-important question: How are the aspirations of the public to be represented? "The apparently irreconcilable desire for memorial space and city life is a spur to architectural invention," said Stan Allen, of the SOM team, which creates the opportunity to devise "a city not yet imagined."

What would turn this "opportunity" into a necessity? The most provocative scenarios are certainly risky. But failing to make a calculated bet on the future may no longer to be an option. Given the amount of vacant space available in New York, real estate analysts have predicted that the square footage lost in the towers won't be needed for anywhere from 10 to 30 years. The real estate industry secured a federal guarantee of a whopping $5 billion in incentives for tenants willing to locate in Lower Manhattan. They are going begging.

One-way "dialogue"

What bets to make nowadays must inevitably involve the public. Officials enough to retain its hold on us as the terror attacks inevitably take their place in history?

In respecting the 200-foot-square footprints of the twin towers—another planning consensus—and drawing the inevitable linkage between them, several designs created a very large and monumental precinct that would be off-limits to almost anything but the commemorative program. That expansiveness, in turn, stymied efforts to more gracefully thread the rebuilt site into the surrounding network of streets and blocks. It's why the site remains a distinct enclave in most of the schemes. And it's why you see big open plazas in schemes by Foster, Think (the Sky Park variation), and United Architects. The Meier Eisenman Gwathmey Holl team actually defined the memorial precinct as even larger, stretching it up into gardens in monumental openings high above the street and fingering it out across the Battery Park City development and into the Hudson River (image 7). Studio Libeskind's scheme rejects the footprints in favor of exposing the length of the "heroic" slurry wall that held back the Hudson River as the towers collapsed on top of it (image 2).

We should beware of a commemorative battle of the biggest. It should not be surprising that survivors would define significance in terms of size as well as in the use of ruins. This is what happens in the absence of a sensitively led design dialogue.

Designers have learned from experience that significance is best conveyed by art and design, not size. Landscape architect Diane Balmori, who accompanied Ground Zero stakeholders on a tour of Berlin monuments, was particularly moved by a Holocaust memorial that involved only the painting of vanished Jewish owners' names on building stoops.

To its credit (and with the involvement of designers), the LMDC committee that developed a draft mission statement for the memorial did not demand that the footprints be retained, only respected. Artifacts from the destruction need only be considered for inclusion, it added. Too bad the mission statement came too late to inform the program that was given the seven architect teams.

The teams also demonstrated the validity of other memorializing approaches. By extending the precinct of the historic St. Paul's church into the site, a pocket park by SOM suggests a commemorative possibility that is both moving and authentic (image 6). Since September 11, 2001, the historic church has offered spiritual solace and physical respite for rescuers, victims, and volunteers.

Great ideas, sure. But how to advance key rebuilding decisions while keeping commemorative possibilities open? A series of charrettes or competitions could help everyone understand what is possible on small or large sites, and a clear approach may emerge that does not entangle future possibilities for the entire site. Such an approach would also permit the city to wait longer for its realization. Waiting may seem cold-blooded, but priorities change as grief evolves, and a clearer view of what this memorial should say and how it should deal with the unique senselessness of the tragedy will emerge over time.

Do we really need another world's tallest building downtown? Foster's proposal alone won over many skyscraper rejectionists with its haunting elegance (image 4). It is the most beautiful he has ever done—and beauty counts in restoring the terrible gap in the skyline. Foster's approach recognizes that if you want to set aside a great deal of the site for a memorial and still accommodate a lot of office square footage, a super-tall building is not an unreasonable answer. I am not among the naysayers who think it will take a decade or more for downtown to support significant new square footage. Strategic invest-

Criticism *(continued on page 50)*

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continue to tout a public process that is based largely on one-way communication via public hearing and exhibition comment cards. Both LMDC and the Port are loath to subject their latest round of schemes to the large-scale "electronic" town meeting that so embarrassingly repudiated the July plans. But neither have they proposed the kind of interactive dialogue that would help people sort through the dizzying range of issues the designs engage.

Officials have also closely held plans for the most costly aspect of the rebuilding: public-transportation improvements. Port and LMDC officials were still working on a transportation plan in mid-January, entirely out of public view. A range of options has been proposed by officials and interest groups, some of which would require new river tunnels and new stations at the site or elsewhere in Lower Manhattan. Funds currently available would not go far in completing the most ambitious plans, which would cost tens of billions of dollars. And yet the mayor and business groups adamantly proclaim substantial mobility improvements to be key to revitalization. Having learned a lesson from the December plans, the Port now pledges to search for an architect of international stature to design the transit hub.

Because Eckstut and Garvin promised to deliver the urban-design strategy only weeks after the nine designs were released, the same volunteer organizations that pushed greater public dialogue in July have been presenting their own meetings and forums. The plan's abbreviated schedule "is a bit suspicious," commented AIA New York chapter executive director Ric Bell. It is possible that a better methodology will evolve to serve the public's voice out of this free-for-all, but the cynical use of its many noisy constituencies is a New York specialty. The public treated LMDC's January public meetings as window dressing and stayed away in droves.

Neither Eckstut nor Garvin could say by press time how the work of the seven December teams would be incorporated into the Eckstut plan. "We hope to go ahead with one of the schemes," Garvin said. "But it's a very difficult decision to make." An understatement.

Rallying round—what?

"The Port is trying to get everyone to have consensus around one plan," says Eckstut. Though the agency lost many of its own employees in the disaster, Eckstut said that it did not envision a scheme proceeding that the primary leaseholders—Silverstein Properties (for the offices) and Westfield America (for the substantial retail space)—"don't buy into." The Port expects the existing leaseholders to rebuild largely that which was lost and in pretty much the same way that commercial space is always built—even as the success of the "innovative" study seemed to make business-as-usual untenable.

The leaseholders have not publicly embraced the work of the teams, and if history is any indication, they won't find any of the seven teams' "boldness" sellable. Tenants, it is assumed, will drive the rebuilding to the conventional inspiration-free norm that prevails in what is probably the most innovation-averse industry in America. Indeed, no developer has stepped forward to map a marketworthy approach that would as well represent the public's interest in a powerful gesture.

"I reject the notion that these plans are unfeasible," said Richard Kahan at RECORD's forum. A veteran of government and semi-public agencies akin to LMDC, Kahan claimed, "The program that applies to the site today is arbitrary, driven by the Port and by developers who signed a piece of paper weeks before the disaster. This is correctable." But, he added, "You can't do this without a great client in the mold of the Rockefellers at Rockefeller Center."

To get a plan that recognizes not only the way the disaster affected Lower Manhattan but New York City and the region as a whole "will require the expenditure of someone's political capital," says Alexander Washburn, a veteran of many intergovernmental battles. Kahan thinks "the city and the mayor should take over the process" from the purse-string-holding but so far absent governor. Even with strong leadership, harnessing the enormous public concern will be no easy feat. Failing to do so could imperil the rebuilding. ■

The teams presenting their rebuilding designs in the restored Winter Garden at the World Financial Center, with its view of the disaster site.

ments must be made (in transportation, in the mix of uses, in the environment) and a business case must be developed. (Is the city working on this?) But larger business trends favor Lower Manhattan.

Real estate experts say the low-energy, high-amenity buildings Foster has built in Europe can't work financially in America. Give Foster the chance to prove them wrong. We already know the proposed tower could be the most technically sophisticated skyscraper on earth. Its triangulated form contributes to a uniquely strong structure with the kind of redundancy tall-building critics seek.

Let United Architects refine its skyscraper scheme, too. It's less radical than it looks (image 1). Its floor plates respect current leasing norms; its largest floors will even accommodate the financial-business trading arenas that turn normal office buildings into windowless, overbearing behemoths. It's easy to pooh-pooh the skygardens and streets-in-the-air as architects' fantasies, but if such a large building can succeed, it will do so by offering daylight, views, and other humane amenities lacking in the disfiguring generic developer boxes that litter the neighborhood. With twisting haunches hoisting its great bulk high, the surrounding streets can flow into a rich multilevel topography of plaza, stores, and rail station. Akin to Grand Central Terminal, it choreographs urban spectacle out of the everyday movement of people.

It's not wrong to engage, say, three of these teams to revise their designs based on public comment and realistic analysis. If the December plans demonstrated anything, it is the power of an architecture of passion and commitment to involve people in testing and sorting out ideas. Nothing else about the process has so engaged people in questions that range from the prosaic to the wrenchingly personal. So pick up that phone. And pay the teams decently this time. *J.S.R.* ■

OFF THE RECORD

Seattle landscape architecture firm Gustafson Partners, led by Kathryn Gustafson, in collaboration with Boston's Wallace Floyd Design Group, has been selected to design the 2.8-acre North End Parks to be built over a portion of Boston's Big Dig.

William J. Mitchell will step down as dean of the School of Architecture and Planning at the Massachusetts Institute of Technology (MIT) at the end of the current academic year. He will remain at MIT to lead the school's Media Laboratory and its program in media arts and sciences.

Five design teams have been short-listed by the government of Hong Kong to design and build a $628 million, 2-million-square-foot government complex on the waterfront of the city's Victoria Harbor. Finalists are Kenzo Tange/Skidmore Owings & Merrill, Kohn Pedersen Fox/Wong & Ouyang, NBBJ/Aedas, Norman Foster/RMJM, and Rocco Design. The project will include government offices, a legislative complex, and an exhibition gallery. A winner is expected to be announced later this year.

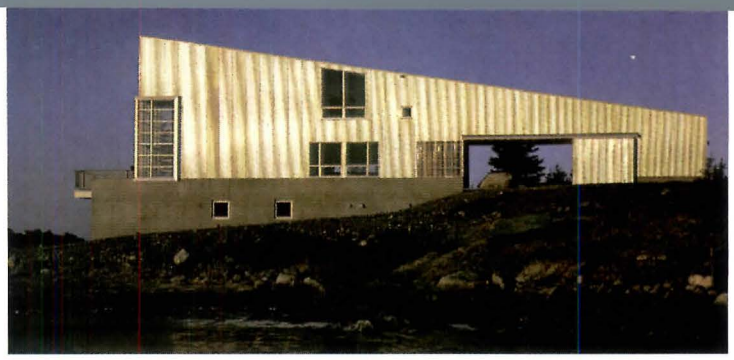
Frank O. Gehry, FAIA, winner of the Pritzker Prize in 1989 and a juror for the prize from 1993 to 1995, will rejoin the jury. J. Carter Brown, who was chair of the jury since the founding of the prize in 1979, died in June 2002.

Australian power company EnviroMission plans to build a 3,300-foot solar tower by 2006. The world's tallest freestanding structure is currently Toronto's 1,813-foot CN Tower.

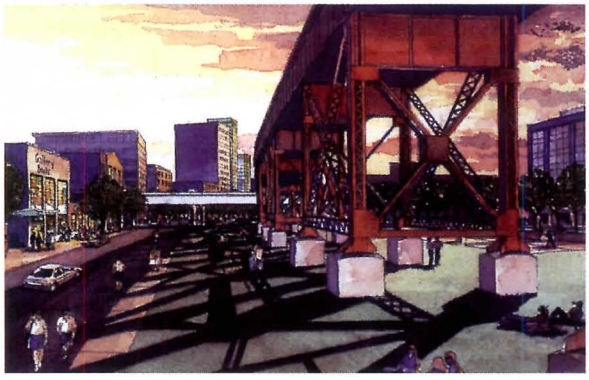
The New Museum of Contemporary Art has named a shortlist of five firms to create designs for a new facility on Bowery at Prince Street, in New York City. The five firms are Adjaye Associates, Gigon/Guyer, Kazuyo Sejima + Ryue Nishizawa/SANAA, and Reiser + Umemoto RUR Architecture.

AIA Honor Award winners announced

The American Institute of Architects (AIA) has announced the recipients of the 2003 AIA Honor Awards. Selected from nearly 600 total submissions, 31 recipients will be honored in architecture, interiors, and urban design at the 2003 AIA National Convention and Expo, May 8–10, in San Diego.



Winning projects include the Howard House (top), West Pennant, Nova Scotia, by Brian MacKay-Lyons; Kate and Laurance Eustis Chapel (left), New Orleans, by Eskew + Dumez + Ripple; and Schuylkill Gateway (below), Philadelphia, by Sasaki Associates.



Honor Awards in Architecture

Concert Hall and Exhibition Complex, Rouen, France, by Bernard Tschumi Architects;
American Folk Art Museum, New York City, by Tod Williams Billie Tsien Architects;
Howard House, West Pennant, Nova Scotia, by Brian MacKay-Lyons Architecture Urban Design;
Heritage Health & Housing, New York City, by Caples Jefferson Architects;
Will Rogers World Airport Snow Barn, Oklahoma City, by Elliott + Associates Architects;
Federal Building and United States Courthouse, Central Islip, New York, by Richard Meier & Partners;
Boston Public Library, Boston, by Machado and Silvetti Associates;
Diamond Ranch High School, Pomona, California, by Morphosis;
3rd & Benton/7th & Grandview Primary Centers, Los Angeles, by Rios Associates;
Simmons Hall, MIT, Cambridge, Massachusetts, by Steven Holl Architects;
New Academic Complex, Baruch College CUNY, New York City, by Kohn Pedersen Fox Associates;
BoO1 "Tango" Housing, Malmo, Sweden, by Moore Ruble Yudell Architects & Planners;
Colorado Court, Santa Monica, California, by Pugh Scarpa Kodama;
Lever House Curtain Wall Replacement, New York City, by Skidmore, Owings & Merrill;
Hypo Alpe-Adria-Center, Klagenfurt, Austria, by Morphosis.

Honor Awards in Interiors

Kate and Laurance Eustis Chapel, New Orleans, by Eskew + Dumez + Ripple;
Central Synagogue, New York City, by Hardy Holzman Pfeiffer Associates;
Craft, New York City, by Bentel & Bentel, Architects/Planners;
Lutece, Las Vegas, by Morphosis;
Collins Gallery, Los Angeles, by Patrick J. Tighe, AIA;
Gardner-James Residence, New York City, by Valerio Dewalt Train Associates;
Martin Shocket Residence, Chevy Chase, Maryland, by McInturff Architects;
Global Crossing Corporate Headquarters, New York City, by Lee H. Skolnick Architecture;
ImageNet, Oklahoma City, by Elliott + Associates Architects;
South Court, The New York Public Library, New York City, by Davis Brody Bond;
The Architecture of R.M. Schindler Exhibition at MOCA, Los Angeles, by Chu + Gooding Architects.

Honor Awards in Urban Design

Schuylkill Gateway, Philadelphia, by Sasaki Associates;
Interstate MAX Station Area Revitalization Strategy, Portland, Oregon, by Crandall Arambula;
Howard University: LeDroit Park Revitalization Initiative, Washington, D.C., by Sorg and Associates;
Charlottesville Commercial Corridor Plan, Charlottesville, Virginia, Torti Gallas and Partners-CHK;
East Baltimore Comprehensive Physical Redevelopment Plan, Baltimore, Urban Design Associates.

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Pentagon Memorial competition winner to be named soon

The Army Corps of Engineers, with a team of selected jurors, is expected to choose a winner later this month in the competition to design a memorial to the September 11, 2001, attack on the Pentagon. The Department of Defense, the competition sponsor that is ultimately responsible for building the winning design, is expected to select a contractor to build the memorial soon thereafter.

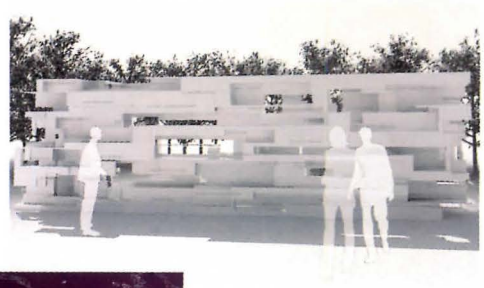
The competition to memorialize the 184 victims of the Pentagon terrorist attack elicited 1,126 entries. Six finalists were chosen in October. Reed Kroloff, a competition consultant, said, "The competition produced exactly what one hoped it would—an opportunity for people who might not otherwise be taken seriously by a big client to do a project."

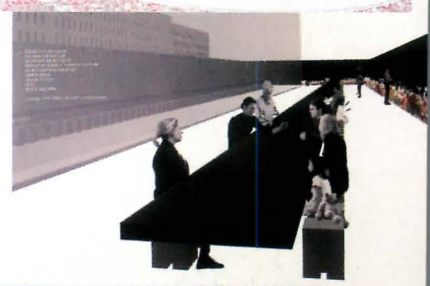
Two of the six finalists are from the University of Toronto faculty, Shane Williamson and Michael Meredith. Williamson designed a masonry wall within a grove of trees, and Meredith, of Clifton Park, New York, proposed a marble pedestal with a central viewing stand. The design by the New Zealand team of Jacky Bowring, Peter England, Richard Weller, and Vladimir Sitta evokes aircraft flight recorders.

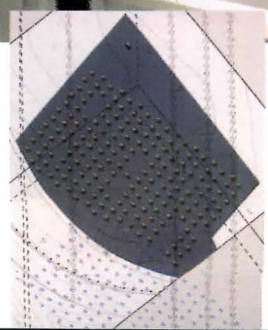
Three teams are based in New York City. Mason Wickham's and Edwin Zawadzki's granite table includes seats with the names of each victim. Jean Koeppel and Tom Kowalski propose installing glass slabs cloaked in mist that visitors can write messages on. Julie Beckman and Keith Kaseman envision 184 cast-aluminum benches running across the 1.93-acre site.

Jury member Terence Riley, chief curator of architecture and design at the Museum of Modern Art, does not believe the competition is "a very reliable predictor" for a World Trade Center memorial. "The family members in Washington feel that the collapse of the twin towers will always be, at least symbolically, the primary image of 9/11," he says. "Their attitude has been to keep the Pentagon memorial very modest and private."

Other members of the Pentagon Memorial competition jury include former secretaries of defense Harold Brown and Melvin R. Laird, family members Wendy Chamberlain and Jim Laychak, artists Sheila Levrant de Bretteville and Mary Miss, landscape architects Walter Hood and Roger Martin, University of Virginia School of Architecture dean Karen Van Lengen, and Carolyn Shelton, wife of General H. Hugh Shelton, former Joint Chiefs of Staff chairman. *David Sokol*







Finalist design by (from top) Shane Williamson, of Toronto; Julie Beckman and Keith Kaseman, of New York; Michael Meredith, of Toronto; Mason Wickham and Edwin Zawadzki, of New York; Jean Koeppel and Tom Kowalski, of New York; and a team led by New Zealand's Jacky Bowring.

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Solar panels installed on White House buildings

The National Park Service (NPS) installed the first solar electric system at the White House compound this past fall. The system, installed in August, went online in September and was officially unveiled in January. NPS also installed two solar-hot-water systems—the first since former president Carter's and the first one ever fully integrated into a White House building design.

"This is not going to wean us off foreign energy by itself, but it has great symbolism," said Mike Paranzino, spokesman for the Solar Energy Industries Association. The 8.75 kW photovoltaic (PV) system feeds into the White House complex's electrical distribution network, supplying a fraction of power at the 55,000-square-foot White House, the 600,000-square-foot Old Executive Office Building, and other structures in the 18-acre compound.

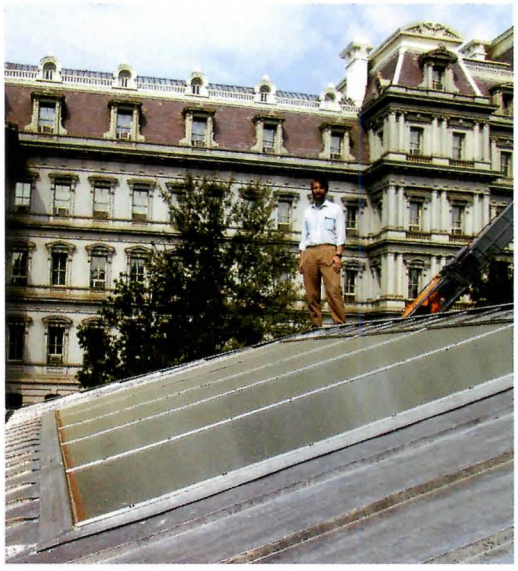
"The solar-electric system provides enough energy for three to four average-size houses," said Steven J. Strong, president of Solar Design Associates in Harvard, Massachusetts. He designed the systems with NPS.

The 167-panel PV system, manufactured by Evergreen Solar of Marlboro, Massachusetts, sits atop the NPS's 3,300-square-foot maintenance building. A three-panel solar-thermal system by California-based SunEarth is also on the roof to provide hot water for the grounds crew members that shower and change there.

At the president's newly rebuilt 800-square-foot cabana near the West Wing, another SunEarth thermal system with about 160 square feet of solar panels heats the water for the first family's shower, hot tub, and pool. It was "integrated into the historically correct, lead-coated-copper, standing-seam roof," Strong said.

"Part of our mission is to promote renewable resources and alternative energy," said project manager James M. Doherty, NPS's White House architect. The thermal systems cost approximately $25,000 and the solar-electric systems cost about $75,000.

This is the first time that solar panels have been fully integrated into the design of a White House building, though then president Carter installed the first solar hot-water panels in 1979. Carter's system sat atop the West Wing itself. Its 32 panels delivered 82 percent of the West Wing's hot-water needs, said Hector M. Guevara, founder of Hytech Industries, the Bohemia, New York, company that installed and supplied the system. The panels were removed in the early 1980s by President Reagan. *Barbara Saffir*



Steven J. Strong, president of Solar Design Associates, stands by the solar-thermal collector array (above) atop the cabana building at the White House. In June 1979, President Carter (left) was at the unveiling of the solar-hot-water panels that Reagan removed in the early 1980s.

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The L-shaped museum addition will include a tiered courtyard (bottom).

Viñoly designs "green" expansion to the Brooklyn Children's Museum

Unveiled in December 2002, the expansion of the Brooklyn Children's Museum by Rafael Viñoly Architects is being touted as the first "green" children's museum design in the United States.

Being constructed above a mostly subterranean, 25-year-old Hardy Holzman Pfeiffer structure, the Viñoly project will include 3,000 square feet of renovated existing space and a 51,000-square-foot expansion to the existing 51,000-square-foot museum. Construction on the $39 million project will begin this year, with completion in 2006.

The cheerful, yellow, L-shaped structure, which will define the corner of Brooklyn and St. Marks avenues in Crown Heights, will open onto a tiered courtyard and play space. A glass curtain wall along the ground floor will allow passersby to look in and visitors to look out onto the street. Permanent exhibitions will be in an interior foyer. Hovering above the curtain wall, the structure's gently undulating facade of daffodil-colored ceramic tile is perforated with constellations of porthole windows. From inside, these windows, some at the eye level of toddlers and others at the eye level of teens, will provide views outside for people of all sizes.

The new yellow building will also be green. The addition will incorporate geothermal heat pumps, recycled and renewable materials, and rooftop solar panels. Because the museum has ongoing environmental education programs, the green features themselves will be incorporated into ongoing exhibitions about energy and sustainable design. *Tess Taylor*

Report finds significant safety hazards at U.S. Capitol

Despite efforts to improve and coordinate emergency evacuation plans in the months following the 9/11 terrorist attacks, the Office of Compliance of the United States Congress has found that the U.S. Capitol complex still demonstrates significant deficiencies in emergency preparedness.

The Office of Compliance issued this evaluation in its "Report on Occupational Safety and Health Inspections," a biennial publication. Legislative branch buildings comprise approximately 20 million square feet and house 30,000 employees.

The Library of Congress revealed the greatest lack of emergency planning capability, according to the report. Many Library of Congress offices have outdated evacuation schemes, while inspections also showed that the three-building complex suffers from inadequate smoke detection, emergency lighting and alarming, and sprinkling.

Among the other problems noted were crowding and inaudible fire alarms in the Capitol building, as well as exit routes and fire extinguishers that were blocked in nonoffice spaces such as the Capitol Power Plant. Green says that many of these glitches will be quickly remedied: "The general counsel of the Office of Compliance has never had to go to litigation to accomplish abatement of any of these hazards."

In a statement, Architect of the Capitol Alan M. Hantman, FAIA, said that a proposed reorganization of the 2,000-person agency, which would place the Safety, Fire, and Environmental Programs Office within the Office of the Facilities Manager, "will improve the overall communication, emphasis, and execution of our safety program, not detract from it." *D.S.*

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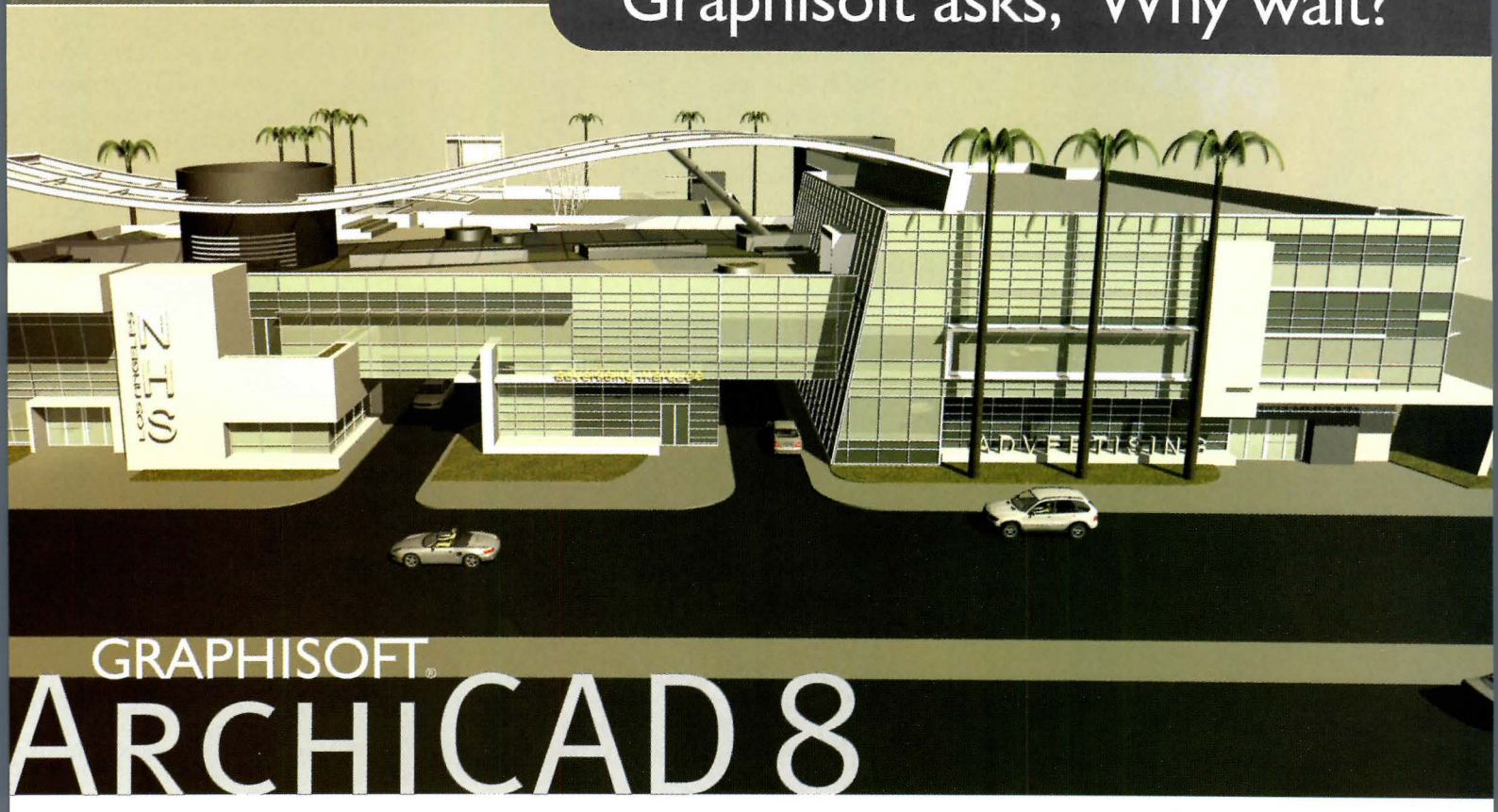

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Maki designs two new Washington University buildings

Washington University in St. Louis has unveiled designs by Japanese architect Fumihiko Maki for two new buildings, totaling $39 million in construction, in the Sam Fox Arts Center on the university's main campus.

Maki served as an associate professor in Washington University's architecture department from 1956 to 1963. He also designed one of the three existing buildings in the Fox arts center, Steinberg Hall, a Modernist pavilion with a cantilevered upper level, in 1960. Steinberg was Maki's first completed building.

The centerpiece of the five-building complex will be a new, 65,000-square-foot art museum to house the university's collection, which is currently displayed in Steinberg Hall. The Museum of Art, which is now called the Gallery of Art, was founded in 1881 as the first art museum west of the Mississippi River. Its holdings are strongest in 19th- and 20th-century European and American art. The new museum building will be constructed of limestone and glass and will also include classroom space and a new library.

Adjacent to the new museum, a 38,000-square-foot building for the School of Art will also be designed by Maki. The new complex will allow the university to consolidate visual arts programs that are currently scattered around campus.

Bixby Hall and Givens Hall, which flank Steinberg Hall and presently house the School of Art and the School of Architecture, were built in a Beaux-Arts style. Construction will begin on the new buildings in March 2004, and Steinberg Hall will undergo renovations. *Kevin Lerner*

In the model (left), the new buildings are in the lighter shade in the back. The new museum is in the back center, and the art school (interior rendering, right) is in the back to the right.

AIA names Young, Jefferson, and Kemper Award winners

The American Institute of Architects (AIA) has announced winners of the 2003 Edward C. Kemper Award, Whitney M. Young, Jr. Award, and Thomas Jefferson Award for Public Architecture, to be presented at the AIA national convention in San Diego in May. C. James Lawler, Jr., FAIA, will receive the 2003 Edward C. Kemper Award. The Hispanic American Construction Industry Association (HACIA) will be given the Whitney M. Young, Jr. Award, and Edmund W. Ong, AIA, and Susan Williams have been selected for the Thomas Jefferson Award for Public Architecture.

The Edward C. Kemper Award recognizes outstanding service to the AIA. Lawler, the founder and principal of C.J. Lawler Associates, in West Hartford, Connecticut, was AIA national president in 1991. He completed a term as chancellor of the AIA College of Fellows in 2002.

The Whitney M. Young, Jr. Award honors the late civil rights and urban leader who urged architects to take greater social responsibility. HACIA is being recognized for its work in promoting Hispanic Americans for public and private construction projects in Chicago. The 23-year-old business association also encourages careers in architecture and construction with a scholarship foundation for minority students in architecture, engineering, and construction management.

Ong will receive the Thomas Jefferson Award in recognition of his 26-year tenure as chief architect of the San Francisco Redevelopment Agency. Williams will receive the award for her role in advocating quality design and preservation as an Indianapolis City-County Council representative and her current role as executive director of the Indiana State Office Building Commission. *D.S.*

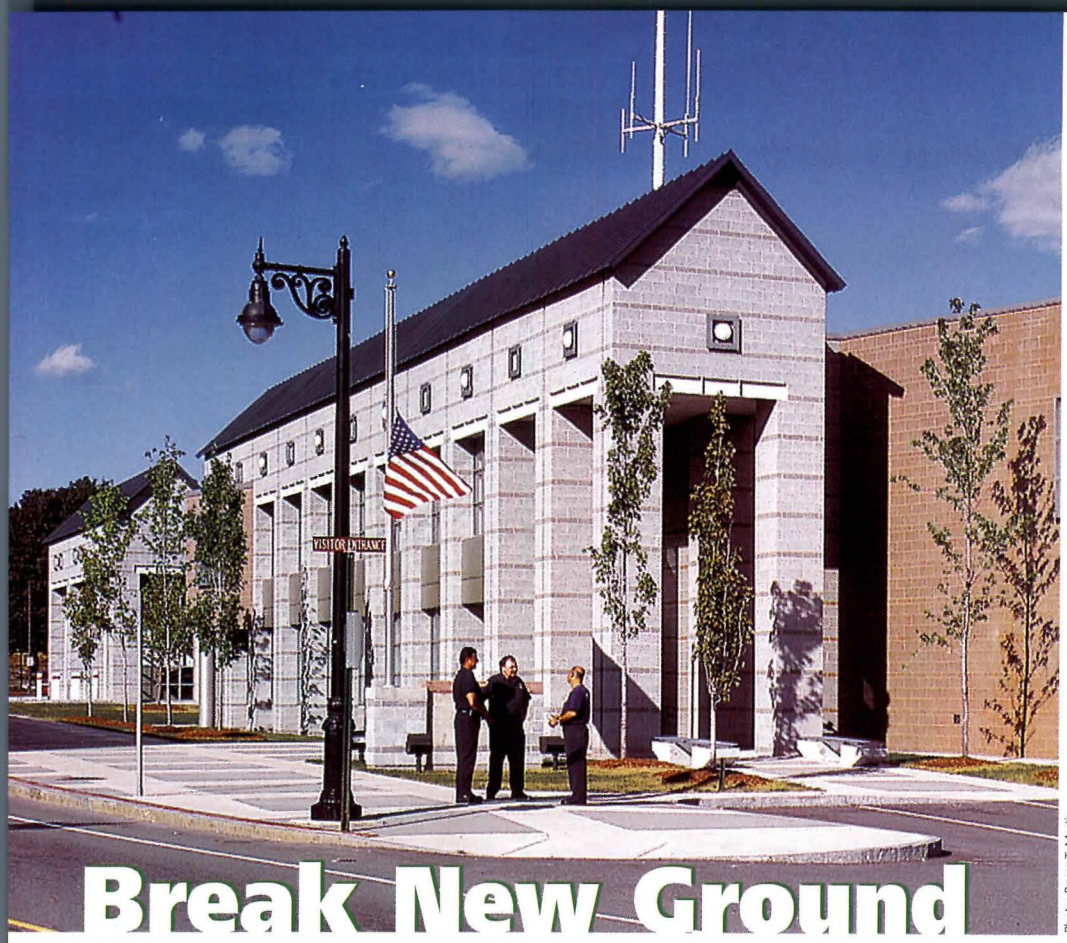

Photo: Bruce T. Martin

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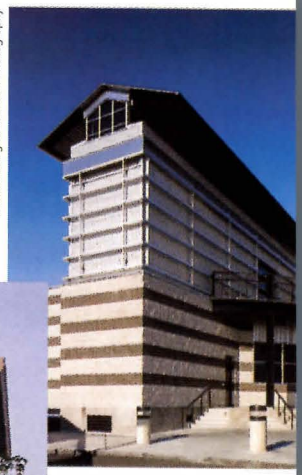

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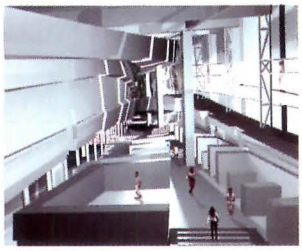
News Briefs



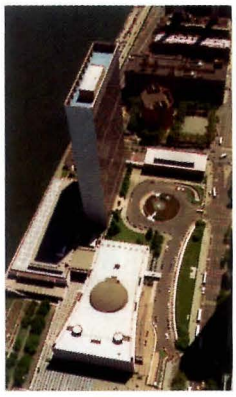
Peter Eisenman's design for the City of Culture (left) and Guest Worker Housing by Bryan Bell (right) will be on view at the National Design Triennial.

Architects represented at National Design Triennial The Cooper-Hewitt, National Design Museum's second National Design Triennial will profile architects in abundance. Architects chosen include Asymptote and Peter Eisenman, both of New York City; Bryan Bell, of Raleigh, North Carolina; San Francisco's Stanley Saitowitz; Kiki Wallace and Mark Sofield, of Longmont, Colorado; and Jennifer Siegal and Escher + GuneWardena Architecture, both of Los Angeles. *Inside Design Now* runs from April 22 through August 3, 2003.

New York makes statewide commitment to being green In his annual address to the state legislature, Governor George E. Pataki of New York pledged that within 10 years the state would produce one-quarter of its energy by renewable resources. The governor's January 8 statement far surpasses other states' green energy goals; neighboring New Jersey plans that 6.5 percent of its power will be from green sources by 2012.

Governor Pataki's promise would require construction of as much as 4,000 megawatts of alternative power. Solar and wind energy production would directly benefit, because hydroelectric plants are already the state's largest source of renewable power.

United Nations renovation to be complete by 2009 The United Nations has announced that it will renovate its New York headquarters. Officials there say that the 38-story U.N. Secretariat Building has no sprinkler system and requires asbestos remediation and new electrical and operating systems. The addition of a new 30-story office building is also planned; the total price tag for the project is expected to top $1 billion.



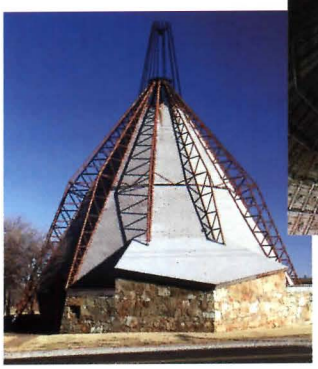
The United Nations will renovate its facilities.

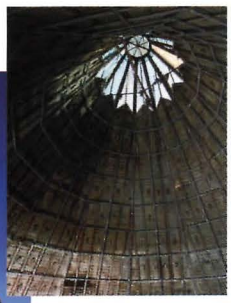
Department of Homeland Security to be headquartered in northern Virginia After a secret monthlong search for office space, the Bush administration has decided to locate the Department of Homeland Security headquarters in the suburbs of northern Virginia. Congress set a January 24 deadline for the president to create and house the department, which will ultimately include 177,000 employees.

At press time, the Bush administration had narrowed its selection to three properties. Two buildings are in Tysons Corner, Virginia, and the third is located within an office campus in Chantilly, Virginia. The lease comprises 275,000 square feet with an option to double that space. The maximum annual cost of occupancy is $25.9 million.

Bruce Goff landmark to be restored The Hopewell Foundation is raising funds to restore and update Hopewell Baptist Church, one of Bruce Goff's best-recognized designs. The conical-shaped structure with a 12-sided base was vacated in 1989 but escaped demolition. It was recently listed on the National Register of Historic Places. The Hopewell Foundation will renovate the church according to a design by Rand Elliott, FAIA, of Oklahoma City–based Elliott + Associates Architects.

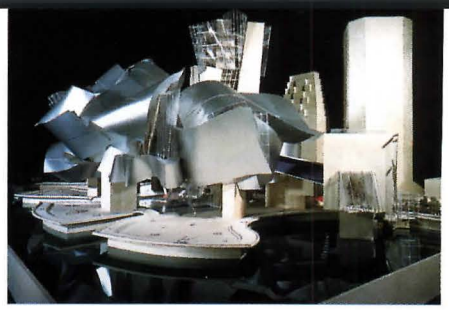
The congregation of Hopewell Church erected the structure, completed in 1951, in far northwest Oklahoma City for approximately $20,000. The building's exterior trusses—composed of oil-field pipe—as well as its stone exterior demonstrate Goff's trademark use of surplus and indigenous materials to achieve affordable design. Elliott + Associates estimates that the restoration will cost $2 million.





Hopewell Baptist Church will undergo a $2 million restoration.

Guggenheim scraps East River museum plans The Solomon R. Guggenheim Foundation announced on December 30, 2002, that it is withdrawing its plans for a new Guggenheim Museum on the East River, in Manhattan. The foundation acknowledged that it cannot afford to finance the proposed $950 million project designed by Frank Gehry, FAIA. Existing budget difficulties forced the Guggenheim Las Vegas to close indefinitely beginning January 5, 2003.



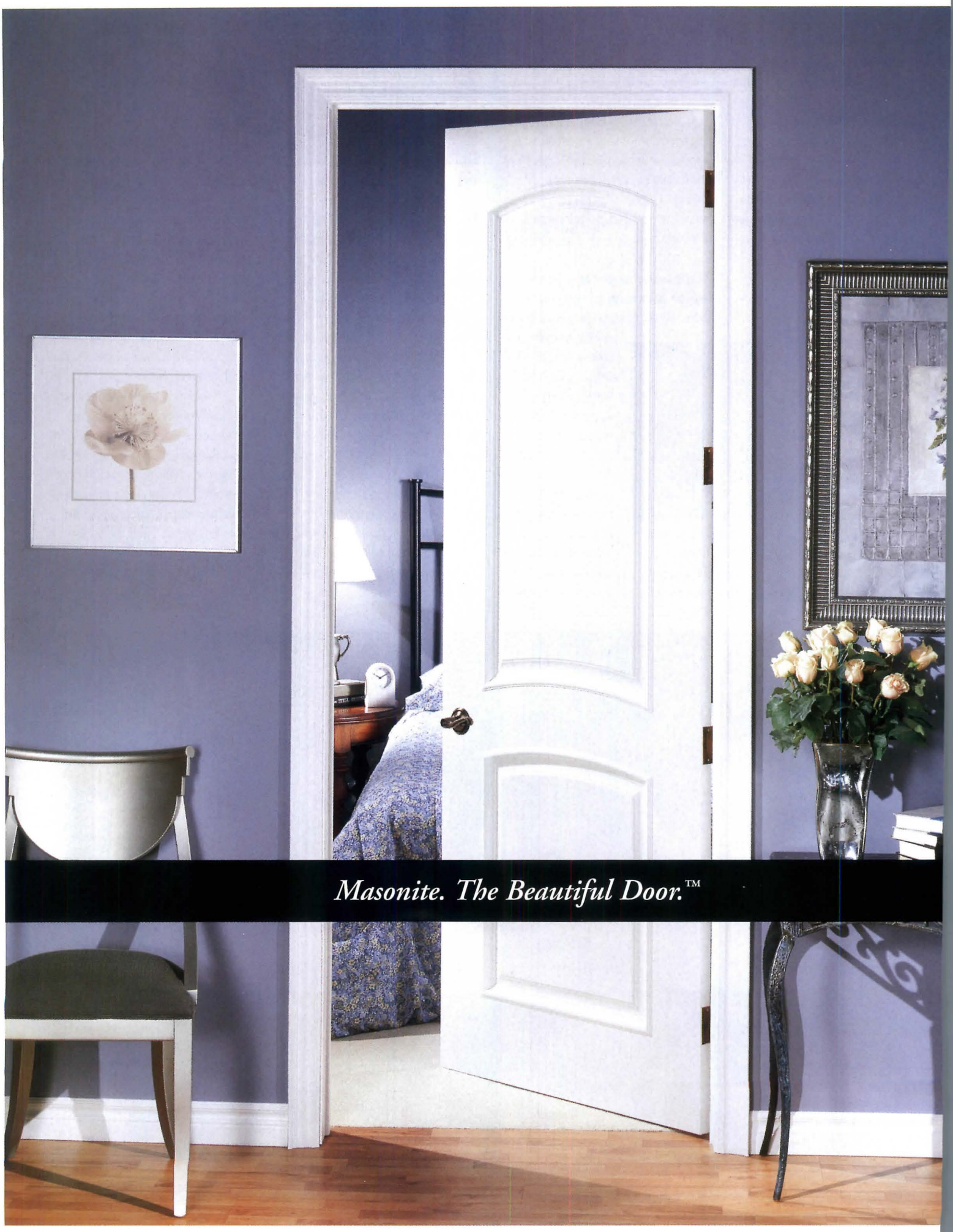
Gehry's East River Guggenheim was cancelled.

In November 2000, under then-mayor Rudolph Giuliani, New York City pledged $67.8 million to the East River Guggenheim project. Gehry's model and drawings for the proposed 572,000-square-foot building were exhibited at the Guggenheim Museum in New York in 2000 and 2001 [RECORD, May 2000, page 41].

With this announcement, it is unclear if the Guggenheim Foundation will consider developing a new museum at Ground Zero, as has been speculated. Peter B. Lewis, chair of the foundation, promises that a new museum will be realized "on another scale and perhaps at another place." *J.E.C.*

Nelson wins ASLA's Olmsted Medal On January 10, the American Society of Landscape Architects (ASLA) awarded its annual Olmsted Medal to Gaylord A. Nelson, who served as U.S. Senator from Wisconsin from 1963 to 1981. The medal, established in 1990, is the ASLA's highest honor presented to an individual outside the landscape-architecture profession.

Nelson is being recognized for his lifelong contributions to the environmental movement. In addition to founding Earth Day in 1970, Nelson established the Outdoor Resources Action Program and championed significant environmental legislation, such as the Clean Air Act and the Water Quality Act. *News Briefs by David Sokol unless otherwise noted.*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Dates & Events

New & Upcoming Exhibitions

Big & Green: Toward Sustainable Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately 50 contemporary green projects worldwide, along with a broad examination of global ecological and economic forces, the exhibition demonstrates the transformative powers of sustainable design. At the National Building Museum. For more information call 202/272-2448 or visit www.nbm.org.

Intricacy
Philadelphia
January 18–April 6, 2003
Guest curated by the architect and theorist Greg Lynn, this exhibition includes works by architects, designers, and artists that reflect an emerging sensibility that Lynn has labeled "intricacy." This notion refers, in the abstract, to a new visual and spatial language of folding, interweaving, and layering—parts relating to wholes—that has been heralded by the digital and genetic engineering revolutions. The exhibition synthesizes a vast geography of ideas and practices drawn from many disciplines and cultural fields. At the Institute of Contemporary Art at the University of Pennsylvania. Call 215/898-5911 or visit www.icaphila.org.

Shigeru Ban
Cambridge, Massachusetts
January 27–March 16, 2003
This exhibition will explore contemporary Japanese architect Shigeru Ban's innovative design approach and will trace the architect's investigation of materials, structural systems, and methods of construction in the development of alternative architectural designs. At the Harvard Design School. For more information, visit www.artmuseums.harvard.edu.

Trespassing:
Houses x Artists
Los Angeles
January 29–April 13, 2003;
May 7–July 27, 2003
The two-part exhibition, co-organized by the MAK Center for Art and Architecture and Bellevue Art Museum, highlights nine new architectural projects developed in a joint effort between contemporary artists and architects Alan Koch and Linda Taalman of OpenOffice. The projects engage the house as subject, investigating its forms, functions, and significance while imagining a wide variety of prototypes for living. In addition to architectural drawings and renderings, *Trespassing* presents oversize scale models, film and interactive elements, as well as an accompanying catalog outlining the projects' development. At the MAK Center for Art and Architecture. For more information call 323/651-1510 or visit www.makcenter.org.

Next: LWPAC
Vancouver, B.C.
January 30–May 2003
The second exhibition presented in *Next*, a series on emerging artists from the Pacific Rim. Vancouver architect Oliver Lang, a partner in LWPAC (Lang Wilson Practice in Architecture Culture) will redesign the *Next* space, a laboratory for new art and ideas in a wide variety of media. A new gallery will be designed by LWPAC to complement and accommodate this program, not only to generate a new space but also to document the process of its production. At Vancouver Art Gallery. Call 604/662-4715 or visit www.vanartgallery.bc.ca.

Ongoing Exhibitions

Do It Yourself: Home Improvement in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American housing and its products, with cultural insinuations regarding gender roles and leisure time in the domestic sphere. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org for more information.

Body Design
San Francisco
November 16, 2002–March 23, 2003
Conventional notions of good design, especially theories about ergonomics, favor objects and spaces that accommodate and even mimic the human form. This exhibition looks at several

provocative designers who take this thinking one step further, reconsidering the relationships of body to space and physiology to function. Roughly 20 prototypes and commercially available works from the fields of fashion, furniture, industrial design, and interior design are featured. At San Francisco Museum of Modern Art. Call 415/357-4000 or visit www.sfmoma.org

David Adler, Architect: The Elements of Style
Chicago

December 6, 2002–May 18, 2003
This will be the first major retrospective of the architect David Adler's work, featuring approximately 100 pieces, including plans, drawings, photos, models, and decorative arts. Also included will be major documents from the Chicago Art Institute's permanent collection and photos newly realized by the renowned Chicago architectural photography firm of Hedrich-Blessing. At the Art Institute of Chicago. Call 312/443-3600 or visit www.artic.edu.

Conferences, Symposia, Lectures

Swiss Made
Houston
January 22–February 12, 2003
The Spring 2003 RDA Lecture Series features five Swiss architects who share an uncommon precision of craftsmanship and deftness of material handling that has come to emblematize the postwar Swiss architectural legacy. The careers of the five designers span from the 1950s to the present. The speakers in this lecture series include Annette Gigon, Mike Guyer, Kurt W. Forster, Marianne Burkhalter, Livio Vacchini and Silvia Gmur. At Brown Auditorium, The Museum of Fine Arts, Houston. Call 713/348-4876 or visit www.rice.edu.

Dallas Architecture Forum Lecture Series
Dallas
November 21, 2002–February 13, 2003
The Dallas Architecture Forum features its seventh season of lectures by some of the most important designers in the world. Included in the series will be talks by Enrique Norten, Rick Joy, and Terence Riley. For information, call 214/740-0644 or visit www.dallasarchitectureforum.org.

Spotlight on Design
Washington, D.C.
February 13, 2003
A lecture by Topher Delaney. The San Francisco–based landscape architect will discuss her work and belief in the healing power of design. Delaney's 26-year career as an environmental architect and builder has encompassed a wide variety of projects including rooftop gardens and award-winning sanctuary gardens for medical facilities. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Designer's Saturday
Hong Kong
February 22, 2003
The objective of this program is to provide the public with a behind-the-scenes look at applied art/design companies in an informative and relaxed setting, giving an opportunity for contact between current and future designers and the local community. By Atelier Pacific. Call 852/2869-8265 or visit www.atpac.com.

GlobalShop 2003
Chicago
March 16–18, 2003
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Dates & Events

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Coverings
Orlando, Florida
March 24–27, 2003
This event will feature the International Tile and Stone Exposition, the International Flooring Exposition, and the Vision Conference Program. At the Orange County Convention Center. For more information, call 561/776-0600 or 800/881-9400, or visit www.coverings.com.

Lightfair International
New York City
May 5–8, 2003
This year's Lightfair promises to be the biggest and most comprehensive annual architectural and commercial lighting conference to date, with more than 550 exhibiting companies occupying more than 1,460 booths, and an expected attendance exceeding 19,000 architectural, engineering, design, and end-user professionals from around the world. At the Javits Convention Center. Call 404/220-2215 or visit www.lightfair.com.

Competitions and Awards

The 2003 DuPont Benedictus Awards
Call for entries deadline: February 14, 2003
The competition, a collaborative effort between DuPont and the American Institute of Architects, with the cooperation of the International Union of Architects, recognizes the innovative and significant use of laminated glass. Architects may submit projects in seven categories: commercial, community, education, government, health care, recreation, and residential. For more details, call 202/367-1633 or visit www.aia.org or www.dupontbenedictus.org.

2003 Business Week/Architectural Record Awards
Call for entries deadline: March 14, 2003
The annual global awards program, sponsored by the American Institute of Architects, invites entrants to submit work that has demonstrated that "good design is good business." This is an opportunity for architects and clients to be recognized for exemplary collaboration between client/architect building teams who use architectural design solutions to achieve strategic goals. Entrants must submit a mission statement and business rationale describing how the project fits into an organization's overall goals. Additionally, entrants describe both the process and results, including measures of how the project's architectural design solution helped achieve those results. Public- and private-sector projects completed anywhere in the world since January 1, 2000, are eligible. Entries are welcome regardless of project or budget size, including new construction, interiors, and renovations/restorations. To download a submission packet, go to the AIA Web site at aia.org, or the ARCHITECTURAL RECORD Web site at archrecord.com. To order by telephone, call 888/242-4240 or 202/626-7467

International Achievement Awards
Deadline for entries: July 1, 2003
Sponsored by the Industrial Fabrics Association International (IFAI), this competition offers architects an opportunity to gain recognition for projects that have creatively used fabric. The competition features 26 competition categories. Project entries include photos of outstanding specialty fabric projects and descriptions of their unique and important characteristics. To request a brochure and entry form, contact Christine Malmgren at 800/225-4324 or 651/222-2508, e-mail cmmalmgren@ifai.com, or visit www.ifai.com.

E-mail event information two months in advance to ingrid_whitehead@mcgraw-hill.com.

Instead of devising a 21st-century urbanism, the latest WTC proposals rehash old notions of the future

Critique

By Robert Campbell, FAIA

I write this column shortly after the unveiling of nine proposals by seven teams for the site of the World Trade Center in Manhattan. They were a huge disappointment. Once again, we are being asked to take our children to an image zoo.

Most of the proposals look like a Stephen Spielberg invasion of dinosaurs, trampling the fabric of the city. It's some kind of backhanded tribute to these designs, I guess, that they've succeeded in making Lower Manhattan, which once seemed so soaring and powerful, look fragile and delicate. The existing city fabric becomes a sort of weedy undergrowth beneath these vast, self-important new constructions.

In most of the designs, there is at least one building intended to be the world's tallest. I guess we Americans have to take back the title from Kuala Lumpur, don't we? Often the proposed towers are connected by sky bridges, creating what more than one designer called "cities in the air." This is avant-garde architecture? People have been imagining and cartooning sky bridges and aerial cities in Manhattan since the 1920s. Flash Gordon got there first. In all the designs, there is more interest in creating a novel, dramatic skyline than in creating a human and usable city fabric at ground level.

The reason for the fireworks on the skyline is largely symbolic. All the designers were working with guidelines set out by the Lower Manhattan Development Corporation (LMDC). The guidelines state: "A tall symbol or structure that would be recognized around the world is crucial to restoring the spirit of the city." The statement is bombastic rant. The spirit of New York did not depend on the Twin Towers, which were dreadful in every way.

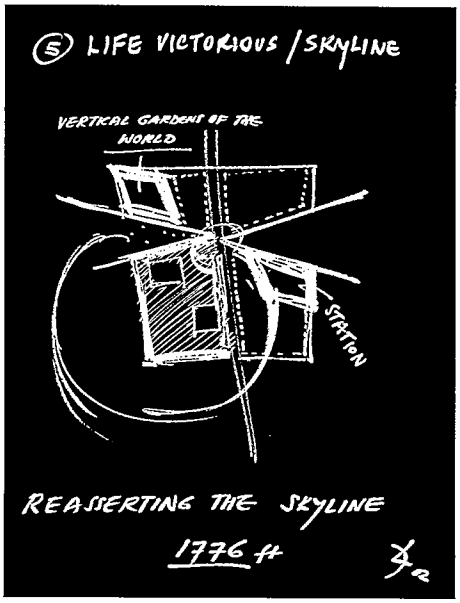
Is there any reason, anyway, for this kind of massive development in this particular location? The LMDC's program calls for 6 to 10 million square feet of commercial space plus a great deal of other stuff, all on a site that is just 60 percent larger than Washington Square. Is there any market for it, with 17 million square feet of office space currently vacant in Lower Manhattan? And if there is, should the new space be in this location? There is plenty of underutilized land only a few blocks away. Why pile such gargantuan development on one small parcel? How do you phase it?

Cloning an old formula

It's not as if anyone has thought freshly about what the program should be. The LMDC's program is déjà vu all over again. It's a recap of the program of 30 or 40 years ago, when the World Trade Center was first conceived. The only purpose of cloning this ancient program is to satisfy the developers who hold leases on the site and hope to collect their insurance money, and the Port Authority of New York and New Jersey, which hopes to collect rent again from the lessors. (It's a curious sidelight that nothing about the World Trade Center, present or past, has anything to do with the Port of New York, which is what the Port Authority is supposed to be worrying about.)

With one partial exception (the Viñoly/Schwartz/Ban team in one of its three proposals), none of these seven supposedly daring designers bothers to challenge the program. Nobody does any fresh thinking about much more than sculptural form or seductive parkland. I'd hoped—actually, I'd assumed—that some or all of the architects would deliberately violate the program. They'd propose some alternatives. That would bring pressure on the LMDC and its parent organization, the Port Authority. The Authority, which is largely controlled by New York's Governor Pataki, could then exercise some political muscle. It could break the leases and open the door to some fresh questions. Such as: What would be a good downtown neighborhood for our own time, now in the 21st century? What is genuinely new about the world that is evolving, and how should urban design respond to it? What are the virtues of traditional urbanism that we should be sure to hang on to? Instead, both in program and in design, the architects and the LMDC are rehashing the late 20th century.

Part of what seems to be driving the current zeal for a glorious and novel skyline is a concept that I thought had long since been put to rest by the philosopher Karl Popper and other thinkers. This is the belief that architecture must serve some emerging zeitgeist, that it must be midwife to a future that is struggling to be born. For those who embrace such a religion (which is what it is), it is helpful to remember that anything new will soon be old, and that it won't be either better or worse for being so. Architecture isn't about forward- or backward-looking ideas. It's about good ideas and bad ones. Piling a gargantuan commercial monoculture on this site may not be one of the good ones. Whether it is or not, the fact is that the question hasn't been investigated. The LMDC has taken over an old program that never



A sketch by Libeskind shows the retention of the "bathtub" wall around the old WTC site, with new buildings set along an angled axis.

Contributing editor Robert Campbell is the Pulitzer Prize–winning architecture critic of The Boston Globe.

worked well, added some tchotchkes, and called it a day. Why hasn't it seized the opportunity to reconsider the future of the WTC site not as an isolated entity, but as a piece of the redevelopment of Lower Manhattan?

I'm well aware that none of the architects regard their designs as finished proposals. They had only 11 weeks to tackle an enormously difficult problem. It's safe to say that whatever eventually emerges won't resemble any of these flashy skylines. The LMDC will pick a team—and all of the teams, certainly, are competent—and only then will the team get down to the actual work of design. Maybe then they'll finally challenge the program, which, after all, is something any creative and responsible architect normally does. Think of these proposals as marketing moves. They're gaudy diagrams to catch the eye. But as diagrams, most of them are a little scary. They're as puffed up with their own egos as they are contemptuous of the older city around them. And speaking of ego, it's amusing to report that one competitor pasted paper over its office windows so no one could steal the genius ideas being fomented inside.

I CONFESS TO BEING SEDUCED BY SOME OF THE DESIGNS AS PURE ARCHITECTURE. BUT THEY'RE FANTASIES.

Libeskind's scheme

All that said, though, I confess to being seduced by some of the designs, viewed as pure architecture. They're fantasies, but they're compelling fantasies. Fantasies and utopian proposals, of course, have their place in the history of architecture, although that isn't how they're being billed in this case. My personal favorite is the one by Daniel Libeskind, designer of the Jewish Museum in Berlin. Libeskind makes two superb moves. He leaves the excavation untouched: the so-called "bathtub," 75 feet deep and lined with the old concrete retaining walls that function as dams to keep out the water of the Hudson River. He proposes this raw excavation as the site for a future memorial to 9/11. It is a setting with the grim vacuity of an Anselm Kiefer painting. Above this space, he cantilevers a crystalline glass memorial museum. On the rest of the site, he arranges a family of towers that look like shards of glass. They rise in a spiral to a green garden at a height of 1,776 feet. It's all quite wonderfully beautiful. It's also totally impractical. How do you maintain a vertical garden inside a slim glass spike a quarter mile up in the air? But as an image to bear in mind, as a sort of Oz-like, unattainable ideal, Libeskind's design is valuable. Despite its great height, it would carry the pincushion skyline of Manhattan to a climax, instead of overwhelming and trivializing it, as the old Twin Towers did and the other new schemes do. I wish the other equally impractical designs shared Libeskind's deft sense of form.

It's only fair to note, as everyone has, that one scheme, the Peterson/Littenberg one, does lack ego gestures. Like the others, it fails to challenge the banana-brained program, but it succeeds in distributing that program on the site in a modest, sane, and even conventional manner. Although I wouldn't particularly mind seeing it built, I agree with those who feel that something more is called for. That something is not a big show-off idea, not an Everest of verticality, not tired futurist cartoons. What is called for is a sense that an opportunity has not been lost to think long, hard, and freshly about the real issues of the city at the beginning of the 21st century. ■

From the roof of city hall to rows of bungalows, Chicago goes green

Correspondent's File

By John E. Czarnecki, Assoc. AIA

Chicago, best-known as the City of Big Shoulders and the Windy City, is now making strides to become one of the "greenest" cities. Under Mayor Richard M. Daley, Chicago has initiated a number of pilot projects in the past four years to demonstrate how it can conserve energy, build new sustainable structures, and retrofit existing buildings to be more environmentally friendly.

Much of the capital for the city's green initiative comes from a 1999 $700 million settlement with utility Commonwealth Edison (ComEd) in an arbitration case. The settlement required ComEd to undertake projects designed to meet Chicago's electrical power needs in an environmentally sound manner. The city's department of environment (DOE) has guided many of the projects, in conjunction with ComEd.

Since 1999, the city has used the Leadership in Energy and Environmental Design (LEED) green-building rating system as a guide for competitions, adaptive reuse projects, renewable energy installations, and evaluation of prototype police stations and libraries.

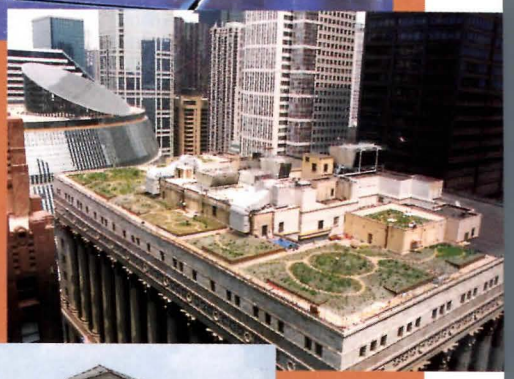
Chicago has a goal to get at least 20 percent of its power from renewable sources—solar, wind, and landfill gas-to-energy—by 2006. In terms of wind power, the city is actively pursuing purchasing a wind farm or taking an equity stake in one.

The city has entered into the Chicago Solar Partnership with a number of organizations, including British Petroleum, Chicago Public Schools, and ComEd, to install photovoltaic panels on a number of buildings, as well as to "make the Chicago Public Schools the largest school-based solar-energy network, and a leader in environmental-technology education," according to the partnership. Solar panels have been installed on the roofs of six of the nine major Chicago museums as well as many Chicago Public School buildings. The panels installed in June 2001 on the Field Museum of Natural History have an average annual electrical output of 53,200 kilowatt hours, and those on The Art Institute of Chicago (pictured, top right) have an average annual electrical output of 56,357 kilowatt hours. The power generated by the panels is fed back into the city grid.

Another project, the Chicago Urban Heat Island Initiative, has been established to reduce urban air temperatures, ameliorate the effects of dark surfaces, and reduce pollution. More than 60 percent of Chicago's rooftops are dark and absorb and trap heat emitted from the sun. This phenomenon—an Urban Heat Island—increases urban temperatures 6 to 10 degrees Fahrenheit over rural temperatures. To lessen the effect, the city is beginning to replace asphalt in alleys with lighter-colored paving, construct light-colored roofs, and install rooftop gardens.

The most widely publicized Chicago rooftop garden—Chicago City Hall (pictured, middle right)—has more than 20,000 plants on 20,300 square feet of roof space. Planted in fall 2000, 95 percent of the vegetation survived the first winter. Designed for low-maintenance plants, the planted portion of the roof has performed admirably and draws a striking contrast with a portion of the same building's roof, over Cook County offices, that has a black-tar surface. On one of the hottest days in 2002, the DOE says the surface temperature was 86 degrees Fahrenheit in the planted areas and up to 168 degrees on the black-tar surface. The average daytime air temperature was 90 degrees above the City Hall garden compared to 102 degrees above the black-tar roof.

The city has spread its green influence from rooftops to the neighborhoods, as well. The Chicago Green Bungalow Initiative has begun



Chicago has gone green with photovoltaic cells on the roof of The Art Institute of Chicago (above), a green roof on city hall (right), and the Green Bungalow Initiative (below).

as a demonstration of sustainable techniques to renovate and landscape bungalows, with partners including the city's DOE and department of housing and the U.S. Department of Housing and Urban Development. The 6400 block of South Fairfield has been selected by the city as a model block for the initiative, and four homes on the block have been renovated to be energy efficient, with features including solar photovoltaic panels, new furnaces, tankless hot-water heaters, and new insulation throughout.

Perhaps the best and most visible Chicago example of sustainable adaptive reuse of existing infrastructure is the Chicago Center for Green Technology (pictured, top right). A 1952 West Side foundry, the building has been dramatically renovated for the Chicago DOE as an office building by Chicago firm Farr Associates. The $5.4 million renovation was completed in summer 2002 with 37 percent recycled materials, both a green roof and rooftop photovoltaic panels, high-performance windows with shading devices, and elevators that run on vegetable oil. The brownfield land in back of the building has also undergone a $9 million cleanup.

With installation likely to begin this year, Chicagoans will soon be well-informed about sustainability when they see a number of kiosks in city parks designed by OWP/P Architects for the Chicago Park District and the Exelon Corporation. Each information kiosk (pictured, middle right and bottom) will showcase photovoltaic technology, have a map of the park that it is in, and text about photovoltaics, solar energy, and alternative energy sources. With the kiosks, the city recognizes that an informed citizenry will help further Chicago's green initiatives. ■

Chicago's green initiatives include the Chicago Center for Green Technology (above) and kiosks (left and in the photomontage below) that will be in Chicago parks.

For and about the new generation of architects

archrecord2

FOR THE EMERGING ARCHITECT

archrecord2 has been around long enough now (the section is a month shy of its second birthday) that designers who have been featured here are turning up in other parts of the magazine, or in other magazines altogether. This month, archrecord2 celebrates its alumni's success with two repeat performances: one from a Colorado firm that designed a House of the Month that appeared on architecturalrecord.com, and one prequel to next month's Design profile.

DESIGN

Going modern in the land of antlers

The members of Studio B, a group of designers based in Aspen, Colorado, want to buy the building in which the firm is based, a warehouse space on the edge of town. When the transaction finally goes through (and according to Scott Lindenau, Studio B's principal, the current landlord is encouraging the deal), the firm plans to transform its space into a series of intersecting geometric volumes. The open work space of the office would be preserved, with all of the designers (six at the moment, with a seventh due to start this month) within shouting distance of each other.

This planned space makes an apt metaphor for the collaborative working style of Studio B, which Lindenau founded in 1991. "When you have an open studio where everyone collaborates, it really encourages creativity," Lindenau said. He likened Studio B's working style to an architecture school's design studio, with the same atmosphere of collaboration, late-night jocularity, and shared purpose.

"Scott's our leader," said Derek Skalko, a member of the firm, "but we all do a little bit of everything, and we all know where everything is."

Studio B's collegiate atmosphere actually includes the classroom, since Lindenau requires that everyone in the studio take two or three classes per year, which Lindenau pays for. The firm's Web site (www.studiobarchitects.net) even exhibits the nonarchitectural artwork of studio members.

Lindenau also covers about half of the cost of the firm's annual two-week sabbatical. The whole office closes down, and everyone travels together, drawing and painting as they go. In 2001, the group went to Berlin and Prague; in 2002, they split their time between Spain and Morocco; and the spring 2003 trip will take the group to Helsinki and St. Petersburg.

Such official beneficence would lead observers to conclude that Studio B has a history of financial success, which seems odd considering Aspen's tradition of conservative architecture and Studio B's distinctly modern bent. Lindenau, though, seems to have timed the studio's existence perfectly.

"A lot of the people moving to Aspen now are younger wealthy people who care about modern design," Lindenau said. He sees the studio's work in part as

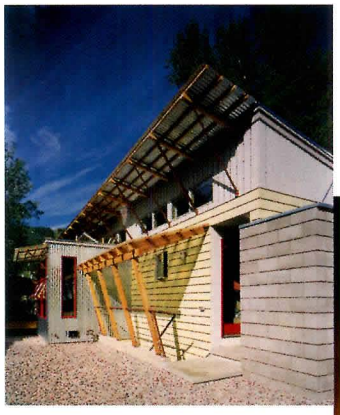
"The Hive," Studio B offices, Aspen, Colo., 2002–2003
Designed as a renovation of the firm's own offices, a warehouse near downtown would become an open, multilevel work space, modeled around the studio's collaborative working style.

Del Balso Residence, Aspen, Colo., 1999–2000
Also known as "Conundrum House," this house's simple palette of sandblasted concrete and mahogany siding allows the building to merge with the natural beauty of the forested site.

(continued from previous page) a reaction against what he calls, "the really criminal architecture of the West, with its sloping roofs and antler chandeliers."

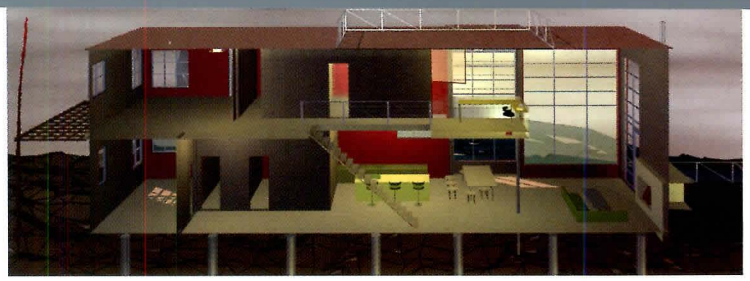
Lindenau, who grew up in the upper Midwest, came to Aspen partly by chance. He drove cross-country in the mid-1980s interviewing for jobs, and found one in Aspen. When he left to start his own firm, he stayed in town. "Sometimes I miss living in an urban area, where we could work on larger-scale projects," he said. "But I always felt that if we remained true to our convictions, then the work would follow."

His first break was the design for his own home, a significantly modified, double-wide trailer on a lot in the Smuggler Trailer Park. "In Aspen, which is one of the most expensive places to live, our only option was a trailer," he said. "My wife and I bought it for $55,000. Now it's worth $1 million."



Lindenau's million-dollar trailer wound up in several magazines, and Studio B has had a solid residential design business ever since. Lately, the firm has taken on some larger projects, including a low-cost housing project (featured as House of the Month, September 2002, on www.archrecord.com), and a master plan for Aspen's civic center. So despite Lindenau's occasional qualms, Aspen seems to be working out just fine for Studio B. "I feel very fortunate to live in a place where we can get work done," Lindenau said, "and where it's sunny every day." *Kevin Lerner*

Go to architecturalrecord.com/archrecord2 for more of Studio B's projects, including a link to the firm's appearance in House of the Month.



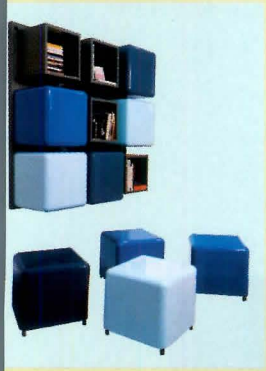
Bergen + Czech Residence, Aspen, Colo., 2002–2003
An entry ramp slopes through this house, eventually becoming a cantilevered deck with views down the adjacent creek. The house rises on pilotis to protect it against possible flooding from the creek.

Lindenau Residence, Aspen, Colo., 1996–1997
Studio B earned some early recognition for this modified trailer home, in which Lindenau found new applications for standard lumberyard materials.

WORK

Building furniture to stay afloat

Sometimes, when an architectural firm is just starting out, the completion of actual architecture relies on the kindness of friends: friends who are willing to take a risk on unproven designers, but who are, unfortunately, unwilling to pay.



Freecell, a young firm that is based in Brooklyn, New York, found a way to get through this start-up period, and even earned some early press coverage in the process. Their tractor chair, a desk chair fashioned from a seat intended for use on industrial machinery, has been featured in several publications and is available for sale on the firm's Web site (www.frcll.com).

Freecell now produces a range of furniture, including the "Seat Storage" system (at left), which functions as seating and shelves; and the Rolling Office Partition (above).

The four members of the firm fabricate the furniture in their studio, where they also build some of their architectural work, such as an apartment with a Murphy bed that they have been designing and building, off and on, for several years. The client is one of the firm's pro bono cases, so this project gets attention between those of paying clients.

Freecell's architectural work, including this apartment, will be featured in archrecord2 in the March issue of ARCHITECTURAL RECORD. More of the group's furniture design can be found online. *Kevin Lerner*

To see more of Freecell's furniture, go to architecturalrecord.com/archrecord2

On the Web, archrecord2 maintains an archive of all of the previous design profiles, career articles, and lifestyle features that have appeared in this space. Find them at **architectural record.com/archrecord2**, along with our monthly forum.

Getting your firm ready to green up its architecture

Practice Matters

By Dan Heinfeld, FAIA

Although most architects agree that making their buildings green is the right thing to do, for years those who really pushed sustainable design were thought to be working on the fringe. Now, green is no longer a novelty, but a fact of life for architects.

One question that seems to confront all practitioners is whether their firm is ready to change its design approach from one that tacks a few green features onto its buildings as an afterthought, to one that creates buildings that are sustainable in a truly holistic sense. It can be a huge change for architects and clients alike.

Some of the objections to doing green design are easy to anticipate. Cost usually comes up first. Many people think of green buildings as prototypical and assume they are too expensive for "real world" use. This is less true today than it once was. One reason that green buildings are more affordable these days is that prices for highly efficient materials, systems, and fixtures have been dropping. Many strategies for improving a project's sustainability can be added with little additional cost if they are added early enough to be part of the "genetic code" of the design.

Skeptics who joke that buildings must be covered with diagonal wood siding to be green might be surprised to learn that the Premier Automotive Group building (photo below) designed by LPA, in Irvine, California, received the U.S. Green Building Council's (USGBC) comprehensive Leadership in Energy and Environmental Design (LEED) certification. This third-party validation process establishes that a building meets comprehensive performance standards for sustainable design.

A trip to the USGBC's Web site will show that the council has so many influential professional and industry members, and that so many communities are now providing incentives for architects and builders who use green building strategies, that it is unlikely sustainable design is merely a passing fad.

Getting started

There are some simple steps that you can take to help your firm go green. Begin with training. It can be obtained through the USGBC's LEED workshops as well as at many other continuing education venues. Invite your architects to become LEED accredited. Make discussions on sustainability a priority at staff meetings and invite experts on green building for in-house seminars.

Next, add reference materials to your firm's library. The USGBC's *Sustainable Building Technical Manual* and the *LEED Reference Package*, which contains a complete set of tools for LEED design, certification, and professional accreditation, are excellent places to begin. Most professional book publishers are now offering books on sustainable architecture, and there is an abundance of publications from product manufacturers.

Third, true sustainability is not something an architect can overlay onto a project at the end of the design process. An integrated design process looks at the development of a project from the time that ground is broken throughout its entire life cycle. It demands the commitment of consultants. The budgeting process should be comprehensive enough that opportunities for making all parts of a project sustainable can be identified early and money can be shifted where it will best meet the project's green goals. A comprehensive analysis would consider the benefits of trading a costly and environmentally insignificant feature—a granite facade or showy lobby, for example—for extensive site landscaping that would shade the building from the hot summer sun, reduce heat islands in a parking lot and on walkways, and increase the overall beauty of the project. The firm I work for believes in this approach so much that we have created value-engineering software to analyze green alternatives to standard systems and building materials.

The LEED-certified Premier Automotive Group headquarters building in Irvine, Calif.

Finally, involve your client in every green-design decision. Client resistance usually evaporates when you can demonstrate that making a project sustainable will not incur a substantial increase in cost. Few clients are likely to say, "Give me the environmentally insensitive building over the sustainable one," any more than they would purposefully select an ugly design over an attractive one.

Once your firm has built some green projects and you are able to demonstrate the firm's green-design skills, you will have a track record you can make a part of your marketing program. Many firms that have already made the leap to green are often profiting handsomely from it. These firms also have an advantage in recruiting and retaining employees. Young professionals who feel strongly about the environment and really want to make a difference will be attracted to your firm if you can demonstrate a commitment to environmentally responsible design.

The bottom line

Perhaps the most important reason to do green architecture is that it seeks real solutions to problems involving energy use, water management, and indoor air quality. Architects whose ambition is to *design buildings* that will stand the test of time can do no better than to develop architecture based on the principles of sustainability. ■

Dan Heinfeld, FAIA, is a LEED-accredited professional and partner in charge of design for LPA, in Irvine, Calif.

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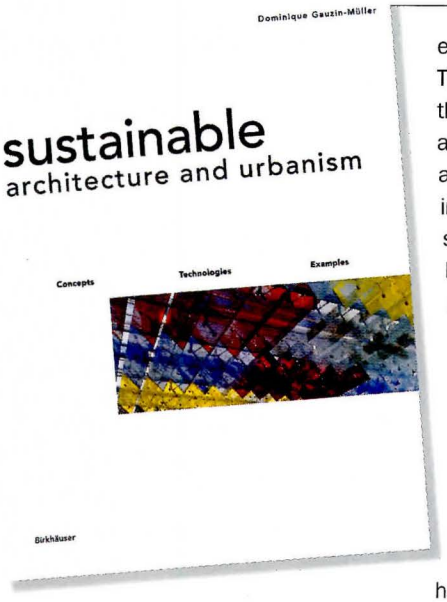
Resources in print for architects and designers who want to build green

Books



Sustainable Architecture and Urbanism: Design, Construction, Examples, *by Dominique Gauzin-Muller with Nicolas Favet. Basel: Birkhäuser, 2002, 228 pages, $70.*

The subtitle of this book could have been "learning from greener Europe." The volume is an elegant overview of issues in sustainable design and their application to mostly small-scale projects in Europe. The author sets the context with a discussion of mounting worldwide attention to environmental degradation and resource limits. Her references to the Kyoto Accords and other international agreements are a reminder of the disconnect between America's current political stands on environmental issues and those of Europe and elsewhere.

Gauzin-Muller describes trends in environmental architecture, including the low-tech/high-tech dichotomy; the "middle way" of environmental humanism; a social and democratic environmentalism focused mostly on low-cost housing; and "environmental minimalism," the recent breed of high-performance, low-energy projects.

Some sections are a bit dry and yet useful. For example, Gauzin-Muller wades through several European rating and assessment tools (including the U.K.'s BREEAM, Holland's DCBA, and France's HQE) to compare and contrast these approaches. Unfortunately, the U.S. Green Building Council's LEED is not mentioned, depriving American readers of what would be the most pertinent comparison.

Six European communities of various sizes serve as urban design and development case studies. Their efforts are progressive, complex, and multifaceted; housing, transit, open space, and other issues seem to have received equal emphasis. The communities' successes are encouraging. But it would have been useful to learn more about the rough spots they faced along the way—policy barriers, political issues, or other stumbling blocks.

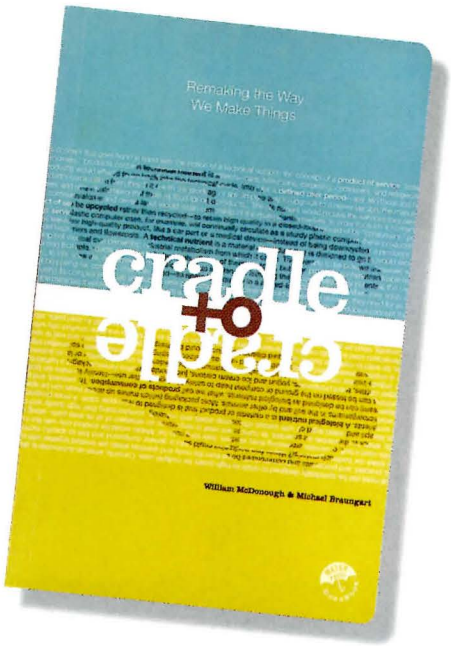
Gauzin-Muller shows and concisely describes 23 architecture projects, from single-family homes to office buildings. Many are small, chosen because they offer sustainable solutions that were executed economically and can be replicated. This collection of work goes beyond the Euro starchitects (though some are mentioned elsewhere). The approach makes the work more inspiring, showing that holistically sustainable projects are achievable by "regular" architects working on regular projects.

Stylistically, the architecture fits the category of sustainable design that emphasizes humanism and Minimalism. Natural light is a dominant theme, and the work has a strong sense of approachability in both form and materials. Elegance and poetry are in healthy supply, although readers looking for the dramatic new green aesthetic might find the architecture too quiet. *Kira L. Gould*

Cradle to Cradle: Remaking the Way We Make Things, *by William McDonough and Michael Braungart. New York: North Point Press, 2002, 193 pages, $25 (paper).*

Cradle to Cradle begins with that all-too-familiar gloomy forecast for our planet that could cause the reader to passively wait for the end, which, by all accounts, appears to be moments away. Everything that is manufactured and necessary for human comfort and production is toxic. Fabrics, carpets, appliances, computers, and toys contain lead, mercury, hazardous dyes, acids, chlorinated and brominated substances, just to name a few. Furthermore, in order to produce all this toxicity, we have squandered our resources and overheated the planet and are now suffering the consequences.

The prevailing moral reflex is to blame our reckless embrace of the destructive tools of progress. Fear and loathing are focused squarely on technology. From there, in a collective paroxysm of denial, we search for antitechnology measures and adopt recycling and conservation as the path to restoration and redemption. Neither will work, say the authors—architect William McDonough and his business partner, the chemist Michael Braungart. In fact, both approaches are illogical. Less is not more. Using less energy does not produce more natural resources. Using less just prolongs the inevitable. And the authors don't feel any more positive

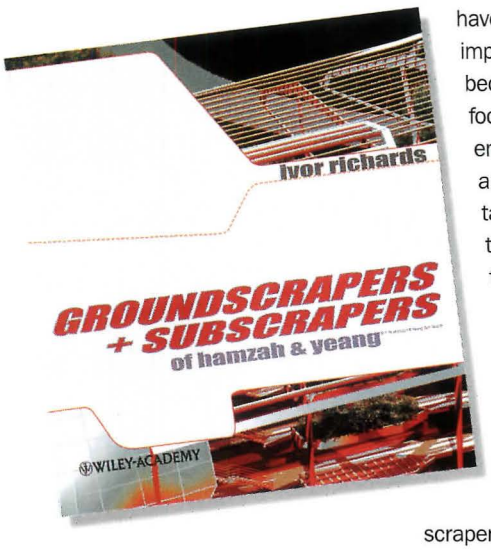


Books

about recycling, correctly renaming the well-intentioned, albeit feeble, activity "downcycling." After all, the products are still going to end up in the dump eventually.

Although they tend to repeat themselves by the end of this manifesto, McDonough and Braungart have some radical ideas. Technology is not the culprit; in fact, human invention and ingenuity are what's going to save the planet. By creating products that return harmlessly to the earth ("biological nutrients") and by manufacturing materials that continue to circulate without degrading ("technical nutrients"), we will create a regenerative system, called "eco-effectiveness." Although there are no formulas, the authors offer scientific principles and issue intellectual challenges. All of them can be reduced to a single paradigm: Reinvent in order to replenish. For instance, don't design a car (or a house) that releases minimal or even zero harmful emissions, design one that releases positive and useful emissions. Easier said than done, but the logic is beautifully simple. *Sara Hart*

Groundscrapers + Subscrapers of Hamzah & Yeang, *by Ivor Richards. New Chichester, U.K.: Wiley-Academy, 2001, 260 pages, $65.*



This book presents some groundbreaking ideas about ground-healing architecture. It shows how we might design and build large buildings in a way that is in harmony with nature. It explores the notion of low-rise ecological structures as seen in the work of Malaysian architect Ken Yeang, whose firm Hamzah & Yeang has pioneered climatically sensitive high-rise design.

"Groundscrapers" are those buildings that "touch lightly" upon the ground, doing a minimum of damage to the ecological systems found on the earth's surface. "Subscrapers" are buildings that live underground, their roofs becoming part of the landscape and converting the excavated site into a natural habitat that may never have existed.

Groundscapers and subscrapers reach out into the landscape as mid-rise buildings that potentially have a greater environmental impact than skyscrapers because they have much larger footprints for the space they enclose. Described as the antithesis of the environmentally responsive skyscrapers that Yeang is famous for, the designs and ideas presented in this book are not antithetical, but rather complementary. While Yeang's skyscrapers are models of energy efficiency and sustainable design, groundscrapers and subscrapers can mend incisions made by building on the land.

After September 11, 2001, many asked if we should ever build skyscrapers again. While today such questions seem an emotional overreaction to the moment, Yeang's architecture gives us a glimpse of what that idea might actually mean, and how a more environmentally responsive architecture might be achieved by building low.

As Yeang explains the princi-

ples of groundscraper and subscraper design, the critical element turns out to be linked and continuously vegetated planting zones, "ecological corridors."

These corridors help to balance the biodiversity of buildings, which traditionally are intruders in an area's flora and fauna. Yeang sees such ecological corridors as restorative, bringing back the biodiversity of brownfield sites and ecologically challenged areas that suffer from previous development. He conceives of buildings as contiguous with the landscape, alive with greenery growing over, through, and around them.

As Yeang explains: "This design endeavor becomes one of the creation of new ecological habitats, which has previously been nonexistent." The lesson of groundscapers and subscrapers is that, in Yeang's words, "by appropriate design, we can actually contribute positively to the biosphere's ecosystems by enabling the increase in the biodiversity of the locality."

By reintroducing natural environments in a world that is becoming increasingly artificial and paved-over, such buildings have the potential to improve the quality of the microenvironment and decrease "heat-island" effects.

Ultimately, Yeang sees these buildings as not only oases in the city, but links in a green chain, covered in grass and flowers, that extends in all directions throughout the city, blending built form with land form. In such a world, architecture and nature not only coexist, but are symbiotic—twined together in a green embrace.

The bulk of the book presents 25 projects for sites throughout Asia and Europe that explore these ideas and premises in built form. Some have trees thriving inside, others are crowned with fields of green and insert themselves seamlessly within the landscape. Yeang's architecture is not only ecologically sensitive, but (as this book shows) formally fascinating and exemplary.

Michael J. Crosbie

Sustainable Architecture White Papers, *edited by David E. Brown, Mindy Fox, Mary Rickel Pelletier. New York: Earth Pledge Foundation, 2001, 324 pages, $17.*

With energy a front-burner issue for the first time since Jimmy Carter donned his cardigan, this 4-by-7-inch volume of essays on sustainable design is timely. Among the questions tackled by the Earth Pledge Foundation's little handbook are: If we are to make better use of our limited supply of water, wood, energy, and land, how do we build, now that there are six billion of us? How do we make zero-emission houses? How do we create structures that can eventually be harmlessly reincorporated into the land?

Contributors to the volume include William McDonough ("Eco-Effectiveness: A New Design Strategy"), James Wines ("The Art of Architecture in the Age of Ecology"), the late Samuel Mockbee ("Building Dreams: An Interview with Samuel Mockbee"), Harry Gordon of Burt Hill Kosar Rittelmann Associates ("Sustainable Design Goes Mainstream"), Robert Watson and Adam Cox of the Natural Resources Defense Council ("The Eco Office: Tomorrow's Workplace, Today"), and more than 50 others.

Some of the essays are brilliant, some are not. They are grouped under the headings of practice, building community, public works, homes and schools, products and materials, and resources.

Taken together, the reports address sustainability as incorporating social, institutional, and spiritual aspects of life. Samuel Mockbee, who was founder of the Auburn Rural Studio, writes, for example, "The smart architect thinks rationally about a combination of issues including sustainability, durability, longevity, appropriate materials, and sense of place. The challenge is finding the balance between environmental and economic constraints."

Andrea Oppenheimer Dean

In Washington, a showcase for sustainability inspires by looking ahead, not back

Exhibitions

By Deborah Snoonian, P.E.

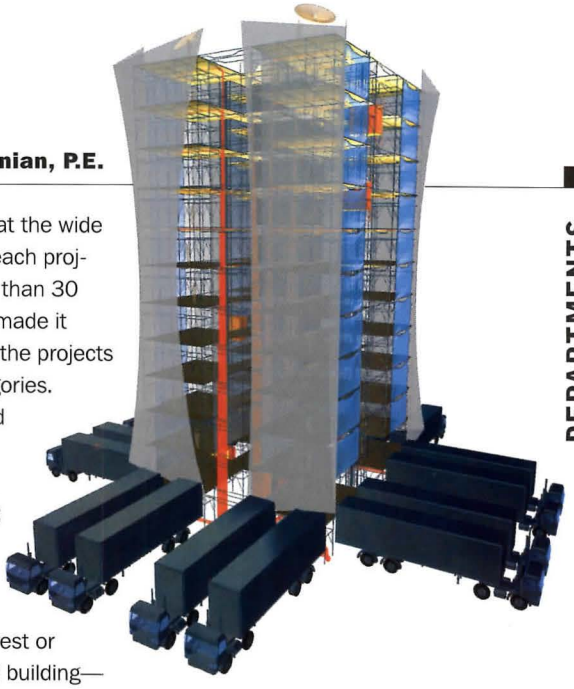
Big & Green: Toward Sustainable Architecture in the 21st Century. *Curated by David Gissen, at the National Building Museum, Washington, D.C., through June 22, 2003.*

It begins outdoors. A wind turbine, 8 feet in diameter and perched atop a 41-foot pole, lurks on the front lawn of the National Building Museum in Washington, D.C. A placard explains that the turbine—which looks like a giant pinwheel—can harness enough energy to power the average American home. "Putting the turbine outside is a way to introduce our visitors to the exhibition material, at a scale that makes sense in their everyday lives," said Howard Decker, the museum's chief curator.

Big & Green is the first major showcase for large-scale, environmentally responsible designs from around the world. (At press time, the exhibition had not yet opened, but the full-color catalog [Princeton Architectural Press] as well as computer renderings of the gallery installations were provided for preview purposes.) The show comprises 50 built, in-progress, and unbuilt works presented in sketches and photographs, models and renderings, mock-ups and interactive displays.

While sustainable design solutions are often explored for small-scale buildings, like single-family homes or service structures in undeveloped areas, the show's curator, David Gissen, decided to focus on recent large projects "because that's where the stakes are highest." Indeed, the projects shown constitute something of a This-Is-Big-Green-Building-Today compendium. The oldest project dates to 1980 (the Best Products Company Forest Building, in rural Virginia, by James Wines's firm SITE Projects), but most of the completed work is less than five years old.

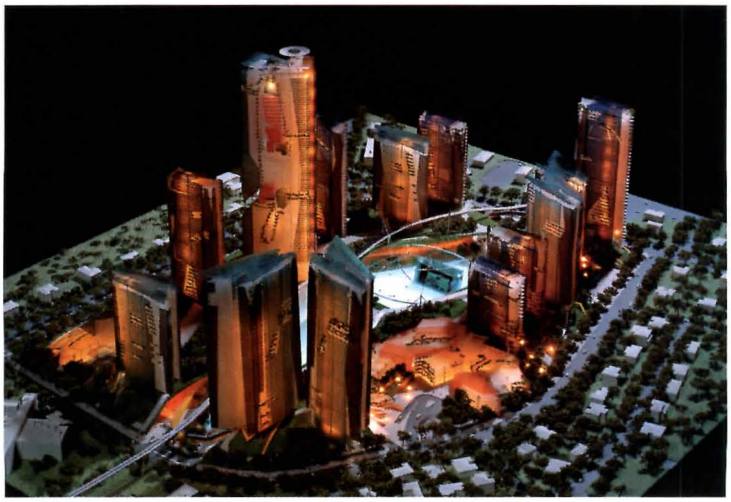
Gissen gathered a small group of advisers to help select the projects, which were assigned to one of five categories based on their primary environmental benefits: energy; light and air; greenery, water, and waste; construction; and urbanism. This turned out to be a simple way to organize the exhibition catalog, but don't expect to find the same one-to-one correspondence at the museum. "We moved some projects around to different categories because we discovered more information about them after the catalog went to press," said Decker. He added that the wide variety of media for each project—there are more than 30 models on display—made it challenging to group the projects in their original categories. Recyclable cardboard tubes are used as a structural element in the exhibition design; if successful, they will make visitors feel like they're walking through a forest or a partially completed building—both places in transition, as green architecture itself is right now.



FTL's portable 12-story building can be erected on-site in two weeks.

As for the building types and styles, this show is an architectural bouillabaisse. There are skyscrapers and master plans, sports arenas and apartment buildings. "This is not a theoretical exhibition," stressed Decker. The same can be said of the entire oeuvre of green projects, especially commercial and institutional buildings: Although common features include indoor atria, roof gardens, and solar panels, the forms these solutions take in different projects and locations resemble each other about as much as a Volkswagen Beetle resembles an actual insect.

That's not to say themes don't emerge. Most of the projects appear in dense urban areas (not surprising, given their scale). Non-American work is represented heavily in the mix (31 of the 50), and a disproportionate number of the U.S. projects are in New York and California, where lawmakers have created incentives to reward developers for sustainable building. The overall aesthetic is more high-tech than woodsy, from the sleek crystalline towers of the Gannett headquarters in McLean, Virginia, by Kohn Pedersen Fox [RECORD, May 2002, page 212] to the rocketlike

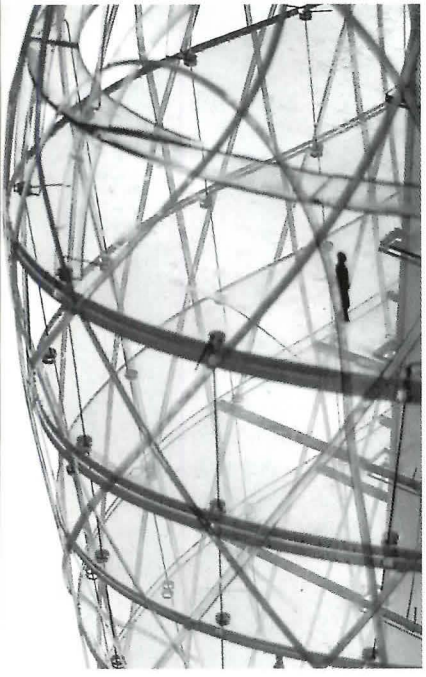


T.R. Hamzah and Yeang's dense high-rise campus for a Malaysian university includes a technology center, labs, convention space, and student housing.

Foster and Partners' Swiss Re headquarters in London will be completed in 2004.

Swiss Re headquarters by Foster and Partners, currently under construction in London.

Critics have posited that green architecture lacks panache, and in this exhibition one finds reason to side both with and against them. The award for biggest wow-factor goes to Nicholas Grimshaw & Partners' retro-futuristic Eden Project, with domes that "bubble out of Cornwall's ruined landscape" [RECORD, January 2002, page 92]. Yet it's the theoretical projects that are the most appealing and intriguing: the Carbon Skyscraper, by



An MIT students' model of a light-as-air skyscraper is made of high-strength, resin-treated carbon fiber.

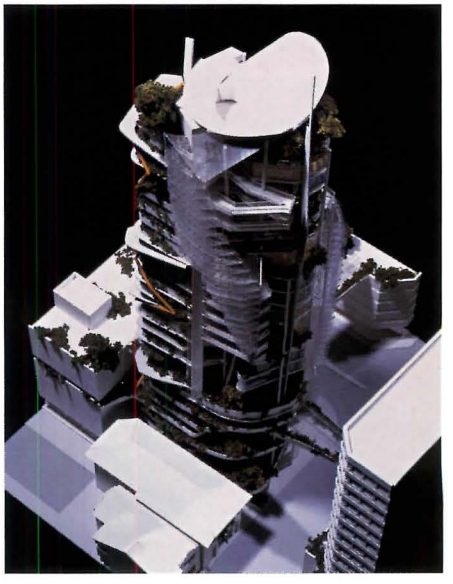
Peter Testa and his students at MIT; the Recyclable, Portable Fabric Skyscraper by FTL Design Engineering Studio; Richard Rogers Partnership's never-built study for a low-cost housing project in Korea. By and large, the American work—particularly the completed projects—is not of the same caliber. Call it bouillabaisse without the spicy kick.

Except for the omnipresent William McDonough, relatively few of the architects shown will be familiar to the general public. McDonough's much-hyped Gap headquarters in San Bruno, California, is featured, as is the Ford River Rouge Center, Albert Kahn's seminal factory complex in Dearborn, Michigan, where McDonough is adding roof gardens and landscaping to cleanse polluted runoff and wastewater. (This could be dubbed "project with the most ironic client," given the abysmal gasoline mileage of Ford's sport utility vehicles.) To those who follow green building, however, the designers represented will not surprise: Croxton Collaborative, Fox & Fowle, Kiss + Cathcart. Granddaddy of them all is Malaysian architect Kenneth Yeang, who coined the term "bioclimatic skyscraper" to describe his pioneering tall buildings that incorporate natural ventilation and vegetation [RECORD, March 1993, page 26; August 1998, page 81].

Many designers who appear in the show also served on its advisory council, and at first blush this might seem self-congratulatory at best and a conflict of interest at worst. But fussing over whose projects were chosen for *Big & Green* is an exercise in splitting hairs. Few clients demand this type of work right now, and a relatively small circle of architects respond to their needs. The work of these firms simply *is* the state of the practice. Whether other designers will take up this mantle for large projects remains to be seen, although the rising adoption of green building standards and environmental-protection mission statements by governments, universities, and corporations makes this seem inevitable.

As for the catalog, Gissen's introduction deserves points for its succinct history of green building. Well-honed essays introduce each of the five sections, and projects are given two-page spreads of images and a one-paragraph summary of their primary features—just enough to provoke interest. Rounding out the content are interviews with designers and a glossary of sustainable-design terms; these are nice touches, even if they appeal only to the most design-savvy. Sorely missed is the casual peruser's handiest shortcut—an index of all the projects with their locations and year completed or conceived.

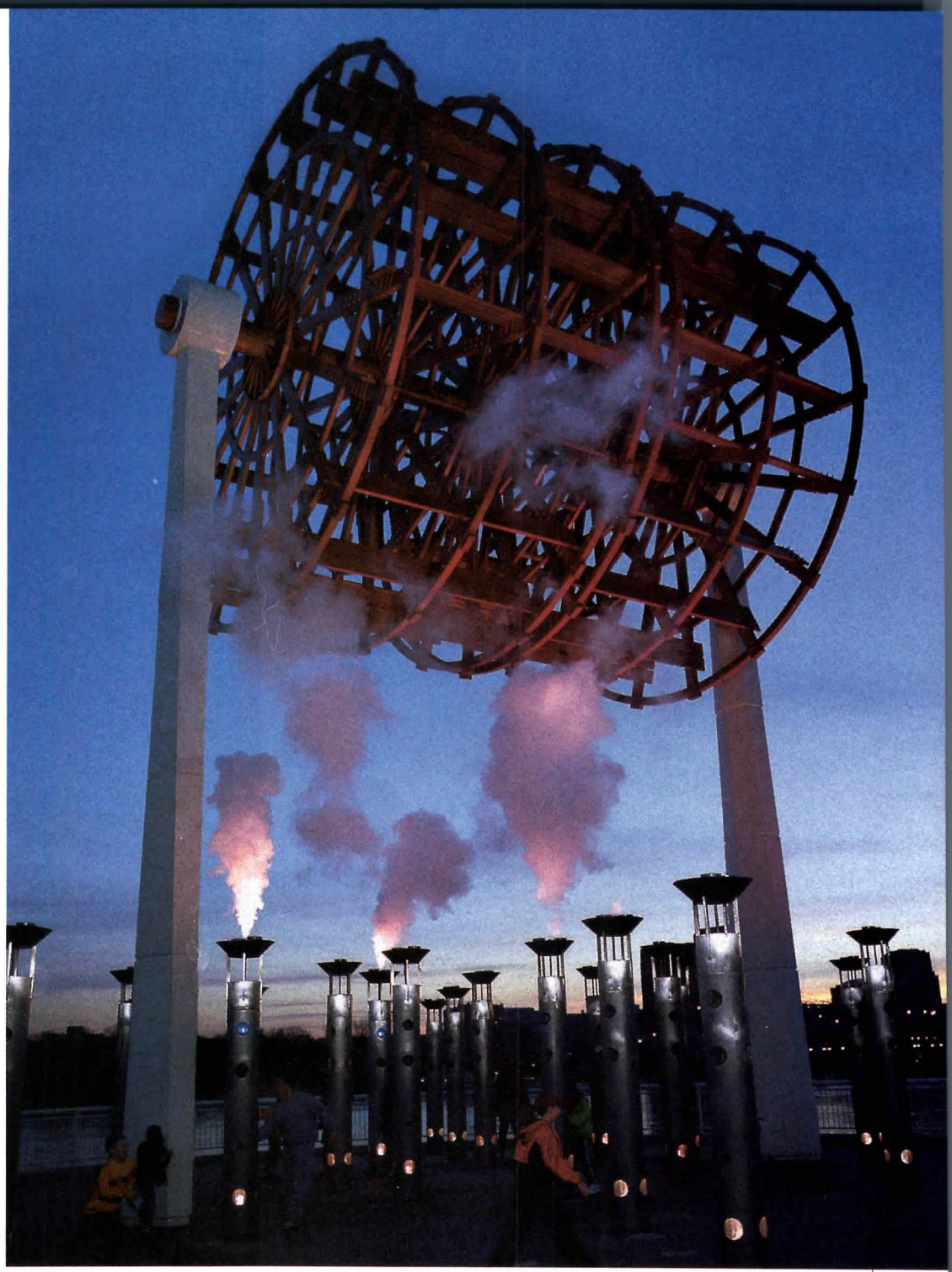
One important question that remains unresolved is, does size matter? Is there a point at which a project's sheer massiveness outweighs its environmentally friendly attributes? A new football stadium on the west side of Manhattan, designed by Kohn Pedersen Fox, would take up a huge amount of land and create thousands of gallons of runoff during storms—and would be fully utilized, on average, for about eight Sundays per year. But it's designed to power itself *and* add energy to the grid. This conundrum (possibly a moot point, since the stadium's future is uncertain) illustrates the difficulty of weighing the relative benefits and drawbacks of individual projects—something designers struggle with constantly.



The EDITT Tower, to be built in Singapore, has a high ratio of planted areas to indoor spaces.

We'll still build big. That's a certainty. But sustainable skyscrapers aren't. The strongest work in *Big & Green* is about possibilities, not realities. "We're looking at an architectural condition that's still evolving," Decker said. The exhibition's timing and venue could be seen as either propitious or beside the point, with the Bush administration, mere blocks away, dismantling a generation's worth of environmental regulation and deciding not if but when we will go to war against a major oil-producing nation. No matter what your politics, *Big & Green* brings together thought-provoking projects whose designers envision them coexisting with nature, not dominating it. ■

Snapshot



By Ingrid Whitehead

Senses work overtime to celebrate a bygone age

Nostalgia certainly ain't what it used to be. At least, not in Cincinnati, where celebrating the region's past—in particular, the steamboat era—is a full-fledged multisensory experience. As part of the National Steamboat Monument, Whistle Grove, an interactive instrument by artist Christopher Janney, provides visitors with a place to interact with a "living" monument.

Whistle Grove is a three-part construction consisting of a red, three-story paddle wheel and a plaque with an ever-changing riddle installed directly under the wheel. The structure contains 24 stainless-steel columns, and as a person moves among the columns, various steamboat sounds, such as a calliope, a steamboat whistle, voices of rivermen talking about life on the river, as well as steam jets housed at the top of each column, are triggered by photosensors. Texts on steamboat history are strategically placed among the columns, as are lights—some of which are triggered like the sounds. "Public art should work at both the scale of the city and the scale of the pedestrian," says Janney, who is trained as an architect and a jazz musician. "With Whistle Grove, I'm asking people to play with the city." ■

ost people don't see the forest for the trees when it comes to new construction. Indeed, everyone is so focused on nishing their own part that responsibility for the performance of the whole system gets lost. That's exactly why we eveloped knowledge-based integration. It's an approach designed to add value and reduce costs throughout the life a building. And it places all that responsibility squarely on the only shoulders strong enough to handle it. Our own.

How green buildings are smarte

By Deborah Snoonian, P.E.

Architects have always aimed to make buildings comfortable and safe, but various forces in effect today make these goals more pressing than ever. Over the past decade, the continued dwindling of natural resources, coupled with studies that demonstrate the adverse consequences of poor indoor air quality, have given rise to an increasing demand for building products whose manufacture, transport, use, and disposal safeguards both environmental and human health. Yet, though using green products is a critical step toward making buildings sustainable (see "What Makes a Product Green?" on page 173), in the long haul, slashing the power consumption of the built environment is what reaps the most benefits environmentally.

The current state of our built environment with respect to this last goal is a mixed bag. According to the Department of Energy, which surveys commercial buildings every four years (see map inset and graphs for more detail), the number of buildings in the U.S. has increased steadily since 1979 while total energy consumption has remained flat—suggesting we have found ways to make our structures more efficient. Yet buildings constructed after 1960 use more energy per square foot than older buildings, which contradicts this assertion. Suffice it to say that, on average, we've got a long road ahead of us—in the U.S., anyway.

But that road is being cleared of obstacles. The nationwide push to make buildings sustainable will hasten the efficiency of new buildings. In the past five years, cities such as Seattle, Chicago, New York, Arlington, Virginia, and many others have adopted green building guidelines and incentives for developers to build efficient structures using renewable power sources such as solar and wind energy. The U.S. Green Building Council has seen a fourfold increase in its membership since the mid-1990s and a growing list of projects undergoing certification. At the council's first national conference, in November 2002, in Austin, Texas (which attracted nearly 4,000 people, more than double the number expected), the workshops and presentations emphasized the merging of the practices of architecture and engineering to fashion buildings more holistically from the design phase forward. This was true of both new construction and retrofits, in which owners have invested in energy-management technologies for systems such as HVAC and lighting to automate energy savings and cut operating costs.

Once in a great while making a structure more energy-efficient can even have spectacular unanticipated benefits. For example, on September 11, 2001, a high-tech energy-management system (EMS) played a role in saving many lives. It prevented millions of dollars in damage to a building whose continued operation was crucial for safeguarding national security. That building was the Pentagon.

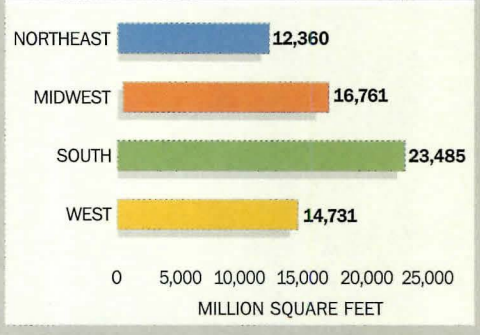
Inside the Pentagon's energy-management system

In the mid-1990s, Steve Carter, who holds the clunky title of real estate and facilities liaison to the $1.85 billion Pentagon Renovation program, was given a mandate: Reduce the energy bill of the Pentagon by 35 per-

HOW MUCH DO BUILDINGS CONSUME?

Every four years, the Department of Energy completes an exhaustive data-collection exercise known as the Commercial Buildings Energy Consumption Survey, or CBECS, which covers commercial buildings in the U.S. of more than 1,000 square feet in size. From this exercise, a dizzying array of data is spun forth, not only on building energy sources, consumption, and expenditures, but also on building size, location, occupancy, and many other factors. Combing through the data reveals a rich set of information about our built environment. A selection of data and trends is presented on these and the following two pages. For more information, visit eia.doe.gov/emeu/cbecs/contents.html.

DISTRIBUTION OF FLOOR SPACE BY CENSUS REGION, 1999



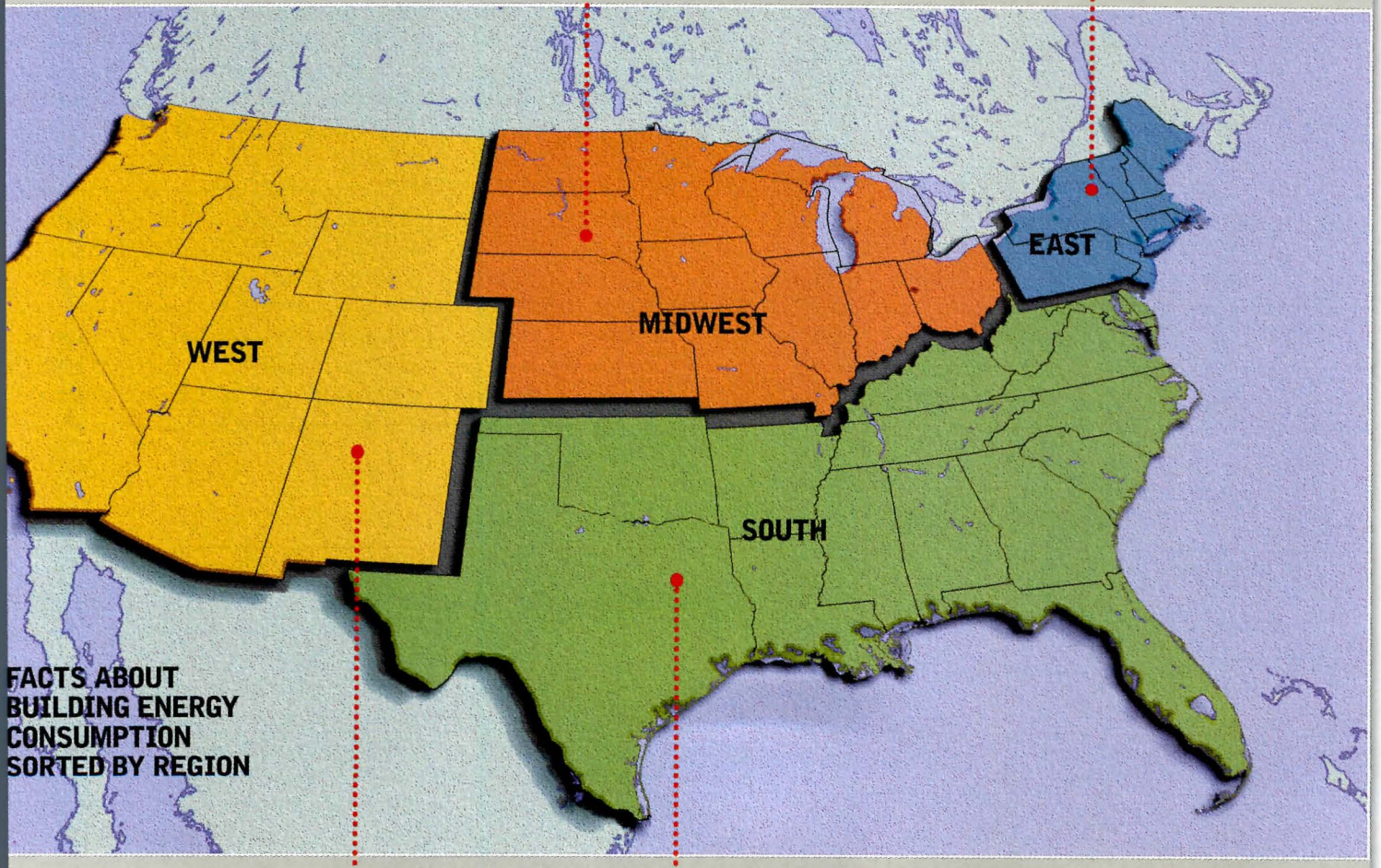
MAP: COOLMAPS DIGITIZED MAP IMAGE © 1995 WISDOM, INC.; CHARTS BY LEE GLYNN

nd safer

Energy-saving technology can have unexpected side benefits for building safety and intelligence. One case study shows us how.

Midwestern buildings weigh in between other regions of the country in building size, age, and energy consumption. They are ranked second in total energy consumption, but third in per-building and per-square-foot use of energy.

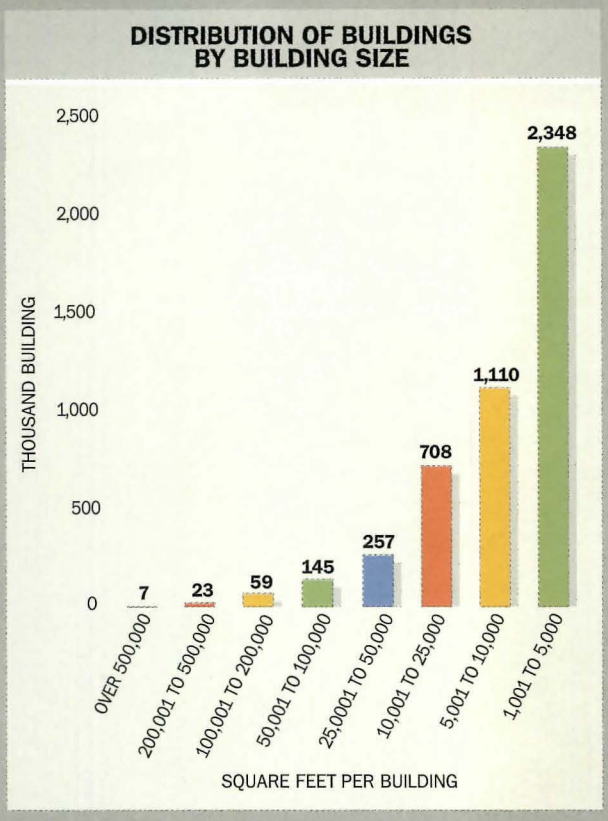
The densely populated East has the highest number of buildings constructed before 1959. The average commercial building size is 18,000 square feet, larger than elsewhere in the country. Its structures use the most energy per square foot.



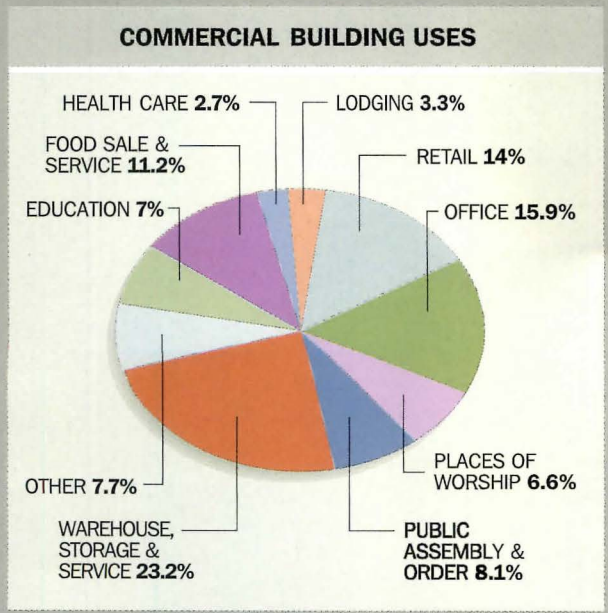
FACTS ABOUT BUILDING ENERGY CONSUMPTION SORTED BY REGION

The states in the West have buildings that are newer, on average, than in other parts of the country. Its buildings also consume the least amount of energy on a per-occupant basis, and only slightly more energy than those in the South on a per-building basis.

As the largest region in the survey, the South has the highest number of buildings and the largest amount of square footage. On a per-building basis, its buildings are the most energy-efficient of the four regions of the country.



Most buildings in the U.S. are less than 5,000 square feet in size. This is where the potential for decreasing energy use is greatest.



Over 500 mechanical equipment rooms are controlled by the Pentagon's EMS.

cent by the year 2010. Carter, an engineer, has worked at the 6.6-million-square-foot Pentagon for more than 17 years and knows its building systems as intimately as a chiropractor knows the spine. What Carter convinced his superiors to do was invest in a new energy-saving digital backbone for the Pentagon.

The primary feature of this backbone is an energy-management system that links together various direct digital control (DDC) technologies to automate the building's HVAC system and make it easier to monitor and manage. Included in the EMS is equipment such as sensors for air flow and temperature, as well as actuators that control the actions of fans, pumps, and motors. DDCs were first developed in response to the energy crunch of the 1970s. Today, all modern HVAC equipment is digitally controlled, and EMSs are a common element of large-building construction because they offer efficiencies in operation that can pay for themselves within two to three years, according to industry groups.

As the Pentagon is renovated section by section, the HVAC equipment will be upgraded in sections as well, with new, DDC-equipped components replacing the old, manually operated ones. When Carter was given his energy-savings mandate, renovation staff were preparing to make over the first section of the Pentagon, Wedge 1. He proposed something radical—while replacing that wedge's HVAC systems, why not

ON SEPTEMBER 11, AN EMS SAVED MANY LIVES AND PREVENTED MILLIONS OF DOLLARS IN DAMAGES TO THE PENAGON.

retrofit new DDCs onto the existing 55-year-old HVAC system in the other four wedges? And while they were at it, why not centralize the building's operations in a single location?

The price tag on his suggestions made them unpopular. "Nobody wanted to pay to put new controls on 55-year-old equipment, knowing it would all be replaced anyway during the renovation," Carter recalls of the resistance he faced. Still, he persisted, demonstrating that the investment would pay itself back rapidly in dramatically lower energy bills and adding that consolidating the Pentagon's operation in one location would streamline maintenance. In the end, his wishes were granted. That was in 1997.

The ultimate result was the Building Operations and Command Center (BOCC), which opened in the newly renovated Wedge 1 of the Pentagon on June 8, 2001. The BOCC is like the Pentagon's brain, the place where a network of thousands of DDCs that make up the EMS come together, and where information on the building's condition is collected in real time. In the BOCC, maintenance staff can take the Pentagon's pulse by watching five 90-inch display screens that show data such as room temperatures and pump statuses. They can spot trouble and fine-tune these systems from their workstations, or, if need be, they can also tap into the BOCC's

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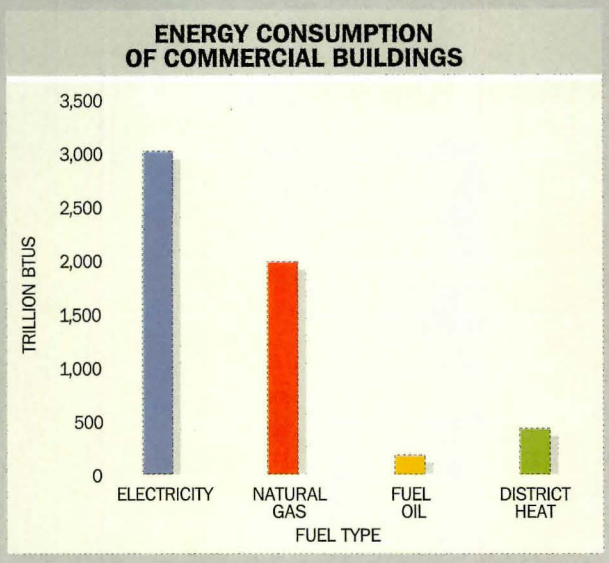
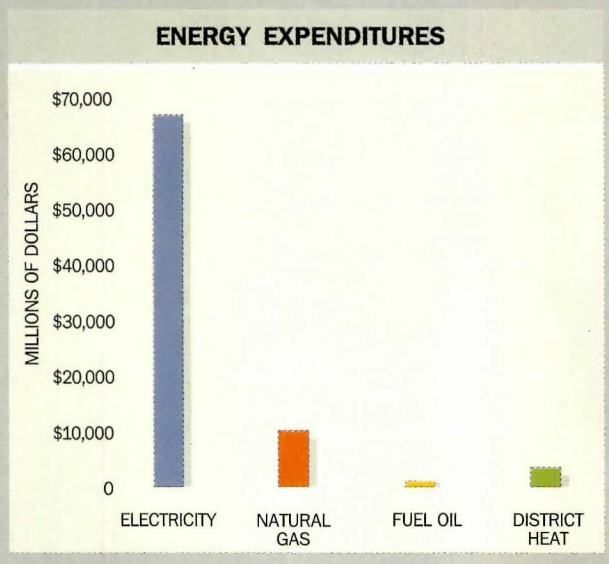
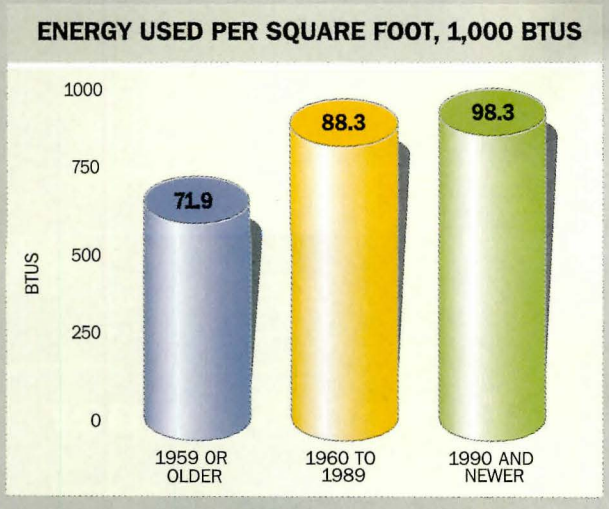




Most people are surprised to learn that older buildings use less energy per square foot (below) than their newer counterparts.



information system via laptop connections in the Pentagon's 500-plus mechanical rooms. This balance of centralized and distributed building information was both an innovation and a coup for a government-owned building of this size.

As Carter and his staff began working with the new system, they thought of more capabilities to add on top of the standard EMS technology. "We put in water sensors and leak detectors under all the air handlers, and gas detection where the natural gas system was, so that exhaust fans would be turned on if gas concentrations got too high in some areas, and we made sure the fire-detection system was linked to the HVAC system," he said. "We realized, too, that we could shift air patterns in the building—pressurizing some areas to keep out heat and smoke in case of fire, for instance." A laundry fire in one of the Pentagon's cafeterias in the summer of 2001 proved this was no small convenience: The smoke was tightly contained around its area of origin, and after the fire was doused, engineers were able to desmoke the building in 20 minutes. "The fire department was totally amazed. Everyone was really excited by what we were able to do," Carter said.

But the biggest test of all came on September 11, 2001. That morning, like most mornings, Carter was in his office in the BOCC. He and his colleagues were watching the twin towers burn on television when the plane struck Wedge 1. "All the control boards in the BOCC switched over and showed that the fire alarm system was going off," he said. "We immediately started shutting down some of the air handlers, but our first thought was, nothing could be *this* massive." But massive it was. Shortly after the crash, the BOCC lost power—and the operators lost their ability to watch or make adjustments to the building from there. Carter grabbed a two-way

EIGHT PEOPLE STAYED IN THE PENTAGON, CONTROLLING FIRE DAMAGE VIA WORKSTATIONS IN VARIOUS MECHANICAL ROOMS.

radio and headed to a mechanical room nearby that still had power. From his laptop, he tapped into the BOCC's information system (fortunately still intact) and sent out commands that closed dampers and turned off fans all around the Pentagon to contain smoke and starve the raging fire of oxygen. When he learned that a breached water main had caused the water pressure in the building to dip too low for firefighting, Carter dispatched a few of his engineers to the bowels of the building to remedy the problem. All in all, eight people stayed in the Pentagon on September 11, controlling the fire damage remotely via workstations from various mechanical rooms in the building, with Carter directing the effort by radio.

On September 12 the Pentagon reopened. One hundred eighty-nine people had been killed (125 on the ground), and the building suffered $501 million in damages. But the Secretary of Defense's office, the National Military Command Center, and other mission-critical areas such as data storage centers and wiring and switch rooms were spared, thanks to the energy-management system and eight people. Had the building's HVAC system not been automated and centralized—again, with the intent of saving energy, not lives—Carter and his maintenance staff would have faced a grave situation. To control the fire and smoke they would have had to close dampers and turn off fans manually in more than 500 mechanical rooms. Even if it were possible to reach these rooms in the midst of this conflagration, it would have taken many hours to do it.

While what happened at the Pentagon on September 11, 2001, was extraordinary, it speaks volumes about how sophisticated energy-management systems have become in enabling people to control building environments. Architects and engineers are only beginning to comprehend the benefits EMS technology holds for the future. ■


page 110


page 124


page 138

Good design no longer needs the "green" modifier

THREE PROJECTS PROVE THAT BEAUTY IS MORE THAN (BUILDING) SKIN DEEP

All too often, the debate about green architecture dwindles into a simple morality tale: Evil Developers who solicit bland, energy-guzzling boxes designed cheaply and fast by mercenary architects versus Earnest Internationals, teams of clients, architects, and engineers who ostentatiously call attention to their use of nontoxic and certified materials. Poised above the fray are the critics who wash their hands of both camps, saying their work does little to provoke thought or stir the soul, much less improve the quality of the built environment or preserve natural resources.

It's time for the argument itself to become sustainable. Living takes resources, and buildings use resources. When searching for work to include in these pages, we sought projects and designers that strike a balance, while also using it as an opportunity to explore ways to protect the environment in form and function, as well as materials.

These three buildings represent vastly different approaches to green building. What looks like Lord Norman Foster's formal whimsy is actually technical prowess of the highest order—the firm relied heavily on computer analysis and modeling to create a building that uses far less than its share of energy. Behnisch, Behnisch & Partner went to extraordinary lengths to ventilate an office building naturally at all times of the year. And at York University's Computer Science Center—a place that, by definition, will become obsolete 10 years from now—Busby + Associates and architectsAlliance took the concept of "plug-and-play" a step further by fashioning a building flexible enough to adapt to future changes with minimal need for retrofits.

In each project, technology was the catalyst between engineering ingenuity and architectural boldness. As a matter of fact, the work represents a long-overdue convergence of old technology with new. Sophisticated software programs allowed engineers to complete complex iterations in seconds, so that, in turn, natural ventilation could be employed for maximum energy efficiency.

These are not perfect projects, but they are projects that advance the state of sustainable design. We applaud the designers for their efforts. We look forward to seeing more. *Deborah Snoonian, P.E.*

CONTINUING EDUCATION

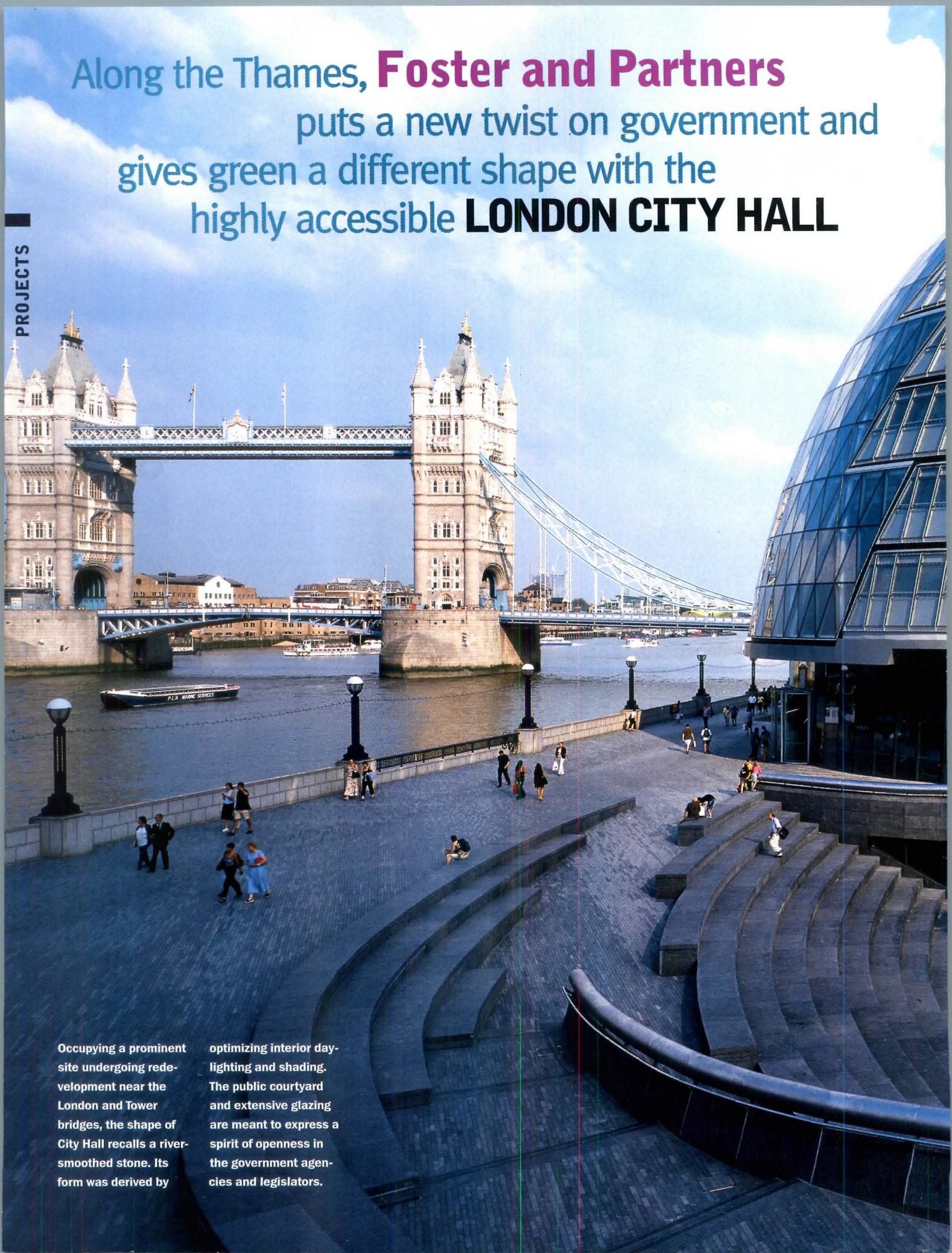
Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education Opportunity, which includes three special sections, on pages 116, 128, and 142. To receive credit, turn to page 147 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. *Describe climate engineering currently being implemented in building projects.*
2. *Explain different ways of cooling and heating buildings in climate engineering.*
3. *Identify factors necessary for environmental comfort.*

Along the Thames, **Foster and Partners** puts a new twist on government and gives green a different shape with the highly accessible **LONDON CITY HALL**



Occupying a prominent site undergoing redevelopment near the London and Tower bridges, the shape of City Hall recalls a river-smoothed stone. Its form was derived by optimizing interior daylighting and shading. The public courtyard and extensive glazing are meant to express a spirit of openness in the government agencies and legislators.

On the building's south side (this page), the facade is stepped in from top to bottom so that lower floors are shaded by those above them. Boats glide past City Hall on the Thames River (opposite, top). Seen by day and at night (opposite, middle and bottom), City Hall is a daring form that belies the blandness common to many public buildings.

By Jayne Merkel

If ever a building announced to the world that a new day had dawned, Foster and Partners' new London City Hall does so with a clarity not seen in a city building in this country for quite some time. The big, shiny, steel-and-glass egg looks as if the dome of Berlin's Reichstag (which Foster also designed) had spun off, gathered steam, and landed on the banks of the Thames with such force that its tip was buried in the earth.

On closer examination, the Greater London Authority (GLA), as the building is also known, is even stranger—curved inward toward the top on one side, stepped out and upward on the other, a bit flat-topped from some perspectives, pointed like the back of a cat's ear from others. Its shape was devised to minimize the surface area exposed to direct sunlight while still admitting daylight. The southern overhangs allow each floor to shade the one beneath it but make the structure seem a bit tipsy. Inclined peripheral steel columns, which appear straight on each level but bend inside the floor plates, keep it erect.

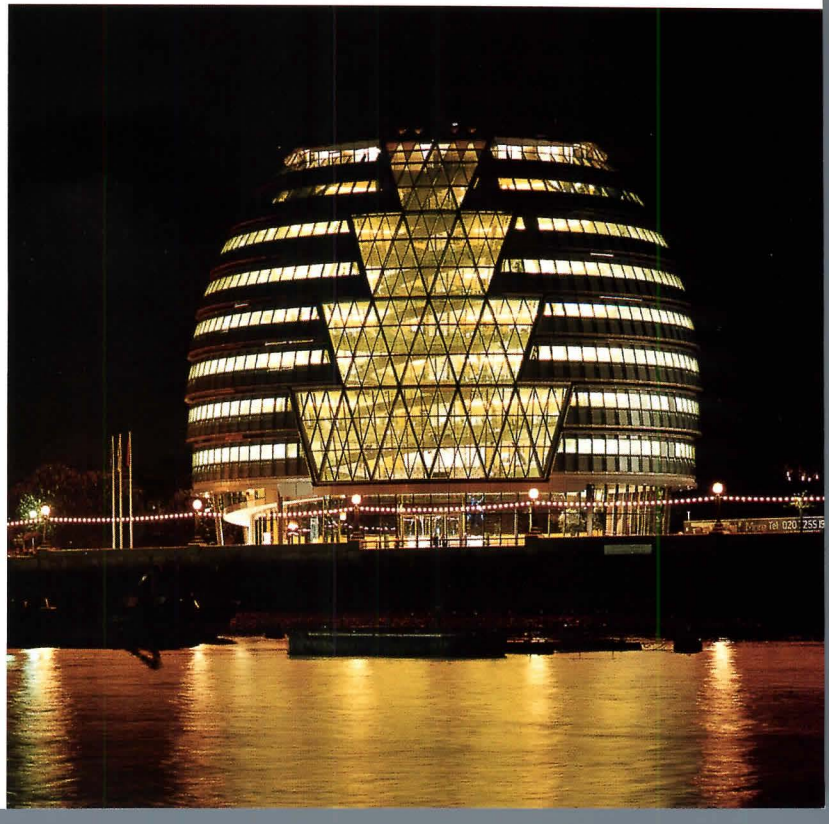
On the north side, transparent triangular panels open the Assembly chamber to the river. On the east, west, and south, where the offices are located, the skin is composed of a banded grid of triple-glazed panels with fritting, solar blinds, and operable vents. Offices are cooled by ceiling-mounted chilled beams fed by the water table 427 feet below London; by winter, that water warms up enough to be used for heating. Together, these features reduce the energy load of the building by 75 percent, compared to similar-size office buildings elsewhere in London.

The obviously high-tech building symbolizes a new progressive agenda, and energy savings are an important part of that, though that isn't immediately apparent: There are no natural materials, stony thermal masses, secondary outer shells, or other staple features of sustainable design. What is obvious is that the glass skin, like that of Berlin's Reichstag dome, allows government to be quite literally transparent—visible to the citizenry. Most of the skin on the GLA is actually opaque, but that isn't noticeable since the solid insulated silver aluminum panels that cover three-fourths of its surface are sheathed by plates of shiny glass. The openness is real, though. The citizenry, and even tourists, are welcome. They can walk right in with the governors from a spacious plaza beside the Thames through revolving doors that fold back to accommodate crowds.

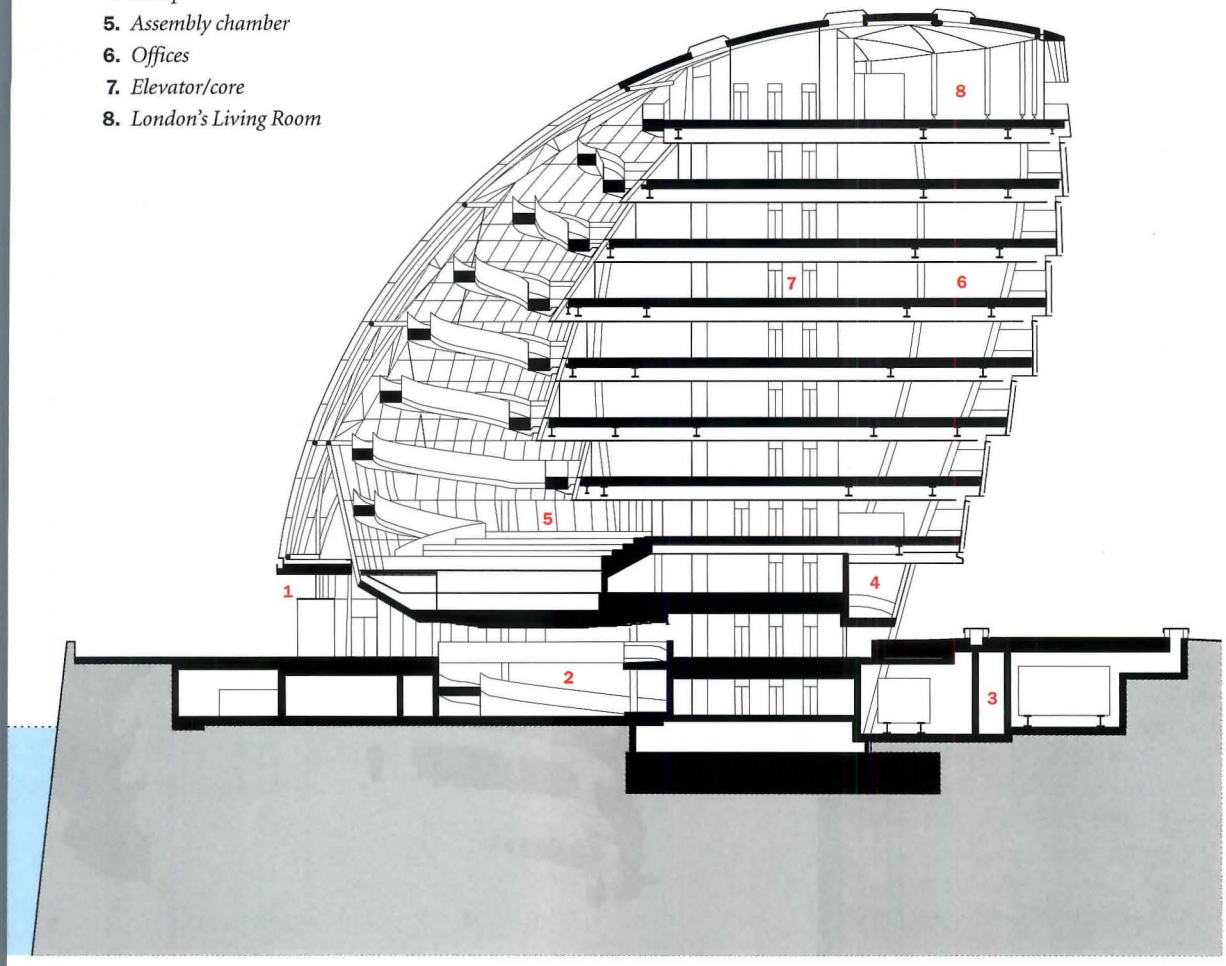
Once inside, they find a generous circular atrium with a gigantic model of the city to explore. A gently stepped ramp, similar to the one that surrounds the inside of the Reichstag dome (which is the size of this entire building) but more functional, encircles the structure, providing views into the Assembly chamber on one side and government offices on the other. You can really see government at work, at close range. On the north are vistas of the City, London and Tower bridges, and the Tower of London, looking like icons of a different millennium, which they are. *(continued on page 120)*

Jayne Merkel, a contributing editor of the London-based magazine Architectural Design/AD, *is a former editor of the New York AIA's* Oculus. *She is writing a book about Eero Saarinen for Phaidon Press.*

Project: *City Hall, London, England*
Client: *CIT Group*
Architect: *Foster and Partners; Lord Norman Foster, FAIA, Ken Shuttleworth, Andy Bow, Stefan Behling, Sean Affleck, Richard Hyams*
Engineers: *Arup (structural, m/e/p, facade, fire, acoustics)*
Consultants: *Davis Langdon & Everest (cost); Claude R. Engle Lighting (lighting); Reef UK (maintenance); Townshend Landscape Architects (landscape)*
Contractors: *Mace (construction manager); Schmidlin UK (cladding); Westcol Glosford (structural steel)*

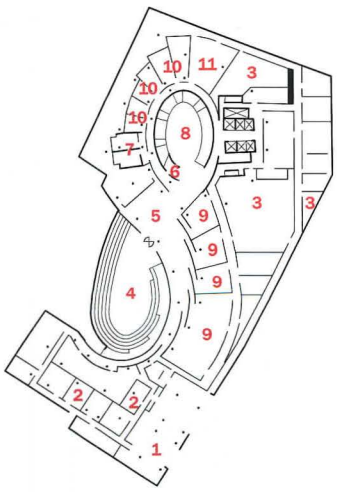


1. *Main entrance*
2. *Exhibition space*
3. *Physical plant*
4. *Ramp*
5. *Assembly chamber*
6. *Offices*
7. *Elevator/core*
8. *London's Living Room*

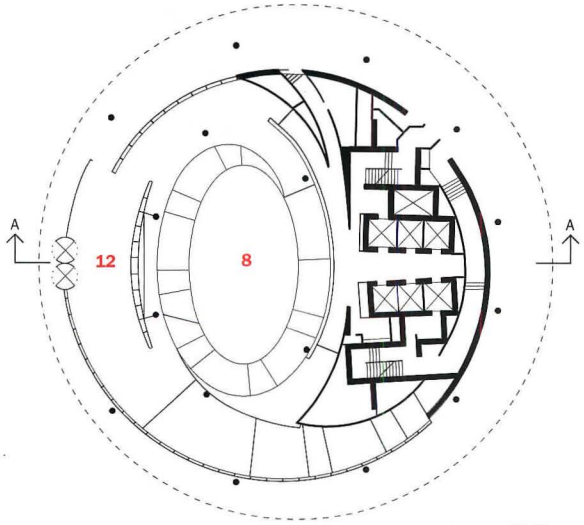


SECTION A-A

The panelization of the building skin was determined by analyzing sunlight patterns throughout the year. Three-quarters of the facade is composed of opaque panels; the transparent areas have adjustable blinds.

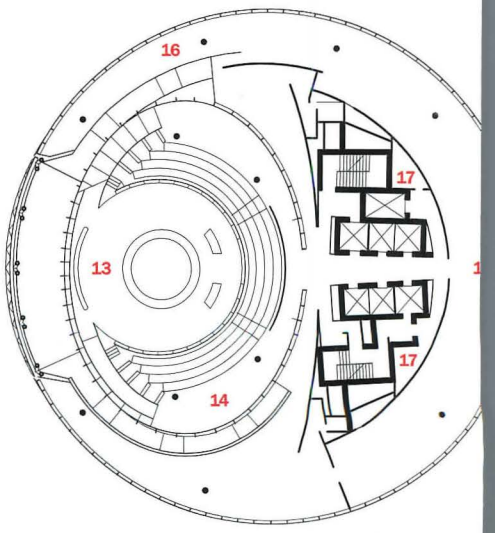


UNDERGROUND

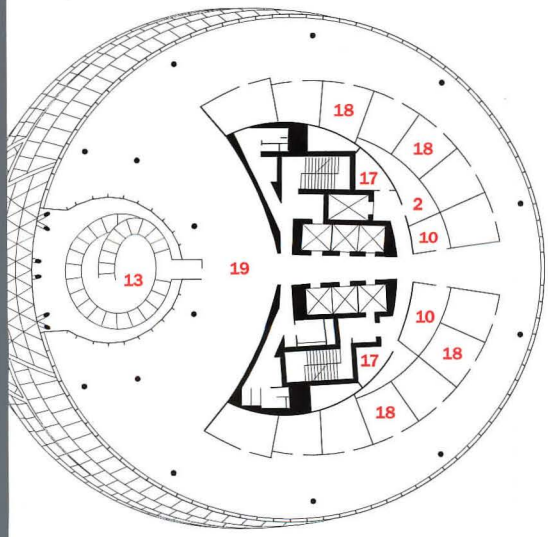


GROUND FLOOR

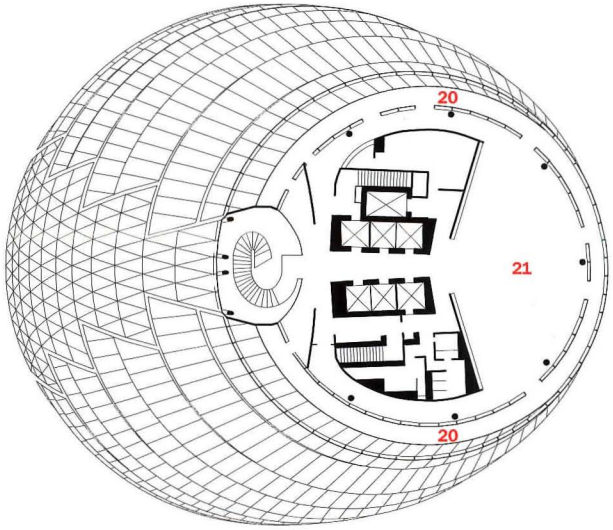
N 0 30 FT. 10 M.



LEVEL TWO



SIX



LEVEL NINE

1. *Parking*
2. *Storage rooms*
3. *Physical plant*
4. *Outdoor amphitheater*
5. *Café*
6. *Information desk*
7. *Kitchen*
8. *Exhibition area*
9. *Committee room*
10. *Meeting room*
11. *Media center*
12. *Reception*
13. *Assembly chamber*
14. *Public viewing gallery*
15. *Library*
16. *Reading room*
17. *IT room*
18. *Office*
19. *Open-plan area*
20. *Terrace*
21. *London's Living Room*

Technology and ingenuity contribute to energy-efficient performance

The strangely beautiful egg shape of the Greater London Authority (GLA) by Foster and Partners has as much to do with sustainability as it does with architectural design. The architect and its engineering partner, Arup, decided early on that the building would be designed as an energy-efficient entity, as opposed to a typical structure that has energy-efficient devices tacked onto it late in the design-development phase. This meant that the envelope itself had to limit heating and cooling loads. The result is a spherical envelope that is itself an energy-saving device. A sphere has 25 percent less surface area than a cube of the same volume. Less surface equals less heat and cooling gains.

Arup engineered every aspect of the facade to minimize heat transfer across the external surfaces. The maximum allowable solar heat gain for each external square meter of building was determined by constructing and analyzing heating- and cooling-load models. The use of highly insulated panels combined with high-performance glazing reduces potential heat loss from the building. The greater the need for solar shading, the greater the cladding-to-glazing ratio. The use of these panels combined with high-performance glazing reduces potential heat loss from the building to a level well below that required by the building regulations.

Structure played a major role in creating an efficient and integrated network of systems. A diagrid structure supports the north-facing facade. Hot water courses through horizontal members, 12 inches in diameter, warming the atrium and creating, in essence, London's largest radiator. Structure that doubles as plumbing illustrates the economy of systems integration.

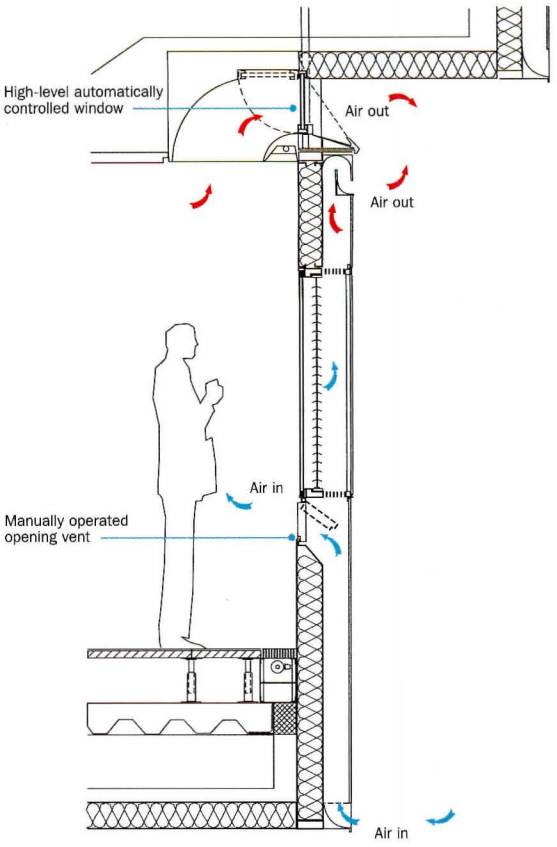
Furthermore, the building leans back toward the south, where floor plates are stepped inward from top to bottom, providing natural shading from the most intense direct sunlight. On the north side, where there is no direct sunlight, the glazing is clear.

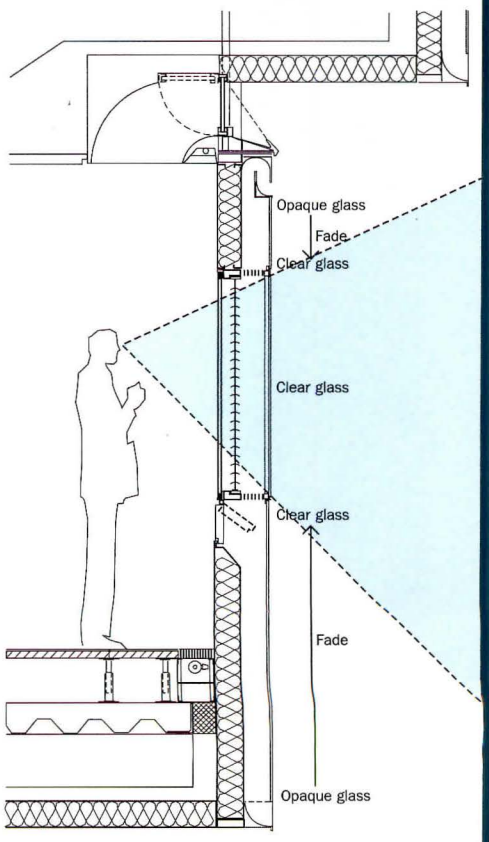
When heating is required, two gas-fired boilers generate hot water for use in convector heaters in the offices, in the debating chamber, and for the underfloor heating of the foyer. The hot water runs through heating coils in the air-handling units, warming incoming air. To reduce the energy required to circulate the water around the system, Arup chose variable speed pumps, which allow the water flow to be increased or reduced to meet demand.

Air for ventilation enters offices through grilles in the floor. Vents in the facade are provided in the external offices for natural ventilation. When the vents are opened, local cooling and heating systems will be deactivated. During winter, heat and moisture will be recovered from the outgoing air and used to condition incoming ventilation air using devices called hygroscopic (the property of readily absorbing water) thermal wheels.

In the summer, comfortable internal temperatures are maintained by chilled beams, rather than electric chillers. The beams are located in the office ceilings, where cold ground water passes through the heat exchanger and is circulated through these beams. The ground water is pumped to a height of 410 feet at a temperature of 53 to 57 degrees Fahrenheit from the aquifer below the building via two specially drilled boreholes. This cold ground water is also used directly in the cooling coils of the air-handling units to cool the fresh air entering the building.

The use of this natural resource for cooling reduces electricity consumption and thus saves money. Boreholes use

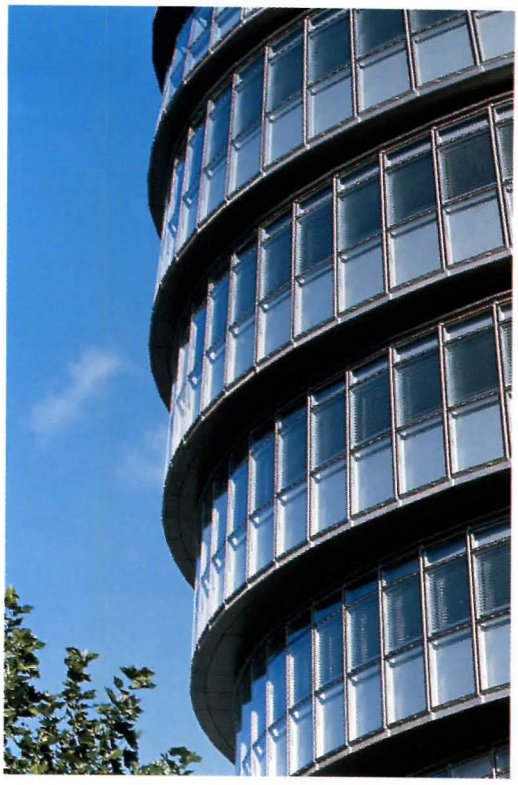


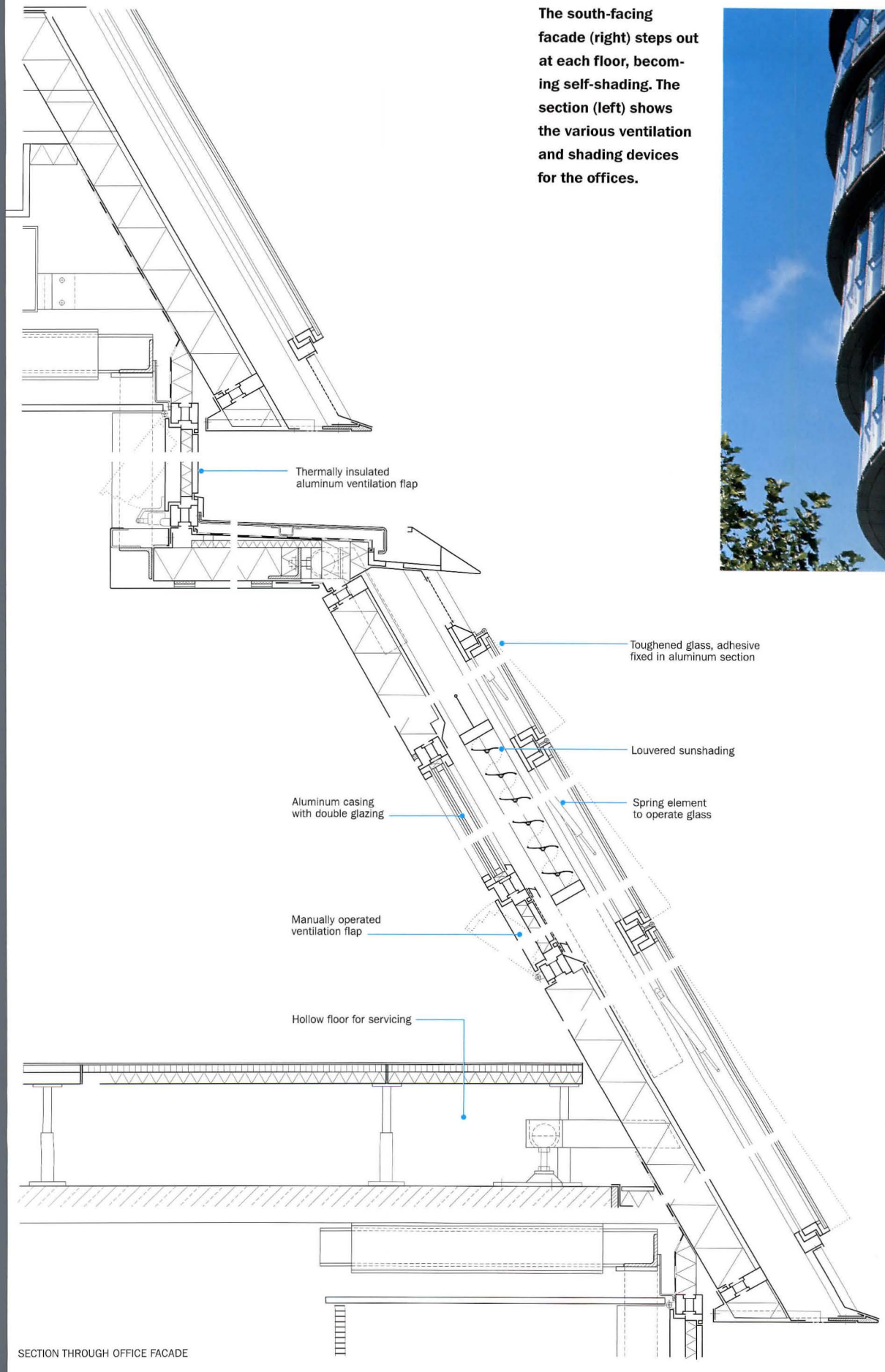


NATURAL VENTILATION DIAGRAMS

AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION *This month's Continuing Education Opportunity includes three special building-science sections, on pages 116, 128, and 142. For learning objectives to focus your study while reading these sections, turn to the Projects introduction on page 109. To receive credit, turn to page 147 and follow the instructions. As always, archrecord.com has this story and more continuing education.*

The south-facing facade (right) steps out at each floor, becoming self-shading. The section (left) shows the various ventilation and shading devices for the offices.





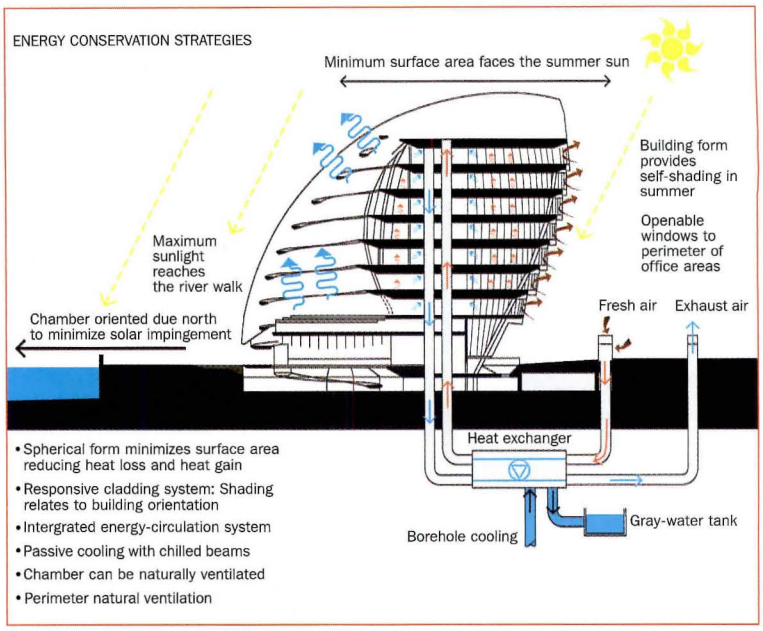
SECTION THROUGH OFFICE FACADE

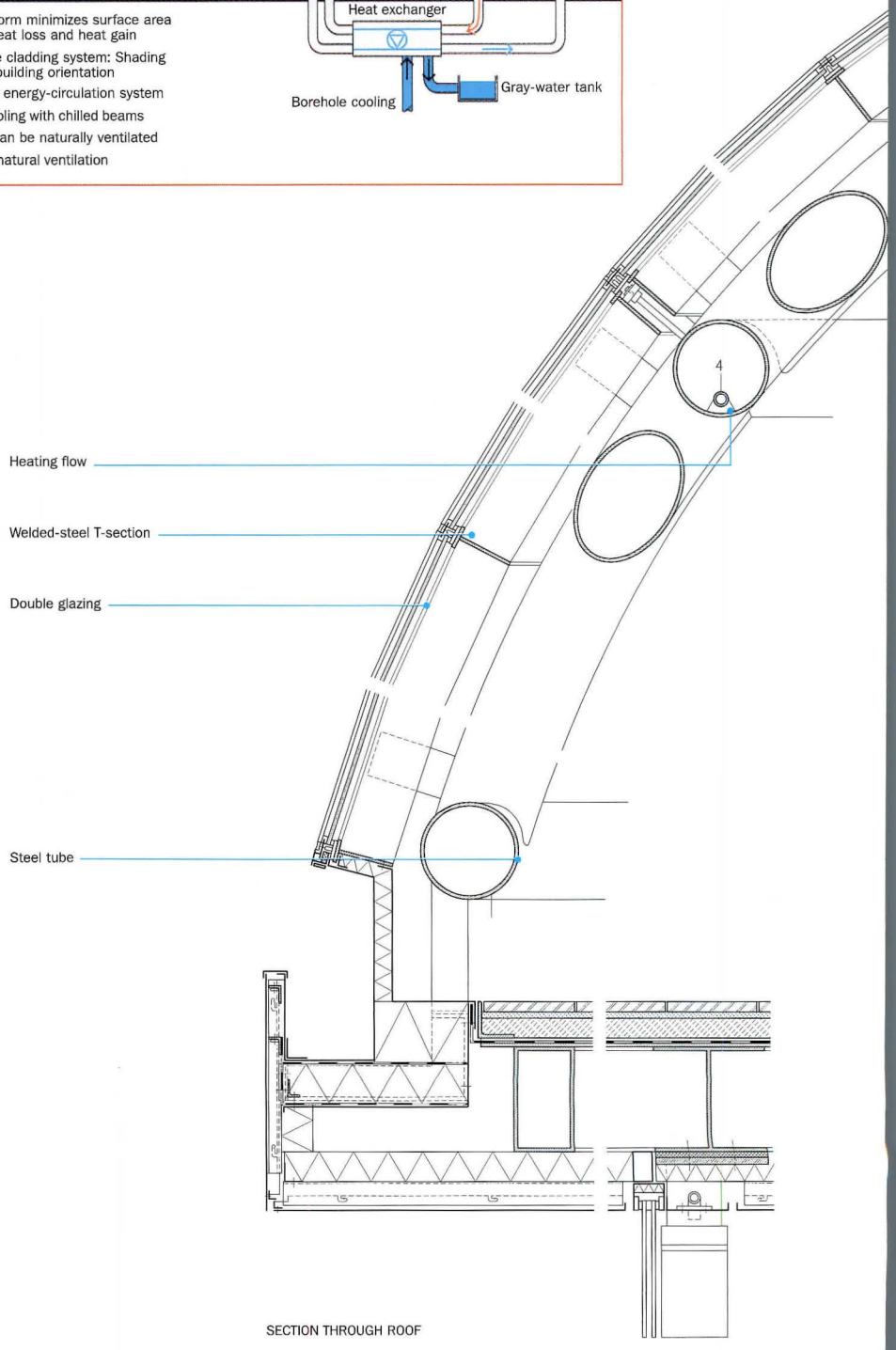
less energy than do conventional chillers and cooling towers, and they are less expensive to install and maintain. Following circulation, the ground (aquifer) water is used to flush toilets before being discharged, further reducing water consumption.

As shown, environmental comfort is determined by air movement, ambient temperature, humidity, air intake and exhaust, and solar radiation. Building systems can be optimized only if the designers understand the interaction and interdependence of each system with every other system. Arup specializes in what is called flow engineering, which is the process of analyzing, predicting, and controlling the movement of fluids using mathematical models and experimental techniques.

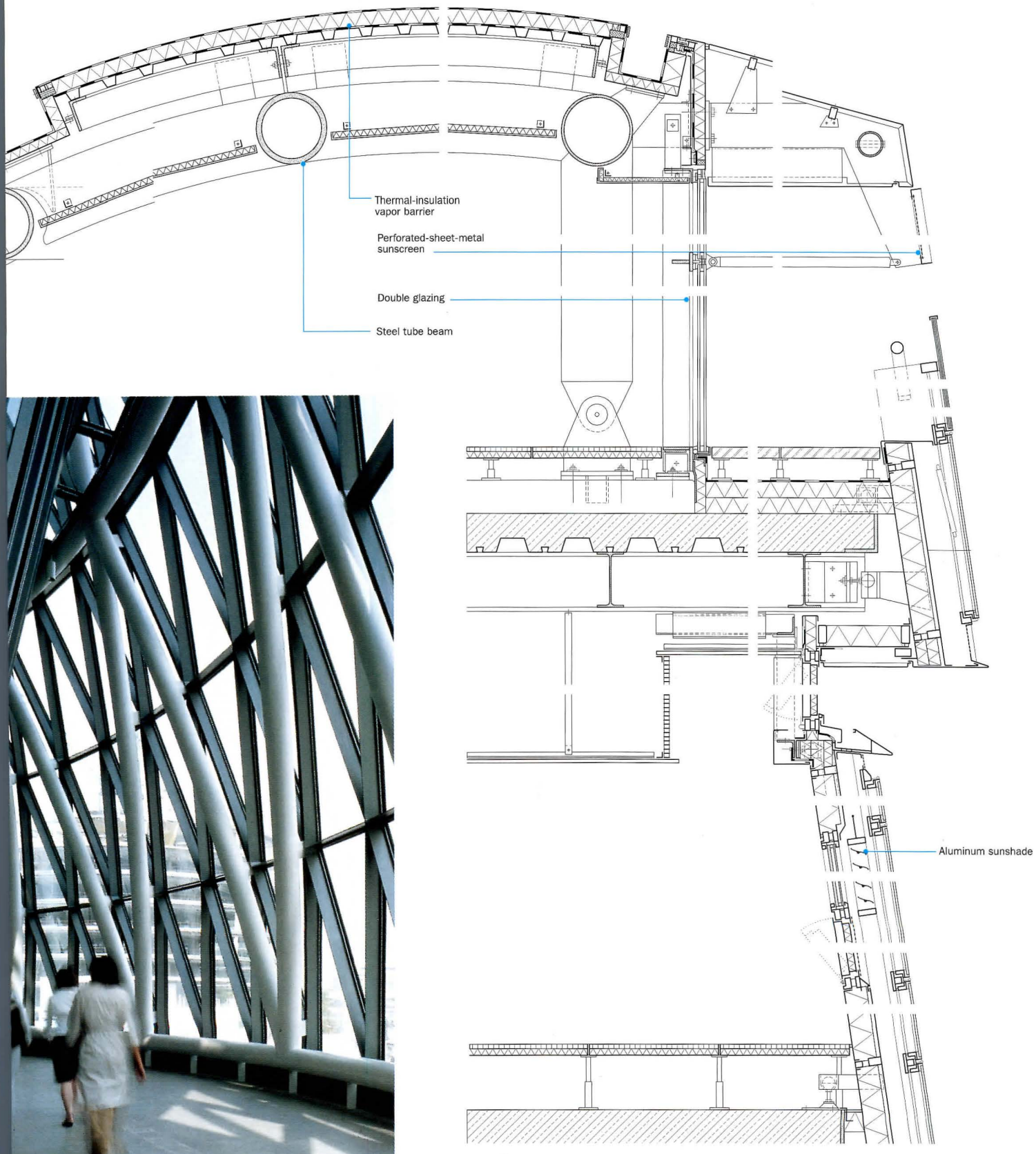
As building owners are realizing, systems are only as good as their consistent performance. Surveys have indicated that 75 percent of buildings in the United Kingdom are operating incorrectly, have inappropriate operation and maintenance contracts, or are wasting money through inefficient energy usage. Arup engineered a sophisticated Building Management System (BMS) to maintain and control conditions within the GLA building. The BMS is programmed to maximize the use of the energy-saving systems and ensure other mechanical systems are used efficiently. For example, the chamber and committee rooms of the GLA building will only be cooled when they are occupied. During peak summer conditions and when the chamber is not in use, large air vents allow natural ventilation. The BMS also controls the flow and temperature of the air entering the chamber and ensures the occupants are provided with the required amount of fresh air.

Arup's environmental expertise continues to be applied beyond the GLA envelope. The firm has worked closely with the mayor of London, Ken Livingstone, and the GLA over the past two years to develop a comprehensive set of policies and proposals that will improve London's air quality. These range from encouraging environmental best practice from businesses and new developments to investigating the feasibility of a low-emissions zone (an area from which the most polluting vehicles are excluded). *Sara Hart*





SECTION THROUGH ROOF


Thermal-insulation vapor barrier
Perforated-sheet-metal sunscreen
Double glazing
Steel tube beam
Aluminum sunshade

(continued from page 113) The 201,650-square-foot building was constructed for £43 million (about $64 million). It replaces the Greater London Council's enormous County Hall, designed by Ralph Knott and erected in 1922 at the public's expense. When the Thatcherites dissolved the leftist Council in 1986, they also sold County Hall; this stone structure with a proud classical facade now houses a hotel, apartments, galleries, and an aquarium.

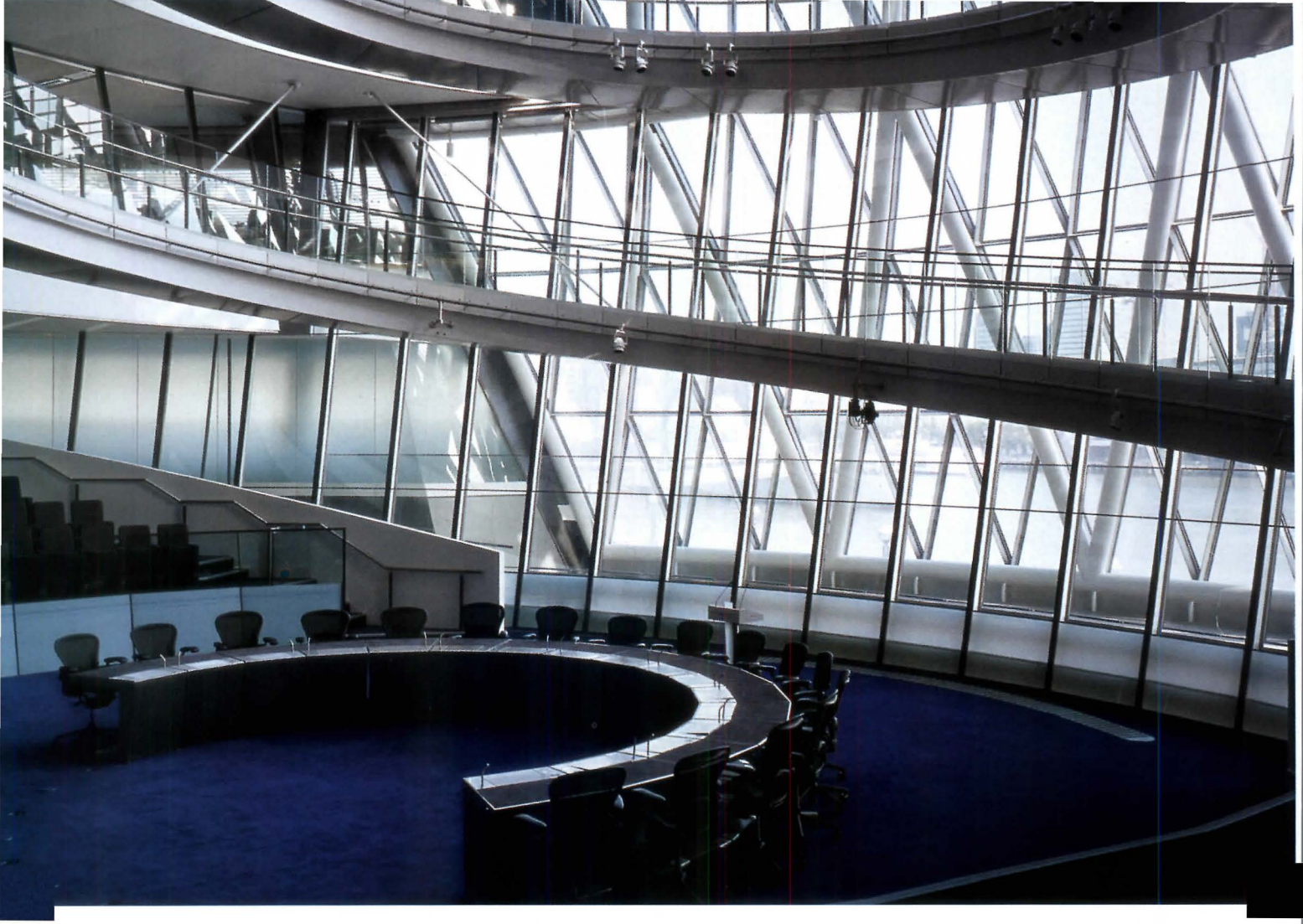
When Tony Blair came to power, he said his government represented a return to "modernism," implying a commitment to a social safety net and a forward-looking approach. So he had to create a place for the reborn agencies to operate, and that place had to be a visible symbol of compassionate, enlightened leadership. Since privatization was (and is) still in vogue, the government could not simply build the new facility—instead, it held a developer/architect competition that allowed entrants to propose both the building's form and location. Extraordinary energy savings were also required. The winners were CIT Group developers, with Foster and Partners architects and Arup engineers.

The team chose a 3.6-acre site on the South Bank that had been cleared in the 1980s for what was then called London Bridge City 2 within the Southwark Riverside Masterplan. This area has become vastly more desirable since the Tate Modern and a huge Ferris wheel (known to Londoners as "The Wheel" but officially named The British Airways London Eye, designed by David Marks & Julia Banfield Architects) opened a few years ago. It was ripe for development and accessible by two tube stops. The new team renamed the site More London and planned nine buildings containing a total of 2.4 million square feet, all to be designed by Foster. It's the biggest commercial development in London in 15 years. Besides City Hall, there will be four office headquarters buildings with shops and restaurants on the ground floors, underground parking, a hotel, a theater, and two major public squares in a privately owned (but ungated) area with walkways and a 1,000-seat amphitheater.

Old buildings on a once-shabby adjacent street are being renovated for mixed uses and will be connected with City Hall and its new neighbors, to tie their site to the city grid and London's past. But City Hall itself speaks to the future in a way American municipal buildings rarely do—or haven't since Frank Lloyd Wright's futuristic Marin County Civic Center appeared in northern California in 1962.

In London, what you see now is lightness—glass and steel working

Entry doors fold back to reveal a naturally lit interior (opposite). Visitors and legislators can peruse an enormous model of London in the atrium (this page, top and bottom) before ascending a ramp for a closer look at the Assembly chamber and government offices.



together dynamically to create a structure that, though unfamiliar and daring, invites exploration and enables interaction. At the top is a space with a terrace overlooking the city, called "London's Living Room," which can be used by the public for exhibitions and events. The cafeteria under the atrium is also open to the public. And the lavender-carpeted Assembly chamber on the second level is surrounded by a tiered public gallery. This space has such fine acoustics that speakers don't need microphones; even softly spoken conversation is audible on the upper levels of the ramp. The 25 members of the Assembly can sink into ergonomic chairs at their gray suede round table and tap on their individual stainless-steel desktops, at which point a flat-screen computer will appear. James Bond, eat your heart out—as the members of the London AIA did when they settled into the seats while on a tour last fall led by Bruce Curtain of Foster and Partners. The architects were so fascinated by City Hall it was difficult to get them to leave at the end. Night fell during the tour, so the building glowed handsomely as a finale.

Whether City Hall will be quite as sensational when the area around it is redeveloped remains to be seen. But, for now, it puts government in a favorable and forward-looking light. ■

Sources

Glazing: *Schmidlin (external); Seele (atrium and other areas)*
Steel: *Wescol Glosford (custom frame)*
Concrete work: *Geoffrey Osborne*
Ramp: *Waagner Biro Atkiengesellschaft*
Revolving doors: *Rush Entrances/Blasi*
Chilled beams: *Trox Technik*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

The access ramp corkscrews its way through City Hall (this page). The ramp's design—a box that carries concrete treads (opposite, bottom)—contributes to the Assembly chamber's superb acoustics (opposite, top).

The complex was designed to provide a transition between the city's old residential area to the south and its historic center to the north (opposite). With facades oriented in many directions, the building turns its back on no one (this page).

Behnisch, Behnisch & Partner creates a glimmering, dynamic, and energy-efficient landscape in glass and steel at NORDDEUTSCHE LANDESBANK

By Tracy Metz

Without the glazing, which takes on the blue cast of the sky, it would be tempting to view the Norddeutsche Landesbank in Hannover, Germany, as a modern-day Emerald City. This new bank complex by Behnisch, Behnisch & Partner is a self-contained mini-metropolis, rising like a sculpture of glass-and-steel boxes, piled with nonchalant elegance one atop the other, some cantilevered daringly, and all culminating in a tower.

Hannover is not a city with a well-established tradition of risk-taking architecture. Close to the old East German border, it lagged behind the rest of West Germany in both economics and post–World War II reconstruction. The locals have grown fond of the remaining old buildings, and years of restrictive zoning resulted in a rather low and uniform cityscape. Even the impact of cutting-edge architecture in the pavilions of Hannover's Expo 2000 [RECORD, July 2000, page 30] is not obvious.

Within this cultural and physical milieu, Behnisch, Behnisch & Partner devised a massing that would create a transition zone between Hannover's 19th-century residential area to the south and its denser historic center to the north. With shimmering elevations facing many different directions, the structure's multiple orientations were intended as a way of connecting it with the surroundings, so that the Norddeutsche Landesbank (Nord/LB) building wouldn't seem to be turning its back on anyone.

Bringing together 1,500 employees, formerly dispersed over 15 separate locations, the 840,000-square-foot complex occupies a large city block. In response to this nexus of neighborhoods and the scale of Hannover's old quarter, the new building meets the busy artery of Friederichswall with a low base: ground-floor shops beneath two floors of offices, embracing a publicly accessible inner courtyard with a reflecting pool and wooden decks. The low perimeter block of offices surrounds three sides of this courtyard—traversed at various heights by glass tubelike passageways connecting the wings of the building. (Incorporated into the new complex is the landmark 19th-century Siemens Building, now used as a training center with separate access.) The nearly 230-foot-tall tower—a beacon in the larger urban context—houses primarily offices and meeting rooms, with executive dining rooms and boardrooms at its top. Crowning the tower is a 65-foot-high sculpture of glass panes, coated with a metal film that changes color with the position of the sun and nighttime illumination by diodes.

The lobby is a four-story-high, semipublic space—the actual

Tracy Metz is RECORD's Amsterdam-based correspondent.

Project: *Norddeutsche Landesbank am Friedrichswall, Hannover, Germany*
Architect: *Behnisch, Behnisch & Partner—Günter Behnisch, Stefan Behnisch, Günther Schaller, partners; Martin Haas, Jörn Genkel, project leaders; Alexandra Burkard, Martin Gremmel, Dominik Heni, Bettina Maier, Klaus Schwägerl, Jorg Usinger*
Project management: *NILEG*
Engineers: *Arge Tragwerksplanung, Wetzel & von Seht; Pfefferkorn*
Consultants: *Transsolar Energietechnik (energy); Christian Kandzia (color); Becker & Becker, Lindhorst, Grabe, Taube/Goerz/Liegat (environmental)*

Scaled-down massing at the block's perimeter allows Nord/LB to meet adjoining neighborhoods with a low-rise base (right). Closer to the center of the site, the partly cantilevered tower rises up from a courtyard (above). Glazed, tubelike passageways (opposite) traversing the courtyard and connecting the building's wings have roofs that can open in warm weather.

bank offices, and concomitant security measures, start on the second floor—covered by a sloping glass wall with louvers for climate control. To one side is the "forum," a space that doubles as art gallery and lecture hall. In the lobby, an extraordinary floor bridges height differences not with stairs but through a seemingly infinite number of slightly ramping triangular planes, keeping the space fluid but sometimes playing fleeting tricks with your sense of balance. This entry area also provides access to a two-level underground parking garage and the ground-floor company restaurant, just beside the tower lobby. The restaurant's roof is abstractly shaped like butterfly wings and covered with earth and vegetation that varies with the seasons. Waterside decks around the indoor dining areas invite employees to lunch in the courtyard, accompanied by the babble of water flowing like a curtain over a low wall.

Spectacular aspects aside, Behnisch, Behnisch & Partner won the international competition for this building in part because of the firm's skill in reducing energy use, bringing in daylight, and ensuring worker comfort. In Nord/LB, the ground floor plays a key role not only in mediating between existing neighborhoods and providing an enjoyable setting, but in achieving the building's energy goals. As in earlier Behnisch work, such as the Dutch Institute for Forestry and Nature Research [RECORD, January 2000, page 96], the courtyard—with low roof plantings (on the restaurant) and water elements—helps improve the interior microclimate, providing cleaner air to ventilate and cool the building. *(continued on page 137)*

A shallow pool in the courtyard, along with plantings on the restaurant roof, enhance the complex's exterior as well as its interior ecology.

High-Tech Tools Give German Engineers Low-Tech Solutions

The climate-control engineers at Transsolar Energietechnik in Stuttgart, Germany, had two primary goals in mind when they set out to plan an energy-efficient complex for Norddeutsche Landesbank. The first priority was to surpass the 1997 German insulation regulations by 10 percent, and then to create environmentally sensitive measures at a reasonable cost. According to Peter Voit, project leader for Transsolar, because energy consumption for winter heating is comparatively low, attention was focused on the reduction of costlier environmental necessities—ventilation, cooling, and lighting.

Harnessing natural ventilation to cool the offices rather than installing air-conditioning was a logical choice, since temperatures in Hannover only rise above 72 degrees Fahrenheit about 5 percent of a year. However, this strategy is much more complex than merely installing operable windows. Specifying the optimal glazing systems requires careful study of the weather, solar radiation, and daylighting routines, as they impact each other's effectiveness.

Transsolar is part of a consortium that continues to develop TRNSYS, an open-code program commercially available since 1975 that simulates the transient performance of thermal-energy systems. This tool, along with FIDAP (software for numerical air-flow simulation, particularly in natural ventilation systems or the study of air currents inside rooms) and RADIANCE (software for evaluating the quality of illumination based on the luminance of both natural and artificial lighting), aided the engineers in resolving an interrelated set of environmental concerns.

The core of the planning activities focused on the design of the standard offices. The goal was to allow office workers control over heating, window openings, lighting, and shading devices in a system that required no mechanical ventilation and cooling. As the wall sections show, ducts exhaust air to vents in the roof. Their location in the corridors helps mitigate sound. The exhaust system relies mostly on the chimney effect, when outdoor temperatures are below 50 degrees. Even when electrically driven fans are needed, the energy they use is negligible. Such efficiency eliminated the need for a heat-recovery system.

On the one hand, protection from solar heat gain is necessary if a building is to be naturally ventilated. On the other hand, shading devices should not block out daylight if that's the major source of illumination in the offices. In the case of Norddeutsche Landesbank, adjustable, highly reflective aluminum sun blinds within the double-glazed units allow reflected light into the interior while blocking solar radiation.

Transsolar also took advantage of the earth's natural thermostat and incorporated a geothermal heat exchanger and pump. The use of radiant-slab cooling was particularly ingenious. Polyethylene pipes were cast in the exposed-concrete ceiling slabs. Cold water (about 62 degrees Fahrenheit) is pumped through the pipes, generally at night, storing coolness in the concrete surface for delivery to the room in the morning.

It is clear that climate engineering in Germany has evolved way beyond its counterpart in the United States, and yet none of these strategies is rocket science. The time has come for American architects and engineers to seek alternatives to their high-voltage formulas and begin to work unplugged. *Sara Hart*

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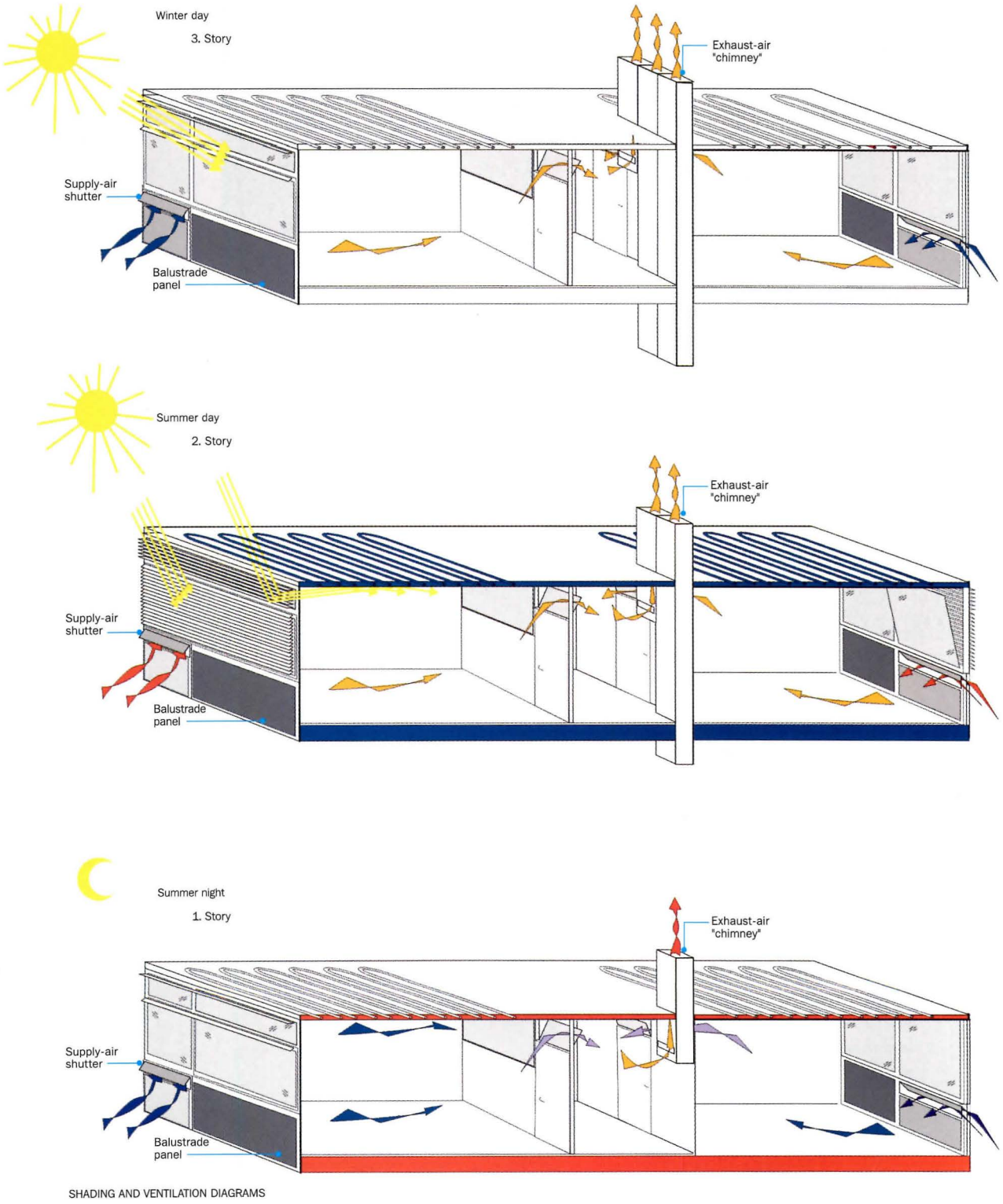
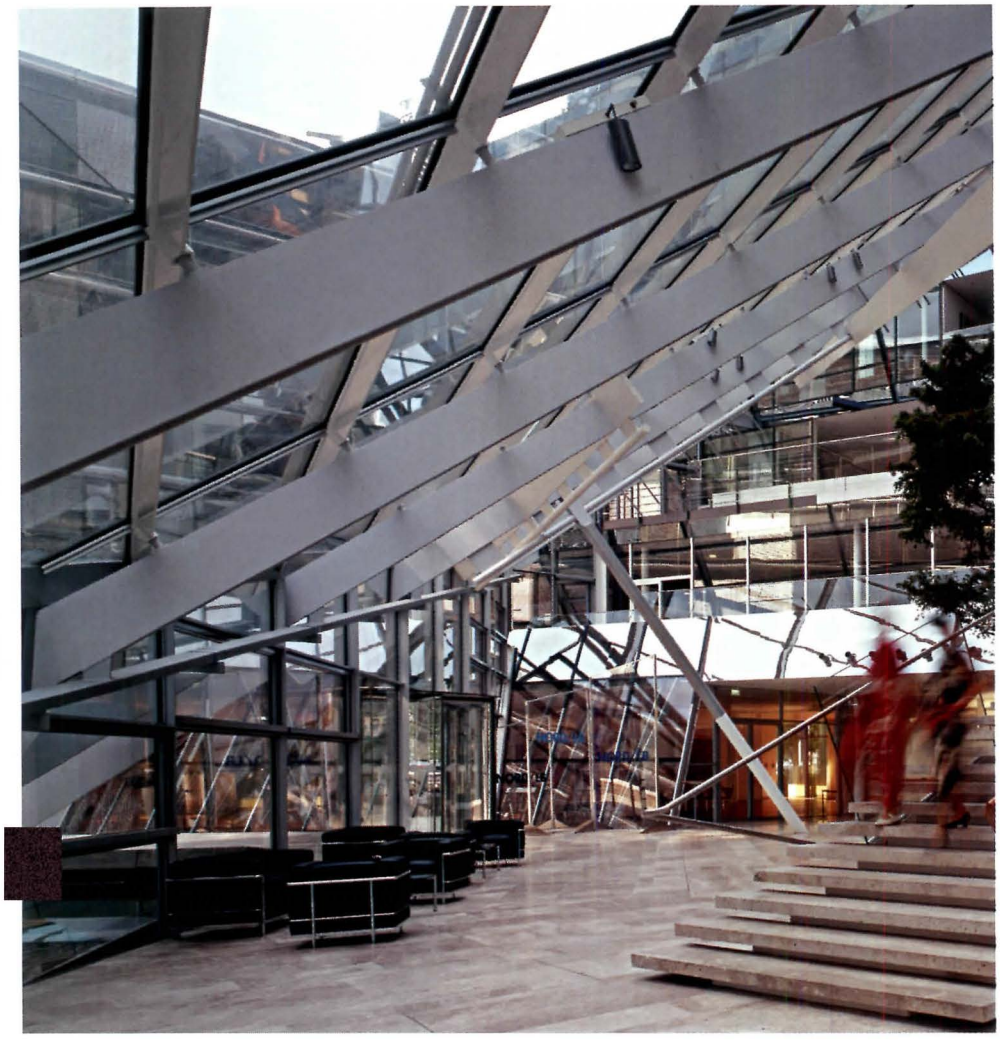
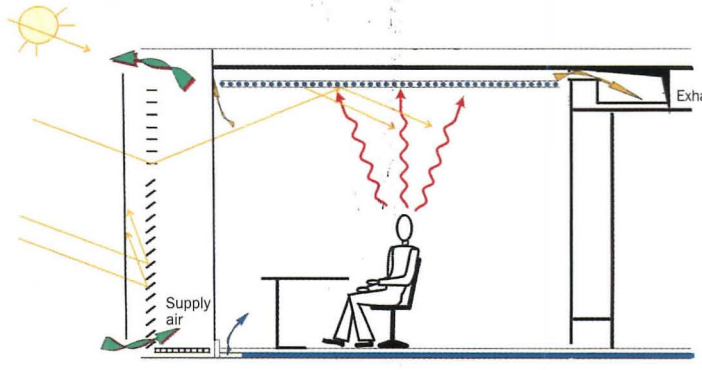
he offices provide high evels of comfort at low perating costs during ll seasons. Outside ir is drawn through the pace and exhausted hrough vents in the orridor that lead to himneys (diagrams at ght). During summer venings, warm air is hilled by cool-water umps through pipes mbedded in the con- rete ceiling. Highly eflective louvered linds (opposite, ottom left) convey ght into the interior hile blocking solar adiation.



SHADING AND VENTILATION DIAGRAMS

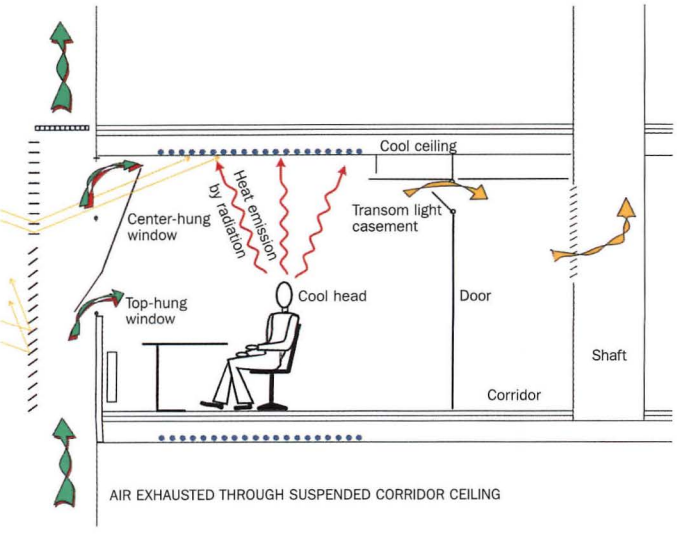


The lobby (above) is a four-story-high semi-public space covered by a sloping glass wall with operable louvers for climate control. This area provides access to subterranean parking, the adjacent company restaurant, the courtyard, and the tower itself. Executive offices and meeting areas occupy the upper reaches of the tower (above left, center, and opposite, right).

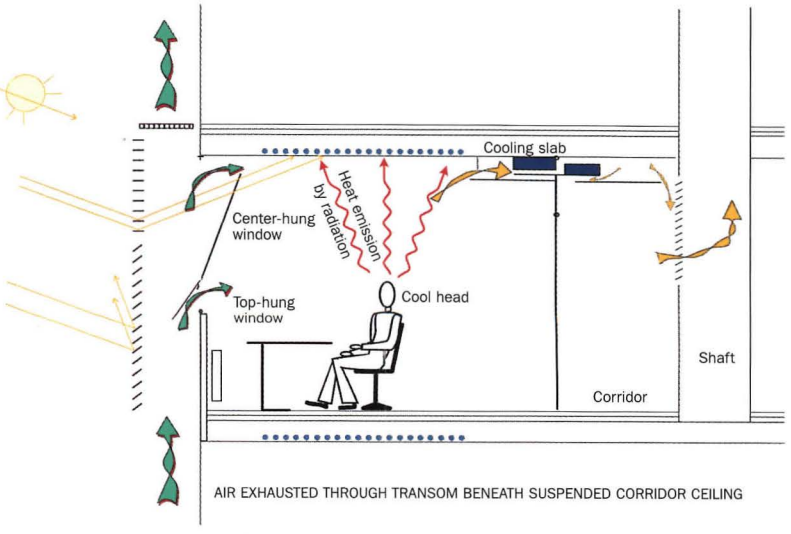


AIR EXHAUSTED THROUGH CEILING TO DUCT

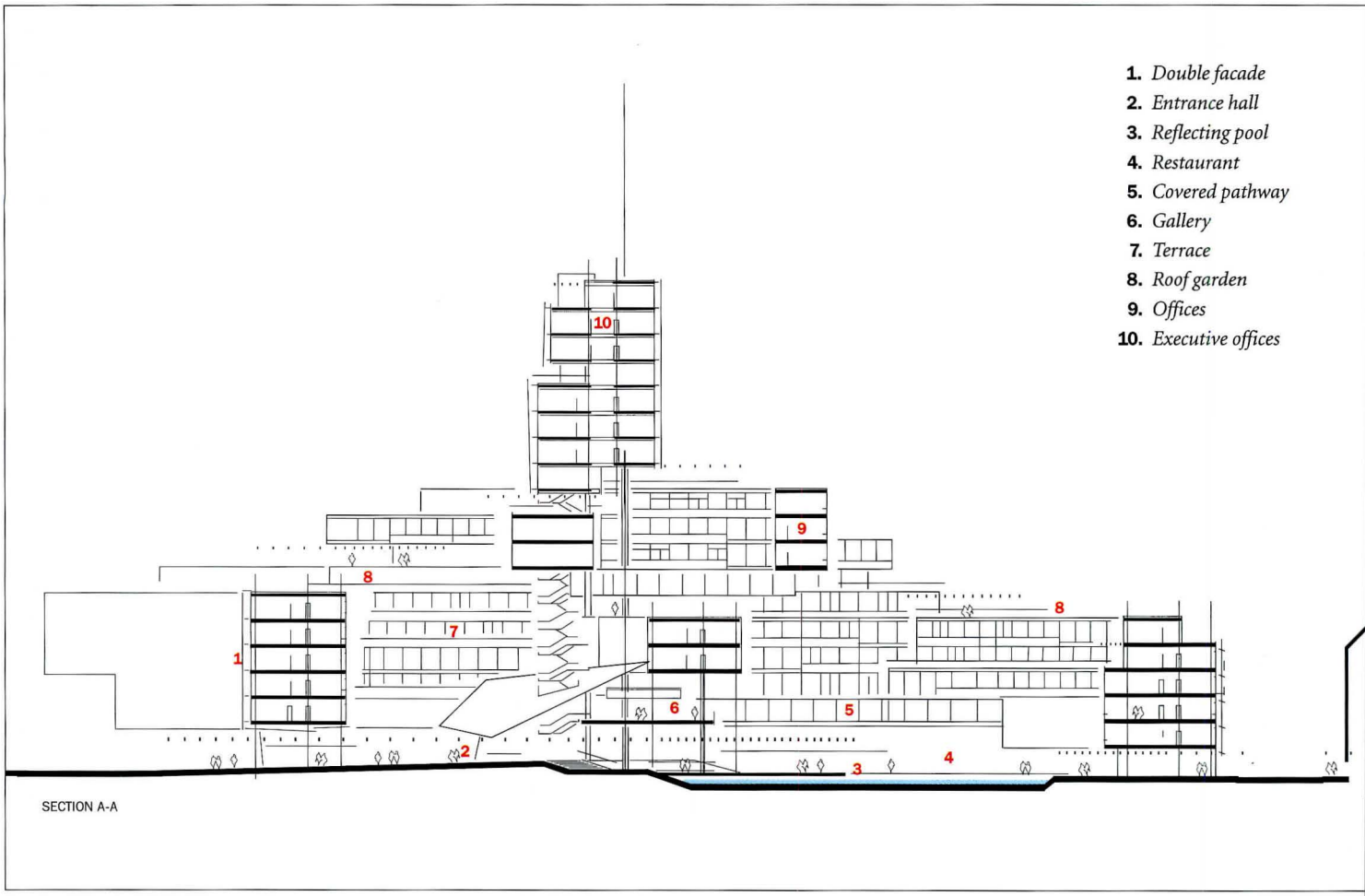
DIAGRAMS SHOWING AIR FLOW



AIR EXHAUSTED THROUGH SUSPENDED CORRIDOR CEILING

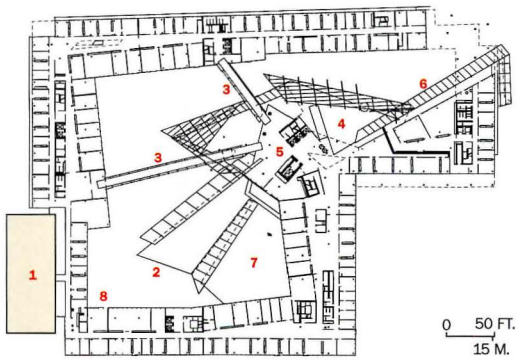


AIR EXHAUSTED THROUGH TRANSOM BENEATH SUSPENDED CORRIDOR CEILING

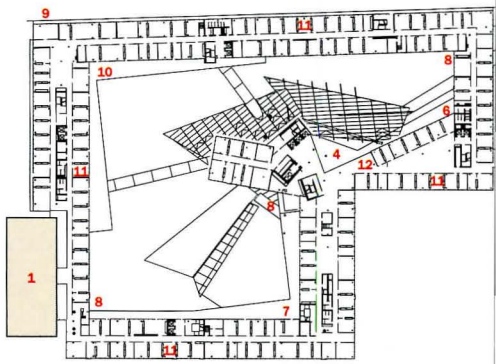


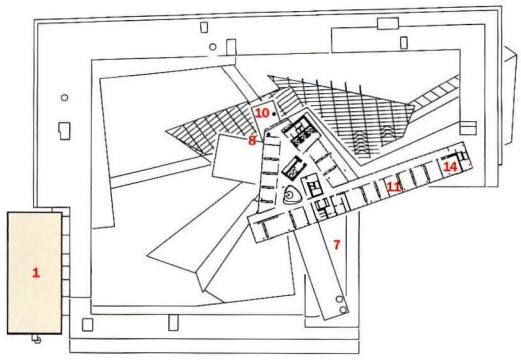
Plantings covering the roof of the staff restaurant (opposite, top right) varies with the seasons and helps refresh the courtyard microclimate. The building's articulation of many parts becomes even more pronounced at night (opposite, top left).

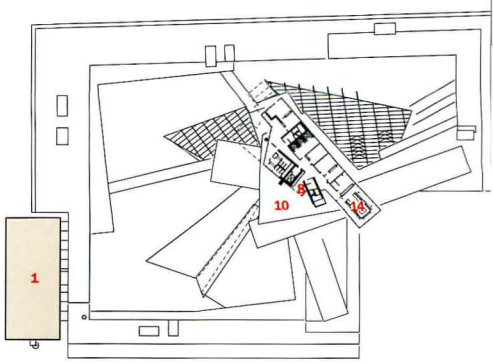
In cross section (above), the bank's mix of public spaces, outdoor terraces, and offices becomes apparent. The floor plans (right) show the pinwheel-shaped placement of the cantilevered upper floors of offices.



FIRST FLOOR


THIRD FLOOR


EIGHTH FLOOR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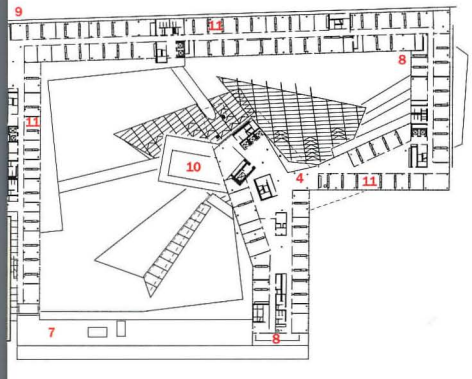

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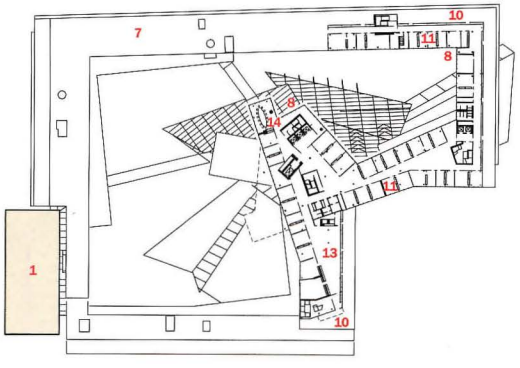
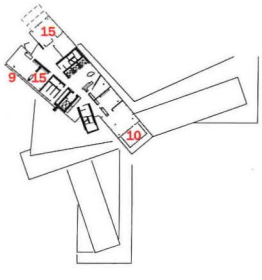
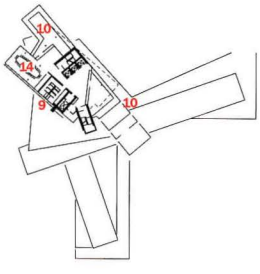


SIXTH FLOOR

1. *Existing building*
2. *Courtyard*
3. *Covered pathway*
4. *Entrance hall*
5. *Lobby*
6. *Terrace*
7. *Roof garden*
8. *Social area*
9. *Double facade*
10. *Roof terrace*
11. *Office*
12. *Gallery*
13. *Library*
14. *Conference room*
15. *Executive office*



ELEVENTH FLOOR



FOURTEENTH FLOOR

The courtyard has an intensely dynamic character, resulting from multiple skews; the daring, seemingly precarious, cantilevering of volumes; the slick slope of the lobby roof; and the near collision of these parts with structural columns and high-flying, tubelike passageways (this spread). At night, the vivid mural in the staff restaurant becomes highly visible from outside (opposite) .

The lobby, with its overhead walkways, echoes the building's skewed and intersecting forms. A mural by British artist Michael Craig Martin enlivens the staff restaurant (left). The low-rise section of the complex (opposite) incorporates an elevation of the preexisting Siemens Building, now an interior wall facing daylit balconies off a company training zone. Martin painted this elevation with the identifying *Nord/LB* in colorful supergraphics.

(continued from page 126) The offices have no air-conditioning—unusual in German commercial high-rises, most of which have either air-conditioning or mechanical ventilation systems with controlled fresh-air supplies and exhaust-air extraction. Here, the tower's load-bearing structure—consisting of two 3-foot-thick columns with concrete cores wrapped in heating spirals—is cooled by a low-energy system using cold ground water, pumped from 66 feet below the ground, about 6 feet below the water table. The tower relies on concrete ceilings for its storage mass. Water, running through pipes in the tower's ceilings, gets cooled in soil heat-exchanger tubes in 120 foundation piles, where the heat is removed in the summer and can be stored for winter use. The seasonal storage and pumped circulation of ground water constitutes the building's main heating system, but conventional zone heating backs it up. For the whole complex, the annual balance of heat supplied to and extracted from the ground is equal. Though the system itself is not new, it is atypical for such a large building.

Allowing each employee to make local adjustments to workplace temperature and airiness, the windows are individually operable. Offices on the building's low perimeter, facing the traffic artery, are double glazed against noise and car fumes, but even here, the inner windows are operable. Depending on orientation, some windows are protected by foil dot patterns applied to the glass, while others have external sunshades—operable both centrally and from workers' individual controls. The upper slats of the sunshades are angled specifically to direct illumination inward and keep out glare. To bring light into the courtyard, computer-driven mirrors on its surrounding facades redirect rays into shadowy corners.

The importance the architect attached to creating a pleasant and comfortable work atmosphere is apparent everywhere, not only in the nuances of shading, the refreshing courtyard, and the operable windows. Though many workers had to adjust to the "fishbowl" distractions and lack of privacy created by glass walls onto interior corridors, the daylight admitted was welcome from the start. And everyone seems to enjoy the informal interaction and information exchange at the many strategically placed coffee corners. Plan variations from floor to floor allow for many office types, from open layouts to cells and team offices.

In the staid world of German banking, the choice of an unorthodox, noncorporate office like Behnisch, Behnisch & Partner represents a major leap. In a statement, C.E.O. Manfred Bodin admitted that "for us bankers, it was not always easy to follow the highly creative approach of the architects." But in the process, Behnisch clearly managed to satisfy traditional executive needs. On the tower's 11th through 17th floors, where the nine top executives have their offices, private dining rooms, a "sky lounge," a conference room, and a large dining room for guests are all designed with understated chic. And by choosing architecture that is both environmentally sustainable and visually striking, Nord/LB sends a message far and wide, sharpening its social image and promoting a forward-looking reputation. Among the locals, reactions to the new building seem strong, yet mixed: People either love or hate it. ■

Sources

Curtain wall: *Rupert App GmbH*

Glazing: *Glas-Fischer GmbH*

www For more information on the people and products involved in this project, go to Projects at **architecturalrecord.com**.

The main entrance and lobby (this page and opposite) face the campus walk. The sun-shaded glazing above the lobby provides natural light for the main lecture theater, which extends up and over the lobby.

Without architectural fanfare, **Busby + Associates** and **architectsAlliance** demonstrate sustainability in a northern climate with York University's **COMPUTER SCIENCE BUILDING**

By John E. Czarnecki, Assoc. AIA

Perhaps the best way to describe the Computer Science Building at York University, in Toronto, Canada, is to be clear about what it is not. It does not offer the architectural spectacle that the Greater London Authority Headquarters and the Norddeutsche Landesbank, both featured in this issue, possess. A low-lying structure tucked discreetly into a campus, the York building lacks the landmark presence in an urban cityscape that distinguishes those two projects. However, in the Toronto climate of harsh winters and hot summers, the York facility provides one of the best examples of North American institutional architecture that fully integrates environmentally sustainable features into an intelligent design. It avoids the aesthetic clichés associated with "green."

Located in far northwestern Toronto on a stark campus of many concrete Brutalist buildings constructed in the 1960s and '70s, the Computer Science Building was designed by Busby + Associates Architects, of Vancouver, in a joint venture with architectsAlliance, of Toronto. It replaces an existing computer science building, completed in the mid-1990s, that was quickly perceived as too customized and not appropriate for changing technological needs. "That building didn't evolve," says Adrian DiCastri, a partner with architectsAlliance.

York University, with a number of facilities recently completed or currently under construction, also foresaw a need for greater building flexibility to address an upcoming surge in enrollment. The university has coupled its demographic foresight with an environmental commitment. In the past decade, in both its curriculum and campus setting, it has pursued a green agenda and now has sustainable guidelines for all new buildings. Having a savvy client enabled the team of Busby and architectsAlliance to fully develop an environmentally sustainable building from the start.

Simple in plan, complex in building intelligence

Opened in spring 2001, the 101,400-square-foot York University Computer Science Building comprises the largest green institutional building in Canada. Built for only $11.1 million, or $110 per square

Project: *Computer Science Building, Toronto, Canada*
Owner: *York University*
Architect: *Busby + Associates Architects—Peter Busby, partner in charge; Mike McColl, associate in charge; Veronica Gillies, Alfred Waugh, Susan Ockwell, team; architectsAlliance—Adrian DiCastri, partner in charge; Walter Bettio, project architect; Barbara Zee, team*
Engineers: *Keen Engineering (mechanical); Yolles Partnership (structural); Carinci Burt Rogers (electrical)*
Landscape: *John Lloyd & Associates*

The copper-clad facade with a sawtooth pattern on the building's east and west sides (west side shown here) allows for winter solar gain and summer shade on the east; it is oriented for northern light on the west.

foot, the straightforward plan allows flexibility. Situated snugly between two existing academic buildings—fitting the campus master plan's call for increased density—the front of the computer science building faces a walkway to the south. The three-story structure, with two, 200-seat lecture halls in the basement, is composed primarily of three volumes: a bar of laboratories and offices extending the length of the building's western edge, a courtyard at the northeast corner surrounded mostly by offices, and a volume with a 950-seat lecture hall and the main entrance at the southeast corner. The plan of the entire structure was based on a 30-foot module. Learning a lesson from the previous, overly customized computer science building, the architects designed most interior walls in the bar and courtyard volumes of this new structure as partitions that can easily be removed or repositioned for new configurations. All mechanical, data, and electrical systems are connected through continuous cabinets along the building's perimeter—a distributive system allowing for easy modifications. Currently a

THE BUILDING CAN READILY BE ADAPTED TO ANOTHER ACADEMIC OR OFFICE USE AT ANY TIME IN THE FUTURE.

home to computer science, the building can readily be adapted to another academic or office use at any time in the future.

The building's efficient envelope includes a sawtooth-patterned facade clad in copper (pictured left) on the top two floors of the east and west sides. The orientation of the east sawtooth allows for winter solar gain and summer shading, and the west wall is oriented for northern light. The lecture hall, featuring a planted green roof for storm-water retention and thermal reflectance, is clad in precast concrete on its east wall.

A glass wall (featuring glazing with a low-e coating and a 40 percent shading coefficient) faces the campus walkway to the south and has an integrated glass canopy. From the walkway, visitors enter into an entry hall with full southern exposure. The entry hall's ceiling, covered with a maple-veneer acoustic panel, slopes down to a maple bench (see photo, page 145). This simple, Alvar Aalto–inspired design detail warms and humanizes the space that faces the garish Brutalist concrete buildings outside.

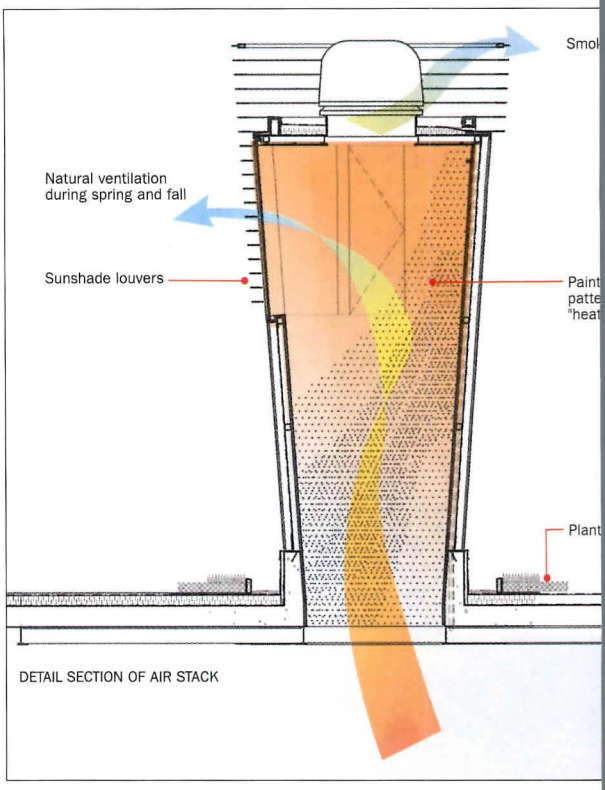
The main lecture hall, accessible to the entry lobby, has seating that steps up and over the lobby. The back wall of the hall has glazing facing south, with fabric-covered-wood, floor-to-ceiling louvered sunscreens that can be closed with computer controls. Through numerous discussions, the architects convinced the university to add glazing for natural light along the hall's southern wall because many of the events and classes held in the space do not require darkness.

Form follows function follows climate

Programmatic functions are placed in relation to climate in this building. Labs line the north side—where the building will have the least heat gain—of the top two floors. Every office, lab, and classroom has operable windows either on the perimeter of the building or facing an interior atrium for access to daylight and fresh air. The principle north-south circulation spine forms a double-height atrium, separating the bar volume from the rest of the building. The tree-filled courtyard atrium (pictured at right), with offices primarily on two sides, is topped with fritted glass as well as clerestory windows that mechanically open in response to the need to exhaust warm air. Building volumes act as continuous vessels for air flow and cross ventilation, drawing air from perimeter windows into the atria, where it is exhausted through the courtyard atrium's clerestory as well as through thermal chimneys in the circulation spine atrium.

Offices and labs with operable windows ring the courtyard atrium on four floors. The atrium, topped with fritted glass, has *clerestory* windows that mechanically open when it is necessary to exhaust warm air.

York Computer Science Building acts as vessel for natural ventilation



Although designed prior to the implementation of the LEED (Leadership in Energy and Environmental Design) green building rating system, the York University Computer Science Building would likely qualify for a LEED Gold rating, according to the architects.

The building's shape and external shading provide an efficient envelope. Exterior walls, composed primarily of curtain-wall systems, precast concrete, and copper, have a thermal value of R23, and the roof has a value of R35. Ordinary concrete emits greenhouse gases, but the concrete used in this structure is composed of a mixture with at least 50 percent fly ash. The fly-ash concrete will emit far less greenhouse gas than conventional concrete. The building also features a planted roof that allows for evaporative cooling in summer and added insulation in winter. Excess rainwater is collected and stored in a rooftop tank for controlled dispersal into a drain to the ground.

According to the architects, the Toronto climate will allow for natural ventilation without heating or air-conditioning 55 percent of the year. When natural ventilation is adequate for maintaining comfortable temperatures, temperate air is drawn through intake grilles into an underground plenum where air is passively cooled, then drawn into rooms through floor- or wall-based diffusers. In this condition (see middle section diagram, opposite), fan coils are locked out, and windows and stack dampers open to allow cross ventilation. The air rises in rooms and is warmed by building occupants and computers. The exposed concrete structure absorbs, holds, and slowly releases heat before it rises through openings in the building's two atria, creating a pressure differential. Stack effect draws air into operable windows and wind pressure raises the air-change rate, allowing for passive cooling. As outdoor air temperature rises, exhaust fans are turned on to assist ventilation. When heating or air-conditioning is needed, fan-coil units draw in mixed air, heat or cool it, and deliver it to building spaces. A direct digital control system, which manages the heating, cooling, and ventilation, determines the switch-over point from natural ventilation to normal systems and vice versa.

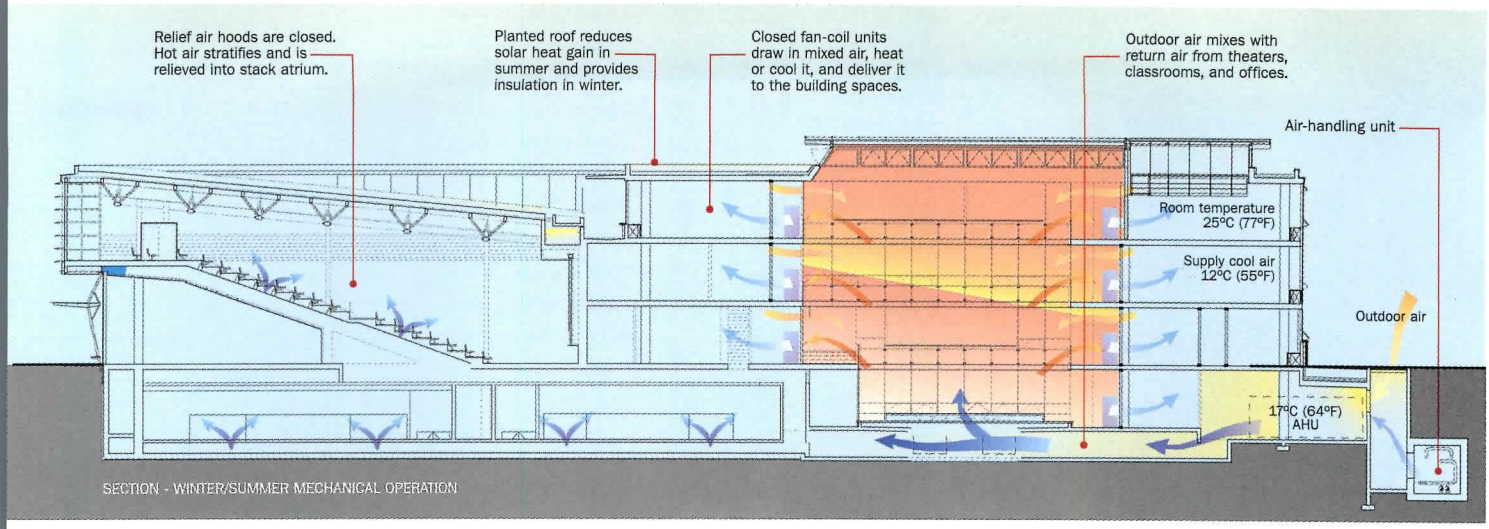
The university implements a broadened thermal comfort range in this building compared to most education structures. Temperatures in offices and labs are kept between 68 and 73 degrees Fahrenheit and between 64 and 79 in public spaces. "That temperature gradient has a significant impact," on energy cost savings, says Adrian DiCastri, a partner with architectsAlliance.

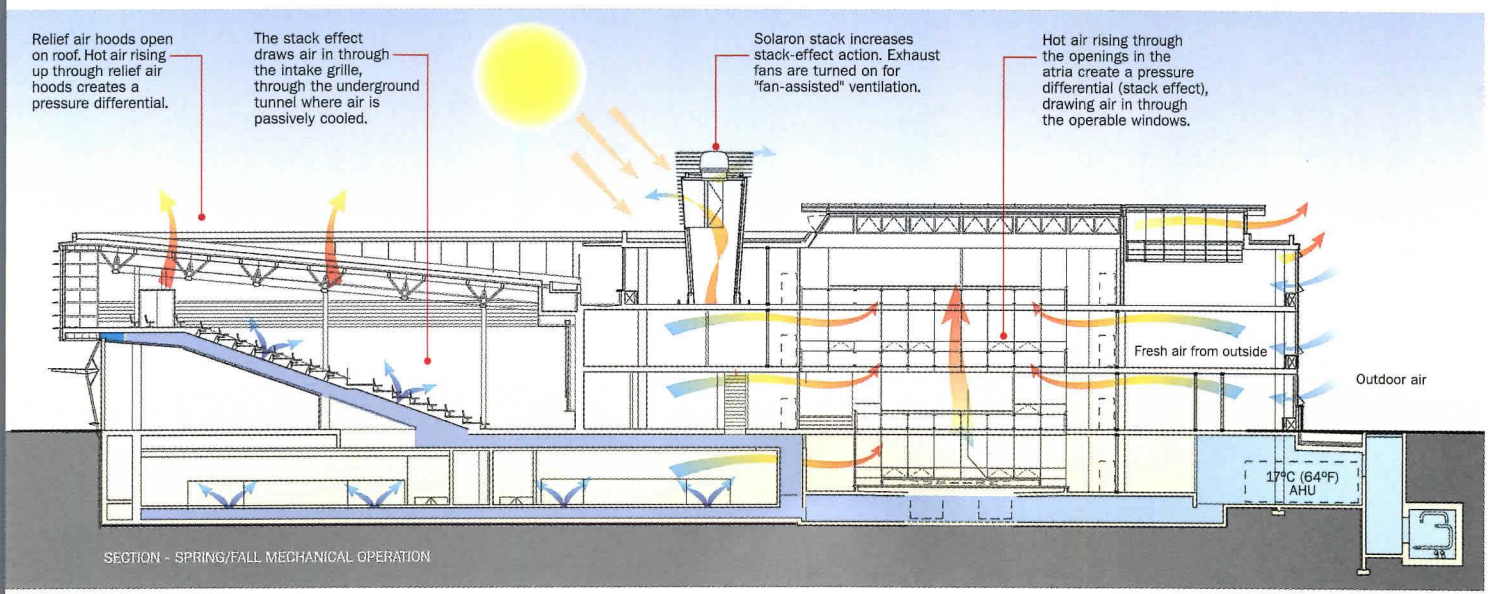
Building users can self-regulate spaces with manual controls for windows, air diffusers, and lighting. The university gave all occupants instructions on when, for example, to open a window or when to open air diffusers.

Most of the building's furnishings are covered with a DesignTex fabric developed by William McDonough. The fabric involves a more efficient dyeing process and reduction of wastewater.

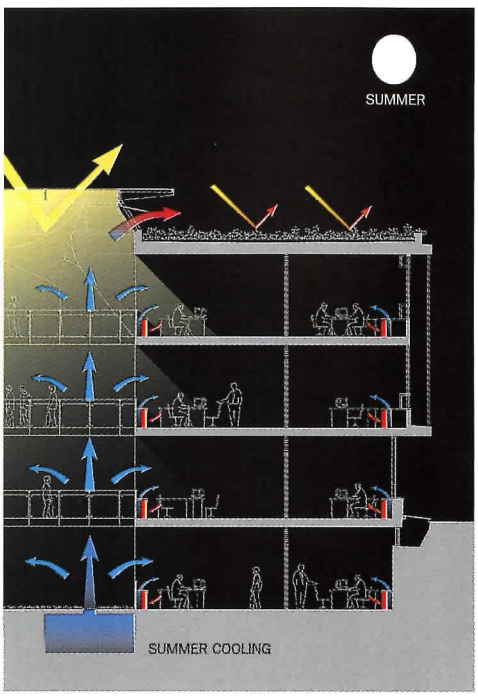
The architects claim that their material selection will save 1,340 tons of greenhouse gas emissions annually, and building systems operations will save 1,125 tons of greenhouse emissions per year. Over a 75-year life span, the building will save 85,715 tons of greenhouse gas emissions. The estimated operating and maintenance costs over 75 years are $33.3 million, as opposed to $83.9 million if the building were conventionally designed. *John E. Czarnecki, Assoc. AIA, with Sara Hart*

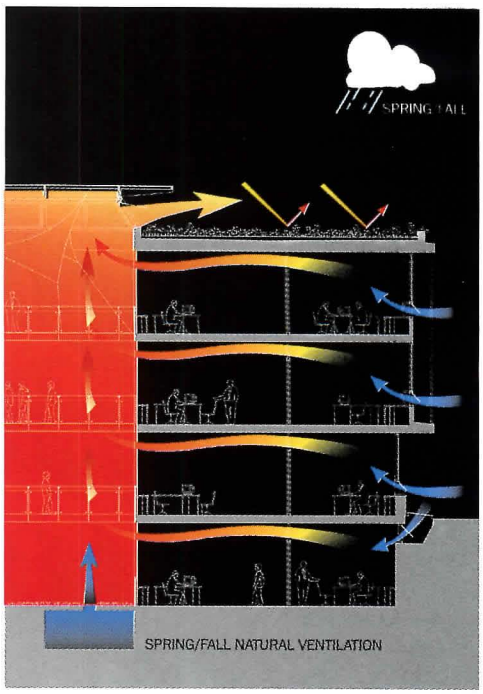
AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION *This month's Continuing Education Opportunity includes three special building-science sections, on pages 116, 128, and 142. For learning objectives to focus your study while reading these sections, turn to the Projects introduction on page 109. To receive credit, turn to page 147 and follow the instructions. As always, archrecord.com has this story and more continuing education.*

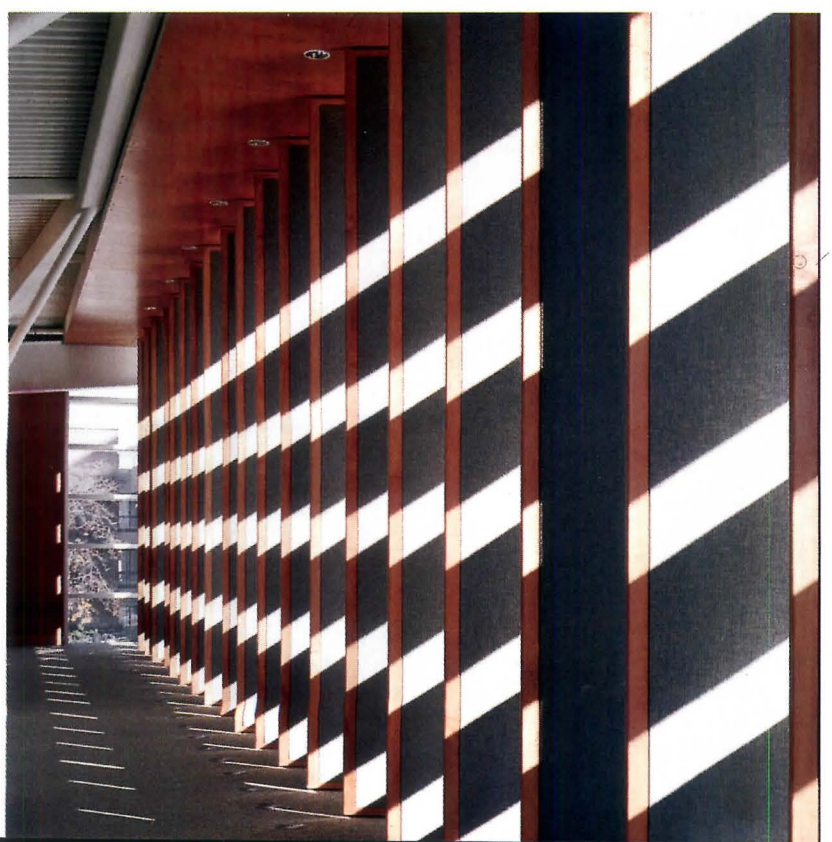




The inside of air stacks along the west atrium (in picture and diagram, opposite) are lined with a dot matrix pattern for surface reflection and absorption, to maximize daylight penetration. The stacks are topped with exhaust fans that turn on when needed to exhaust warm air. The diagrams to the right show the offices and classrooms adjacent to the courtyard atrium. In summer, cool air is delivered from fan-coil units through diffusers that are individually controlled by room occupants. Cool air is also brought into the atrium from the ground. The planted roof allows for evaporative cooling in summer, absorbing as much heat as a black or gray membrane roof would. In natural ventilation conditions (diagram, far right), cool air enters the rooms through operable windows. Warm air rises and enters the atrium, where it is exhausted through the clerestory. Passively cooled air enters the atrium floor from the underground plenum.



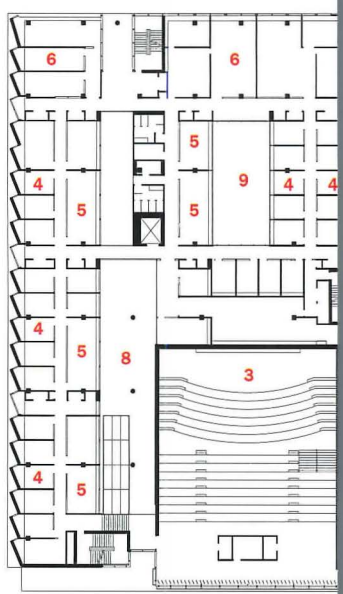




The north-south corridor through the building (left) acts as an atrium. Fabric-covered wood panels in the back of the lecture theater (below) can be opened or closed to emit or block daylight. The main lobby (opposite) slopes down from the campus walk.

1. *Entry*
2. *Lobby*
3. *Lecture theater*
4. *Offices*
5. *Grad offices*
6. *Computer labs*
7. *VGR laboratory*
8. *West atrium*
9. *East atrium*
10. *Library*
11. *Faculty lounge*
12. *Seminar room*
13. *Planted roof*
14. *Exterior deck*

THIRD FLOOR



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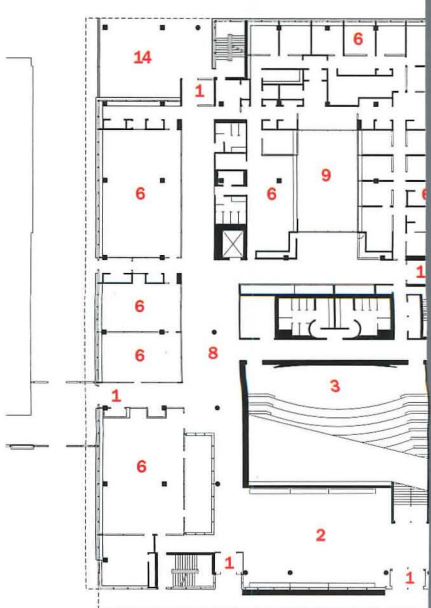

FIRST FLOOR

N 0 20
6

The building's concrete structure is exposed throughout, and exposed-concrete ceilings (composed of 50 percent fly-ash concrete, which results in lower greenhouse gas emission) provide thermal mass to store heat. Air-conditioning and heating is necessary in a building in this climate, but the smartly designed structure holds heat in winter and allows for ventilation in temperate weather. The building was designed for air to flow through rooms and interstitial spaces—there are no ducts. The heating and cooling loads are far less than they would be in a conventionally designed building, and the mechanical equipment is about half the size necessary for a traditional building of its size. With a lower cost for mechanical equipment, the architects were able, in effect, to focus on considering the entire building as an integrated mechanical system.

Corridors, lined with a cherry-faced plywood with low-VOC toxins, have linoleum flooring, which is renewable and inert. Most of the building's materials, including steel, concrete, and glass, were produced locally in or near Toronto, the center of Canadian manufacturing.

Thinking green from the beginning

What Busby and architectsAlliance have shown with the York building is that it is possible to have an environmentally sustainable building in a climate with dramatic extremes. "We always hear that it is easier to do green in a benign climate," says Peter Busby, principal of Busby + Associates. "But the harsher the climate, the easier it actually is to do a green building. Toronto buildings require three times as much energy as those in Vancouver," so the payback in energy savings in a sustainable building in Toronto, although it definitely requires heating and air-conditioning, is far greater than in a gentler climate.

Planning for sustainability from the beginning of schematic design, according to DiCastri and Busby, is key. And that requires a dramatic change in mindset. "Architects design a conventional building and try to make it green," DiCastri says. "You can't make a building green as an add-on. We say that if you go light or partially green, it will add to the costs. If you go deep green, it will lower the costs."

The true test will be the facility's ability to perform and be flexible. As the copper used in the building slowly patinates and the university's academic needs change, the structure as a whole must also evolve. ■

Sources

Copper cladding: *Heather & Little*
Metal/glass: *Kawneer Company Canada*
Masonry: *Belden Brick Company*
Glass: *AFG Industries; Glass Group*
Skylights: *Prelco*
Metal doors: *Regal Door & Hardware*

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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- Read the three special building-science sections, on pages 116, 128, and 142, using the learning objectives provided on page 109.
- Complete the questions below, then fill in your answers.
- Fill out and submit the AIA/CES education reporting form or download the form at www.architecturalrecord.com to receive one AIA learning unit.

QUESTIONS

1. How is cool air delivered to the building at York University?
- **a.** cold air brought in through natural ventilation
- **b.** cold-water pipes running through concrete slabs
- **c.** shading overhangs cool the inside air
- **d.** air from an underground plenum is drawn into rooms

2. Specifying optimal window glazing systems required studying the impact of
- **a.** daylight routines
- **b.** weather, daylight routines, and solar radiation
- **c.** solar radiation and daylight
- **d.** weather and daylight

3. Environmental comfort is determined by which combination of factors?
- **a.** temperature, humidity, air intake and exhaust, and solar radiation
- **b.** air intake and exhaust, humidity, and solar radiation
- **c.** temperature, humidity, air intake and exhaust, air movement, and solar radiation
- **d.** temperature, humidity, and solar radiation

4. The process of analyzing, predicting, and controlling the movement of fluids is known as which?
- **a.** flow engineering
- **b.** hygroscopic engineering
- **c.** building management system
- **d.** variable speed water pumping

5. The goal in the Hannover building was to allow office workers control over which?
- **a.** placement of windows
- **b.** choice of shading devices
- **c.** temperature and air movement
- **d.** heating, window openings, lighting and shading devices

6. Shading devices should do which?
- **a.** allow solar heat gain
- **b.** protect from solar heat gain
- **c.** block out daylight
- **d.** reflect daylight to the exterior

7. A sphere has how much less surface area than a cube of the same volume?
- **a.** 15 percent
- **b.** 25 percent
- **c.** 35 percent
- **d.** 45 percent

8. Potential heat loss from the GLA was reduced by which?
- **a.** high-performance glazing
- **b.** highly insulated panels
- **c.** combination of high-performance glazing and highly insulated panels
- **d.** combination of high-performance glazing and solar shading

9. The GLA atrium is heated by which method?
- **a.** hot air
- **b.** hot water
- **c.** solar radiation
- **d.** stack effect

10. The GLA's offices are ventilated by which method?
- **a.** the air-handling unit
- **b.** vents in the building facade
- **c.** operable windows
- **d.** both a and b, but not c

Program title: **Three special articles, found in the Projects section beginning on page 109, Architectural Record (02/03, pages 116, 128, and 142).**
AIA/CES Credit: This article will earn you one AIA/CES LU hour of health, safety, and welfare credit (valid for credit through August 2004).
Directions: Select one answer for each question in the exam and completely circle appropriate letter. A minimum score of 70% is required to earn credit.

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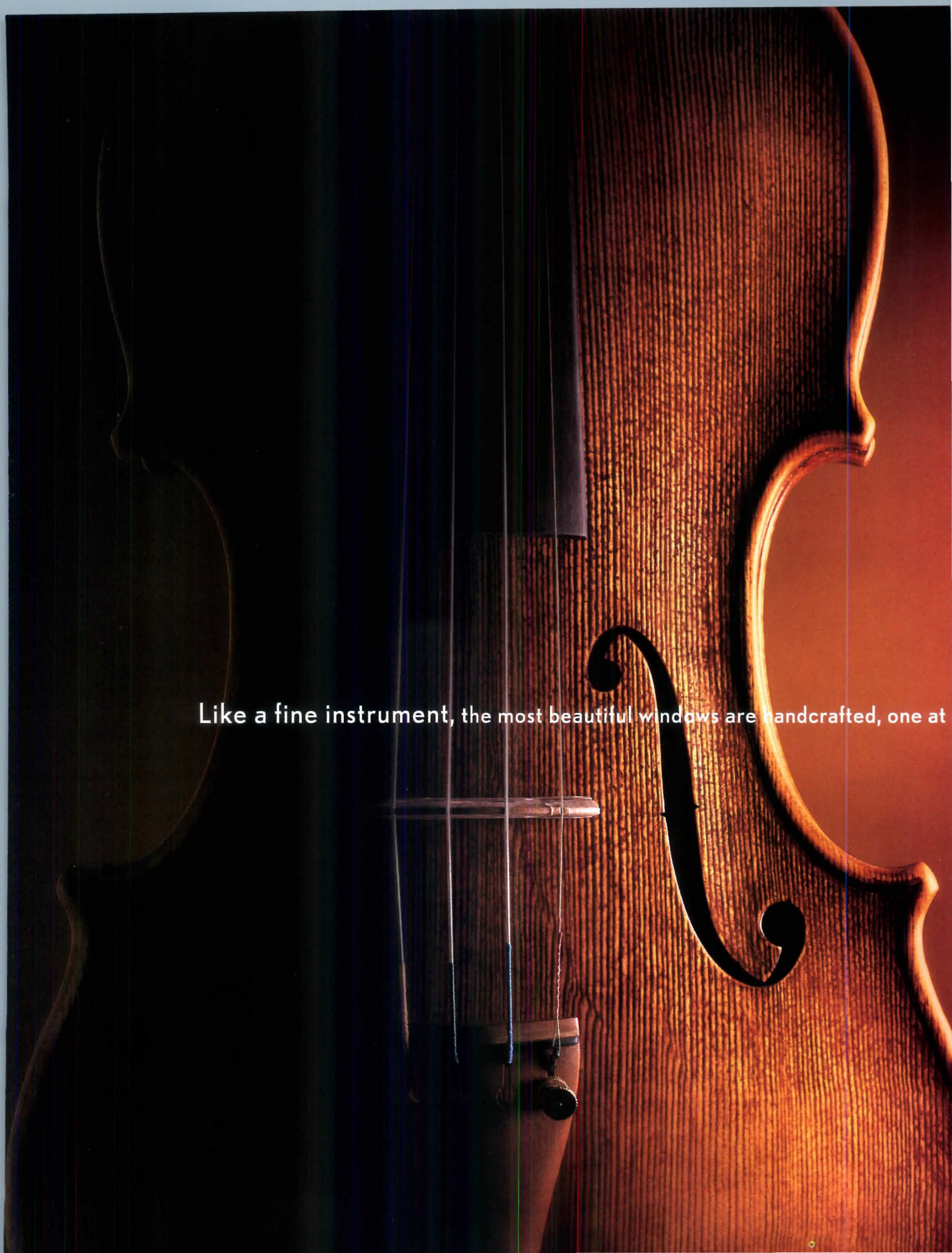

Like a fine instrument, the most beautiful windows are handcrafted, one at

LIBRARIES

Hubs of Learning

ONCE THE HUSHED REPOSITORY OF BOOKS, THE LIBRARY IS EVOLVING INTO A HYBRID COLLECTION OF BOTH ACTIVE AND QUIET SPACES WHERE EVEN A CUP OF COFFEE IS WELCOME.

By Clifford A. Pearson

Go to a flea market anywhere they're building new libraries and chances are you'll find some old card catalogs for sale. Digital technologies have made the great wooden cabinets with all their index cards obsolete. But libraries made of bricks and mortar (or glass and steel) are not disappearing, even though much of the information they house can now be accessed online or by other remote means. Their roles and functions, however, are changing.

More than ever, libraries are social hubs and places of learning. Although people can search catalogs and read periodicals from their computers at home, they need to visit the library to have real conversations, to bump into colleagues, to catch the buzz that only a physical hive of activity can engender. "Libraries are no longer just repositories of information," says Shirley Dugdale, the head of learning environments consultancy services at the planning and design firm DEGW. "People go to libraries these days for help in finding information and to collaborate with others," explains Dugdale. One of the design challenges for architects is finding the right balance between spaces for interaction and sanctuaries for reading.

Public libraries are increasingly important in providing access to computers and online services for people who don't have such technologies at home or work, says Dugdale. They are also becoming places where more affluent people can come, plug in, and get help in mining the often confusing information landscape. While libraries have long provided communities with reading rooms, today they often have extensive facilities for classes and even conferences. Libraries are also supplying spaces for other kinds of gatherings: cafés for informal encounters, "newsstands" for people to catch up on the latest periodicals, and galleries for exhibitions. In part, these are responses to a new type of library competitor—the comfortable, sprawling stores of book chains such as Barnes & Noble and Borders. The changes seem to be working: Library visits rose 8.3 percent in 2002 over 2001, according to a study by the American Library Association.

Both public and private clients are reasserting the civic role of libraries. Cities such as Nashville and Troyes, France, have built major facilities right downtown, using them to make architectural statements about the central role of learning in a modern society. In Dresden, Germany, a new library brings together the collections of the state government and a local university and creates a public square serving town and gown. And in Boston, the Christian Science church literally tore down walls separating its new Mary Baker Eddy Library and the city's street life. Although these projects employ different architectural styles, they all strive to express a vigorous engagement with the public realm. ■

1.

Dresden, Germany

Mostly buried underground, the Saxon State and University Library by Ortner & Ortner brings some old-fashioned ideas to a Modern building.

2.

Nashville, Tennessee

Robert A.M. Stern Architects designed a Neoclassical icon to face Tennessee's 19th-century state capitol and attract citizens downtown.

3.

Troyes, France

A grand porch and bold use of materials and colors give Du Besset-Lyon's Médiathèque an engaging presence in a historic city.

4.

Boston, Massachusetts

Ann Beha Architects created a dialogue between old and new when it converted part of an early-20th-century building into a Modern library.

www For additional library projects, and more information on the eople and products involved in the following projects, go to Building Type tudy at **architecturalrecord.com**.

Saxon State Library
Dresden, Germany

1 **ORTNER & ORTNER BRINGS BACK A NEOCLASSICAL FORMALITY TO LIBRARY DESIGN WHILE LEAVENING IT WITH A MODERN SENSIBILITY.**

By David Cohn

Architect: *Ortner & Ortner Baukunst—Laurids Ortner, Manfred Ortner, principals; Christian Lichtenwagner, Ekkehart Krainer, Ulrich Wedel, Rudi Finsterwalder, Michael Ewerhart, Michael Adlkofer, Hans Witschurke, Roland Duda, Robert Westphal, Michael Franke, Berit Grosmann, Bernhard Eichinger, Thomas Grossmann, Thomas Heydenreich, Georgia Prätorius, Ralf Prätorius, project team*
Architect (planning): *ATP Achammer-Tritthart & Partner—Burkhard Junker, chief executive officer*
Client: *State of Saxony, represented by the State Construction Department—Matthias van Rüdiger, managing director of construction*
Landscape architect: *Burger + Tischer*
Engineers: *Gmeiner Haferl Tragwerksplanung KEG (structural); Zibell Willner & Partner (building planning)*
Main contractor: *Bilfinger + Berger*

Size: *485,000 square feet*
Cost: *$80 million*

Sources
Stone facade: *Lauster Steinbau*
Glass roof: *MBM Metallbau*
Wood panels: *Inabau Tischlerei*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

For more than two decades the prevailing model for library design in Germany has been Hans Scharoun's State Library in Berlin. Breaking with the tradition of organizing large libraries around a central reading room, Scharoun introduced a nonhierarchical mix of reading areas and book stacks, which he set on floating floor trays much like the projecting balconies of his nearby Philharmonic Hall. With the new Saxon State and University Library in Dresden, architects Laurids Ortner, 62, and his brother Manfred, 60, have made a radical break of their own. They have reintroduced the monumental reading room and used it to provide a focus for the 400,000 square feet of open book stacks and study areas in this mostly underground facility.

Program

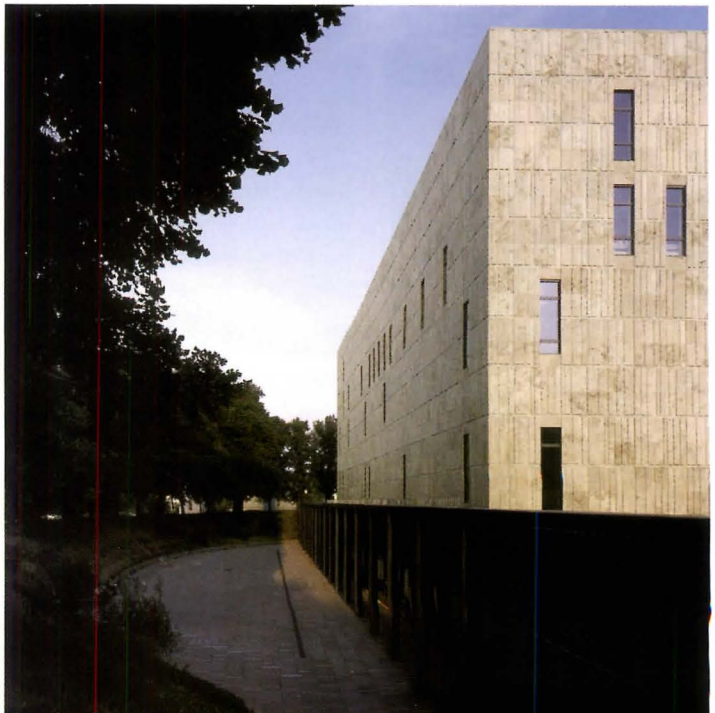
The building combines the official collections of the Saxon State with the general library of Dresden's Technical University, providing space for 7 million volumes. Its site, once the university's soccer field, is ringed by mature trees and earth berms originally built for spectator seating. Set in a developing area at one edge of the campus, the library will be joined by new academic buildings.

Solution

The Ortners' design, which won an open competition in 1996, plays back and forth between Neoclassical formality and the more informal and practical approach of contemporary buildings. This dichotomy highlights the two origins of the library: the Saxon royal collections and the public university's holdings.

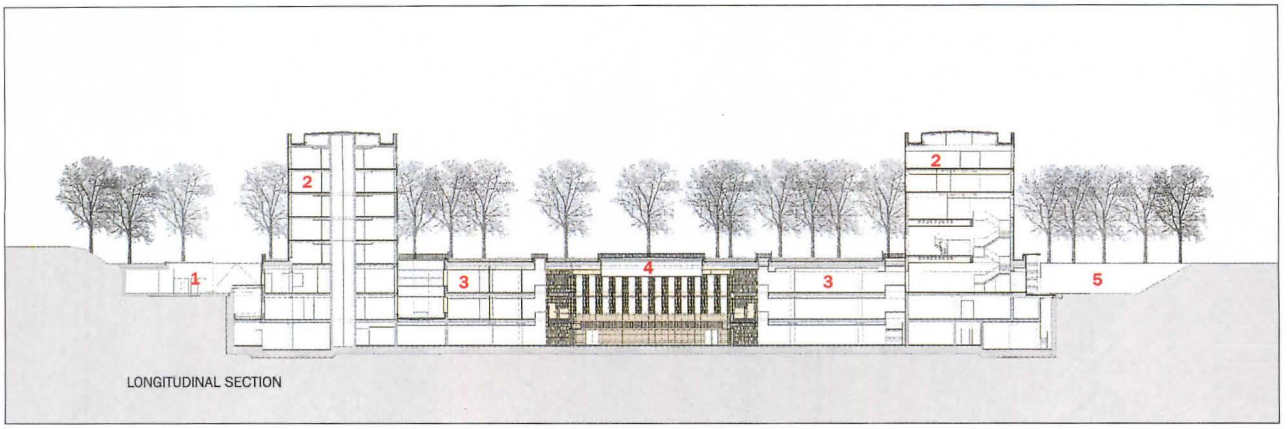
"Our first idea was to put the library underground," says Manfred Ortner. "It was the only way to maintain the aura of this location, which was given by the surrounding trees." This approach also allowed the architects to create a large public square for the growing campus. The library occupies three levels below the square, which is set at the height of the earth berms. The architects framed the square at the front and back with a pair of administrative blocks clad in Türing stone, a honey-colored German travertine. Covered in sod and crisscrossed by paths, the square is punctured by skylights, ventilation pods, and emergency egress hatches to the library below.

In contrast to the uneasy, artificial naturalism of this too-often punctured lawn, the library's main entry portico presents a row of black precast-concrete columns that evokes the Neoclassical grandeur of Schinkel's Altes Museum in Berlin. The portico, which is partially hidden from the street by the site's berms, reveals itself through a small off-center opening, seeming to emerge

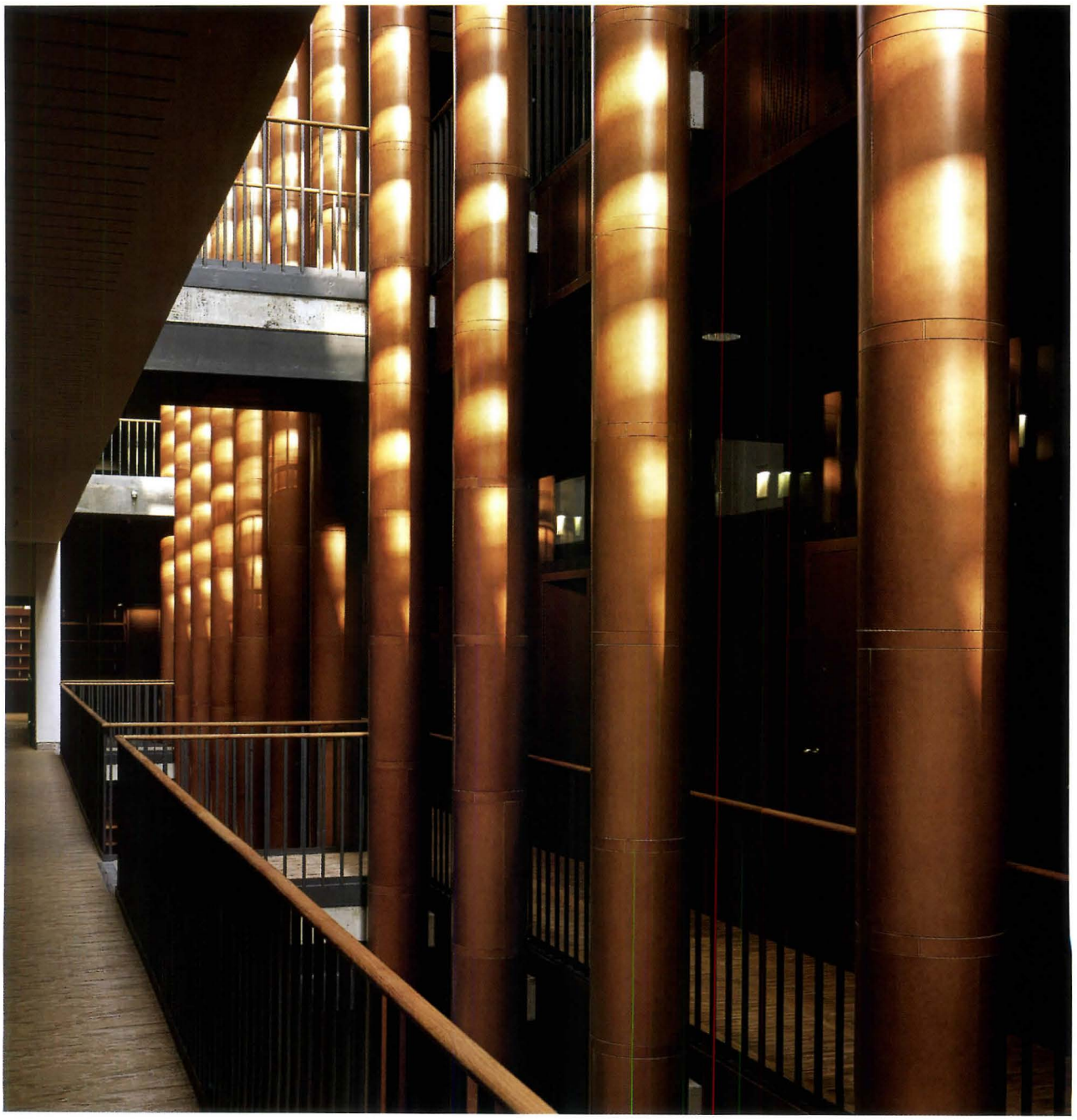


David Cohn is RECORD*'s Madrid-based correspondent.*

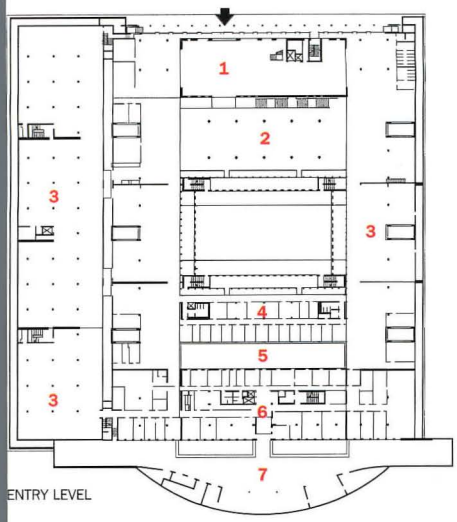
The two above-ground blocks define a public square for a growing university campus (right). The buildings are clad in Türing stone, a German travertine (below).



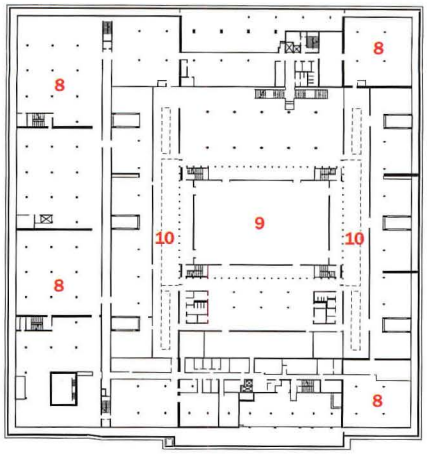
1. *Entry*
2. *Administrati*
3. *Reading/stac*
4. *Main reading*
5. *Loading*



Much of the libra buried beneath t landscaped publ square, helping t vide a stable inte environment for t book collections tion, above). Imp precast-concrete columns add to t building's sense formality (left), w numerous skyligh bring daylight int major reading ar study areas (opp



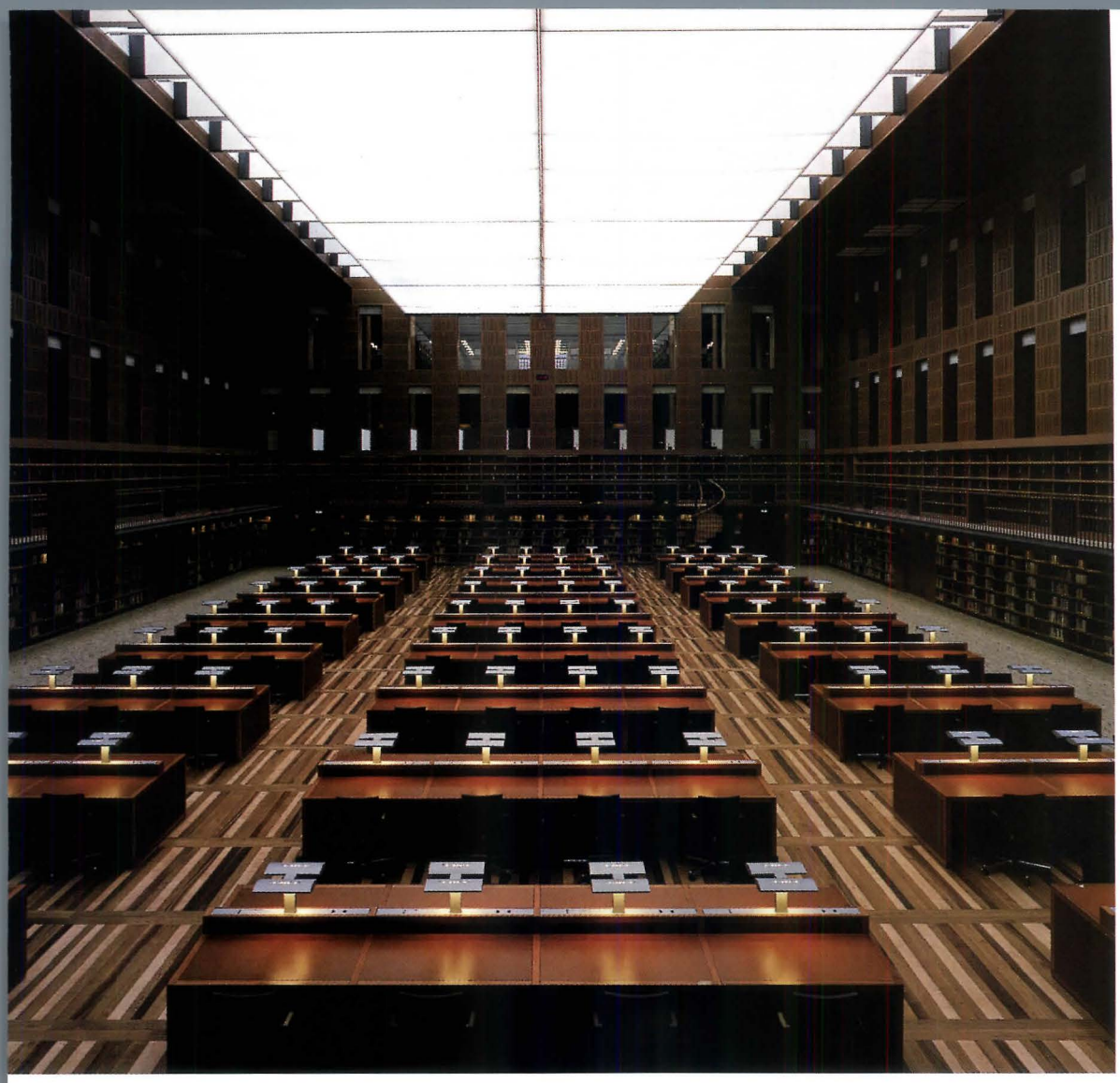
ENTRY LEVEL

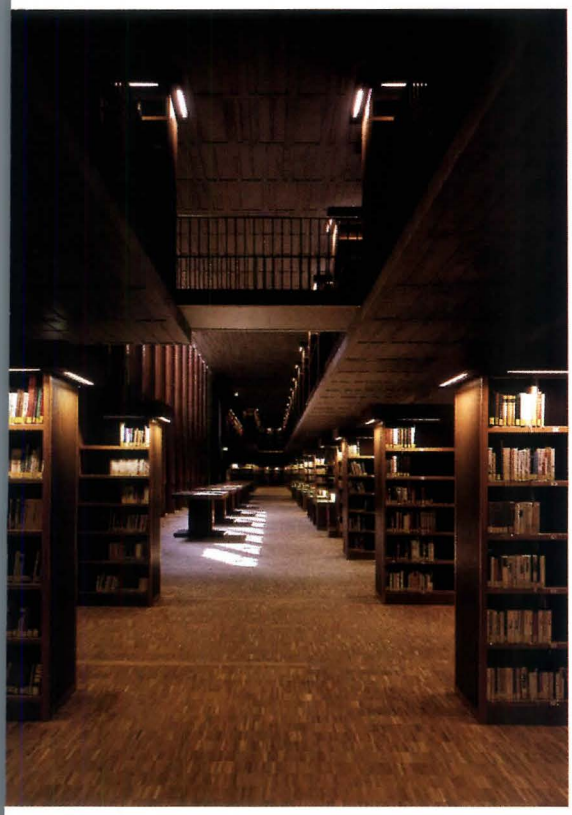


LOWEST LEVEL

N 0 50 FT. 15 M.

1. *Lobby*
2. *Catalogs*
3. *Reading/stacks*
4. *Seminar rooms*
5. *Light well*
6. *Offices*
7. *Loading*
8. *Archive*
9. *Main reading room*
10. *Double-height galleries*





from the earth like a picturesque English garden grotto.

The stately reading room lies at the heart of the building and rises from the lowest level to a skylit ceiling. Surrounded by open floors, it is enclosed by bookshelves and paneling of stained wood and fiberboard. "A classic reading room has the scale and power to focus readers' attention," says Manfred Ortner. "You can feel the power of the whole library concentrated here."

Mediating between this grandeur and the surrounding floors is a series of double-height, skylit circulation galleries, which are sometimes staggered between the three floors in a lively section of Piranesian complexity. The reading room is ringed by these cuts and a double-height row of wood columns.

Interior finishes search for a balance between economy and dignity. The warmth of wood mixes with the honesty of untreated concrete columns and exposed ductwork. Carpeting is ingeniously printed with a pattern scanned from a sample of Türing stone. The Ortners also apply a "bar code" pattern—a shallow relief of boxes in irregular configurations—to the building's stone cladding, as well as to the wood paneling and coffered concrete ceilings inside.

Commentary

With the Saxon State Library, the Ortner brothers have come a long way from their 1960s roots as part of a group of radical artists and architects called Haus-Rucker-Co. While they currently share with other architects of their generation a fashionable nostalgia for the Neoclassical, their work is far from the stilted orderliness favored by many of their Berlin peers. The underlying modesty of the Saxon library, as seen in its retiring urban presence, is a necessary antidote to more bombastic features like the grand entry portico. Just as Scharoun conceived the open-plan floors of his State Library in Berlin to represent West Germany's postwar spirit of democracy, so the Ortners' mix of the Neoclassical and the suburban offers a suggestive image of a new Germany in the making. ■

As in the great Beaux-Arts libraries of the 19th century, the main reading room (opposite, top) serves as the focal point of the entire design. But the Ortner brothers surrounded this room with open-plan reading areas (opposite, bottom left) and used modern elements such as raw concrete and sculptural stairs (this page and opposite, bottom right).

Nashville Public Library
Nashville, Tennessee

2 **ROBERT A.M. STERN ARCHITECTS BROUGHT HARD-NOSED PROBLEM-SOLVING SKILLS AS WELL AS NEOCLASSICISM TO A COMPETITION-WINNING DESIGN.**

By Christine Kreyling

Architect: *Robert A.M. Stern Architects—Robert A.M. Stern, FAIA, Alexander Lamis, AIA, partners; Jeffery Povero, AIA, Paul Zembsch, project designers; Daniel Lobitz, AIA, Melissa DelVecchio, Mark Gage, Ryan Hullinger, Julie Nymann, Jong-Hyuck Park, Charles Toothill, Susi Yu, assistants; Dawn Handler, Laura Hynes, Mei Wu, landscape team; Thu Do, Kelly Greeson, Pat Burns Ross, interiors team*
Architect of record: *Hart Freeland Roberts*
Client: *Public Library of Nashville and Davidson County*
Engineers: *Hart Freeland Roberts (structural); I.C. Thomasson Associates (m/e/p)*
Consultants: *Allan Ray Associates, Ben Page and Associates (landscape); Fisher Marantz Stone (lighting); Shen Milsom & Wilke (acoustical)*
General contractor: *Beers/Jones & Jones*

Size: *350,000 square feet*
Cost: *$51 million*

Sources
Steel windows: *Hopes*
Glazing: *Viracon*
Skylights: *Naturay Skylights*
Special interior surfacing: *Forbo Marmoleum; Tennessee Marble; Surell*
Lobby flooring: *Georgia Marble*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Downtown Nashville once had a Classical library building. The 1904 edifice, constructed with a donation from industrialist Andrew Carnegie, was demolished in 1963 to make way for a main library in the Modernist mode. Fragments of the old structure were placed in a plaza next to the new library, where they lay like bleached bones alongside the Santa Fe Trail—critters that failed to go the distance.

In 2001, Nashville got a new main library that reincarnates the Classical spirit of the lost Carnegie building. And the current facility, designed by Robert A.M. Stern Associates and the local firm Hart Freeland Roberts, is proving to be the most popular architecture in town, as six decades ago the Ryman Auditorium became the mother church of country music there.

Program

The library commission, which Stern won in a competition with two other finalists—Michael Graves and Hardy Holzman Pfieffer—envisioned a building with 288,000 square feet of space (four times the size of the existing facility) and a construction budget of $50–$55 million.

The program, developed by project manager Heery International for a user group wary of winding up with a stylish but dysfunctional plant,

Christine Kreyling is architecture critic for the Nashville Scene.

was purposely specific. The full-block site was difficult—with a steep slope and a parking garage that had to be preserved. The immediate context was architecturally mediocre and fractured by surface parking, but it had the virtue of a direct sight line to the Tennessee State Capitol three blocks away.

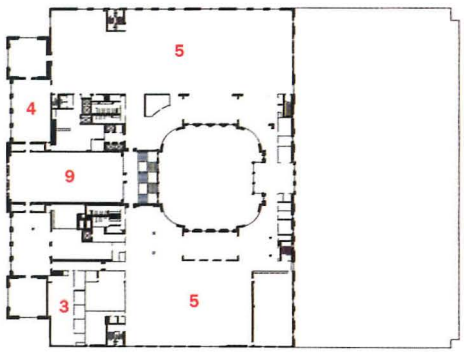
Solution

Stern's victorious design acknowledged that the capitol is the only architecture in the vicinity worth the library patron's attention. The major public spaces—lobby, Nashville Room for special collections, and Grand Reading Room—all focus on views of William Strickland's Greek Revival masterwork. More informal seating areas turn inward toward an open-air courtyard. And in its uncompromisingly Classical organization, massing, and detailing, the library recognizes the capitol's stature. "Classicism seemed appropriate to reinforce Nashville's history as the 'Athens of the South,' " Stern says, "to strengthen something that's latent."

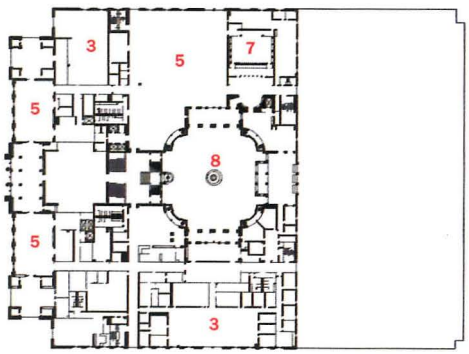
By building a three-story, pedi mented limestone front on Church Street, the architects were able to place two large floors over the existing parking structure. They als inserted an intimate Italianate courtyard in the center of the plan on the second floor.

The interior is an exercise in logical progression. The ground floor lobby houses circulation services, with a balcony functioning as exhibi tion and music gallery. Library direc tor Donna Nicely says the self-contained lobby and balcony "encourag us to program events there—the noise doesn't leak into other areas." Surrounding the lobby are spaces requiring the most immediate publi

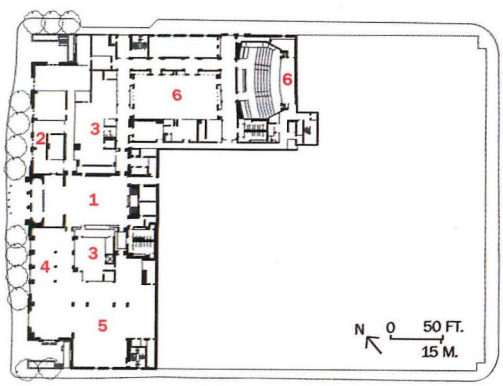
The main entry facade on Church Street (this page and opposite) hides an existing parking structure, which now feeds pedestrians into the library's lobby.



THIRD FLOOR



SECOND FLOOR



GROUND FLOOR

The main entry (above) and key interior spaces, such as the main reading room (opposite, bottom), face the state capitol, while lesser reading areas (opposite, top right) face a courtyard built on top of the garage. Murals in the stair hall (right) were painted by Richard Haas, while EverGreene Studios did the decorative painting in other areas. The main lobby and its surrounding balcony (opposite, top left) can be used for special events.

1. *Lobby*
2. *Retail*
3. *Offices*
4. *Reading*
5. *Stacks*
6. *Conference center*
7. *Children's theater*
8. *Courtyard*
9. *Grand reading room*

ccess: a "storefront" for popular
naterials, a streetside café and
etail space, and a conference cen-
er adjacent to the garage. Stern
otes that "the entrance from the
arage is not into some nasty space
ut right into the lobby, which
ncourages people to cut through to
he street, and maybe pick up a
ook in the process."

A double staircase leads up
o the children's section, special
ollections, and offices. The top
oor, with its barrel-vaulted main
eading room, is reserved for seri-
us study and research. The plan
lows activity to circulate around
he courtyard and minimizes a
atron's need to trek through one
ivision in search of another.
esign competition juror Marlene
avis, dean of the University of
ennessee's College of Architecture,
escribes Stern's planning as "a
rogrammatic tour de force. He
orked out every little detail."

ommentary

tern's library was part of an ambi-
ous $115 million building program
at also included five new branch
raries and the renovation of three
xisting ones. Director Nicely is
eased that "patronage at the main
rary is four times what it was in the
rmer library. The public loves this
uilding. What they like most is that
feels so warm, so welcoming; it
oesn't intimidate. I think we struck a
ord in the city." A Classical chord. ■

Troyes Médiathèque
Troyes, France

3 **DU BESSET-LYON WRAPPED A HISTORIC COLLECTION OF BOOKS IN GLASS AN GOLD, CREATING A MODERN JEWEL BOX FOR THE CIVIC REALM.**

By Claire Downey

Architect: *Du Besset-Lyon Architectes—Pierre du Besset, Dominique Lyon, principals; Alain Chiffoleau, Gary Glaser, Lawrence Weiner, project team*
Client: *Communauté d'Agglommération Troyenne*
Engineers: *Khephren Ingénierie (structural); Alto Ingénierie (m/e/p); Van Santen (facades)*
Consultants: *Speeg & Michel (lighting); Jean-Paul Lamoureux (acoustical); Casso (security)*

Size: *116,000 square feet*
Cost: *$12 million*

Sources
Masonry and foundations: *CRN*
Metal structure: *ACMM*
Curtain wall: *Laubeuf*
Gold suspended ceiling: *Richter System*
Metalwork: *Vulcain*
Woodwork: *Santin*
Elevators: *Otis*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

The French Revolution toppled the monarchy, but it also attacked another rich and powerful institution—the Church. In 1789, the revolutionary authorities gathered thousands of rare books and manuscripts, mainly from religious libraries, and assembled them in one collection in the city of Troyes. But the collection never had its own building until July 2002, when the Troyes Médiathèque opened its doors.

Program

Troyes is a city with an industrial past, rich in medieval architecture, and with a growing university population. For the Médiathèque, the municipality wanted a welcoming environment that would attract a diverse group of users. To do this, it applied new technologies to old sources, such as scanning 12th-century manuscripts to make them available as digital files. It also instituted an open-shelf policy for contemporary books and allowed people to take some titles out of the building (which is not the norm at French libraries).

When they won the design competition in 1997, architects Du Besset and Lyon were already known for a library they had designed in Orléans, as well as the headquarters for *Le Monde* in Paris. The Troyes project is part of a new development zone, on the site of what had been an old train station and, later, a high school. Today, the existing building is being turned into a cultural center, with the library abutting it on one side.

The library provides space for the rare-book collection, exhibitions, reading rooms, a newspaper kiosk, and closed areas for book conservation, storage, and offices.

Solution

Because the library has only three visible facades and suffers from a main entrance located off the parking lot of a McDonalds restaurant, the architects chose to create a building that is largely transparent, where interiors and exteriors flow together.

Beyond the glass facade, a series of bold elements—including a gold ceiling, a pink staircase, a historic book room, and a yellow corridor—define an interior urban landscape. At the heart of this cultural village is a dramatically elongated rare-book room where volumes are displayed on wooden shelves dating to the 17th century.

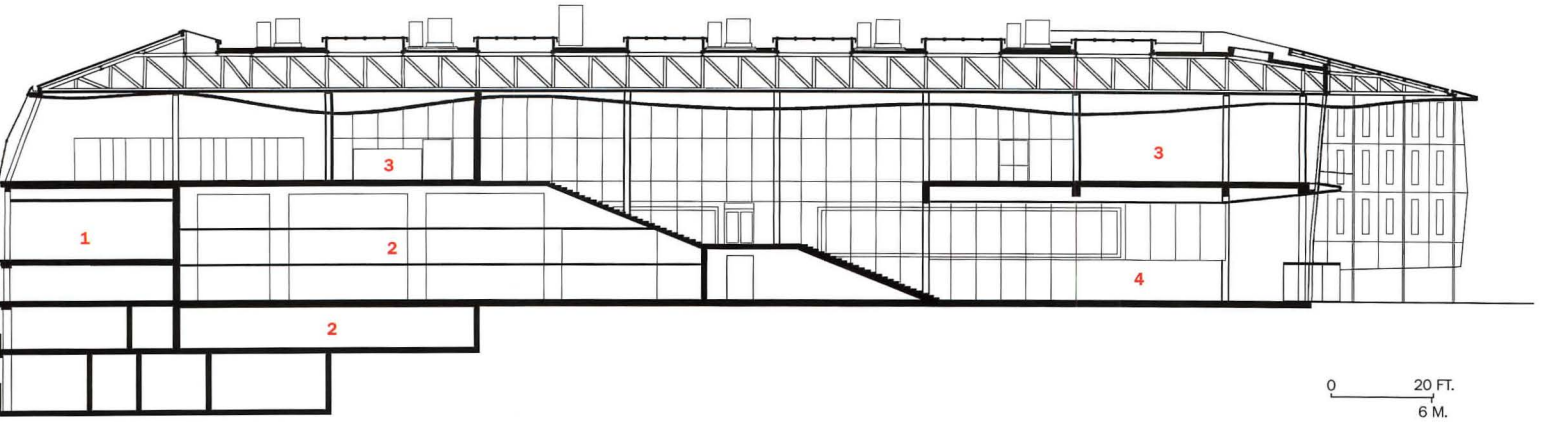
Glazed corridors and open-stack areas wrap around the old book collection, with expansive glass walls that encourage people to push open doors and explore new works. The architects employed a palette of pastel colors to define spaces, even extending the concept to window walls where colored film is sandwiched between glass layers.

Surrounded by glass, the main

Claire Downey is RECORD*'s Paris-based correspondent.*

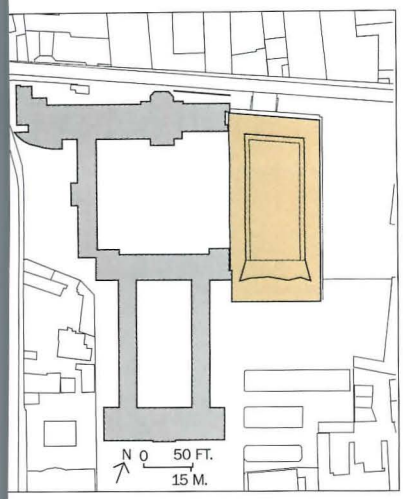
A glass front and deep portico help project th interior spaces out to the exterior. Part of this strategy includes continuing the undula ing gold ceiling of the top floor on the under side of the roof to form a canopy, a feature that is currently being completed.

PHOTOGRAPHY: © PHILLIPE RUAULT, EXCEPT AS NOTED

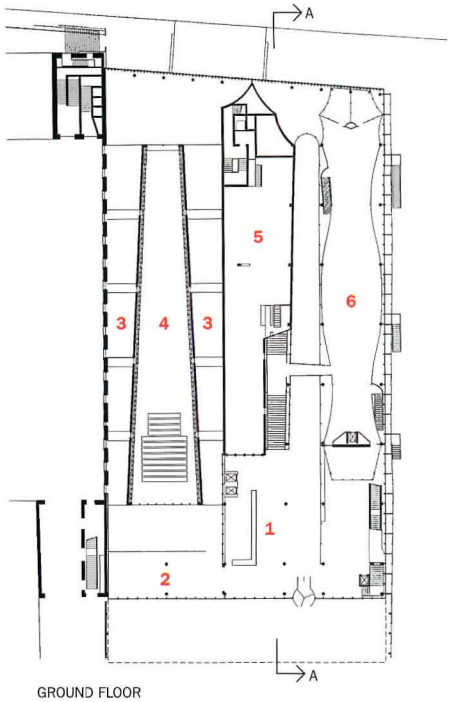


SECTION A-A

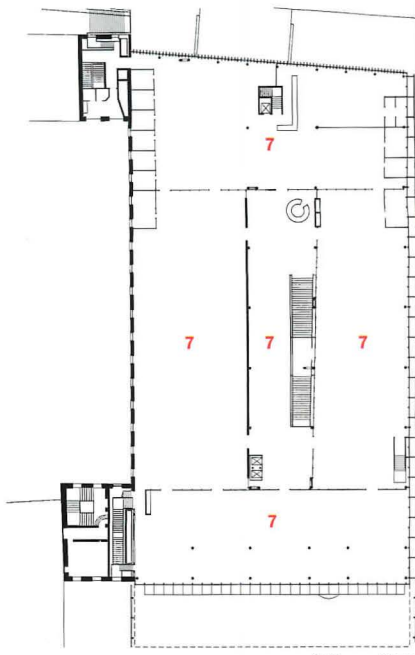
1. *Permanent exhibits*
2. *Storage*
3. *Reading*
4. *Children's section*



1. *Lobby*
2. *Newsstand*
3. *Permanent exhibits*
4. *Rare books*
5. *Storage*
6. *Children's section*
7. *Reading*



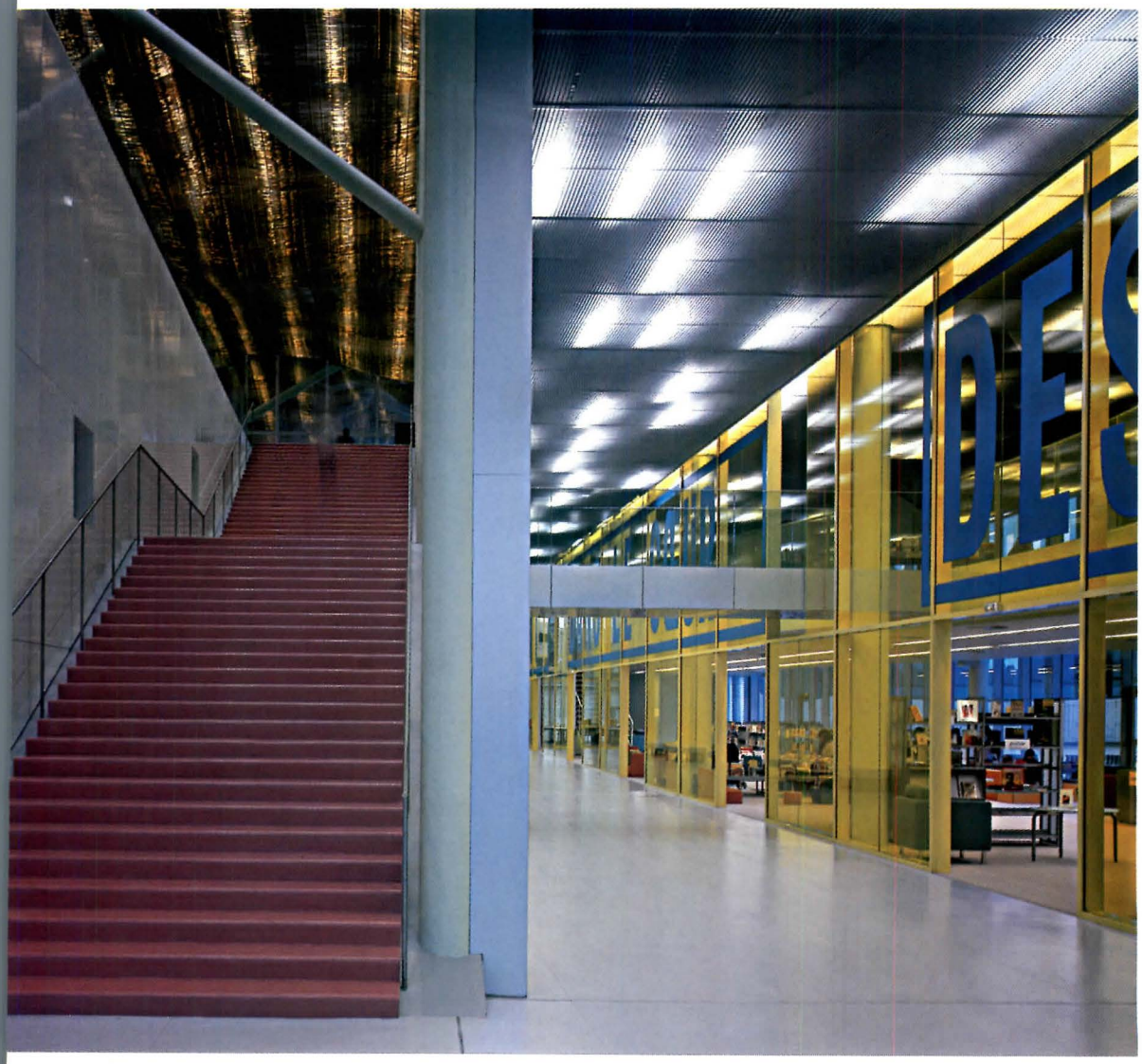
GROUND FLOOR



SECOND FLOOR

N 0 30 FT
9 M

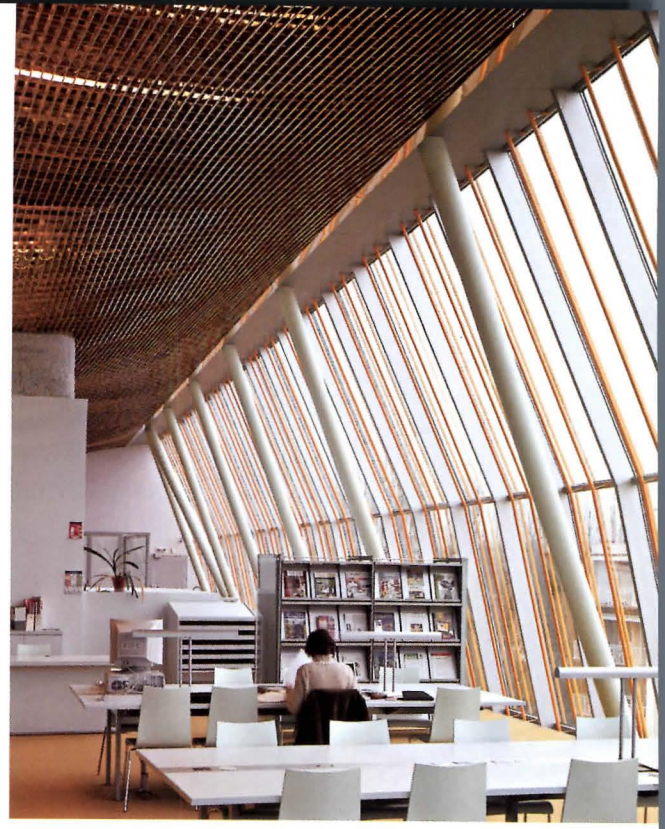
The library abuts an old train station that is being converted into a cultural center (site plan, above). The phrase "Ecrit dans le coeur des objects" ("Written in the heart of objects") runs along a main corridor (below).



reading room on the top floor offers views of the city and the moody, often gray, sky. An undulating gold ceiling grid floating above the floor casts a warm light over stacks and reading areas and evokes metaphors of the region's champagne industry. Made of gold-anodized aluminum, it is more crumpled than curved in places, adding to its reflectivity. Looking up, visitors can see through the grille to the lights above and through a glass roof to the sky beyond. The architects designed the building so the gold ceiling would project out under the roof to form a canopy over the entry, an element that is just now being completed.

Commentary

Du Besset and Lyon have shown themselves to be experts at designing spaces that create a certain lightness of being. At Troyes they balanced the intimacy that pastel colors can impart with a dynamic energy generated by long, open volumes. The result is a place where visitors feel comfortable either studying for hours or just dropping by to see a changing exhibition. What the library needs now is an entry sequence that doesn't require sidestepping a drive-thru lane at McDonalds. ■



The rare-books room (above left) includes old shelves, while reading and study areas elsewhere in the library are thoroughly modern (above right). Visitors can look through the gold ceiling and glass roof to the sky (below).

Mary Baker Eddy Library
Boston, Massachusetts

4 **ANN BEHA ARCHITECTS INSERTED A MODERN LIBRARY WITHIN A NEOCLASSICAL BUILDING, RESPECTING THE OLD BY MAKING CLEAR WHAT'S NEW.**

By Nancy Levinson

Architect: *Ann Beha Architects—Ann Beha, FAIA, Peter Sugar, AIA, principals; Peter Hoyt, AIA, Chris Raber, Cynthia Deschenes, James Selvitelli, Chantelle Brewer, Milton Lau, Jill Bogdanowicz-Wilson, design team; Jonathan Cutler, AIA, John Paul Dunn, master planning; Ken Guditz, AIA, Ric Panciera, AIA, Geoff Pingree, envelope*
Client: *Mary Baker Eddy Library for the Betterment of Humanity*
Consultants: *Reed Hilderbrand Associates (landscape); Schuler & Shook (lighting)*
Engineers: *Weidlinger Associates, Simpson Gumpertz & Heger (structural); Vanasse Hangen Brustlin (civil); AHA Consulting Engineers (mechanical/electrical)*
General contractor: *Shawmut Design and Construction*

Size: *81,000 square feet*
Cost: *$25 million*

Sources
Glass curtain wall: *Old Castle Temp Glass (Stackwall System)*
Brushed stainless-steel canopy: *Hercules Steel*
Swinging doors and enclosure: *Salem Glass*
Office furniture: *Herman Miller; Knoll*

www For more information about the people and products involved in this project, go to Building Types Study at **architecturalrecord.com**.

Bostonians have never shied away from the challenge of the good cause or the high ideal, and it is no surprise that the city that styles itself the "Athens of America" should boast an abundance of institutions dedicated to the pursuit of knowledge. The latest such institution, which opened this past fall, is the Mary Baker Eddy Library for the Betterment of Humanity. Designed by Ann Beha Architects, the library has, as its formidable name would suggest, a capacious agenda. It is at once a research institution housing the collections of Mary Baker Eddy, the founder of the Church of Christ, Scientist, and a civic gathering place, featuring exhibitions whose theme is the power of ideas.

Program

As conceived by the client, the program for the library mixes the practical and idealistic, the private and public. Located within an existing building—the 11-story Neoclassical mid-rise once occupied by the Christian Science Publishing Society—the 81,000-square-foot facility includes a technologically up-to-date research library and a small conference center for both institutional and public use. In addition to these specialized spaces, the library features a sequence of public galleries, all of which have a marked spiritual and pedagogical bent, and whose presence addresses the client's ambitious goal of making the library a forum for the public. These galleries include the Hall of Ideas, located in the double-height space that was once the building's entrance lobby and for which the MIT Media Lab has created "Word Physics," a computer-generated flow of great quotations; the Quest Gallery, which documents Mary Baker Eddy's life and work; the Monitor Gallery, an interactive display that uses the resources of *The Christian Science Monitor* to explore world events, past and present; and the renovated Mapparium, a three-story, spherical, stained-glass simulation of the globe, constructed in 1935 and long one of the city's singular attractions.

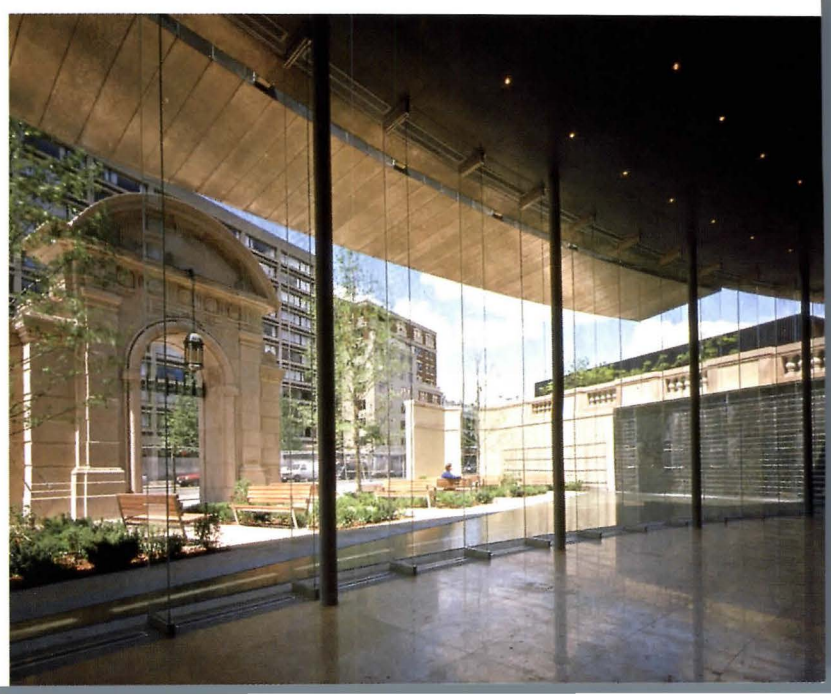
Solution

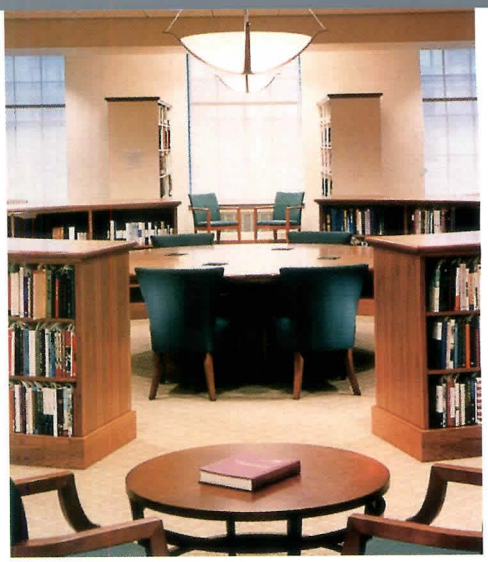
Designed in 1932 by Boston architect Chester Lindsay Churchill, the existing building was, as Ann Beha's partner Peter Sugar put it, "worn-out and dusty, but structurally strong—it had once contained the presses of *The Christian Science Monitor*." Throughout, the architects have followed the sensible and sensitive course of refurbishing, wherever possible, existing features and finishes, and of using a contemporary vocabulary for all that is added, thus articulating old and new. The result is a lively blending of elements, including chestnut wall paneling, travertine and terrazzo floors, wrought-iron grillwork, and mosaic-tile ceilings, all retained from the original building, and new features such as a lobby staircase with a stainless-steel stringer and glass balustrade, sleek new birch furniture, and a glass curtain wall.

The library occupies only four floors of the old building, with research and archival spaces on the top two floors and public galleries on

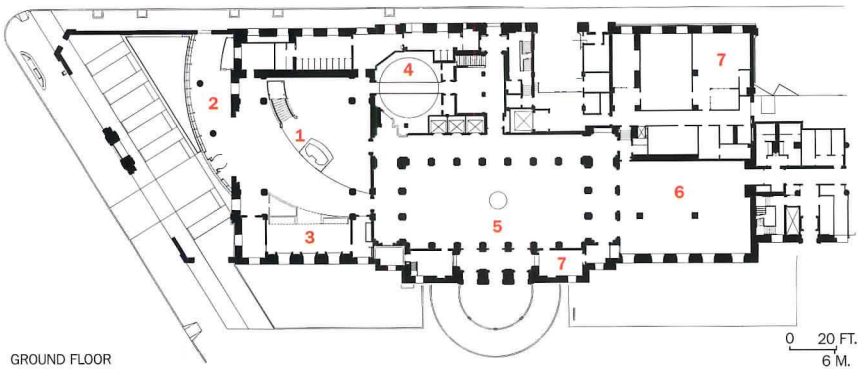
Nancy Levinson is the former managing editor of Harvard Design Magazine.

Before the library project, the building was cut off from the street by an imposing wall (opposite). Today, much of the wall is gone and a garden entry beckons pedestrians (below left) and brings light into the lobby (below right).





The architects inserted clearly Modern elements in the reception area (far left) and reading rooms (left) while restoring the old fabric of spaces such as the Hall of Ideas (below).



GROUND FLOOR

1. *Reception*
2. *Sitting*
3. *Shop*
4. *Mapparium*
5. *Hall of Ideas*
6. *Temporary exhibits and café*
7. *Office*

the lower levels. These public spaces posed a particular challenge. If the library were truly to be a civic meeting place, it would need to establish a strong presence on its street, which happens to be Massachusetts Avenue, one of the city's main thoroughfares. But the old Publishing Society was not at all a presence on the street. It was literally walled off, separated from the surrounding city by a 14-foot-high limestone wall that sheltered what had been a private garden; the building was entered from the Christian Science Plaza (part of the church headquarters designed in the early 1970s by I.M. Pei and Araldo Cossuta). The architects met this challenge with a skillful and bold gesture: move the entrance from the plaza to the main avenue, tear down the high wall, and extend the lobby toward the street, enclosing the new entry space with a gracefully curved, 16-foot-high glass wall, transparent by day, aglow by night. And from this generous architectural move there followed an equally good landscape strategy, which was to create a garden between the lobby pavilion and the street. Designed by Reed Hilderbrand Associates, the garden, like the architecture, elegantly intermingles old and new. By removing only portions of the Neoclassical wall, the designers created a landscape in which new features, such as a stainless-steel waterwall, work in crisp counterpoint to the imposing heft of the Baroque-style gate.

Commentary

Boston has long been characterized by a creative tension between past and present, tradition and progress. In recent decades, the traditional—both the real thing and the recreated—has carried the day, to the point where it was hard to recall the city's once-strong commitment t contemporary design (exemplified, for instance, by Pei and Cossuta's Corbusian-influenced Christian Science headquarters). It is heartening, then, to see the solid and dignified Christian Science Publishing Society renovated with care and craf but not undue reverence, transforme into a place where existing building and contemporary design are not clashing but complementary. ■

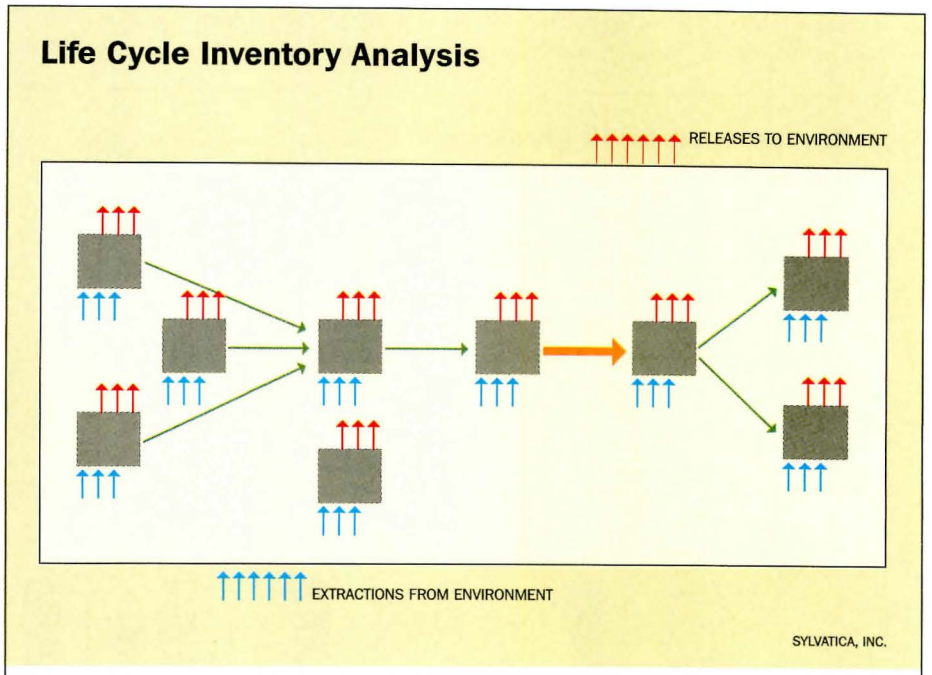
There are numerous ways to determine just how sustainable so-called green products are today

INDIVIDUAL PROJECTS MAY BE FREE OF TOXIC EMISSIONS, BUT A PROJECT'S TRUE SUSTAINABILITY QUOTIENT DEPENDS ON A SCIENTIFIC ANALYSIS OF THE LIFE CYCLE OF ALL THE MATERIALS

By Nadav Malin

A conversation with Ronald Dean of Farr Associates in Chicago illustrates how far some firms have come in their approach to green materials. Through their research and past projects, the designers at Farr Associates are very familiar with the considerations that go into choosing green materials, and factor those into their decisions as a matter of course. With that approach as a baseline, they are able to integrate green products into the broader quest for the right materials with which to construct a project. "It's not just about whether the product is green, but how well it fits into the design and the stories we're trying to tell with the building," says Dean.

For some projects, an explicitly natural or ecological aesthetic is appropriate, suggesting a certain style of visibly green products. "We designed a clay-straw retirement home for a woman," Dean explains, "and all materials going into that project tended to relate to that aesthetic or philosophy—a lot more wood, plaster, unpainted systems." But any projects can use green products and materials, either by covering natural materials with more conventional finishes, or choosing from a palette of products that are environmentally sound even if it's not obvious at first glance.



Life-cycle analysis is the process by which the inputs and outputs of energy, resources, and pollution are quantified for each process in the life of a product.

What makes a product green?

So, what constitutes an environmentally sound product? What should you look for, and how can one distinguish real green achievement from marketing hype? The tools and resources available to designers have, until recently, relied almost exclusively on a handful of attributes, such as recycled content or low indoor emissions, as indicators of environmental performance. For example, the U.S. Green Building Council's LEED Rating System allocates points for the use of materials that are salvaged, recycled, rapidly renewable, locally produced, or harvested from well-managed forests.

But these attributes, considered in isolation, may be misleading indicators. Just because a product has one sustainable ingredient does not automatically make it the best environmental choice, as it may also have undesirable traits. Some recycled rubber flooring products, for example, offgas chemicals that make them inappropriate for indoor applications. And straw-panel products work great in some applications, but they are more sensitive to moisture than wood-fiber panels, making them less durable in damp climates.

To avoid these problems, researchers and environmental advocates are developing more holistic methods to determine which products are environmentally preferable. Most of these are based primarily on a system called life-cycle analysis (LCA)—not to be confused with the engineering practice of life-cycle costing. In LCA, researchers study a product from its origins as raw materials, through processing, manufacturing, and use to its ultimate disposal or reuse. For every process in this life cycle, they quantify the flows of resources and pollution, and then estimate the environmental impacts of those flows.

In theory, this comprehensive LCA approach allows us to know with more certainty which products are environmentally preferable. Indeed, the U.S. Environmental Protection Agency (EPA) recommends LCA as the basis of the Environmentally Preferable Purchasing programs that federal agencies are required to implement. The EPA has also helped develop some of the research and modeling

Nadav Malin is editor of Environmental Building News, *content director for BuildingGreen.com, and cochair of the Materials & Resources Technical Advisory Group for the LEED Rating System.*

New software packages allow designers to calculate the environmental burdens of materials

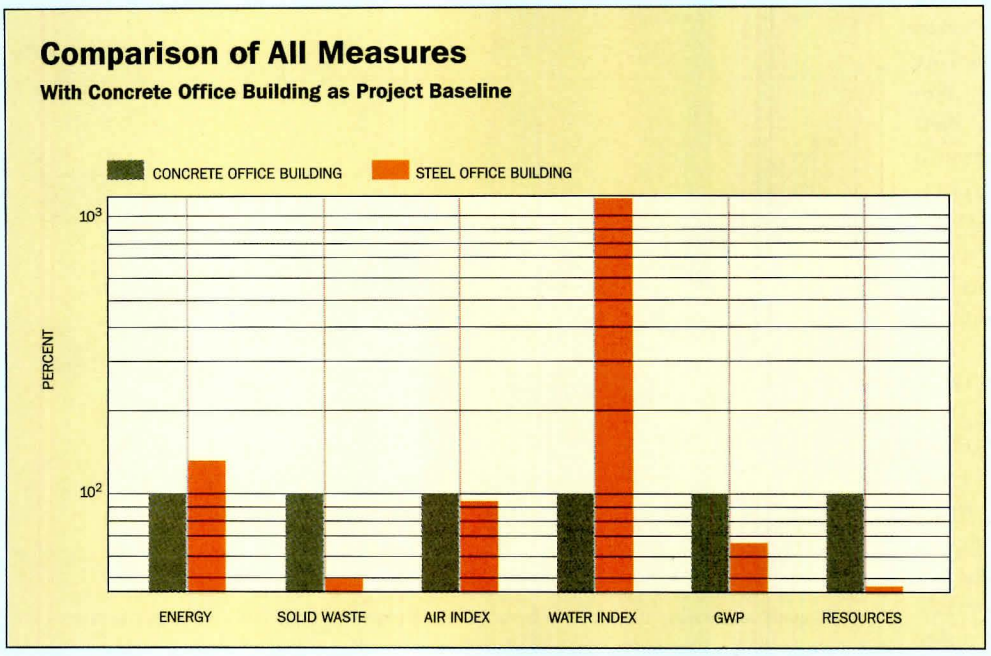
Most life-cycle analysis (LCA) software is complex and expensive and is best used by consultants who have the training to use it appropriately and interpret the results. Two software tools are now available, however, that can be easily used by any designer. New versions of both products have recently been released with significant new features, and they have very different emphases.

The Athena Environmental Impact Estimator version 2.0 (sample output shown below) is organized around building elements or whole buildings. It is a simple modeling tool, in which the user describes the primary building elements by inputting dimensions and choosing materials from a menu of options. Based on this model, the software computes a bill of materials, and then tabulates the environmental burdens of the project. The results can be displayed as tables or charts, either for a single project or as a comparison across multiple projects.

The software does not predict energy use from building operations, but it does include an option to input that information. The impacts of that energy use, reported as either annual energy use or energy use for the entire life of the building, can be included in the LCA results. The developers of Athena EIE hope that it will eventually be available as part of standard CAD software, making environmental-impact information available during the design process at the click of a button. Athena software is available for $390 from the Athena Sustainable Materials Institute: www.athenasmi.ca.

The second tool is Building for Environmental and Economic Sustainability (BEES). Unlike Athena, which is based on building elements, BEES focuses on individual products and materials. Version 3.0 makes it possible for the first time to compare brand-specific products. For example, the user can now compare the EcoWorx carpet tile from Shaw Industries with the PowerBond ER3 tile from Collins & Aikman or the Sabi tile from Interface Flooring. (The ER3 looks slightly better than the others, although the final result depends on how you choose to weight the relative importance of the various environmental-impact categories.) Eighty products from 14 manufacturers are included in the current version. It is also possible to compare generic products based on industry-average data for those product types.

The new release of BEES uses the latest EPA methods for analyzing the data. BEES 3.0 is free from the National Institute of Standards and Technology: ww.bfrl.nist.gov/oae/bees.html.



methods used to estimate the impacts of resource use and pollution associated with a product's life cycle.

In practice, however, LCA requires so many assumptions and approximations that any results it generates must be viewed with some skepticism. Even if the assumptions and underlying data are reasonably good, a margin of error of 30 percent or more is typical, so only very large differences in the scores of competing products are meaningful.

IN THE CASE OF INDOOR AIR EMISSIONS, MOST RELEASES OF VOLATILE ORGANIC COMPOUNDS (VOCS) DECREASE OVER TIME.

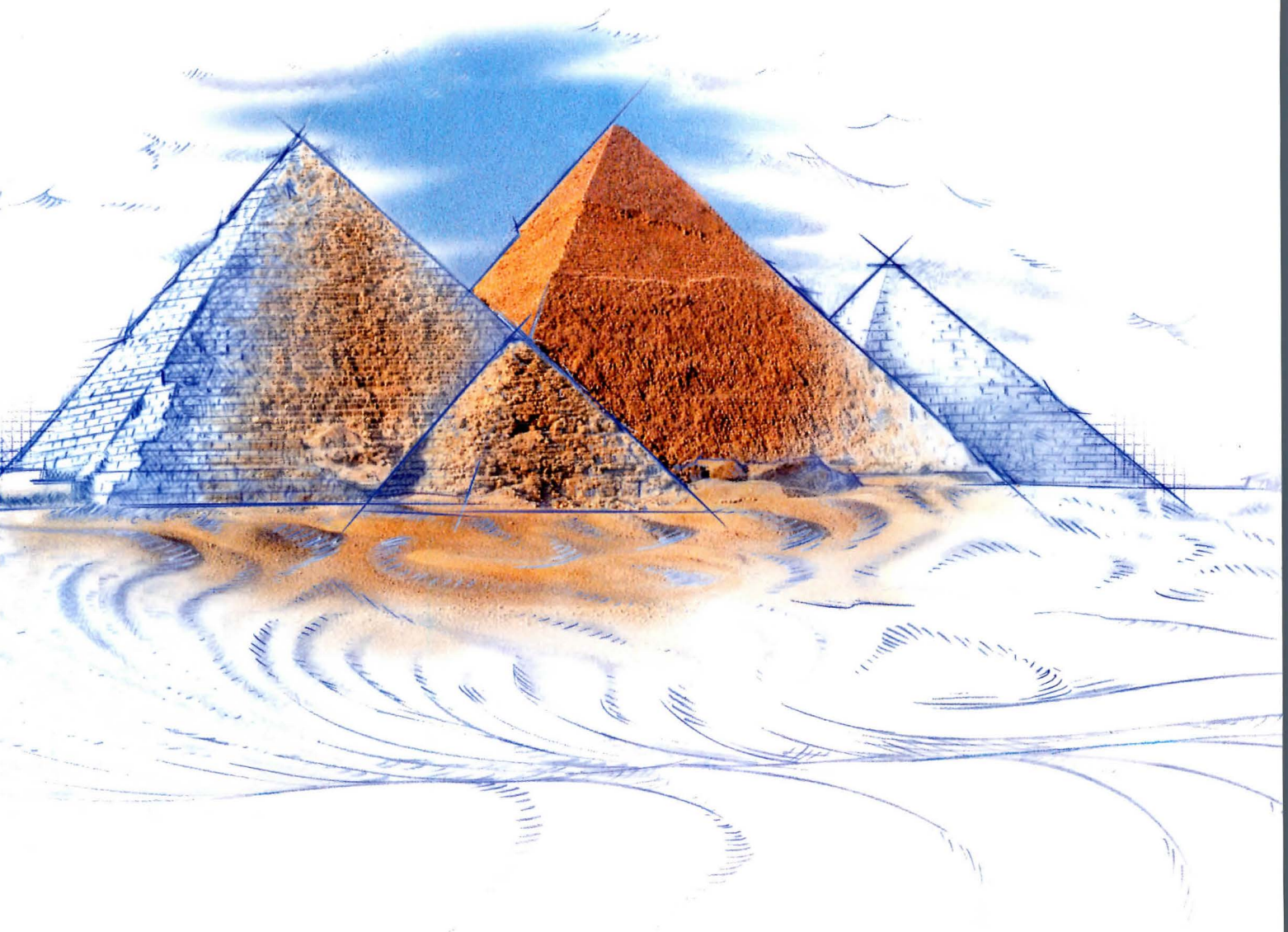
Before it became popular as a method for comparing and choosing products, LCA was developed to inform companies' internal product development. From this background came one of its strengths—the ability to tell us where in a product's life cycle the biggest environmental burdens are generated. In the case of building products, LCA results show that energy use or indoor air emissions during use are often the most *important* consideration.

For any product that affects the building's energy use, such as a variety of scales ranging from a chiller to a window or light fixture, selecting the model that saves the most energy almost always results in the lowest overall life-cycle burdens. Even ceiling tiles can make a difference—in a space that uses indirect lighting, the reflectivity of the ceiling is probably more important overall than the amount of recycled content in the tiles.

In the case of indoor air emissions, most releases of volatile organic compounds (VOCs) decrease over time. So the use of a very low-VOC paint may be important initially, but after a few months or years that benefit is negligible. Chemical emissions from ongoing maintenance, however, do not taper off in the same way. One study suggests that a single instance of stripping and waxing a floor releases as many unhealthy VOCs as are released by the installation of the flooring itself, including the adhesive, over its entire useful life.

A comprehensive look at materials highlights the fact that when we install and use a product in a building we are engaging with that product at one point in its overall life cycle. Prior to reaching our job site, the product evolved through a series of resource extraction, manufacturing and transportation activities. After it is no longer needed in our building

ROOF THAT WHEN PEOPLE WORK TOGETHER, NYTHING IS POSSIBLE.



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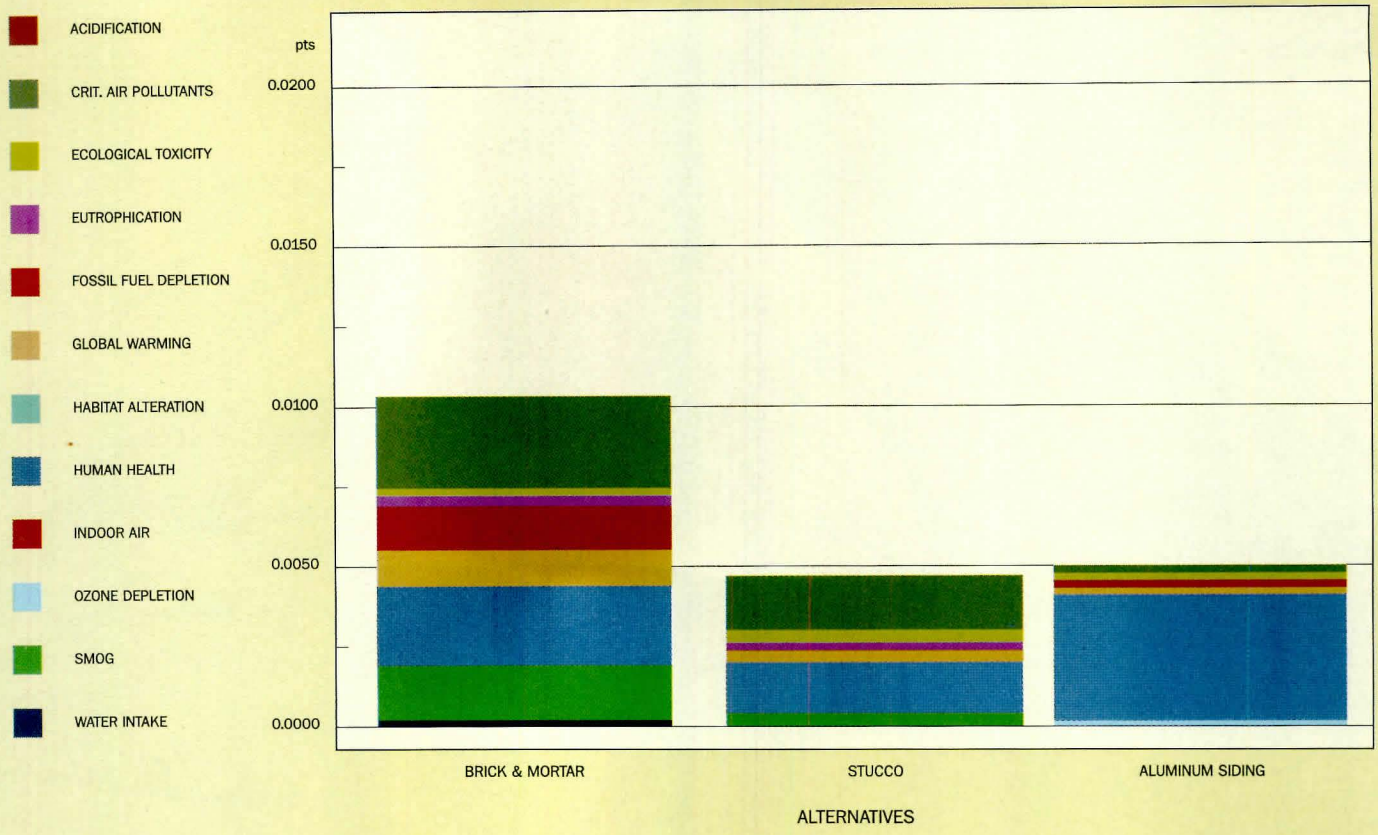

This sample chart shows three cladding alternatives—brick and mortar, stucco, and aluminum siding—that have been examined across all 12 environmental-impact categories by using Building for Environmental and Economic Sustainability (BEES), a Windows-based, decision-support software. BEES is a powerful technique for selecting cost-effective, environmentally friendly building products. All stages in the life of a product are analyzed. (The difference between BEES and the Athena program is discussed in the sidebar on the previous page.)

more activities will be required to dispose of it or prepare it for reuse or recycling. Each of these processes had its own material and energy requirements and pollution emissions.

While the environmental burdens resulting from a product's history and its future are important, they are rarely as important as the product's performance in the building. Carpet got a bad reputation in the green building world in the early 1990s, due to concerns about its role in

CARPET GOT A BAD REPUTATION IN THE EARLY 1990S DUE TO THE WASTE CAUSED BY THE TONS OF IT REPLACED EACH YEAR.

indoor air quality problems and due to the enormous waste caused by the tons of carpet replaced each year. Since then, carpet companies have been aggressively combating that image, and nearly every company claims that its products are green. Different companies are approaching that goal in very different ways, however. Noted below are features of products by some of the most progressive carpet companies.

Nearly all commercial carpet uses nylon face fibers. Nylon comes in two varieties: nylon 6, supplied primarily by Honeywell and BASF, and nylon 6,6, supplied by DuPont and Solutia (formerly Monsanto). Nylon 6 is easier to recycle, while nylon 6,6 may be more durable. A number of companies, including Interface Flooring, Lees, Shaw, J&J Industries, offer recycled-content fiber, though efforts to get large-scale recycling efforts going for turning old carpet fiber into new have not yet become commercially viable. Interface has also experimented with natural fibers, such as hemp, in commercial carpets, and plans to release carpet with fibers made from agriculturally derived plastics.

As conventional dyeing processes use a lot of water and generate significant waste, solution-dyed nylon is preferable. Many carpet fibers are treated with stain-resistance and mold-inhibiting chemicals which can be beneficial (reducing the need for cleaning agents, reducing mold), yet the treatments themselves may also represent a health and environmental risk.

Nearly all companies use polypropylene fabric as the primary backing into which the face fiber is tufted. As petrochemical resins go, polypropylene is relatively simple and benign. Lees' Metafloor product line takes a unique approach by beefing up and pigmenting the primary

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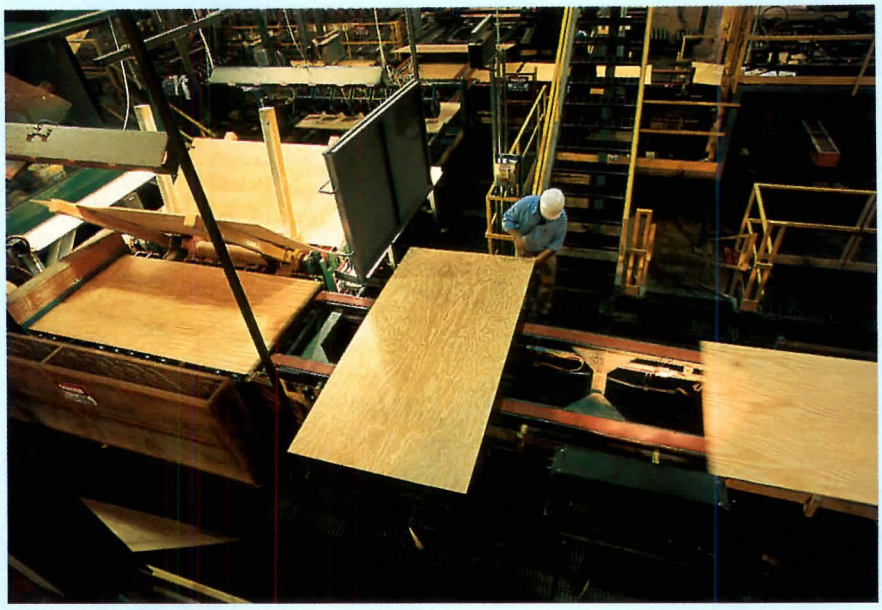
New wood-certification projects have emerged to address concerns about logging practices

Wood has come under fire as a building material in the U.S., mostly by environmentalists concerned about logging in the old-growth forests of the Pacific Northwest and in tropical rain forests around the globe. From a manufacturing perspective, however, wood is a relatively low-impact building material, because trees do most of the manufacturing themselves, using photosynthesis. The amounts of energy and resources needed to mill and dry wood are small compared with those used to manufacture concrete or steel. To address concerns about logging practices (and the associated loss of wildlife habitat and siltation of streams from runoff), a number of certification programs have emerged.

These programs monitor logging practices on the ground and certify forestry operations that meet their standards. The only such program that has widespread endorsement is that of the Oaxaca, Mexico–based Forest Stewardship Council (FSC). The FSC's "Principles and Criteria" aim to ensure that forestry practices are environmentally responsible, socially beneficial, and economically viable. These global principles are translated into meaningful standards at a local level through a region-specific process of setting standards.

FSC also accredits and monitors certification organizations. These independent, third-party auditors annually evaluate compliance with FSC standards to award certifications. In addition to certification of forest-management practices, FSC-accredited organizations certify companies that process, manufacture, or sell products made of certified wood to ensure that a reliable chain of custody can be established. The majority of FSC certification audits performed in North America are conducted by SmartWood and Scientific Certification Systems (SCS).

Simply adding the FSC requirement to your standard specification is not enough. First, the quantities, species, and grades of wood that are available with FSC endorsement are limited, so you must find out what is available that will fit the needs of your project. Second, even if the material is available, it is best not to specify the highest grades of wood (at least not in large quantities), because only a small fraction of the lumber from any one logging operation can meet those grades. Specifying lower-grade wood greatly reduces the pressure to cut large, old-growth trees, and can save a lot of money. Often structural requirements can be met without using the highest grades.



To ensure that the wood used is actually certified, your specifications should require that project contractors and subcontractors submit vendor invoices containing their chain-of-custody certification numbers and identifying each certified product on a line-item basis. For more information, contact the Certified Wood and Paper Association: www.certifiedwood.org.

backing so that it can become part of the exposed surface of the floor covering, thus greatly reducing the amount of face fiber needed.

Most broadloom carpet is made with styrene-butadiene latex (SB latex) and a chalk filler, as the secondary backing. High-end products use a more dimensionally stable urethane backing. Many companies now offer a urethane backing option from Universal Textile Technologies that uses a soy-based polyol as one ingredient, comprising about 7 to 10 percent of the backing by weight. Lees Carpets' two newest carpet lines use the Unibond RE backing, which contains 20 percent postconsumer recycled content.

SOME COMPANIES HAVE WELL-DEVELOPED SYSTEMS FOR TAKING BACK USED CARPET AND UTILIZING IT AS A RESOURCE.

Carpet tile products use either PVC (Interface, Collins & Aikman) or urethane (Milliken) backings. Collins & Aikman has led the recycling charge, with technology that shaves off most of the face fiber for recycling as nylon, and then recycles the rest of the carpet by mixing it into PowerBond E3 backing for new carpet. The residual nylon fibe in the recycled backing actually improve the product's performanc Interface Flooring's GlasBac RE backing system also uses a high percen age of recycled material.

Some companies have well-developed systems for taking bac used carpet and utilizing it as a resource. Milliken Carpet, with i Earth Square process, extends the life of carpet tiles by taking back use tiles, retexturing them, cleaning them, and overprinting them with new pattern so they can be resold for about half the cost of new tile Interface Flooring's Solenium product, introduced in 1999, was a effort to solve the future reuse problem by making it easy to separa the components.

Carpet innovations show that performance and sustainabili aren't mutually exclusive. If a product's function affects the amount energy or water used in the building, then how well it functions dete mines how good it is environmentally. More fundamentally, how product or material works, functionally and aesthetically, is as critical a green building as in any good design—if it doesn't do its job, then doesn't matter how environmentally friendly it is. ■

Digital Architect

Interiors go with the flow

y Alan Joch

/hen future visitors stroll through ne Clinton Presidential Center in ttle Rock, Arkansas, they'll have ttle idea how much of their physi-al comfort depends on what's nderfoot. A special floor slab will ouse an exotic heating and cool-g system that will variously rculate hot or cold water through-ut the museum to regulate the ıdoor temperature according to ne seasons.

But the floor won't be the only nvironmental regulator. Streaming unlight from an all-glass, west-ıcing wall will enter the space to elp heat the interior and create uoyant layers of air and comfort-ble surroundings for guests.

This intricate dance of tempera-ures and air currents hasn't been ft to chance. Engineers are spend-g months poring over sophisticated ɔmputer models that forecast the emperatures at every point within ne building for each season of the ear, and for specific times of each ay. The environmental model has ecame an essential component of ne design process.

At the heart of this model is ne arcane technology known as ɔmputational fluid dynamics (CFD), hose complexity makes it a highly ɔecialized calling with the reputa-ɔn of something bordering on Black Magic. By first simulating a proposed design of the library and then breaking up the 3D model into thousands of tiny cells, CFD software lets engineers map, in great detail, airflow characteristics and temperature variations, and pass those analyses on to architects. In the case of the Clinton Presidential Center, the firm Polshek Partnership, in New York City, uses these full-color animations and diagrams to revise various interior configurations and floor plans, like partitions and elements of a mezzanine, to achieve the right airflow for comfortable temperatures year-round.

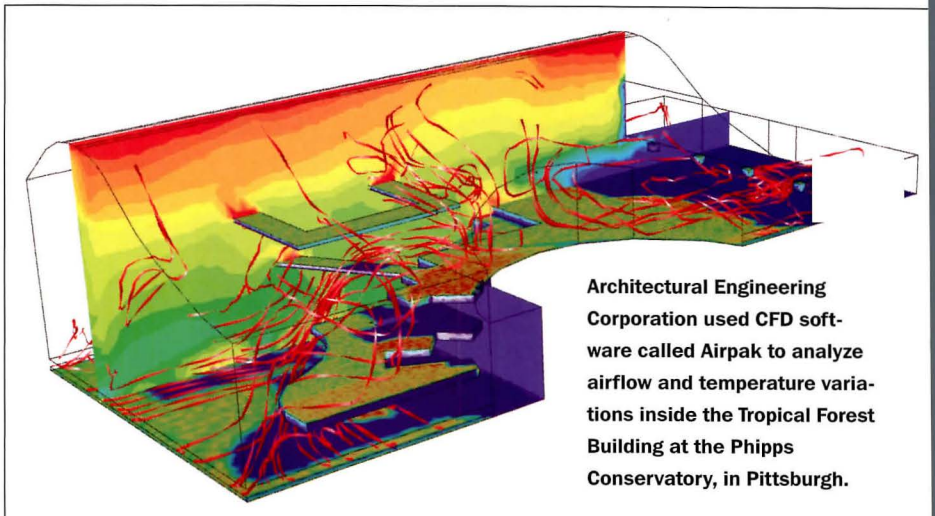
"There was no way we could do a radiant floor slab in the Clinton Center without extensive CFD simulations," says Daniel H. Nall, AIA, and senior vice president of Flack + Kurtz, the New York City engineering firm that performed the CFD analyses. "It allowed us to see what's important for creating comfort in the occupied zones and what happens to this comfort level when we start messing with the design."

New uses

Once the exclusive realm of aerospace engineers using airflow models to create new generations of wing designs, CFD gradually evolved in the early 1990s to become a tool to help designers of commercial and public buildings, starting first in Europe and Japan and eventually reaching the U.S. Still an expensive niche technology used only for select projects, CFD helps architects gauge the effectiveness of exotic HVAC systems, especially those used to regulate large open spaces like atria. The technology can also model the air quality within a proposed building or judge the effectiveness of new or nontraditional types of ventilation systems, such as the radiant flooring that will be used in the Clinton Center.

In addition to the Clinton Center, Flack + Kurtz has used CFD for a new dormitory at Dartmouth College, which also makes use of a radiant-heating and -cooling floor slab. "We're trying to [air-] condition the people, not the space," Nall says about the design goals of those projects. "People are not going to be walking on the ceiling, so we're working on creating comfortable conditions in the zones of the buildings that are actually occupied. CFD is the only way we can get a handle on what's going on in these spaces." The only alternative, he says, would have been to build full-scale mockups of the structures and take physical readings—obviously a cost-prohibitive exercise.

Flack + Kurtz isn't the only engineering company to conduct CFD analyses on buildings. Steven Winter Associates in Norwalk, Connecticut, used CFD to help optimize the operation of an HVAC system with natural ventilation at the Adam Joseph Lewis Center for Environmental Studies at Oberlin College, a project designed by architect William McDonough, AIA. Architectural Energy Corporation (AEC), a Boulder, Colorado, engineering and design firm, worked with the Pittsburgh architecture firm IKM to create an addition to the Phipps Conservatory and Botanical Gardens, in Pittsburgh. The addition (called the Tropical Forest Building) houses a rain forest, and the CFD analysis depicted not only temperatures and airflow, but also patterns of sunlight throughout the year. "Our



Architectural Engineering Corporation used CFD software called Airpak to analyze airflow and temperature variations inside the Tropical Forest Building at the Phipps Conservatory, in Pittsburgh.

lan Joch is a technology and business riter based in New England. ontact him at ajoch@monad.net.

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clients are plants, which need the right amount of light, the right spectrum of light, and the right temperature," says Michael Holtz, AIA, AEC's president. "We're looking at airflow to make sure we achieve acceptable conditions." In addition, Arup, a London-based engineering company, used CFD to help remodel the air-conditioning system of the historic London Coliseum, the home of the English National Opera.

In each case, CFD provided "what-if" capabilities that helped architects and engineers reconcile environmental and design considerations. "Architects come to us with design objectives and CFD helps them develop a design that meets those objectives," Holtz says. "Once a preliminary design is developed, CFD can then be used to evaluate its effectiveness."

These capabilities are helping CFD find more widespread applications, especially for more innovative designs. "It gives us more freedom to play with new ideas," says Jelena Srebric, assistant professor and CFD instructor at Pennsylvania State University's department of architectural engineering. "CFD allows us to test [models and designs] that don't yet exist."

The Tropical Forest Building at the Phipps Conservatory lets in plenty of natural light for its permanent botanic residents. The simulation software Radiance was used to create this rendering of lighting conditions, and the results were used in the CFD analysis.

Detailed models

In recent years, CFD software has become more mature, and commercial products geared for building design are appearing on the market to ease the complexities of creating models. In addition to their CFD analysis engines, a handful of vendors are now marketing user-friendly interfaces for those products that are designed to simulate building conditions. These include Airpak, by Fluent. In time, CFD will become easier to use and economical enough to be applied to more mainstream designs, Srebric believes.

The analysis process typically begins by importing a CAD file with a proposed design into a commercial CFD program, which then plots the geometry of the space in 3D and the materials that could affect airflow and temperatures. The model also estimates boundary


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conditions—the temperature of surrounding structures or the amount of sunlight streaming into the design space. It's at this point that the program creates the 3D grid of cells that will allow engineers to look at the area in fine detail. A grid for a relatively small 20-by-30-foot office space, for instance, may contain more than 100,000 of these cells, each of which may require nine different complex mathematical equations to properly model airflow and thermal properties, according to Srebric.

The results are then sent to the analysis portion of the CFD software, which crunches the numbers to develop graphical representations of airflow and surface temperatures. The process of building models, running simulations, and analyzing results may take anywhere from a couple of weeks to a period of months, depending on the size of the space and the number of design iterations the project goes through, Holt says.

No matter how sophisticated the CFD models may be, it takes more than just plugging some numbers into a software application to end up with an effective design. "Reality is always more complicated than any computer can ever simulate," Nall says. "The best we can do is create a simplification of reality by picking out those factors that are most important." For instance, the configuration of walls within a particular floor plan may matter more than the material those walls are made of. These sorts of judgments take time and experience, and for that reason Srebric advises caution when architects choose consultants to conduct analyses. "Anyone giving me CFD results must convince me of their accuracy," she says. "There must be some validation through benchmark comparisons with similar projects. Never trust anybody who is just delivering results [for a current project]."

CFD ANALYSIS HELPS ARCHITECTS DESIGN CUTTING-EDGE INTERIORS THAT ARE ALSO COMFORTABLE.

This work doesn't come cheap. CFD analysis may add up-front costs of anywhere from $10,000 for smaller projects to $100,000 or more for large buildings, Srebric says. "It's too time-consuming and expensive for every project," she concedes, which is why CFD has made little penetration into residential or small-scale work. But if a client wants to build something with unconventional forms or materials, CFD analysis may mitigate the risk of ending up with an uncomfortable interior. "The technology helps make up for the fact that you're building something that no one has ever done before," says Nall. He adds that for projects characterized by innovation, a CFD analysis is often included as part of Flack + Kurtz's basic engineering services.

Science meets art

Fortunately, when CFD is done correctly, it takes on a life of its own that goes beyond reams of inscrutable statistics. "Once you're over the simulation hurdle, using the results is a pure pleasure," says Srebric. The resulting graphical models exhibit an almost artful display of colors, contours, and movement that together can turn the calculations into visual treats. More importantly, these representations help architects gain confidence in the validity of the design they offer a client. "The beauty of CFD is it allows us to test a building's performance before it's built," Holtz says. "If all your failures happen during design, you can deliver a successful solution when it's time to do the actual building." ■

Lighting

The sacred and the profane, illumination and illusion, and the student scene, too

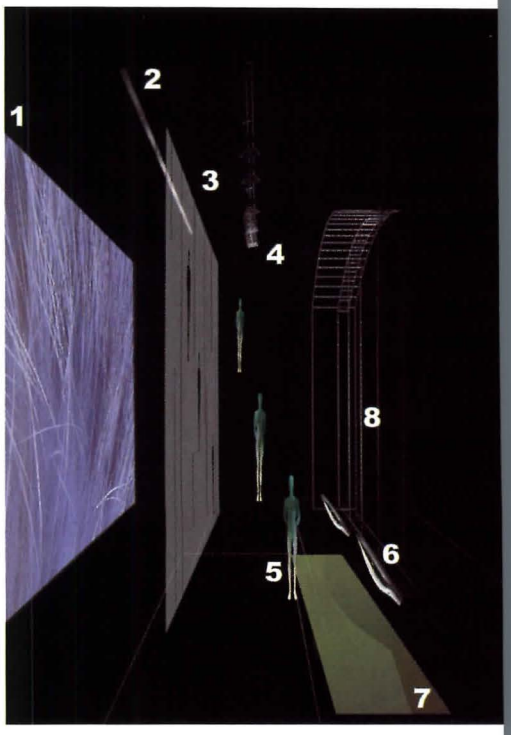
BRIEFS

The 25th Session of the Commission on Illumination commences in San Diego on June 25. The quadrennial, weeklong lighting conference focuses on presentations by world experts. For information, visit the Web site www.cie-usnc.org. **If you are ailing from seasonal affective disorder**, Oliver Sacks's book *Uncle Tungsten* may be just the tonic. He gives a fascinating account of his uncle's lightbulb manufacturing company, Tungstalite, in prewar England. Don't forget to brush up on your high school chemistry; Sacks's description of Mendeleevian's development of the Periodic Table of the Elements is mind-boggling. *Charles Linn, FAIA*

CONTENTS

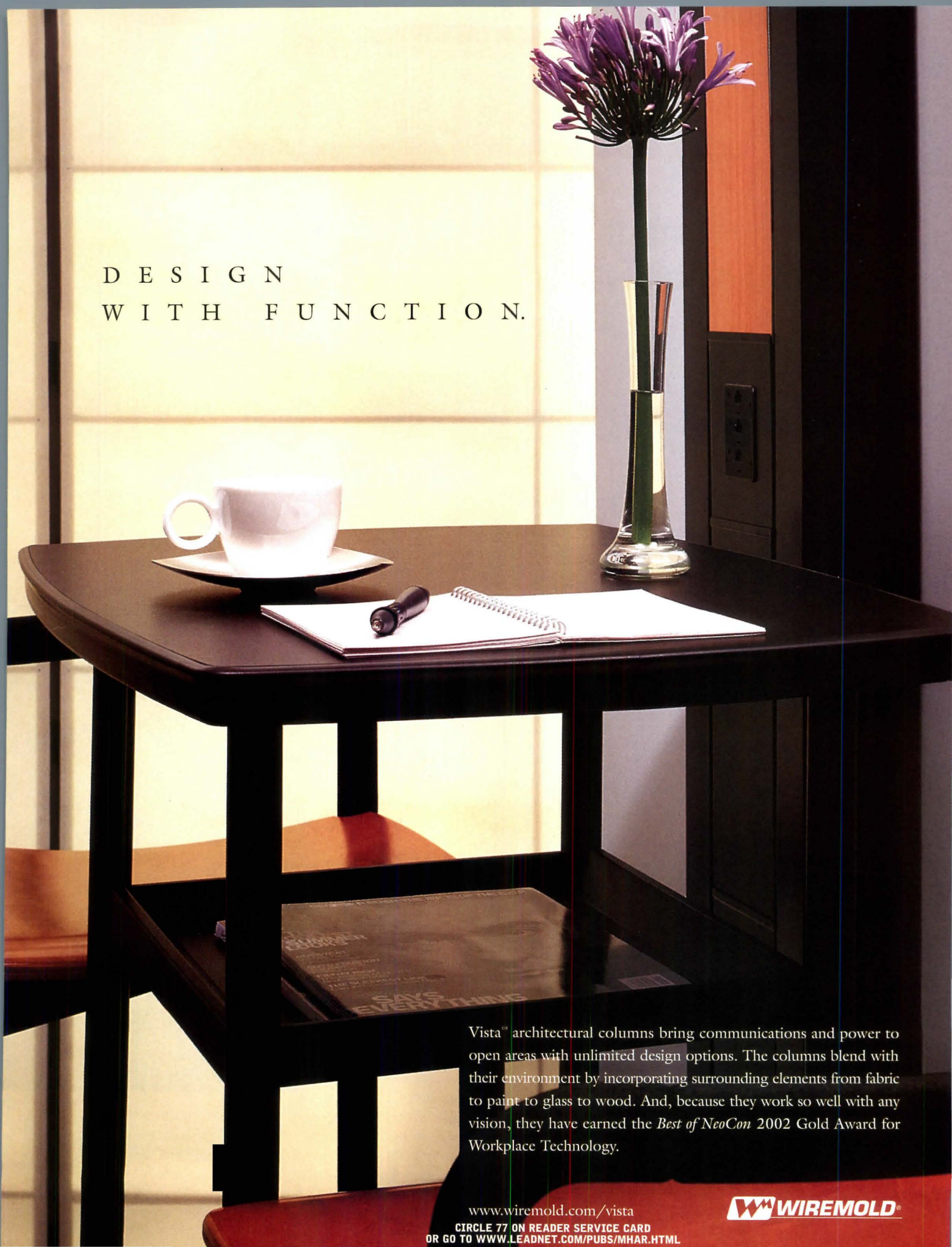
The present age prefers the sign to the thing signified, the copy to the original, fancy to reality, the appearance to the essence, for in these days illusion only is sacred, truth profane," declared philosopher Ludwig Feuerbach. He was writing in *The Essence of Christianity* in 1843, but lately we at RECORD have been thinking a lot about the sacred and the profane, appearance and illusion, and, well, Christianity. We lighting editors are not always such a philosophical crew, but the juxtaposition of projects this month—and their strategies for illumination—run just this thought-provoking gamut.

For the Friends Meeting House in Manhattan, principal lighting designer Linnaea Tillett, IALD, investigated the history and traditions of the Quaker faith to create versatile illumination that sublimely infuses a spare, sacred space. Simplicity was the essence of the design. Elsewhere in this issue, at Supperclub sites in Amsterdam and Rome, and at the LiT club in Oklahoma City, we've spotted a curious trend (here's the profane part): lighting as a social cue for rest-room design. A trip to the loo, it seems, is part of the enhanced nightclubbing experience, boldly embellished with black lights and colored fluorescent gels. Now if only we could figure out how to operate the unconventional sinks.



Meanwhile, on a plane floating somewhere between the sacred and the profane, college students are pursuing lighting designs with audacity and imagination. Recent Parsons School of Design graduate Conor Sampson, for example, created an exploded view of a store window's lighting (illustration, right) that reminds us of a vintage Hitchcock cinema poster or perhaps a Surrealist's eye chart. Beginning on page 194, you can read more about recent trends in architectural lighting education in the U.S.

With sadness we note the passing of two leading lights in design. Architect Charles Morris Mount died at age 60 on November 8, 2002. One of his last projects, the McDonald's on 42nd Street in New York City, brought Broadway luster to the the fast-food-venue format. Italian architect and industrial designer Achille Castiglioni, renowned for astounding lighting fixtures such as the Tojo lamp, died on December 2 at 84. They will be missed. *William Weathersby, Jr.*



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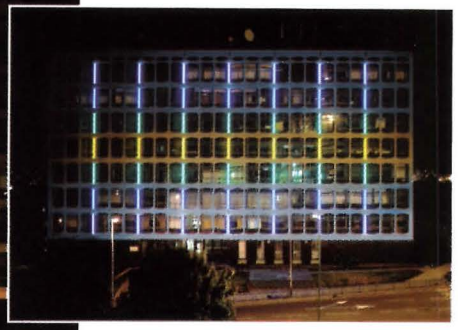
Creative Uses

A 1960s university building gains a new sheen with cold cathode • Ode on a Trojan dawn hits Manhattan • Patrons in Rome and Amsterdam dance through the light at Supperclub

An art and architecture collaborative reinvigorates a dated campus facade in Great Britain



The facade lighting project incorporates 86 individually controlled, 10-foot-long cold-cathode tubes.

The University of Wolverhampton in the midlands of Great Britain is a campus known for artistic experimentation. Its School of Art and Design building, a nine-story, precast-concrete structure designed in the Brutalist style of the 1960s, recently served as a canvas for a colorful play of shadow and light.

"The idea of reconfiguring a landmark in Wolverhampton came from the town's motto, 'Out of darkness cometh light,' " says architect Igor Marko, principal of the firm Art2Architecture, the designers of the light installation.

The result of a design competition funded by the British-lottery-supported Out of Darkness lighting program, Art2Architecture's work is the largest cold-cathode lighting project in the United Kingdom. Marko and his partner, artist Peter Fink, collaborated with Neolec Lighting, a company with 30 years of experience in the application of cold cathode.

Called *Lightlines*, the work "echoes through a graphic, linear pattern of light the architectural design of the Wolverhampton building, animating its proportions and massing," Marko says.

The lighting installation encompasses 86 individually controlled, 10-foot-long cold-cathode tubes mounted between the elevational fins of the facade. The lowest tubes are protected by polycarbonate covers. The installation was designed to fit externally onto the building, concealing both the cable runs and the tubes, so the fixtures do not appear prominent in daylight.

The animated lighting program runs a variety of changing patterns and sequences within a five-minute loop, dimmed for slow or fast changes. The light show will be redesigned annually by Art2Architecture, and relamping is projected after seven years.

Art2Architecture is a company dedicated to collaborative ways of working and employing artists, architects, and urban designers. Its interdisciplinary projects range from major lighting installations, urban centers, ecological parks and bridges, and site-specific artworks employing IT technologies. For a look at a portfolio of other projects, visit www.art2architecture.co.uk. *William Weathersby, Jr.*

Artist Spencer Finch offers a meditation on the quality of light cast by Troy's dawn sky

Color, light, memory, and history are the obsessions of New York artist Spencer Finch. *Eos*, a monumental room-size installation that created a meditation on the quality of light Finch encountered during a trip to the ancient ruins of Troy in western Turkey, was part of an exhibition of his work held at Manhattan's Postmasters Gallery last November and December. Fitted with carefully calibrated spectrum gels, the 75 ceiling-mounted fluorescent tubes approximated the light conditions present at dawn in the landscape at the site in October 2002. "The landscape has been reduced to pure light," Finch says.

The exhibition, which also featured 100 ink drawings of colors from the artist's dreams in the form of Rorschach blots, continued Finch's exploration of the gaps between objectivity and subjectivity. Trained at the Rhode Island School of Design, Finch often uses electric light as a medium. For the installation at Postmasters, he received technical assistance from Capital Light and Phillips Lighting. *WW*

Fluorescents fitted with filters capture the light of ancient Troy in Finch's *Eos*.

Creative Uses

Moody colored lighting sets the scene for dancing and dining at two Supperclubs

A decade is a long life for a nightclub. The staying power to endure beyond a decade is immortality. For European clubgoers, Amsterdam's renowned Supperclub has attained such divine status. Opened in 1990 by a group of artists, the innovative restaurant/club/art gallery was recently expanded at its location in the old center of the city and continues to draw crowds with its "communal" approach to nightlife.

"Freedom is the key word here," says owner Bert van der Leden of the renovation, "just as it has always been." The Supperclub's freethinking philosophy is based on maintaining a "multisensory" environment that encourages camaraderie among strangers. The Amsterdam-based firm Concrete Architectural Associates was hired to revitalize that concept and to export the same ethos to a new sister Supperclub in Rome.

Concrete's approach to lighting both nightspots is as colorful and spirited as the club mavens the franchise attracts. On the first floor of Supperclub Amsterdam, a 1,775-square-foot, two-tiered restaurant is painted and custom-furnished in uniform white, a blank canvas for colored lighting. A truss of automated luminaires and color changers paint the room in hues that can shift with the mood of the crowd. The restaurant in Supperclub Rome makes similar use of LEDs, PAR16s, and fluorescent technology that is capable of altering the color scheme of the interiors.

Communal seating in dining areas furthers the owner's aim that patrons feel a sense of togetherness. Seating around the perimeter of the restaurant on both levels is ultracasual, comprising mattresses covered with white sheets. Diners are encouraged to remove their shoes and lay back against plush cushions. Classic Modern chairs designed by Verner Panton surround dining tables set in the center of the space. The tables were inspired by the design of elephant drums and are sturdy enough to hold diners who venture to dance atop them once dinner has been cleared.

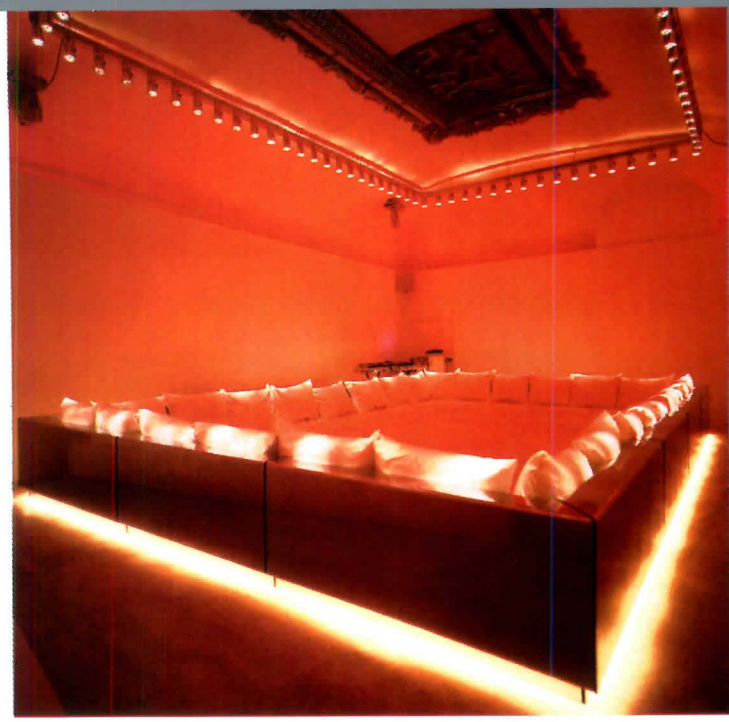
On the lower level, a 1,625-square-foot lounge is for patrons seeking a more intimate setting. The pure white color scheme of the main floor is repeated downstairs, again as a backdrop for colored lighting. Gelled fluorescents uplight fabric-draped stucco walls and bathe seating in a warm glow of vibrant hues.

Lighting creates a dramatic transition into Le Bar Rouge, an intimate bar and dance area that, apropos of its name, is dressed in shades of red. Gelled fluorescents uplight the bar while a truss of mini PAR16 spotlights defines the area behind the bar and a deejay table.

Selective illumination in rest rooms, which are partitioned according to sexual preference, not gender, is a Supperclub signature. The opposite spectrum of the restaurant and lounge, rest rooms are completely furnished in a dark palette with black tiles, stalls, toilets, counters, and large square blocks for seating. Black light illuminates the rest rooms, which the owners envisioned as a darker alternative for patrons too intimidated to make introductions in the well-lit main spaces. Strategically placed mirrored glass affixed to the stalls adds a voyeuristic touch.

Adapting the Supperclub concept to a historic palace near the Pantheon in Rome last year, Concrete worked under the close supervision of the city's preservationists. The architects restored elements of the ancient structure, including frescoes and travertine steps, and married the historic with the contemporary furnishing elements. The patina of centuries-old frescoes juxtaposed with colored lighting continues to position this outpost of Supperclub as another intriguing international nightspot.

Leanne B. French



Monochromatic furnishings and materials in a lounge of Supperclub Amsterdam (below) are a canvas for colored lighting. At Supperclub Rome (above), downlights frame a fresco and cast a glow on communal seating.

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Learning to Light

THE PATH TO A PROFESSIONAL CAREER IN ARCHITECTURAL LIGHTING DESIGN HAS BECOME A ROUTE BUILT ON FIRMER ACADEMIC FOUNDATIONS

By John Calhoun

More architecture professionals and academic institutions have begun to recognize architectural lighting as a valid, discrete discipline, not simply a service enhancing the grand design. In terms of education, there are more paths than ever leading toward a career as a lighting designer. Yet the upgraded standards don't mean that a consistent method of teaching lighting design has been codified. Degrees, programs, and emphases remain all over the map.

The classic educational models remain Pennsylvania State University and the University of Colorado, both of which offer degrees with a lighting specialty within their architectural engineering programs. There are a variety of degrees offered by other institutions, from a Master of Arts in Lighting Design at Parsons School of Design to a Master of Science in Lighting from Rensselaer Polytechnic Institute (RPI). And schools such as the Rhode Island School of Design, among others, offer sessions in lighting design as part of their technology and studio curriculum.

Beyond the university realm, manufacturers such as General Electric present in-house training for professionals and students. Web-based courses and programs are sponsored by the Illuminating Engineering Society of North America and the International Association of Lighting Designers (IALD). The Architectural Lighting Design Master Classes, a professional seminar, takes place this month (February 20–21) at John Jay College in New York City.

"The credibility that the lighting field has accrued was pushed by the generations before us, by professionals like Leslie Wheel and Howard Brandston," says Charles Israel, president of the IALD Education Trust Fund and principal of Lighting Design Alliance, an architectural lighting design firm. "They have trained architects to appreciate the value of good lighting design. The IALD's emphasis is to make students aware of the professional field of architectural lighting design. Lighting consultants may work on 5 percent of all architectural projects. Let's say we could double that to 10 percent. We don't have the depth of ranks to accomplish that. Where would we get all those designers to double our field? Clearly, there is a huge need for better lighting education.

"The IALD is also trying to push lighting design versus illumination engineering," continues Israel, who teaches advanced lighting at the University of Southern California School of Architecture, Los Angeles, as part of the Master of Building Science program. "Some programs provide great technical background but not really the design aspect."

Parsons School of Design, New York City

Parsons, on the other hand, stresses design. As an accredited degree, the M.A. in Lighting Design goes back 18 years, though it grew out of classes first taught at the school by Jim Nuckolls, author of the groundbreaking textbook *Interior Lighting for Environmental Designers*. "As far as I know we're the oldest program in lighting design," says director JoAnn Lindsley, past president of IALD and a Parsons alumna, of the three-semester course of study. Requirements include studio plus courses in lighting principles and daylighting. The philosophical core of the program is a two-semester course, "Light, Perception, and Culture," which emphasizes the history, aesthetics, and psychology of lighting.

"We see light as having a critical role in social formations and in the way the built environment is qualified," says Peter Wheelwright, chair of the Parsons Department of Architecture. The department, founded in 1991 to further refine Parsons' environmental design offerings, grew to incorporate the M.A. programs in lighting and interior design, with the goal of establishing an interprogrammatic field of study.

The road has been bumpy. "There is not a lot of theory underlying [the lighting discipline], and it hasn't cohered into an academic formulation," says Wheelwright. "A cultural perception persists, particularly in higher levels of architecture, that lighting is a service discipline architects tend to think of lighting designers as technicians." Lindsley adds, "Lighting hasn't entered the perception of many architectural schools." To counter this view, Parsons is working to consolidate the curriculum and attract interest and funding from government and industry.

Rensselaer Polytechnic Institute, Troy, New York

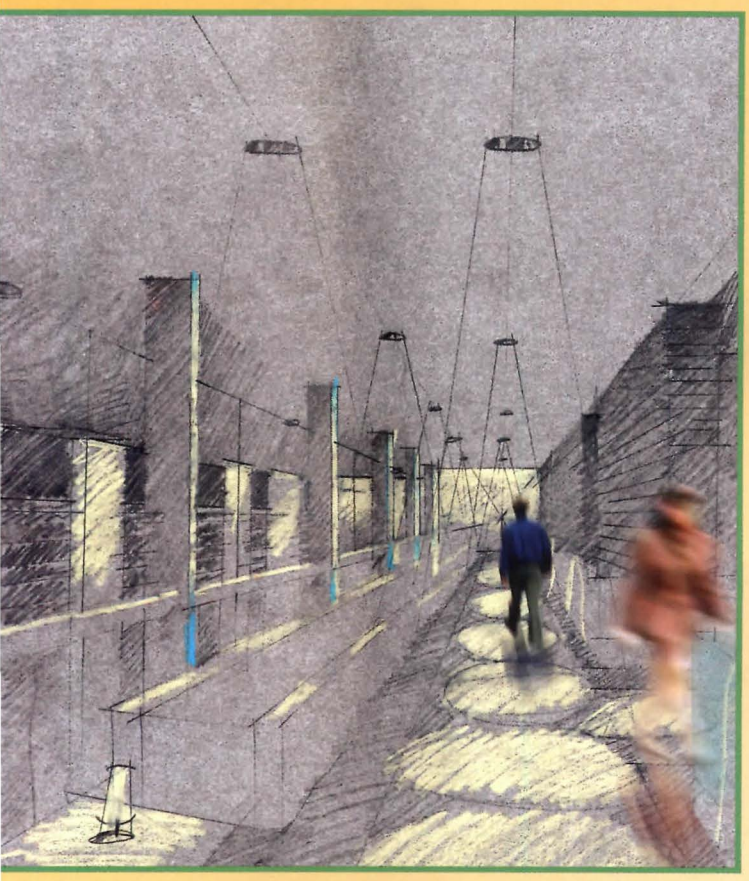
Up the Hudson River from Manhattan, RPI indeed offers a very different kind of lighting education from the Parsons program. The two-year M.S. degree in Lighting, offered by the School of Architecture, is highly concentrated on the technology of light. "Other degrees in lighting tend to be architectural engineering degrees with a concentration in illumination," says Daniel Frering, manager of education at the RPI-affiliated Lighting Research Center, which has been running the M.S. program since 1985. "Our degree is 48 credits, all in the field of lighting."

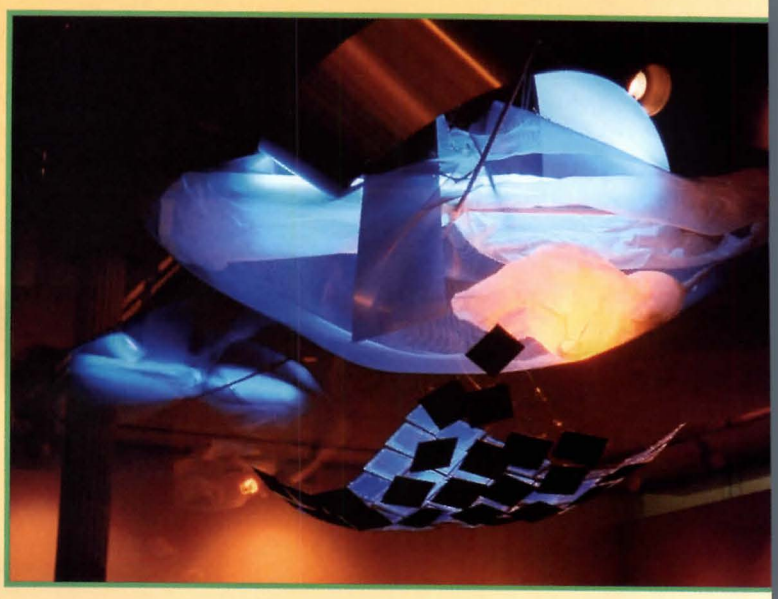
Research dollars—about $4 million a year—drive the program. Students are awarded research assistantships, which pay all or part of the tuition. "We feel that the students learn 50 percent in the classroom and the other half working directly on projects with faculty," says Frering. RPI accepts 10 or 12 M.S. lighting candidates per year, as opposed to the 30 to 40 enrolled in the Parsons program. RPI students come from disciplines including architecture, engineering, art, and interior design. Frering estimates that half of the program graduates go on to work in lighting design.

University of Colorado, Boulder

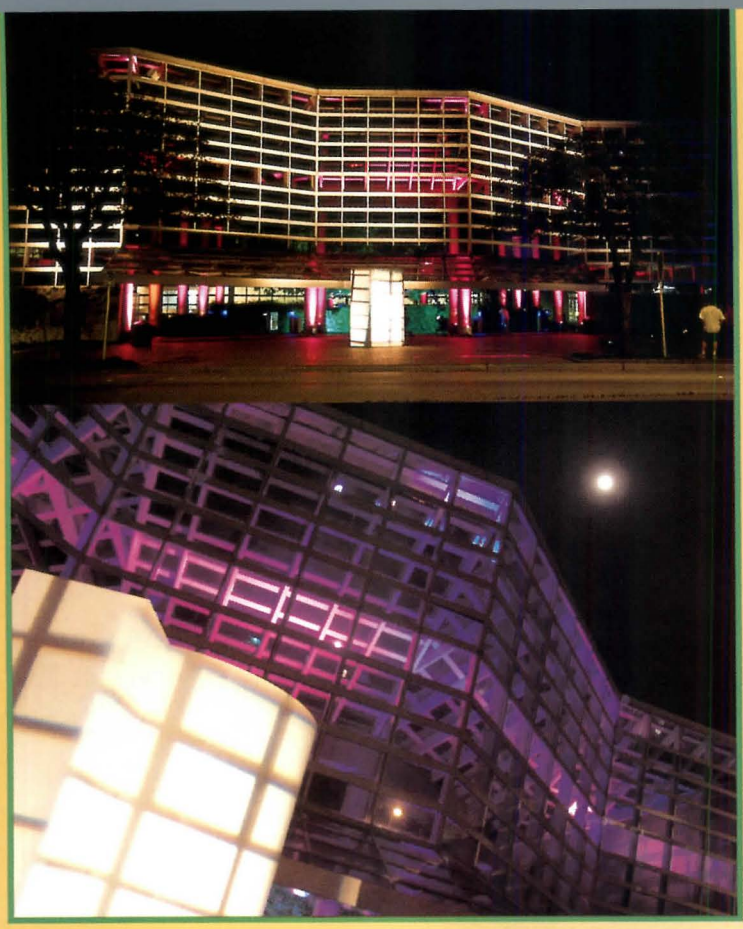
"The degree that we grant at the University of Colorado is a Bachelor of Science in Architectural Engineering, and lighting is one of the specialties," says David DiLaura, senior instructor since 1980. By their junior

John Calhoun is a freelance writer based in New York City who frequently writes about lighting and cinema design.





The Parsons M.A. program stresses design above illumination engineering technology. Among recent work presented by students (clockwise, from top): Two views of an interior swimming pool, with lighting by Conor Sampson, a 2002 graduate; a series of studies for an elevator lobby with a kinetic light sculpture by the team of Li-Wei Lu, Tim Milton, and Chuenjai Nuttamun; an ethereal lighting fixture created by Won-Keun Han; and another rendering by Sampson for the subdued lighting of a law school gallery.



At Texas Christian University, Fort Worth, a grant from High End Systems supporting the school's Lighting Designer in Residence Program allowed Anne Militello of Vortex Lighting to visit campus. After a week of seminars, the students implemented lighting using 21 automated luminaires within the atrium of the Tucker Technology Center. Three fixtures were affixed with rotating gobos to produce dazzling light patterns.

year, students in the four-year program declare an emphasis: Besides lighting, they can choose structures, solar and renewable energy, or HVAC. Nine lighting courses are offered, and lighting specialists are encouraged to take relevant classes in theater and physics. Some engineering-minded students remain to earn an M.S. degree.

It's a highly technical education, but DiLaura, who was instrumental in creating the National Council on Qualifications for the Lighting Professions' Lighting Certification exam, says, "We're committed to broadly educating our students in lighting. I'm known for writing computer programs in mathematics, and when I started, everyone thought, 'He's just going to train engineers, in the worst sense of the word: 24-karat, broken-eyeglass, pocket-protected nincompoops.' Most of our students end up either working for lighting designers or for architectural engineering firms that do lighting as part of their service to architects."

Texas Christian University, Fort Worth

Lighting education is structured somewhat differently at Texas Christian University. With the help of a grant from the Nuckolls Fund, TCU's Department of Design, Merchandising & Textiles has offered a lighting minor since 1998. All interior design students take a core lighting course, while lighting minors take six more. "We're the undergraduate version of the program at Parsons, and quite philosophically different from the program in engineering at Colorado," says Fred Oberkircher, TCU lighting faculty member and past president of the IALD Education Trust. "We're heavy on design, and probably light on calculations."

Oberkircher knows firsthand how scant lighting training has been within architecture programs. "I'm a Penn State grad, but from the architecture side," he says. "When I went there 35 years ago, my one-half of one course in lighting was the same one-half of one course that they offer now. Yet there is a world-class lighting program in the next building, in architectural engineering, and they haven't taken advantage of it."

University of Nebraska, Omaha

The country's newest lighting-specialty degree is at the University o Nebraska, in the four-year-old architectural engineering program. Th university offers a five-year course of study, granting students a B.S. i engineering after four years and an M.S. after five. An area of specializa tion is declared after the third year. Currently there are nine lightin students, but assistant professor Kevin Houser says he hopes the numb will rise to 20 or so. The school has three Ph.D. candidates in lighting.

Establishing architectural engineering at the university resulte from a targeted business call in Nebraska; $70 million in funding came fro the state and industry. The lighting emphasis and lab at the new Peter Kiew Institute was made possible in part by a grant from the Nuckolls Fund, an Houser lured fellow faculty members Clarence Waters and Dale Tiller fro Kansas State and Canada's National Research Council, respectively.

Strength in growing numbers, a deeper pool of mentors

"There are very few tenure-track professionals who have ever done ligh ing design, who have day-to-day experience," notes Israel, identifying challenge to the future of lighting education. "You can't have studen until you have good programs; you can't have good programs until yo have good instructors. With everyone requiring Ph.D.s to teach, it's toug for designers to get that level of accreditation. The only way to get instru tors currently is to steal them from established programs."

"Within many programs in interior design or architecture single requisite course in lighting is taught," DiLaura says. "To get serio about lighting, there must be a sequence that lasts several years at lea The support for that has been all but absent and requires a long-ter commitment by a host institution. That's getting difficult, because high education is funded by huge engines of technology, which our indust lacks. The birth of the Nebraska program is a very uncommon activi and it's an interesting development to watch." ■

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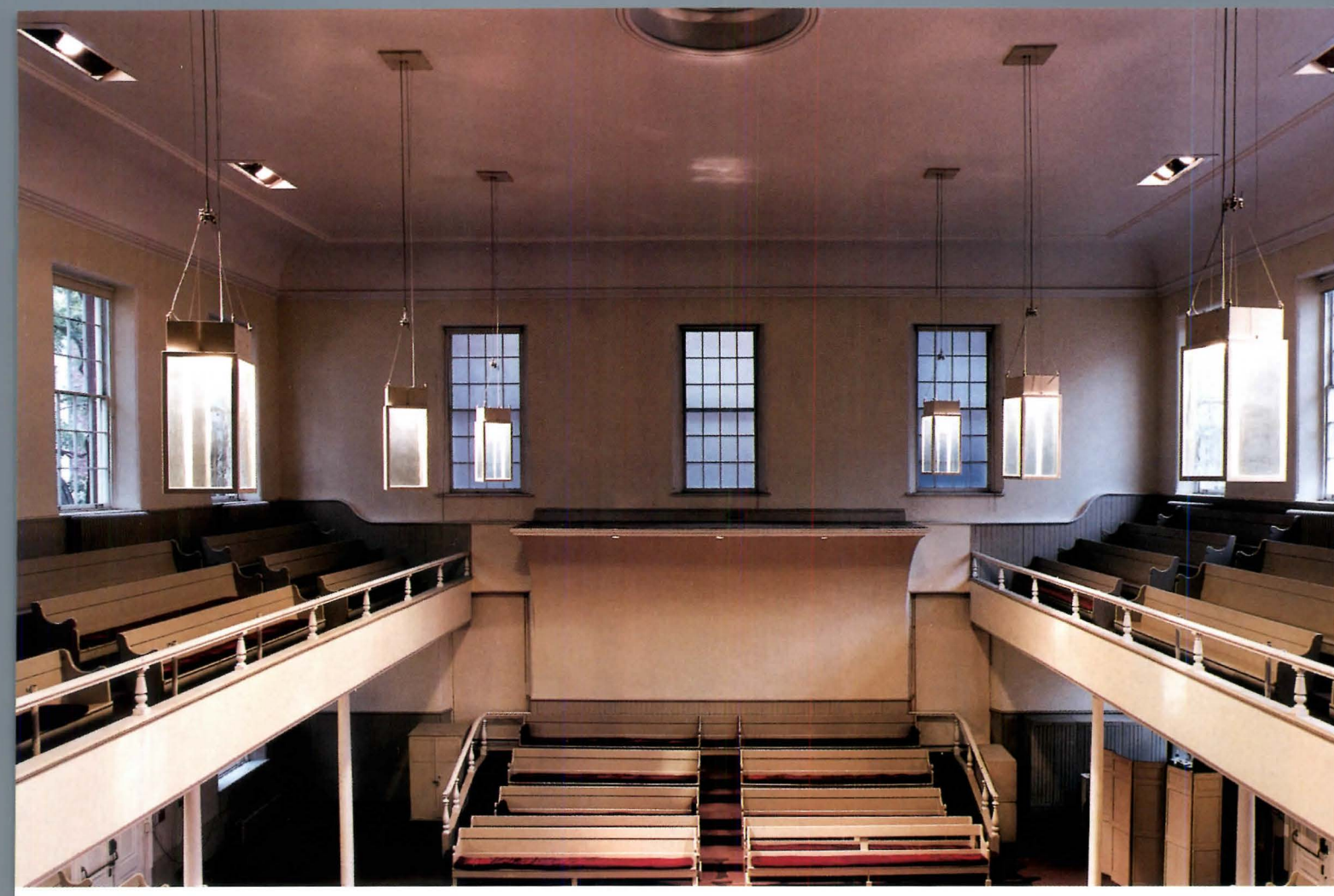
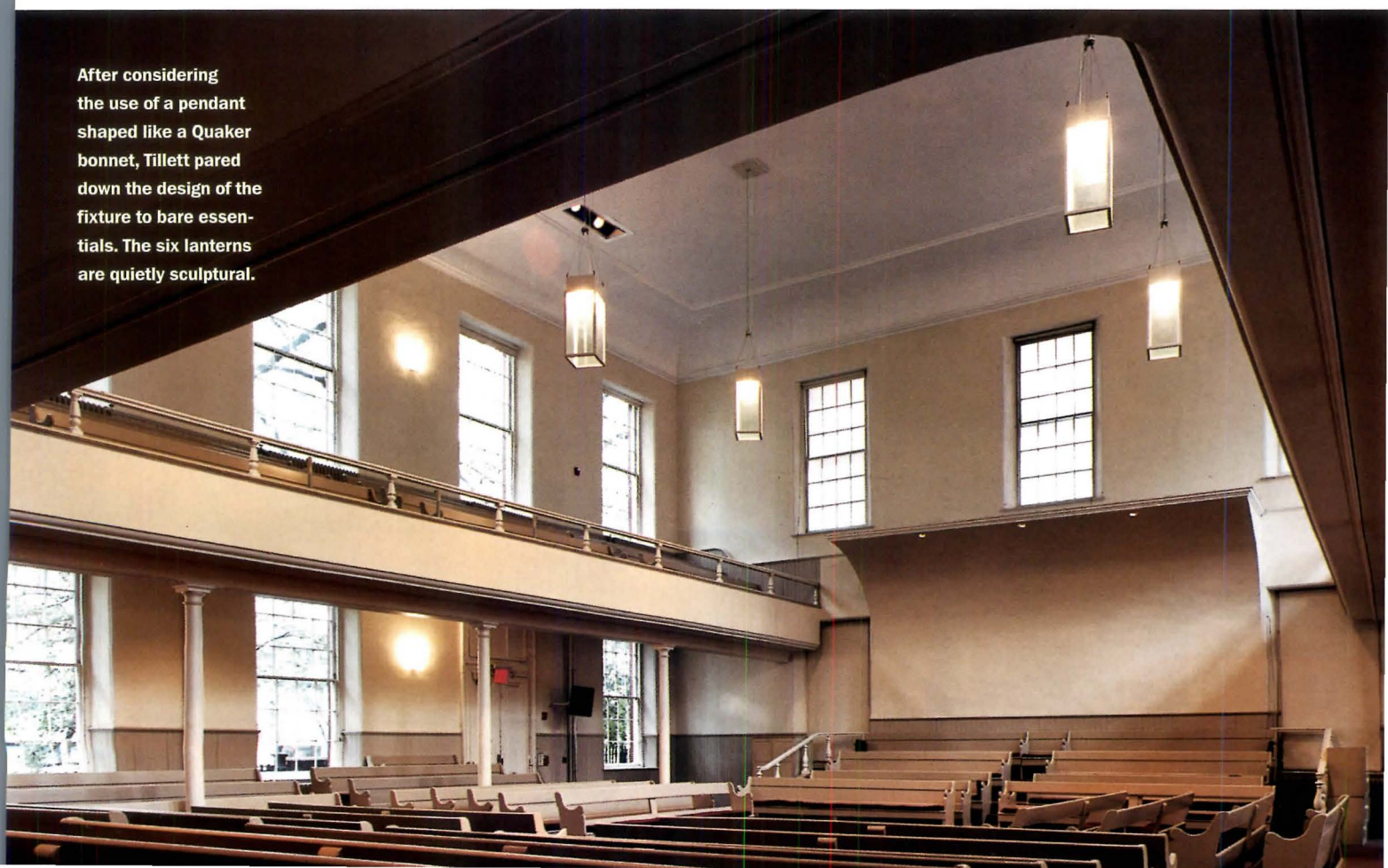




After considering the use of a pendant shaped like a Quaker bonnet, Tillett pared down the design of the fixture to bare essentials. The six lanterns are quietly sculptural.

With new lighting, the historic **Friends Meeting House** in Manhattan achieves beauty in simplicity

By William Weathersby, Jr.

Stuyvesant Square Park is a swatch of Manhattan whose historic fabric remains firm. Once part of Governor Peter Stuyvesant's plantation, or "bouwerie," the area surrounding the square at East 15th Street near Second Avenue was settled in 1836 after Stuyvesant's great-great-grandson, Peter Gerard Stuyvesant, deeded the land to the city. Today, two distinctive buildings dominate Rutherford Place, which forms the western border of the park: the 1856 St. George's Episcopal Church (where J.P. Morgan worshiped) and the Friends Meeting House, a Greek Revival building constructed five years later for a Quaker congregation, the Religious Society of Friends.

Elegantly restrained, the redbrick Friends Meeting House was built by Charles T. Bunting, a member of the meeting who is also thought to have designed the structure. Largely a silent practice without a formal sermon, physical or institutional hierarchy, or visual focal point, the Quaker worship ritual centers around reflective meditation and commentary shared by individuals, with the congregation seated in four sections of pews facing each other in a spare, nearly square room ringed with tall windows. More than 140 years later, the Friends still adhere to the same democratic assembly, but the uses of their main meeting room have blossomed. The 56-by-64-foot room serves additionally as a place of worship for a congregation of Mennonites, a classroom for the on-site Friends Seminary for schoolchildren, a community performance and events venue, and a resource space for an affiliated homeless shelter.

With ongoing architectural restoration under way to preserve the building's wood pedimented porch and double-hung windows with original glazing, the Friends decided to upgrade interior lighting to reflect the meeting house's many contemporary functions.

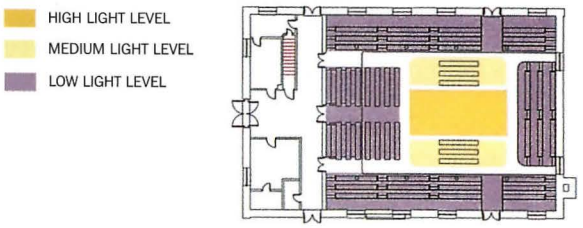
"For Quakers, light is a metaphor for divine inner light," explains administrator Nancy Hadley-Jaffe. "A central tenet is 'light comes from within us, rather than outside us,' so lighting is an important aspect of maintaining the sense of a sacred space."

To orchestrate subdued yet efficient lighting, Tillett Lighting Design focused on the Quaker virtues of "simplicity and frugality," says principal lighting designer Linnaea Tillett. "The new lighting needed to enhance the Friends' own meetings, yet there is so much activity taking place in this one room throughout the week that flexibility, ease of use, and energy efficiency were priorities."

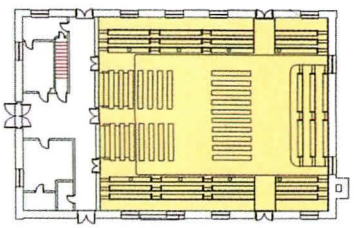
Tillett, who holds a doctorate in environmental psychology, met with the meeting house's many constituencies—from Gospel singers and grade-school musicians to members who have worshiped here for decades—then devised lighting plans and presets for multiple functions.

For ambient lighting, spare pendants find beauty in simplicity. Six brushed-metal lanterns painted dove gray are fitted with restoration glass to reference the traditional lines of the room's tall windows.

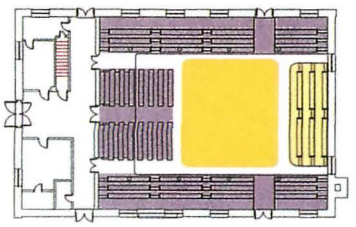
Contributing editor William Weathersby, Jr., is a freelance writer based in Manhattan. He edits the lighting and interiors special sections of RECORD.



MANHATTAN MENNONITE FELLOWSHIP

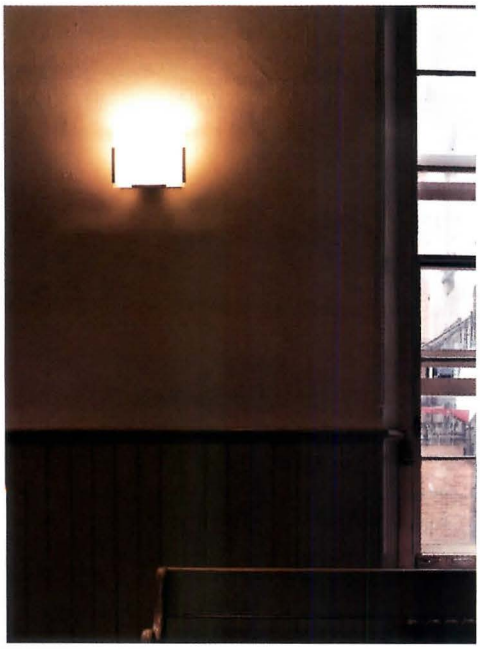


QUAKER MEETING FOR WORSHIP



FRIENDS SCHOOL PERFORMING ARTS

The Friends Meeting House is a center of community activity; Tillett mapped out lighting presets (right) for versatility. Spare custom pendants (above and opposite) complement the austere lines of the meeting space's 19th-century window mullions and glazing.



Recessed ceiling troughs house PAR56 luminaires that support performance requirements (top). Additional MR16 pinspots add ambient light and spotlighting. Sconces were stripped of detail for a spare look (above).

Dimmable compact fluorescents permit warm, concealed light source that complement daylight. The lack of any visible lamp source and the us of restoration glass allows worshipers a view through the fixtures to th windows and landscape beyond. The pendants are on individual motor ized controls so they can be lowered for maintenance.

Sconces were a modification of an existing fixture design. Tillet made the fixtures more austere by removing any detailing and adjuste their size to reflect the scale of the space. They use 42-watt biaxial lamps

Recessed slots in the ceiling house a trough system fitted wit 500-watt PAR56 lamps. Theatrical lights can be operated either from local preset Lutron system or from a theatrical panel. Additiona MR16s provide ambient downlighting. "We locked in energy-efficien all-fluorescent lighting presets for everyday use," Tillett says. "Mor sophisticated programs, such as nighttime performances, integrat incandescent sources for a more intimate ambience." ■

Project: *Friends Meeting House, New York City*
Lighting designer: *Tillett Lighting Design—Linnaea Tillett, principal designer; Kate Gardner, Voravanna Tonkul, project team*
General contractor: *Fifty Three Restorations*
Electrical engineer: *Atkinson Koven Feinberg Engineers*

Sources
Pendants: *Aurora Lampworks*
Downlights: *Iris*
Task lighting: *Altman Stage Lightin*
Sconces: *Baldinger*

www For more information on the people and products involved ir this project, go to Lighting at **architecturalrecord.com**.

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Architects LOT/EK bring a **Boon** to shopping in Seoul with a landscape of light boxes infused with color

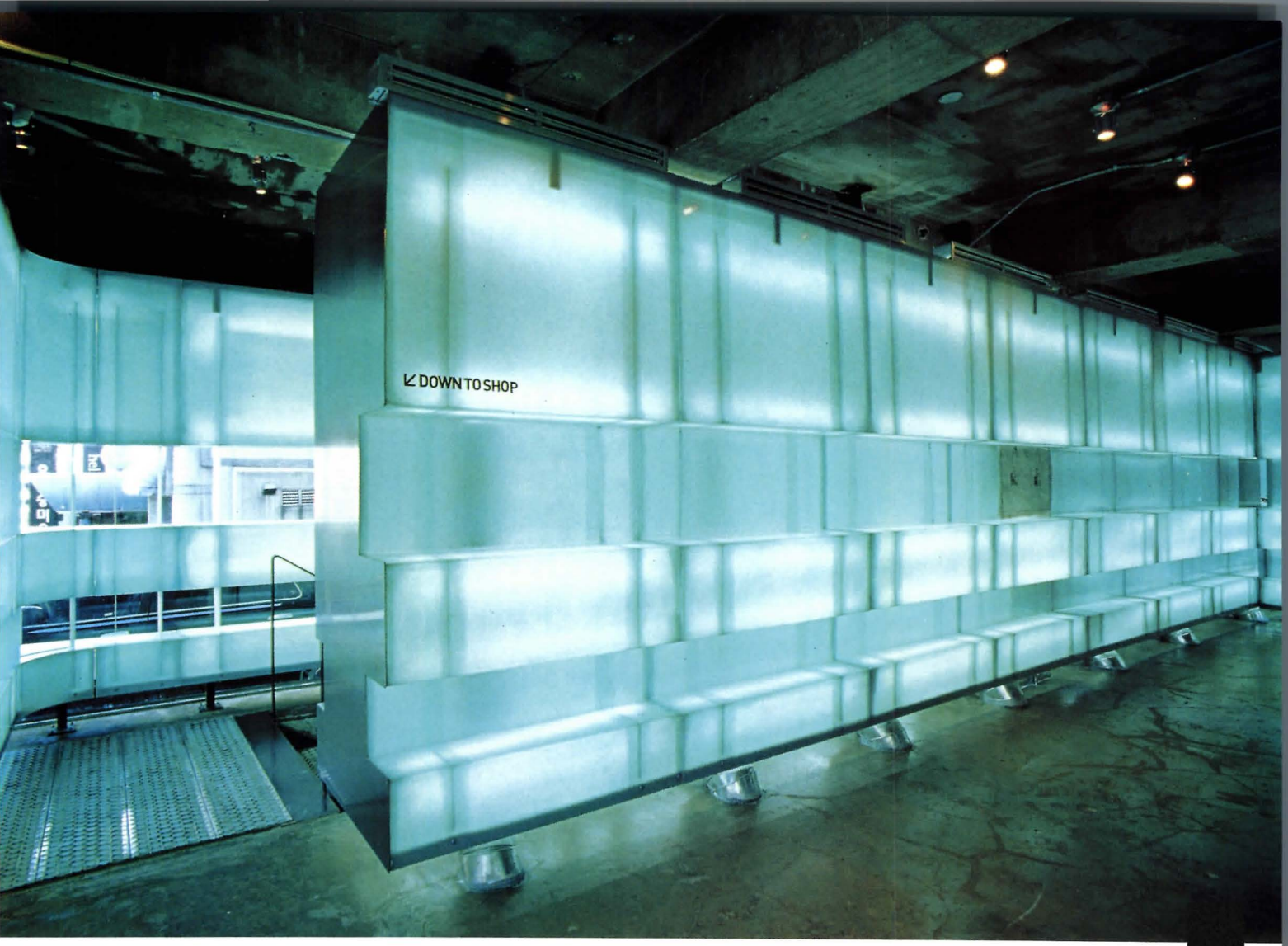
By Leanne B. French

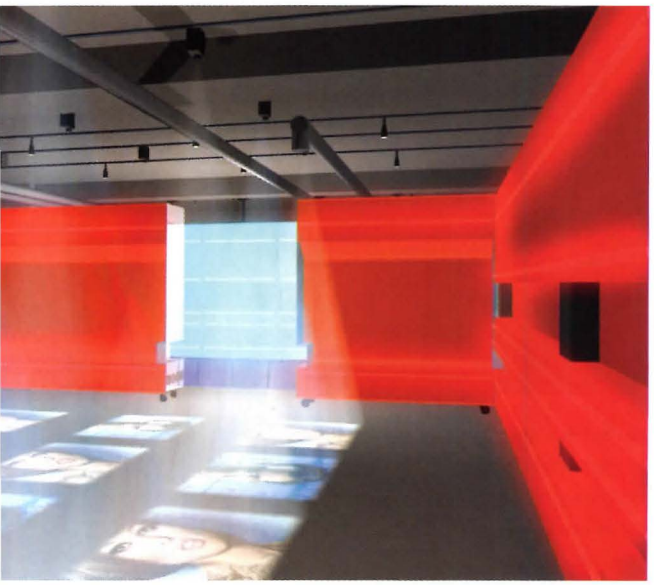
When Boon, the largest fashion franchiser in Seoul, South Korea, decided to corner the market on new talent and compete with the fashionistas in Tokyo and Hong Kong, the strategy was to open a showroom and retail store that would be just as compelling as the fashion designs on display. The owner looked to the U.S. for an edge and an architecture firm to push fashion forward. "They wanted to create a store that was very New York City urban in feeling, a cross between an art gallery and clothing store," says architect Giuseppe Lignano, principal with partner Ada Toller in the Manhattan-based firm LOT/EK (pronounced "low tech").

Both transplants to New York from Naples, Italy, Lignano and Toller are alumni of the Columbia University Graduate School of Architecture, where they became interested in mining the city for ideas as well as materials. The firm has been recognized for its imaginative trans formations of salvaged industrial parts. The architects have turned T monitors into light sources, detergent bottles into lamps, and have mad industrial shipping containers a signature. Recently, the duo maste minded a system of movable shipping containers to enliven an exhibitio space for the Bohen Foundation in New York's West Village.

Translating this urban attitude and eye for innovation to th showroom in Seoul began with finding a two-level facility that coul accommodate a gallery and showroom upstairs and retail area below. 10,000-square-foot sportswear store was the site waiting to be overhaule "The existing interior was entirely Sheetrocked and had a typically blan retail feeling," says Lignano. "At our first meeting we punched holes in th Sheetrock and realized that underneath was actually a beautiful concre structure." The client favored a rougher, warehouselike environment, LOT/EK chose to expose the concrete walls, floor, and ceiling, returnin the shell to its raw, untreated concrete finish.

Leanne B. French is a freelance writer and a documentary filmmaker based in Manhattan. She frequently contributes to RECORD*'s special lighting section.*





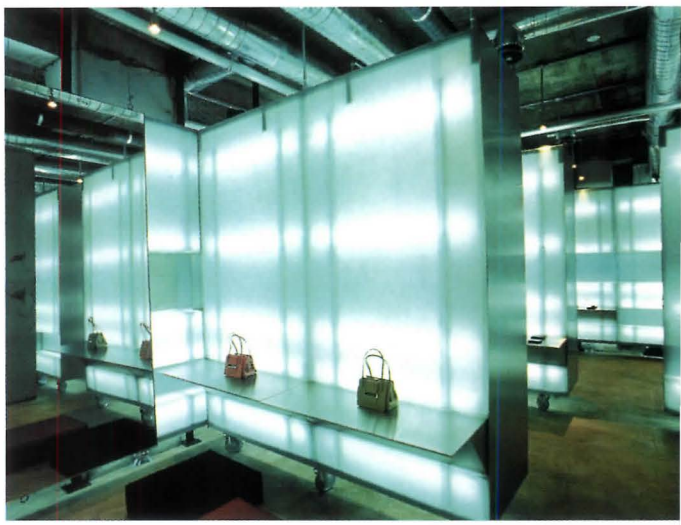
hoto and video pro-
ctions add another
yer of lighting to
e Boon showroom
bove). The movable
anslucent panels
ın be reconfigured
to enclose specialty
fashion vignettes (top
and opposite). Stair
treads of perforated
metal filled with resin
cast pinholes of light
downstairs (right).

The empty structure was deep and narrow with minimal windows, so illumination became a crucial element of the interior design. The architects devised a floating wall system of fluorescent-illuminated, translucent panels to define space and either hide or reveal air and heating ducts and structural elements. The floating fluorescent "ribbon" displays clothing and accessories in the front of the showroom and functions as an unadorned lighting source and visual focus toward the rear. "The band of translucent panels is on castors and continues around the vertical plane without touching the floor or ceiling," explains Lignano. "Essentially, we created a gap between the existing concrete wall and the panels so that we could light them from the back."

Five fluorescent tubes are placed behind each translucent fiberglass panel supported by steel pipe frames. The fiberglass has a slight blue-green tint at the base and acts as a filter for the fluorescent lighting. "The quality of fluorescent light can be very harsh, but we experimented with the color rendering of the panels," Lignano says. "As long as you filter the light with some other color or texture, it can become quite beautiful." The fluorescents also offered the possibility of changing the color of the entire space or a specific zone by simply wrapping gels around the tubes.

LIKE A KIT OF MOVABLE PARTS, THE PANELS CAN BE ROLLED ALONG THE CONCRETE FLOOR TO ENCLOSE SPACE.

While fluorescents make the space appear to glow and provide general illumination, halogen PAR lamps installed in the electrical boxes along the ceiling create museum-style illumination for spotlighting mannequins and special displays. The fluorescent wall system is carried



Within the stark concrete shell, all interior elements are modular. The light-box panels are not connected to either the perimeter walls or ceiling and seem to float like a ribbon of light through the long, narrow space. In-store staff can adapt the units to serve as clothing display niches or room dividers.

*Data for 1" IGU with clear glass interior lite. Oceans of Color, Atlantica, Azuria, Caribia, Solexia, PPG and the PPG logo are trademarks of PPG Industries, Inc.

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Perforated metal stairs and guardrails leading to a roof deck are lit with colored fluorescents (this page and opposite, top). The deck, overlooking a plaza and stadium, was added to the building. Lounges at LiT (opposite, bottom) change hues seasonally.

Elliott + Associates captures LiT in a former warehouse reborn as an edgy art gallery and watering hole

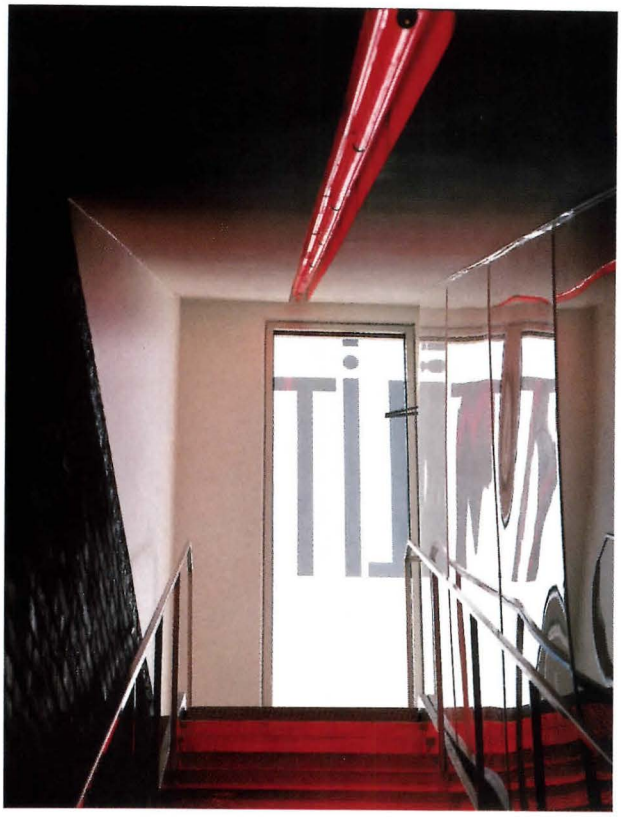
By Leanne B. French

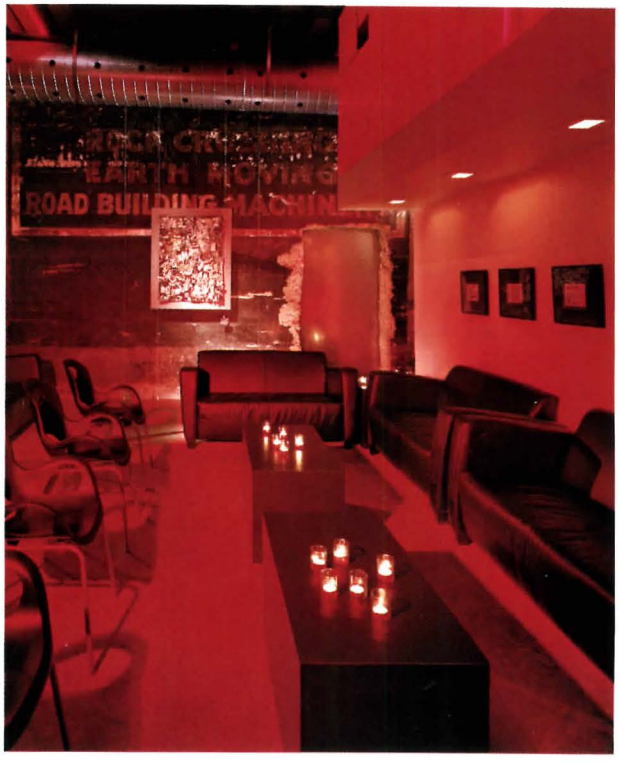
Bricktown, as its name suggests, is an industrial district in Oklahoma City lined with redbrick warehouses that over the years have stored everything from munitions to mufflers. More recently, a city initiative has funded public-improvement projects, including the refurbishment of a scenic waterway, so that tourism is taking root where industry has vanished. It was the allure of the area's industrial past, however, that most inspired architect and lighting designer Elliott + Associates to design LiT (pronounced "light"), an edgy new art gallery and bar on the outskirts of the evolving neighborhood.

LiT's quartet of owners, enterprising medical students moonlighting as entrepreneurs, were not interested in creating simply another tourist draw, but rather a neighborhood spot that would attract a "see and be seen" clientele of regular patrons. Principal architect Rand Elliott, AIA, took an "archaeological approach" to the quirky 25-foot-wide-by-120-foot-long industrial building, formerly the Corkan Pump Company, that they had rented. "The clients had little money and time, and I'm always challenged by that," says Elliott, who oversaw the design and branding of the project from the logo and letterhead to the interior architecture and lighting. Limited by budget, "we powerwashed the shell, removed the dust, then sealed everything, all the cracks and crevices, and froze them in time," Elliott says. New architectural insertions, the bar and gallery spaces, appear to be objects floating within the historic space.

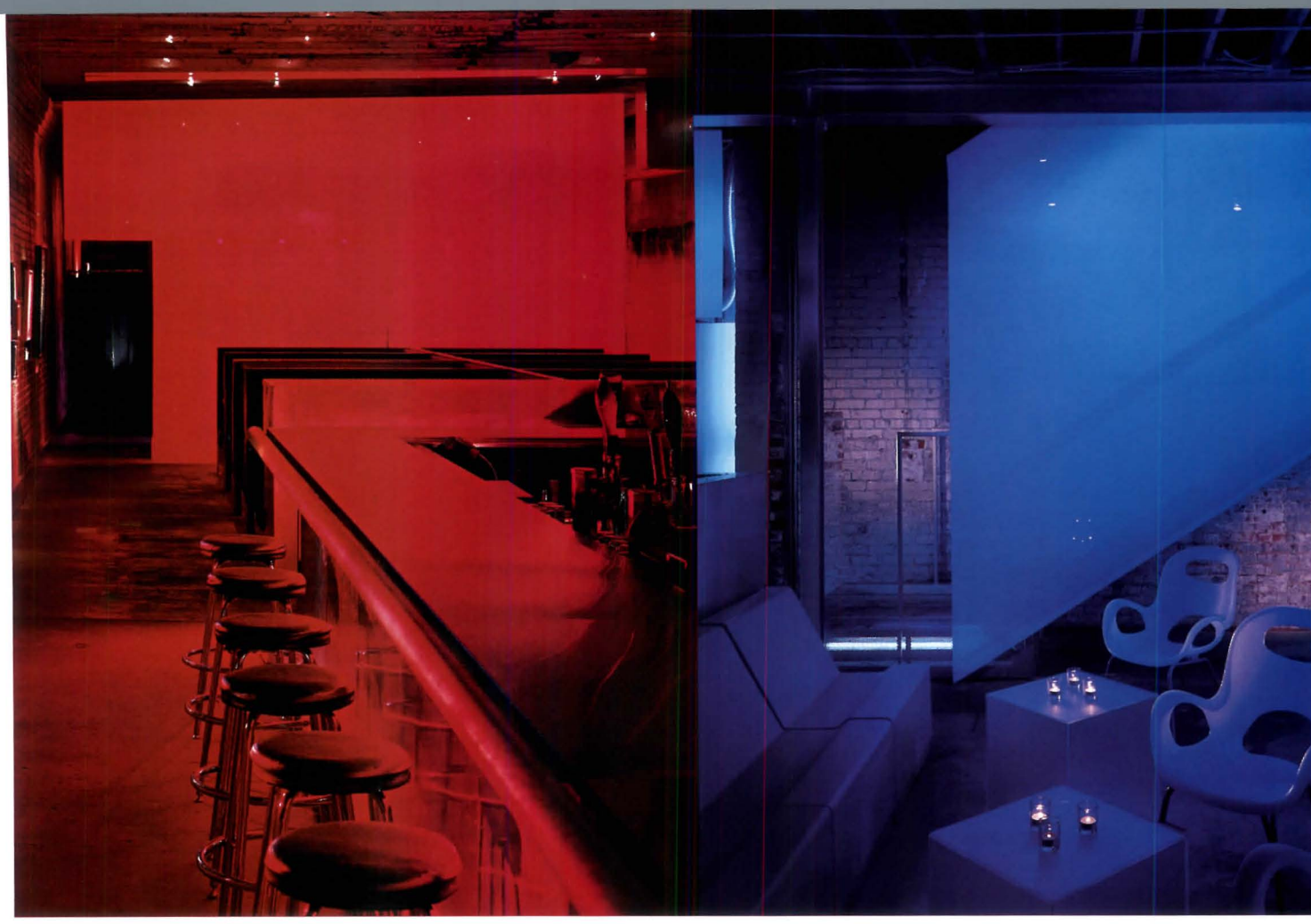
Colored lighting gives the bar its competitive edge, not to mention its name, LiT. Elliott's design objective was to devise a strategy of visual reinvention. "Any bar can become really dull for the staff and clientele who visit frequently," he explains. When the clients suggested the space function as a commercial gallery as well as a watering hole, Elliott threw the proverbial lightbulb of inspiration hovering above his head. "I asked myself, why doesn't the space change just as the art changes? So we proposed that the menu, art, and lighting change on a quarterly basis."

Since LiT opened last July, the lighting scheme has already shifted seasonally from red to blue to purple. Though the chromatic changes in illumination are stunning in effect, they are accomplished simply and at low cost. One hundred T8 32-watt fluorescents are placed at the edges of the 3,250-square-foot main interior, with inexpensive tube guards, or gels, used for changes in color. Through the center of the space, Elliott specified MR16 cable lighting, lamped at 20 and 50 watts. "We put glass filters on the cable lights so we could illuminate the center of the room with color, then illuminate the art with white light," he says. "It





Project: *LiT, Oklahoma City, Oklahoma*
Owners: *Lane Payton, Kyle Payne, Stephen Confer, Tyler Peyton*
Architect, lighting designer: *Elliott + Associates Architects—Rand Elliott, FAIA, design architect; Danny Theisen, Assoc. AIA, Branson Young, Assoc. AIA, Joseph Williams, Assoc. AIA, design team*
General contractor: *Lingo Construction*
Electrical contractor: *Womack Electric*



almost appears as though the artwork is illuminated from within."

Design and construction economics required using inexpensive building materials, which actually fit well with the architects' industrial-chic aesthetic. A bar face and rest-room countertops of galvanized steel have a reflective quality that complements the lighting while trumping the surfacing's industrial pedigree. Black, white, and translucent furniture allows lighting to reign as the premier design element. White partitions in the rest rooms absorb Elliott's tongue-in-cheek lighting plan: pink for the ladies and blue for the gentlemen.

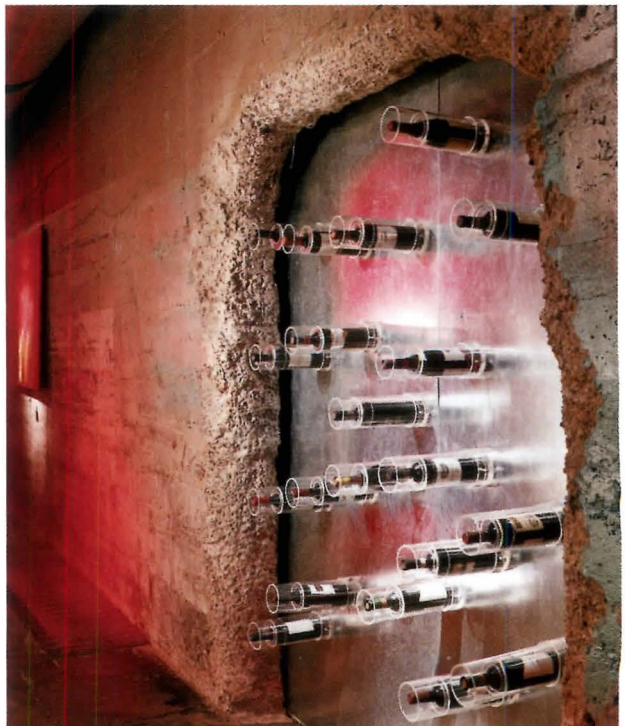
Structural flaws, like a hole in the wall originally used as a path for a forklift, were transformed into design vignettes. The wall opening was covered with galvanized metal and anchors custom metal wine-bottle holders. Nearby, a perforation in the floor was covered with a metal grate and illuminated from within. "The flooring has a mystery to it," says Elliott. "Patrons wonder whether it is art or structure as they walk past."

A centerpiece is a backlit Plexiglas panel along a back wall beneath stairs leading to the roof deck. The illuminated panel creates a golden section while hiding another stairway up to an office. "The panel is the basis for the proportion of all the interior wall elements," Elliott says. "It synthesizes the art and architecture throughout the space." ■

Sources
Cable lighting: *ALFA*
Downlights: *ELP*
Exterior lighting: *Lithonia*
Task lights: *Lithonia; Paramount; First Source Lighting*
Exit lighting: *Quantum*
Controls: *Leviton*

www For more information on the people and products involved in this project, go to Lighting at **architecturalrecord.com**.

"When we conceived LiT, we thought about light as a source of energy and celebration," says Elliott. Above, saturated lighting is achieved with gelled fluorescents aided by cable lights. Below, a former hole in the wall now cleverly stores wine bottles.



Ceramic metal halide outshining incandescent

NEW TINY, LOW-WATTAGE, CERAMIC-METAL-HALIDE LAMPS AND MINIATURIZED ELECTRONIC BALLASTS MAKE IT POSSIBLE TO RETROFIT CMH FIXTURES ONTO EXISTING INCANDESCENT TRACK

By Lindsay Audin

Track-mounted incandescent lighting is the most commonly used system for the display of art and retail goods. Because incandescent lamps are cheap, have precise beam spreads, and produce accurate color, they have always been the lamps preferred for use in track fixtures. Now a new generation of tiny metal-halide lamps, miniaturized electronic ballasts, and new track fixtures permit metal halide to chip away at incandescent's predominance as the lamp of choice in track-lighting systems.

Innovative CMH lamps

In the past, nothing could rival the optical control of incandescent lamps. But even when ceramic-metal-halide (CMH) lamps, manufactured by Philips, Sylvania, and GE, began to approach the color quality and beam control of incandescent lamps, the size and weight of the fixtures discouraged most users from replacing their incandescent track with metal halide. Each fixture and ballast unit could weigh more than 5 pounds, so in addition to the cost of replacing the incandescent equipment, the structure supporting the track might also need to be upgraded. Another disadvantage in the past was that a metal-halide fixture's lamp wattage couldn't be changed without also changing the ballast. By contrast, the brightness and beam spread of an incandescent fixture could be altered simply by changing a lamp.

A compact ballast allows CMH to be installed on incandescent track.

CMH Lamps 101

For those who are unfamiliar with CMH lamps, here are some of the basics. These small lamps provide light that has a color-rendering index of 80 to 92, and they maintain their color-rendering capacity and light output over the lamp's life much better than earlier metal-halide lamps. CMH lamps produce about 80 lumens per watt, about four times as much as a halogen lamp. The high efficiency of such sources cuts air-conditioning loads and makes many spaces, such as stores and galleries, much more comfortable than those illuminated by "space heaters," as incandescent spots have been called. The new lamps emit only a tiny fraction of the ultraviolet radiation common to halogens and older metal-halide lamps. The CMH's ceramic element has an arc gap of just 3 mm. This allows its light to be concentrated with a smaller reflector than was previously possible; for example, a 39-watt CMH lamp is about the same size as an MR16. CMH lamps also start faster than earlier metal halides, reaching 90 percent of full output in 72 seconds, and restart in less than three minutes. Philips calls its CMH MasterColor; GE calls its brand Constant Color; and Osram Sylvania calls its lamps Metalarc Ceramic Metal Halide.

Fitting CMH to existing track

Considering the millions of lineal feet of 120-volt incandescent light track in the world, it should come as no surprise that someone would figure out how to put metal-halide track heads on it. The company that did it is called Metal Light (www.metal-halide.us) and is located in New York City. Its creation is the Track Adapter Pak, a small ballast that is 8 inches long and 1½ inches square, weighs just 14.6 ounces, and may be twisted into place on any standard Juno, Halo, or similar single-circuit track. The bottom of the ballast has an opening that accepts a standard metal-halide track head. Metal Light makes these, as do well-known track-lighting manufacturers such as Times Square Lighting, Con Tech Lighting, Ruud Lighting, and Genlyte-Thomas's Daybrite.

A lighting designer need only choose the lamp size, color, wattage, and style of track head that best fits the application. The ballast can handle 39-, 50-, 70-, or 100-watt CMH lamps; roughly comparable to incandescent in the 75- to 400-watt range. Any of these CMH lamp wattages can be chosen with the flick of a switch on the adapter ballast, so one has to use the lamp wattage that the track head was originally manufactured to handle. Should it be necessary to raise or lower brightness, one need only change the lamp and adjust the switch setting. Metal Light also makes track heads that accommodate GE's new ConstantColor CMH 20-watt bi-pin lamp for installation onto its Track Adapter Pak.

The all-important caveats

First, Metal Light's retrofit ballasts are not dimmable. If the track is wired to dimmers or a dimming system it must be disconnected and the track hardwired to a 120-volt circuit. Second, one should not attempt to install a medium-base incandescent track head with a medium-base metal-halide lamp screwed into it onto the retrofit ballast. The sockets are not designed to carry metal halide's high starting voltage and will fail. Finally, those designers or building operators seeking to retrofit a length of track that is carrying many track heads should verify that the tracks can carry the additional load. Changing 20 heads to CMH would add about 20 pounds to that single length of track.

As with any new product, always check the specs: UL listing, power factor, end-of-life/lamp-failure shutoff, flicker issues, resistance to power spikes, total lamp and ballast wattage used. Look for low harmonics and ease of part/lamp/ballast replacement. While Metal Light's equipment passes all the critical tests, other manufacturers' CHM ballasts may not. ■

Lindsay Audin is the president of Energywiz, an energy and technology consulting firm.

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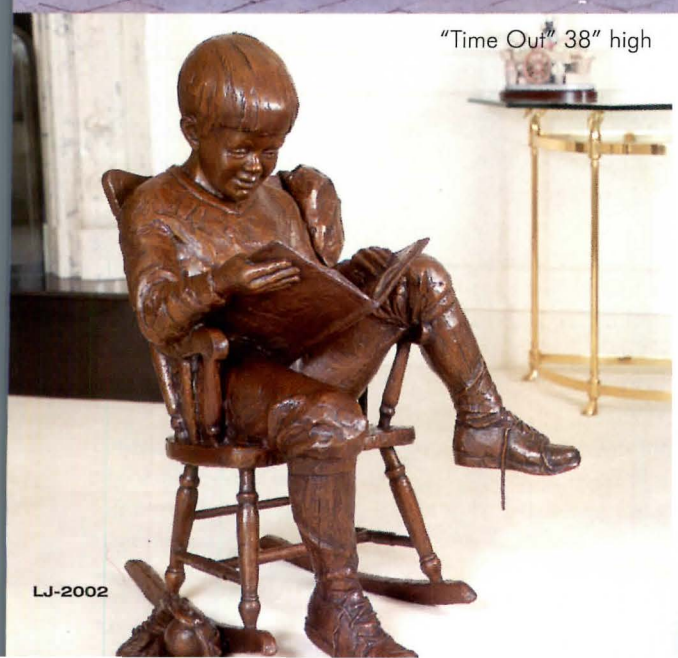


LJ-2002

"Bookworm II," 7", 17", 24", 48" high

Lighting Briefs

► Pop the bubbly

Los Angeles furniture manufacturer Modernica announces the release of the 50th-anniversary-edition Diamond Bubble lamp, from an original George Nelson design long out of production. Created in 1947, the airy Bubble lamps are fashioned from sturdy, lightweight cages covered with a translucent, synthetic material that was originally developed during World War II to waterproof armaments. 213/683-1963. Modernica, Los Angeles. **CIRCLE 200**

◄ Aeronautical lighting

Flux has launched a line of architectural lighting that features nickel-plated steel and anodized aluminum components forged by the same contractors who helped make the Boeing 757 and Boeing 767 airplanes. Each pendant fixture, surface-mount light, and wall sconce has either handblown colored glass, or slumped and textured hydrocut glass. Many of the residential or commercial fixtures can accommodate both incandescent and compact fluorescent bulbs. 206/282-3023. Flux, Seattle. **CIRCLE 202**

► Northern lights

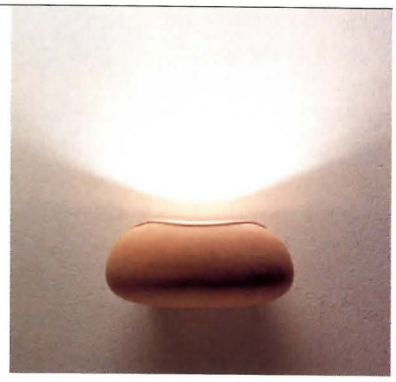
Louis Poulsen was one of the sponsors for last fall's Arne Jacobsen exhibition at Scandinavia House in New York City. The AJ Eklipta light fixture was designed by Jacobsen in 1965 for the City Hall in Roedovre, Denmark. The architect used the product in many of his later buildings, as well, often as wall fixture for staircases. AJ Eklipta features a three-layer handblown glass shade with a clear edge that creates a halo of light around the perimeter. 954/349-2525. Louis Poulsen Lighting, Fort Lauderdale, Fla. **CIRCLE 204**

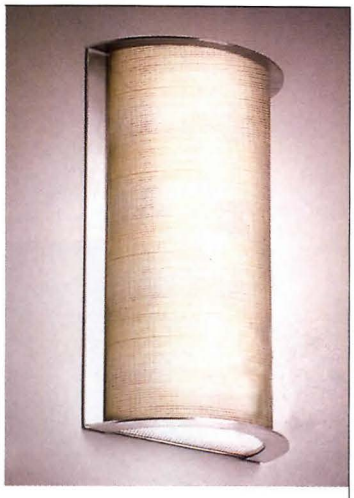
◄ Ice sculpture

Using natural, hand-carved rock crystal, artist Robert Kuo has created the Carved Ice table lamp for McGuire. Resting on a copper base, the translucent, textured crystal catches the light from the lamp and is paired with a Pongee silk shade to add contrast to the lamp's materials. Each lamp is signed, numbered, and dated. 415/626-1414. McGuire, San Francisco. **CIRCLE 201**

► Piece of bread

Pani is a collection of terra-cotta light wall lamps that are available in three different shapes called Baguette, Sfilatino, and Pagnottella (shown) for different powers of linear halogen bulbs. Pani is just one family of luminaires from the Italian lighting and furnishing design company Album. 39/039 220041. Album, Biassono, Italy. **CIRCLE 203**





◄ Acrylic textile shade

Nessen Lighting has teamed with Knoll Textiles to introduce the Imago acrylic textile shade material. The Imago resin-encapsulated shade fabric is available in a choice of 10 colors and textural patterns, ranging in appearance from denim to tweed to linen. Each may be specified as an optional shade choice on a wide range of Nessen decorative wall sconces with rectangular or tubular shades. 914/698-7799. Nessen Lighting, Mamaroneck, N.Y. **CIRCLE 206**

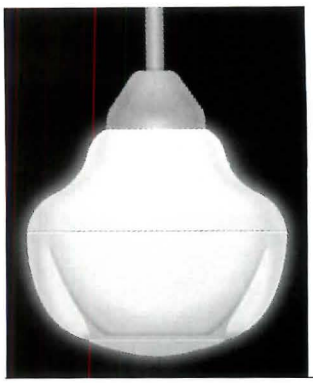
► Neonlike LED

Plexineon is a LED linear lighting system that glows and curves like neon but uses up to 70 percent less energy. The product can be used in long, straight pieces; connected to make one continuous piece; factory-bent tightly into letters or curves; or cold-bent tightly in the field into gentle waves or arcs. 847/328-7800. iLight Technologies, Evanston, Ill. **CIRCLE 205**

Lighting Briefs Efficient choices

▲ Office task lighting

The Ergolite task-lighting halogen model uses a 50-watt shielded tungsten halogen lamp that emits a pure white light from a low-profile circular lamp shade. The fluorescent model uses an energy-efficient, 13-watt, U-shaped lamp enclosed by an elongated, tapered, and louvered shade that aims all emitted light directly onto tasks. Mounting options for both models are comprised of adjustable-thickness edge clamps; circular, nonmarring, weighted table bases; go-anywhere magnetic mounts; and panel mounts that fit most major office panel systems. 800/648-2978. Luxo Corporation, Port Chester, N.Y. **CIRCLE 207**

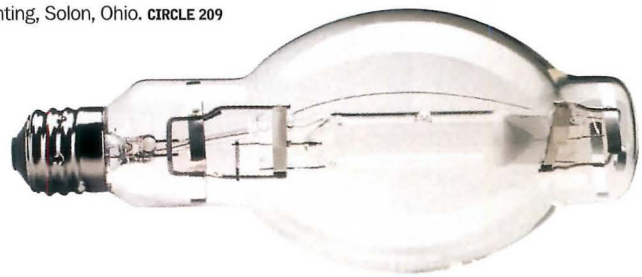


◄ Shapely fixtures

Illuminaire lighting fixtures are available in five optical designs and two sizes with up to 92 percent efficiency. The shapes include the Egg, Crest, Tri-Egg, Tri-Crest (shown), and Quad. The luminaire's prismatic glass reflectors and refractors supply high levels of vertical and horizontal illumination to promote high-level visibility for commercial, retail, or light industrial applications. 740/345-9631. Holophane, Newark, Ohio. **CIRCLE 208**

▼ Wattage savings

Part of Venture Lighting's full line of energy-efficient metal halide systems, the 875-watt horizontal lamp provides energy savings of up to 155 system watts per luminaire compared to a traditional 1,000-watt universal metal halide system. The lamp offers 95,000 initial lumens with a life rating of 12,000 hours. 800/451-2606. Venture Lighting, Solon, Ohio. **CIRCLE 209**



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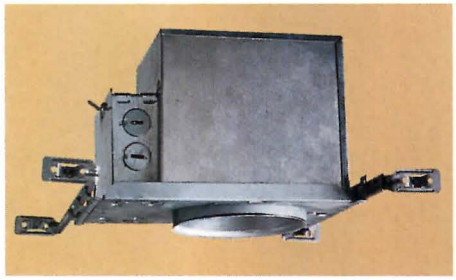
Lighting Briefs Efficient choices

▼ Airtight light

Juno Lighting has introduced its new, 4-inch PAR ICI Downlight to enable installation in a greater variety of space-restricted insulated plenums, to save energy, and to enhance aesthetics with improved beveled-trim rings. The new housing design is Air-Loc rated without requiring the use of supplemental gasketing. The Air-Loc rating complies with energy-efficiency requirements first established in the State of Washington that do not allow conditioned air to escape a recessed fixture or unconditioned air in the attic to enter through it. An Air-Loc recessed fixture can save more than $4 per year per fixture in energy costs compared to a similar IC-rated fixture that does not carry the Air-Loc rating. 847/827-9880. Juno Lighting, Des Plaines, Ill. **CIRCLE 210**



◄ Efficient collaboration

For open office lighting for the Symantec technical support and customer service center in Springfield, Oregon, Pentron T5 HO lamps were used in high-performance indirect lighting systems providing 30-footcandle levels. The outer rows of luminaires nearest the windows are automatically dimmed by daylighting controls using Quicktronic PHO-DIM ballasts. Actual lighting energy use is approximately 50 percent of the amount permitted by the Oregon Energy Code. 978/777-1900. Osram Sylvania, Danvers, Mass. **CIRCLE 211**

► Lasting lamps

Philips' new Alto Plus Slimline T8 8 Foot fluorescent-lamp family features a life of up to 30,000 hours, which is 60 percent greater than other 8-foot fluorescents, which last about 12,000 to 18,000 hours. In addition, the Slimline lamps deliver a high CRI of 85 and 95 percent lumen maintenance over the life of the lamp. 800/555-0050. Philips, Somerset, N.J. **CIRCLE 212**

For more information, circle item numbers on Reader Service Card or go to www.architecturalrecord.com Advertisers & Products inf

New Products

What makes a **product green?** The editors of the *GreenSpec Directory* suggest criteria including environmentally attractive material content or features that reduce the **environmental impact** of building operation. For more info, check out this month's article on selecting green materials, on page 173. *Rita F. Catinella*

BuildingGreen announces the Top 10 Green Building Products of the Year

BuildingGreen, publisher of the *GreenSpec Directory* and *Environmental Building News* (*EBN*), announced its selection of the top 10 new green building products of the year. This first-ever award, announced at the Green Building Council's International Green Building Conference in Austin, Texas, last November, recognizes outstanding products added to its *GreenSpec Directory* during the past year.

The 10 products chosen represent a range of materials and equipment that can help to reduce the environmental impact of a building. Some products selected may have been on the market for more than a year. "We sought to recognize a wide variety of products in an effort to convey to designers, builders, and building owners the wide array of green building products that are available today," says *GreenSpec* coeditor Alex Wilson. "We wanted to choose some really new or innovative products that even seasoned green architects or builders might not have heard of yet." Wilson notes that selecting only 10 products from the 250-plus new products in the directory was difficult. "Five years ago it would have been easy to select the standout green building products. But so many new products are being introduced now that selecting the top 10 products was a huge challenge."

BuildingGreen plans to make the top 10 announcement an annual event at the Green Building Council conference and trade show. The next conference takes place from November 12 to 14 in Pittsburgh.

Eight of the green products selected are shown here. The two products from the top 10 that are not shown include formaldehyde-free fiberglass from Johns Manville and the McDry waterless urinal from Duravit USA. Both products were recently highlighted in the Product Reports section of RECORD's December 2002 issue. 802/257-7300. BuildingGreen, Brattleboro, Vt. **CIRCLE 213**

◄ Cooling heater

WatterSaver is the first heat-pump water heater that is designed as a drop-in replacement for a standard electric water heater. The 50-gallon unit extracts heat from the indoor air to heat water using about half the energy of an electric-resistance water heater. During operation, the WatterSaver consumes about 500 watts of electricity and produces 3,500 Btus per hour of cooling, which in a warm climate serves as free air-conditioning. 716/366-5500. ECR International, Dunkirk, N.Y. **CIRCLE 214**

◄ Insulating aerogel

Until recently, Kalwall's highest-performance translucent glazing system was a 70-millimeter panel with fiberglass insulation that insulated to R-10 and transmitted up to 9 percent visible light. Kalwall R-20 is a new 70-millimeter glazing system that provides double the insulation value and transmits up to 20 percent of visible light. This is achieved by filling the glazing unit with a granular silica aerogel from Cabot Corporation called Nanogel. 978/670-8018. Cabot Corporation, Billerica, Mass. **CIRCLE 215**

▲ Cans of green paint

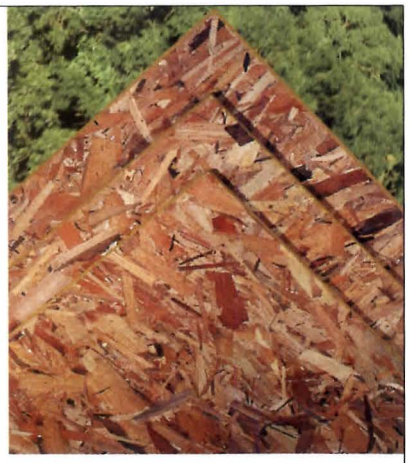
Pittsburgh Paints' Pure Performance line of interior paints is the latest zero-VOC product to enter the market. While most low-VOC paints today use acrylic or vinyl acetate resins, Pure Performance uses a newer vinyl acetate ethylene resin. The company claims equal performance to the second-to-the-top Wallhide line it replaces, and there is no cost premium. This is the first paint to be certified under a new Green Seal standard for paints. 800/441-9695. PPG Architectural Finishes, Pittsburgh. **CIRCLE 216**

New Products

▲ Wheat-straw fiberboard

WoodStalk is a fiberboard product made from wheat straw. It is available in various thicknesses for use in cabinets, shelving, furniture, and underlayment. Not only is the product made from a waste agricultural material (straw), but formaldehyde is not used in its manufacture. (Conventional particleboard and MDF are made with urea-formaldehyde binder and can emit formaldehyde gas.) WoodStalk can be used in place of Lauan plywood as a resilient flooring underlayment, thereby protecting the world's rain forests. 979/238-5329. Dow BioProducts, Manitoba, Canada. **CIRCLE 217**

► Certified OSB



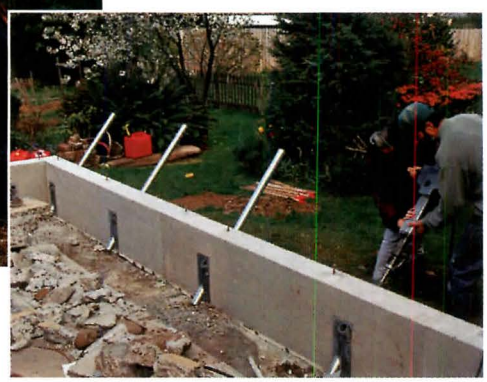
The Roy O. Martin Lumber Company's Tuff-Strand oriented strand board is the first such product to be certified according to standards developed by the Forest Stewardship Council. To receive this certification, the company had to go through an extensive third-party review of its forestry practices on its timberlands in Louisiana. In addition to offering FSC-certified OSB, the Roy O. Martin company also offers FSC-certified softwood plywood, concrete forms, hardwood lumber, and utility poles. 800/299-5174. ROMEX World Trade Company, Alexandria, La. **CIRCLE 219**

▼ PVC-free partitions

Preform Manufacturing offers a range of office partition systems that are manufactured from environmentally responsible materials. Their Classic Panel and Decato systems utilize core materials made from a foamed flue-gas gypsum product, 100 percent recycled-content foamed glass, and a high-recycled-content cellulosic honeycomb material. The company also uses natural textiles and is experimenting with other bio-based materials, including a proprietary resin material. All components are PVC-free, and all finishes are nontoxic. 407/673-7474. Preform Manufacturing. Orlando. **CIRCLE 218**

▼ Dry hands, conserve energy

The new XLerator hand dryer's high-velocity fan results in a typical drying time of just 12 to 15 seconds (versus 30 to 45 seconds for conventional electric dryers). Along with saving a great deal of money in operating costs, compared with paper towels or a standard dryer, the XLerator also performs better from a life-cycle assessment standpoint. Including the energy to produce paper towels, the XLerator uses just 10 percent as much energy per hand-drying use as virgin paper towels, and 17 percent as much as when recycled paper towels are used, according to research compiled by *EBN*. 413/525-4531. Excel Dryer, East Longmeadow, Mass. **CIRCLE 220**



◄ Friendly foundation system

The Low Impact Foundation Technology (L.I.F.T.) is a foundation system that can be installed with almost no excavation. Sections of foundation wall are poured above ground and "pinned" into the ground using heavy-duty steel pins that extend deep enough to support the structure and prevent uplift. This same basic technology has been used for about five years in supporting boardwalks in ecologically fragile locations, such as wetlands, where excavation would cause significant damage. The L.I.F.T. system is being used on a limited basis in the Pacific Northwest, including a Habitat for Humanity home completed last summer. 253/858-8809. Pin Foundations, Gig Harbor, Wash. **CIRCLE 221**

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Product Briefs

▲ Princely frog

The Frog armchair and chaise longue (shown) were two of the new furnishings designed by Piero Lissoni for Living Divani on display at last year's Promosedia chair trade fair in Udine, Italy. The Minimal-style seating collection comes in a variety of coverings, including felt, coach hide, PVC, rope, and padding. 39 031 630954. Living Divani, Anzano del Parco, Italy. **CIRCLE 222**

Redeemable plastics

One of the innovative manufacturers on display at 100% Design, held last year in London, was Smile Plastics. The company is committed to sourcing and developing markets for sheets made from recycled plastics waste, including old plastic bottles, coffee cups, yogurt cups, and industrial waste. Last year's introductions included sheets made from crushed CDs, plastic water bottles, toothbrushes (above left), bank notes (above right), and scrap from the Smile Plastics' factory. 44 01743 850267. Smile Plastics, Shrewsbury, United Kingdom. **CIRCLE 224**

Roof-integrated PV system

The Quick Step Rheinzink solar PV roof-integrated module system features a 3M bonding technique that meets requirements pertaining to light penetration, weather, and aging resistance. The system is suited for roof pitches of 10 degrees to 75 degrees. Without having to walk on the solar modules, they are connected by a roof installer with the aid of a plug-in system. An authorized electrician connects the converter or converters. 617/948-2520. Rheinzink Canada, Boston. **CIRCLE 225**

Product of the Month Mimosa Finishes

Mimosa International specializes in the production and application of a range of authentic Italian decorative finishes for commercial and residential interiors, exteriors, and furnishings. One hundred percent natural materials are hand-applied by craftspeople to produce a range of washable, water-resistant, odorless, and durable finishes. The products can be applied to virtually any surface and produced in custom-made colors and textures. Recent projects include the Villa Venezia residence in Palm Beach, Florida, Smith Architects and Bunny Williams (right); the Prada U.S. Headquarters, Herzog & DeMeuron; and Equinox Gyms, by David Rockwell Architect (top right). Mimosa has collaborated with classic modern furnishings manufacturer Cassina to create a set of fixtures, display cases, and furniture designs for the new 7,000-square-foot Alfred Dunhill New York flagship store. 212/334-0330. Mimosa International, New York City. CIRCLE 223

▲ Alternative coverings

IQ Smart Fabric (above left) is a new upholstery and panel fabric from Carnegie. Composed of a 100 percent polyacrylic face, IQ has one million pile knots per square yard, resulting in higher pile density and greater durability. IQ uses a finishing process of only heat and pressure that eliminates the need for chemical finishes. Also new from Carnegie is Tuscany (above right), an alternative nonwoven wall covering that is PVC- and chlorine-free. Offering a nonwoven base of polyester and viscose, Tuscany is infused with water-based acrylic inks and minerals to create a metallic sheen. 516/678-6770. Carnegie, Rockville Centre, N.Y. **CIRCLE 226**

Product Briefs

▼ Bamboolike pulls

Valli & Valli's new collection of bamboo-inspired door pulls was designed by architect Leon Krier. Suitable for both residential and contract use, the pulls are available in gold, satin chrome, and rustic finishes. The Krier door pull is the newest addition to Valli & Valli's collection of products by distinguished architects and designers. 877/326-2565. Valli & Valli, New York City. **CIRCLE 227**

▼ Get ready, get set

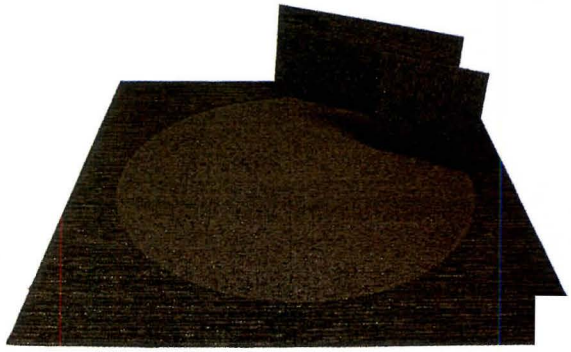
The new Get Set Collection from Allsteel includes tables and seating that can easily be configured for team meetings and breakout sessions. The tabletop features a flip-up top and quickly and compactly folds and nests for storage. The chairs have a cushioned seat, a "flex back" that follows the natural movement of the body, a sloping arm, and perforations in the back that allow for air circulation. 563/262-4800. Allsteel, Muscatine, Iowa. **CIRCLE 229**

► Designer of many interests

M2L presents four re-editioned designs of the Italian furniture designer, artist, interior designer, and architect Carlo Mollino (1905–73). Mollino, inspired by the Futurist and Surrealist movements of his time, was one of the pioneers of biomorphism, which greatly influenced postwar Italian design. A man of many interests, Mollino was an expert stunt flyer, avid skier, race-car driver (and designer), student of the occult, and a photographer known for his erotic Polaroids. The Ardea armchair (shown) was designed in 1944 for the Minola House in Turin. It features a removable cover, a black painted wood base, and a steel frame. 212/832-8222. M2L, New York City. **CIRCLE 230**

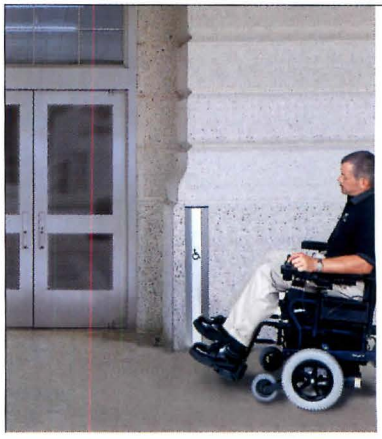
▲ Looming designs

Tuva Looms, a woven carpet company founded by Terry Mowers and Suzanne Tick, is expanding its collection with three new designs and subtly altering colors of existing patterns, all eight of which are still available. The three new patterns are: Double Grid, a large-scaled window-pane pattern on a tatamilike ground; True Path, a linear pattern of ribbed construction; and Open Plane, whose block pattern is outlined with surface ravines created by "warp voids." 212/598-1021. Tuva Looms, New York City. 212/598-1021. **CIRCLE 228**



► Carpeting philosophy

Interface introduces the Philosophy Collection of carpet tiles, which includes three new patterns: Cogent, Perpension, and Rationale. The tiles feature a heavy, nubby texture in a tufted-loop construction that varies in pattern across the three modular formats. The 50 cm tile offers the most flexibility on the floor and displays the smoothest texture; the 50 cm x 1 m plank can be arranged in a number of patterns, such as herringbone or ashlar; and the 2 m x 2 m modular rugs provide a set geometric pattern. 706/882-1891. Interface Flooring Systems, LaGrange, Ga. **CIRCLE 231**



◄ Welcoming entrance

The Ingress'r ADA-compliant door control offers improved accessibility to visitors ranging from the most severely disabled (with limited use of their limbs) to parcel-laden traffic. The door control offers a tapered contour shape to deter shear-off from wheeled conveyances, a height of 36", and a 2" wide central column that is fully activated by a tap at any height. 877/421-9490. Wikk Industries, Greendale, Wis. **CIRCLE 2**

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Product Briefs

▼ Worthy of framing

The Frame line of bathroom fixtures features a flexible plaited-stainless-steel hose covered by a transparent PVC film. The fixture's "frame" is a structural element turned out from a stainless-steel laser-cut plate. Frame also has an accessories line in stainless steel, resin, and glass that includes a scented oil holder and vase. A plaited-stainless-steel spout is also the main characteristic in the bathtub spout (below). The entire Frame line is available in chrome and brushed-nickel finishing. 39 0163 560000. Rubinetterie Ritmonio, Varallo, Italy. **CIRCLE 233**

▲ Workplace workhorse

Werndl comprises an array of modular, mobile, and combinable office furnishings that integrate steel, aluminum, fine wood veneers, and high-impact plastics. The system includes: Emerge, a workstation with integrated wire management; Freewall, an expandable partition providing wire management and adjustable shelving; Touchdown, a sit-stand, height-adjustable side table; Fliptop, a foldaway desk; Moby, a family of lockable file and storage carts; Tokyo, a fixed shelving unit; Communicator, a mobile media cart; and InfoTainer, an array of presentation furnishings. 972/641-2860. Vecta, Grand Prairie, Texas. **CIRCLE 234**

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For more information on energy efficiency and renewable energy programs for New Jersey, visit the New Jersey Clean Energy website, www.njcleanenergy.com.

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Product Briefs

▲ Commercial-grade laminate flooring

Wilsonart has launched a new high-pressure laminate flooring collection called Velocity, designed exclusively for commercial environments. The collection features 20 different exotic wood, stone, and abstract designs. Velocity is constructed with a commercial-grade core and high-performance wear layers and impact layers to withstand the wear and tear of commercial environments. Velocity is Wilsonart's first commercial flooring designed for use with the company's new adhesive-free Trac-Loc installation system. 800/710-8846. Wilsonart, Temple, Texas. **CIRCLE 235**

► Scratching the surface

New designer finishes are available in Alucobond material for exterior cladding and interior finishes. The brushed surfaces are offered as anodized exterior finishes or clear-coat interior-only finishes in designs called Graffiti (random swirls applied by mechanical means, shown above right); Grass (mill-finish-aluminum and satin finish that is highly directional); and Diversion (mill-finish-aluminum and satin finish that is mostly directional, shown below right). The embossed surfaces form a 3D pattern that maximizes texture and contrast while providing a strong visual presence. 800/382-6445. Alcan Composites, St. Louis. **CIRCLE 236**

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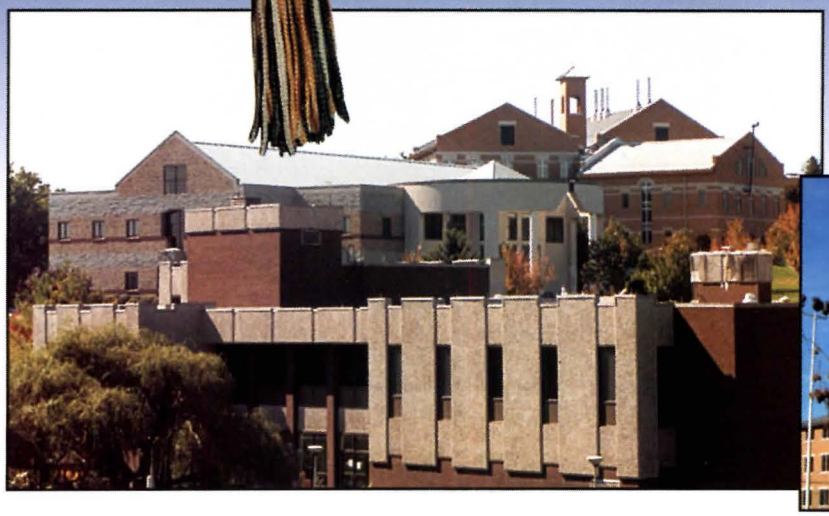

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Product Literature

Health-care furnishings

BioFit Engineered Products offers two brochures for their newest furnishing offerings. The first catalog describes BioFit's line of Fold-N-Roll tables for training and meeting facilities, learning and activity centers, cafeterias, and other applications in plants, offices, and schools. *Seating for Health Care Settings* is a catalog to assist in the specification of chairs and stools for health-care applications. 800/597-0246. BioFit Engineered Products, Bowling Green, Ohio. **CIRCLE 237**

Fine case-goods brochure

CCN International offers a new brochure for its Foundation Collection of hand-configurable, fine wood desk and case-good components. Photos illustrate the many perimeter-mounted work surfaces, desks, tables, reception stations, credenzas, and storage-display cabinets that comprise Foundation. 315/789-4400. CCN International, Geneva, N.Y. **CIRCLE 238**

Revived lighting

Rejuvenatio's Early Winter 2002 catalog features an expansion of the company's Modern America line of light fixtures for homes built from the mid-1920s thro the 1940s. 888/401-1900. Rejuvena Portland, Ore. **CIRCLE 239**

Full-line fan catalog

The new Monte Carlo Fan Company alog is the first full-line catalog from company in three years. The 116-pag catalog features more than three do lines of fans, each of which is offered a range of fan housing and blade col 856/764-0500. Monte Carlo Fan Company, Fort Worth. **CIRCLE 240**

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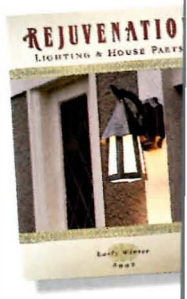

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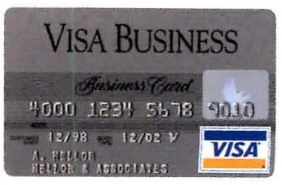

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Product Literature

Track lighting catalog

Lithonia Lighting's full line of track lighting is highlighted in a new 32-page catalog. The piece includes product photography, dimensional drawings, and technical information to allow easy product selection and ordering. In addition to traditional track heads such as flatback, roundback, and lamp holder, new products such as PAR shades and metal-halide lamp holders are featured in the brochure. 770/922-9000. Lithonia Lighting, Conyers, Ga. **CIRCLE 241**

CRSI award winners

The Concrete Reinforcing Steel Institute announced the winners of its 16th Biennial Design Awards Competition in its *2002 Design Awards Brochure*. The 28-page brochure features 10 structures selected for their excellence in utilizing conventionally reinforced cast-in-place concrete. Jury selections represent a wide spectrum of project types, including buildings, bridges, parking facilities, and public infrastructure needs. 847/517-1200. Concrete Reinforcing Steel Institute, Schaumburg, Ill. **CIRCLE 242**

Ventilation product catalog

Greenheck's new *Architectural Products* catalog provides an overview of the company's comprehensive line of louvers and other architectural ventilation products. The illustrated catalog also includes penthouse and equipment screens, sunshades, and standard or custom egg-crate grilles, all designed to complement Greenheck's air movement and control products worldwide. 715/359-6171. Greenheck, Schofield, Wis. **CIRCLE 243**

Wall-mounted lighting

Wall-mounted Wallpack Series luminaires from Holophane are described in a new brochure from the company. Applications include office complexes, schools, parks, parking garages, residential areas, campuses, walkways, and underpasses. 740/345-9631. Holophane, Newark, N.J. **CIRCLE 244**

Treated wood answers

The Southern Pine Council, in cooperation with the American Wood Preservers Institute, has released a new edition of the brochure, *Answers to Questions About Pressure-Treated Wood*. The booklet offers more than 30 definitive answers to popular questions asked about treated wood. 504/443-4464. Southern Pine Council, Kennar, La. **CIRCLE 245**

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ADVERTISERS INDEX continued

1	54		Stepstone Inc *stepstoneinc.com*
42	105		Sustainable Forestry Initiative *aboutsfi.org*
47			Sweets *sweets.com*
6	58		TEC *tecspecialty.com*
08	62		Toyota *www.toyota.com/tomorrow*
4	20	S	Trenwyth *trenwyth.com*
71	66	S	Truebro *truebro.com*
46, 4cov		S	USG Corporation *usg.com*
33			Visa Business *visabusiness.com*
1	22	S	VT Industries *vtindustries.com*
8-29	16	S	Vulcraft, A Division of Nucor Corp *nucor.com*
-9	6		Weather Shield Windows & Doors *weathershield.com*
3	23		Westcrowns Inc *westcrowns.com*
5	25	S	Whirlpool *whirlpool.com*
6	43		Wiley *wiley.com*
3	41		Window & Door Manufacturers Assn *wdma.com*
88	77	S	Wiremold *wiremold.com*
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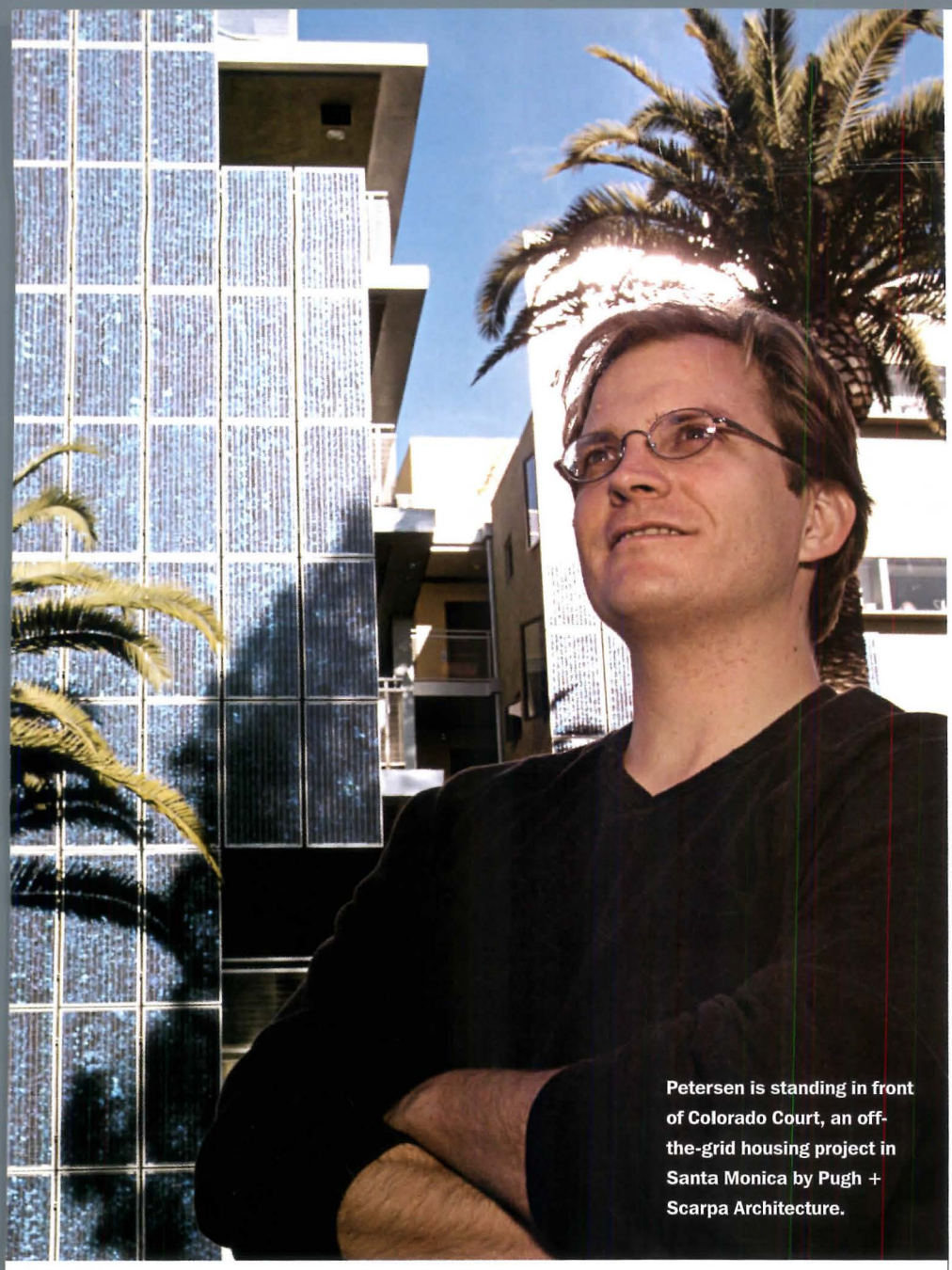


Petersen is standing in front of Colorado Court, an off-the-grid housing project in Santa Monica by Pugh + Scarpa Architecture.

Matt Petersen: California greenin'

Interviewed by Deborah Snoonian, P.E.

Matt Petersen works shoulder-to-shoulder with Mikhail Gorbachev, who founded the advocacy group Green Cross International in Geneva in 1993. Petersen is president and C.E.O. of its U.S. affiliate, the Los Angeles–based Global Green USA, which partners with government agencies to promote sustainable development and awards designers for green building. A Golden State native from Modesto, Petersen began his career as a campaigner (for Dukakis in 1988 as well as political races in California). As a graduate student at USC, he ran Americans for a Safe Future, a group that protested the building of a nuclear waste dump near the Colorado River. RECORD *caught up with Petersen just two days before his wife, Leila, gave birth to their son, Aidan Michael.*

Q: *An environmental-advocacy group based in Los Angeles—sounds like an oxymoron. Why there?*
It's a challenge to catch people's attention about the environment in Los Angeles, but it has a pragmatic side to it, too—"If you can do it here, you can do it anywhere" is our attitude. We're also located here because of its proximity to the media and entertainment community and because California is a leader, not just nationally, but globally, on environmental trends.

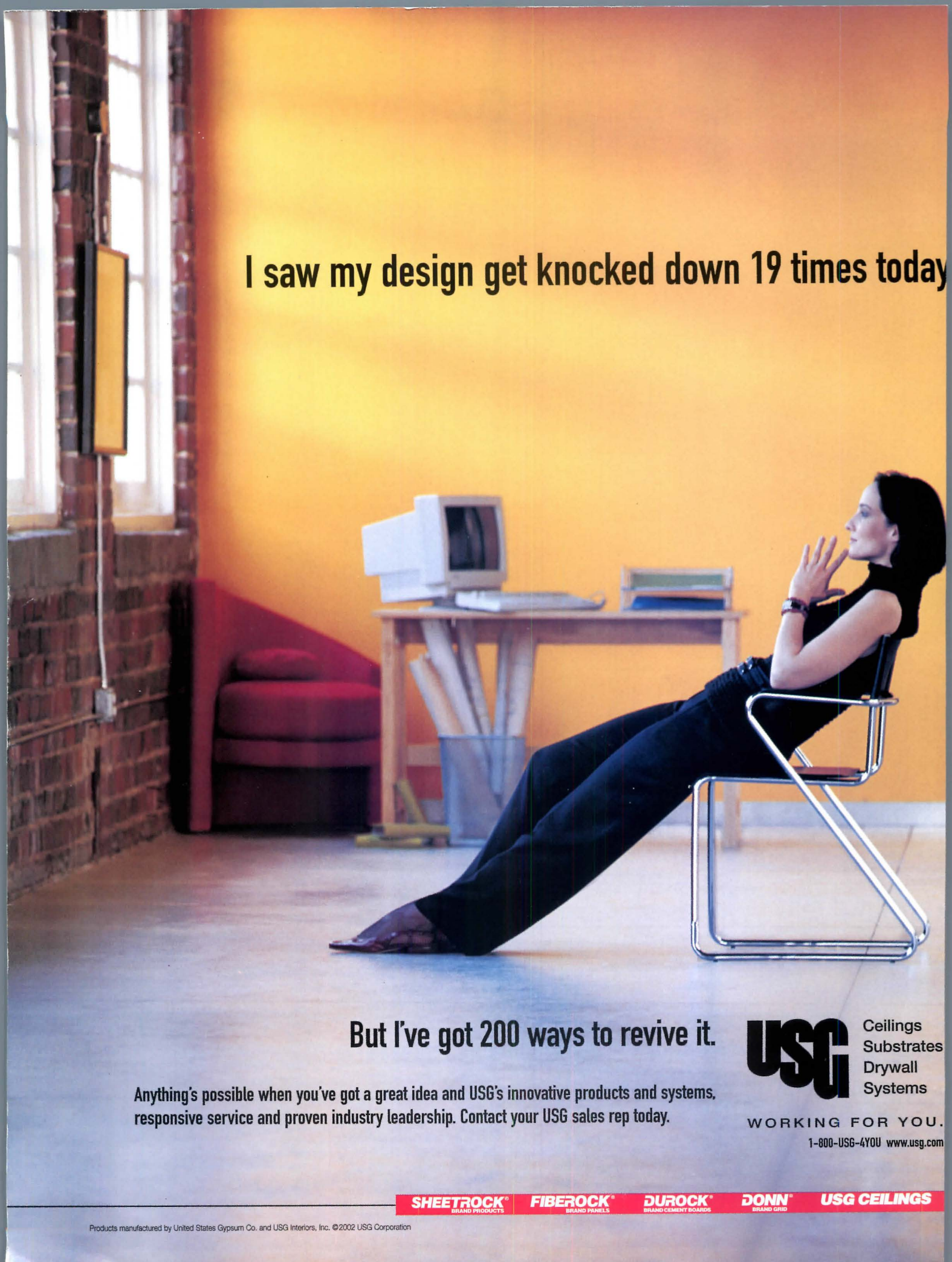
How did you become interested in the environmental movement? I grew up in Modesto, which, along with other Valley cities—Fresno, Sacramento—has become synonymous with sprawl. My dad tells a story of when I was five years old and we were at a park. I guess there was litter on the ground, and I said, "Dad, we gotta do something about our planet!" So, as he tells it, my awareness came earlier than I remember. Really, it was related to my work in politics, especially when I campaigned in 1992 for Tony Beilenson [California congressman, now retired] who was a strong advocate for the environment.

When did Global Green begin working on sustainability and design issues? It started in 1995 when we launched a partnership with Habitat for Humanity. Our mandate was to develop their environmental commitment, to be stewards of God's resources, as they would put it—lowering energy bills for low-income families. We also held a conference of sorts with green-building experts like Bill McDonough [architect] and Ray Anderson [C.E.O. of Interface Carpet]. That grew into our greening-affordable housing initiative; then we began partnering with cities to develop sustainable building programs. The idea of recognizing designers for green building evolved from this.

What's it like to work with Mikhail Gorbachev? He's an amazing man. I met him in 1994 at our first major series of events. I remember thinking his soul just comes up through his eyes and grabs you. He firmly believes that environmental protection is the greatest challenge of the century. Seeing the fallout from the Chernobyl disaster affected him very deeply. On a personal level, he's always got a great joke and provokes interesting conversation. Every time you talk to him, he ends up sitting at the edge of his chair.

Did you go to the U.N. environmental summit in Johannesburg? Yes. One thing we proposed while there was shifting fossil fuel subsidies to a $50 billion solar venture fund, to drive down the cost of solar energy technologies so designers can integrate them into buildings more readily. It got a lot of attention—the Dutch government's very intrigued, and others, as well. ■

Photograph by Robert G. Sanchez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