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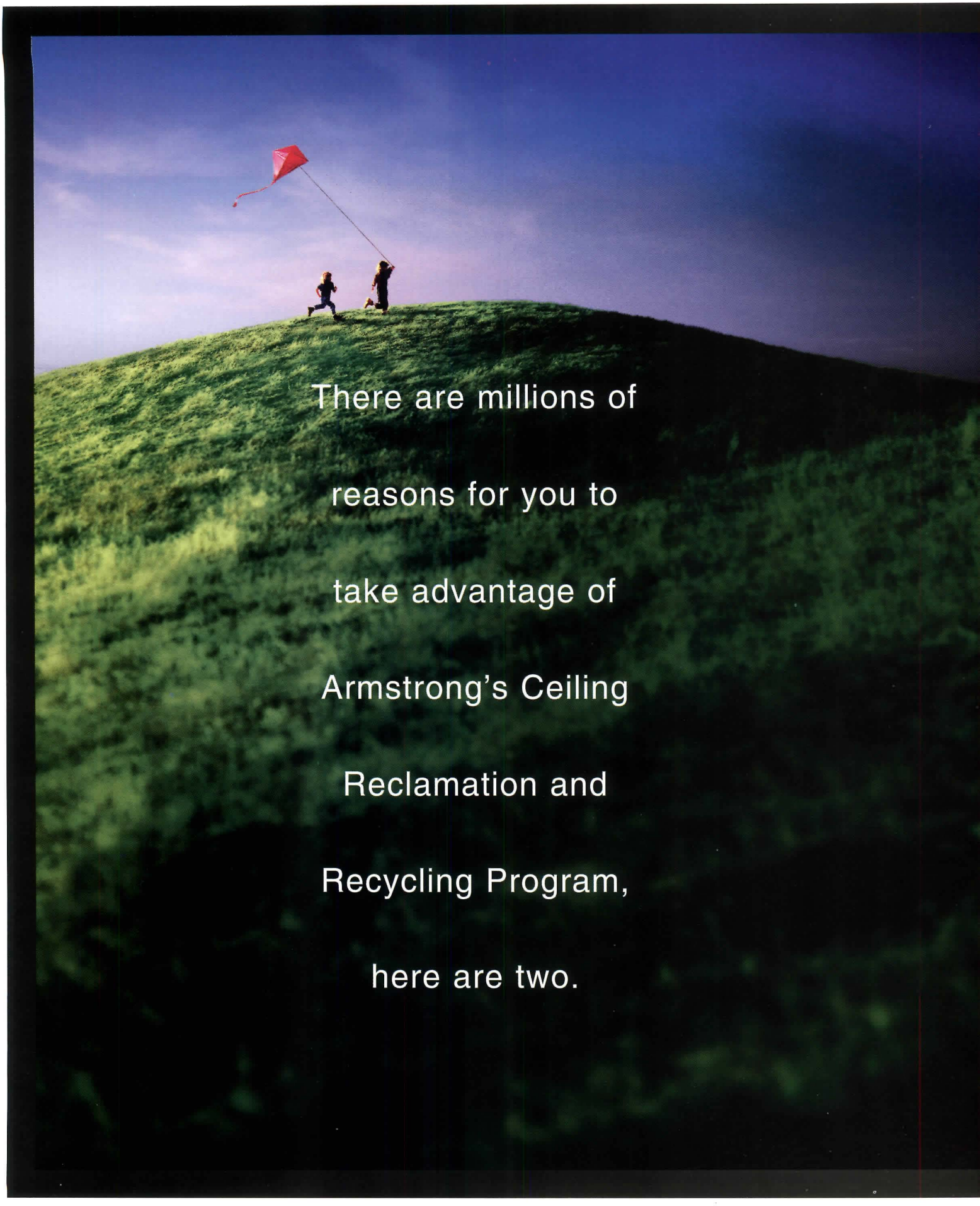
The Light Laboratory, The Story of Water, and Strange Attractors: Steven Holl's Sensuous Alchemy at Cranbrook's Institute of Science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Clinton proposes a blueprint for livability.

By Reed Kroloff

If, like me, you tuned in to this year's State of the Union address primarily to gauge the spectacle of an impeached Democratic president talking to a discredited Republican congress about how swimmingly things are going around here, you might have missed a smaller, but nevertheless important bit of history in the making. Toward the last 15 minutes or so of the speech, President Clinton became the first chief executive to propose a specific "Livability Agenda" for American cities. Simply hearing the words spoken was enough to restore a measure of my battered interest in Clinton's vision for the country. Here, in the midst of a self-inflicted, legacy-tainting, job-threatening crisis, the president reminded Congress that the federal government can "help communities save open space, ease traffic congestion, and grow in ways that enhance every citizen's quality of life"; in other words, make cities more livable.

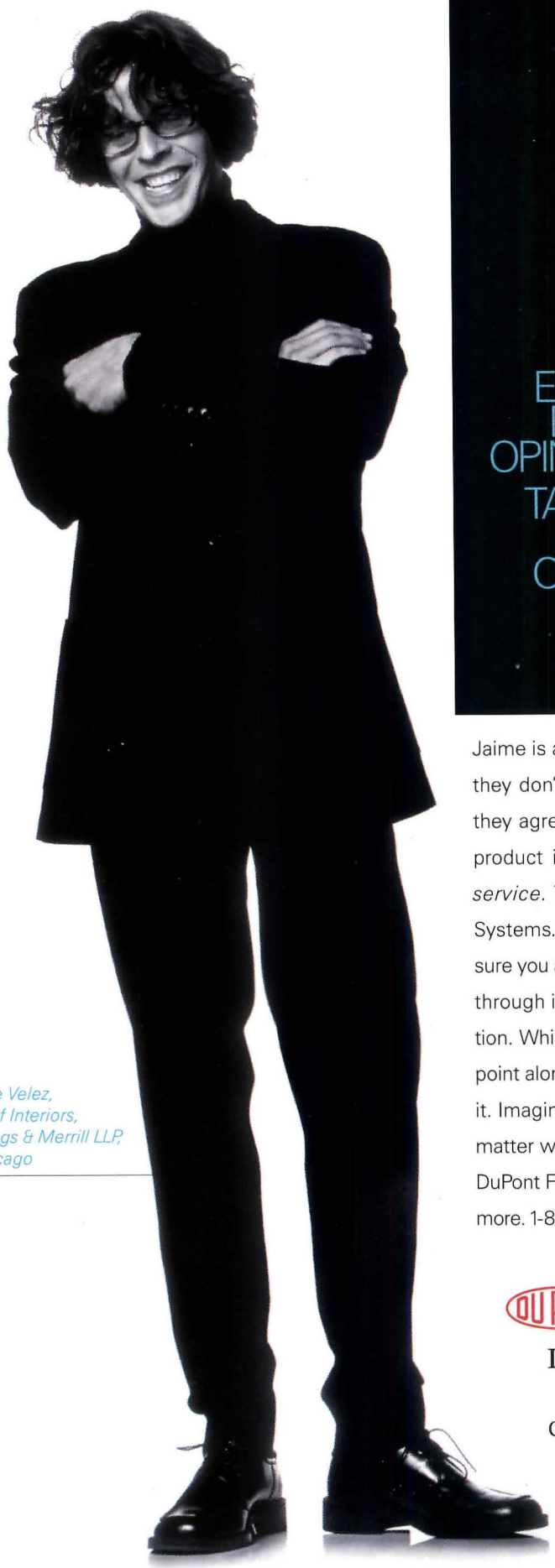
Then came the best part (dare I say it?): Clinton's proposal wasn't mere lip service. Instead, he earmarked $1 billion of his fiscal year 2000 budget for the livability program, and then threw another $1 billion on the table for a "Lands Legacy Initiative" to "preserve places of natural beauty all across America—from the most remote wilderness to the nearest city park." Of course, $1 billion hardly registers in a $1.7 trillion-plus budget. And compared with the costs—both overt and hidden—of runaway urban growth, it's even less: Los Angeles's new rapid transit system, for instance, has swallowed nearly $2 billion for 7 miles of subways, and it is projected to cover nearly 60 miles when complete.

Nevertheless, $1 billion is money that the country can spend to good effect, and the Clinton administration—especially Vice President Al Gore, who crafted most of the proposals—has devised programs that can leverage the money considerably. For instance, one of the larger components of the Livability Agenda is a federally supported bond initiative that the administration claims will enable state, local, and tribal governments to issue more than $9 billion in bonds (over 5 years) to support projects that preserve or enhance green space, protect water quality, and clean up brownfields.

Architects will be interested in two other components of the Livability Agenda. First is a $50 million grant program to "fund local partnerships to design and pursue 'smart growth' strategies across jurisdictional lines." Second, another $10 million will support "partnerships working with local school boards to encourage broader citizen engagement in developing a school system master plan or an individual school site, space, or design plan." Here at last is federal money targeted toward the type of community-based design initiatives that architects have been espousing for years.

The Livability Agenda is one of only several in President Clinton's fiscal year 2000 budget that represents economic opportunity for architects. However, presidential budgets are rarely final blueprints; in a congress hellbent on the destruction of this particular president, his budget proposals are even less likely to see the light of day. If for no other reason than enlightened self-interest, then, architects should lobby their congressional representatives to support the Livability Agenda by name.

But it shouldn't be a whiff of pork that brings a smile to architects' faces. *Rather, the* profession should be pleased that the president's proposals indicate a significant shift in federal planning strategy: The government has begun to recognize that in this age of runaway suburbanization, planning must be regional rather than local. Favoring one city over another in the same region simply produces environmental and economic distortions. The Livability Agenda may only be a billion-dollar down payment, but it should make architects feel like a million bucks.



Jaime Velez,
Director of Interiors,
Skidmore Owings & Merrill LLP,
Chicago

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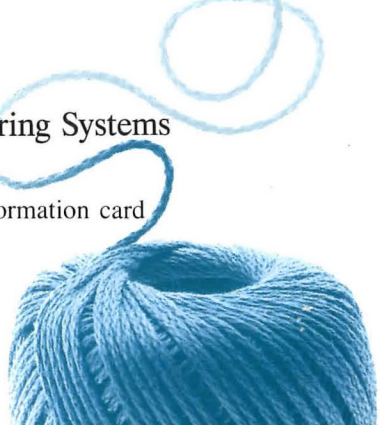


Bold in Bordeaux

Why is it that a building like Richard Rogers' extraordinary Bordeaux Law Courts (*Architecture*, January 1999, pages 64-73) could never happen in the United States? Are government agencies in Europe more daring and less accountable than their U.S. counterparts? Or do the large firms who tend to get such U.S. commissions become inhibited when it comes to finding new expressions for civic institutions?

The creative inventiveness that pervades the design of single-family houses (*Architecture*, December 1998) is nowhere to be seen when it comes to civic architecture in the United States, where an endless rehash of pseudoclassical forms seems to be the norm. This slavish adherence to convention does nothing more than betray a lack of confidence in the institutions housed therein. Do we have so little faith in our government that we only allow ourselves to be creative in the closet, only to become timid puritans when we step out into the civic realm?

Yann Taylor
Field Paoli Architects
San Francisco

Rebuff redux

Reed Kroloff's December 1998 editorial (*Architecture*, page 11) correctly points out that most architects of note ignore production housing. In part, that explains what Kroloff accurately describes as "the deplorable state" of housing design. And I think, as former editor and publisher of *Builder* magazine, I can say "accurately" with some authority.

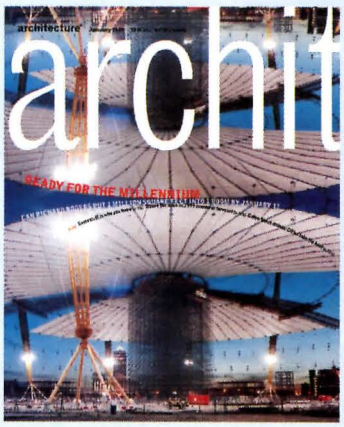
The AIA virtually ignores housing. During my 20 years with *Builder*, they have politely but unfailingly rebuffed every one of our efforts to get them involved in a significant way with everything from *Builder*'s annual housing design awards program to our recent design contest with Habitat for Humanity. In short, the AIA needs to wake up and reach out to builders.

Then there are the architectural magazines themselves, which offer no consistent, meaningful coverage of production housing. *Architectural Record* annually publishes its Record Houses issue, and the houses are more often than not intriguing and inspiring. But at the same time, they reinforce the impression that "most people now think architect-designed houses are for the wealthy only."

Frank Anton
President
Hanley-Wood
Washington, D.C.

Morality play?

After reading through the November 1998 issue of *Architecture*, I thought I had received the script for a morality play. The editors' script is replete with heroes and good guys: for example, architects Peter Eisenman (pages 87-93, 126-127) and Rafael Viñoly (page 119), the good and right kind of architect; semi-tragic guys, for example, "patriarch" Andres Duany (pages 73-77), who possess virtues, but seem to be misguided by ego or philosophical position; and villains, for example, the professional



sports teams owners (pages 11, 132-135), who are engaged in civic "extortion" and "blackmail", and "no-name corporate giant" architects, who are accused of banality.

The morality play concerns itself with the good and the right in matters of designing the environment. Iconic, memorable architecture such as Peter Eisenman's Razorback Stadium are good. "Bland" sports facilities or those "besotted with the nostalgia of brick and ivy" (page 11), and the "potent tool" (page 75) of the nostalgic imagery of New Urbanism are bad.

It is not clear whether this morality play is a comedy or a tragedy, but in any case it makes a very good ethical text. Ethics in architecture are too often engaged quite narrowly, consigned to a class session in a professional practice course dedicated to a discussion of the AIA code of ethics, accessibility or contracts, or to a review of codes of practice in the licensing laws.

Gregory S. Palermo
Department of Architecture
Iowa State University
Ames, Iowa

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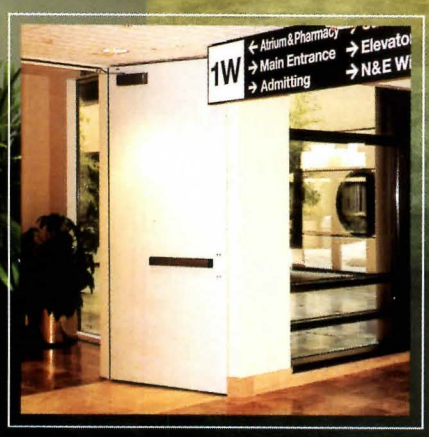

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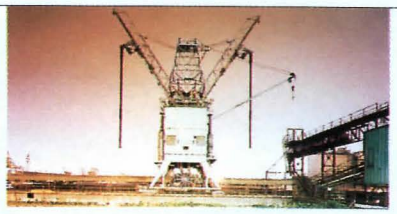
exhibitions

city	dates	exhibition	contact
Los Angeles	March 20-June 12	**A Structure Revealed: The Amsterdam Stock Exchange** at the Getty Research Institute	(310) 440-7300
Montreal	through April 25	**Photography and Transformations of the Contemporary City: Venezia-Marghera** at the Canadian Centre for Architecture 	(514) 939-7026 CCA exhibit includes Olivo Barbieri's photographs of derelict industrial sites near Venice, Italy.
Omaha, Nebraska	through March 21	**Searching for Ancient Egypt: Art, Architecture, and Artifacts** at the Joslyn Art Museum	(402) 342-3300
Philadelphia	March 19- June 15	**L.N. Cottingham, 1787-1847: Architect of the Gothic Revival** at the University of Pennsylvania	(215) 898-2083
Santa Monica, California	through March 21	**Open Ended Systems: The Recent Architectural Work of Angélil/Graham/Pfenninger/Scholl** at Form Zero Architectural Books + Gallery	(310) 452-0222
Scottsdale, Arizona	through May 9	**Will Bruder: Poetry, Pragmatism and Place** at the Scottsdale Museum of Contemporary Art	(602) 994-2787

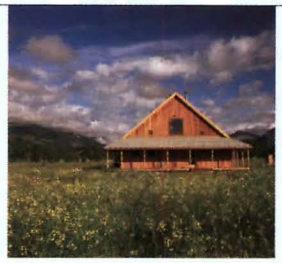
COMUNE DI VENEZIA

conferences

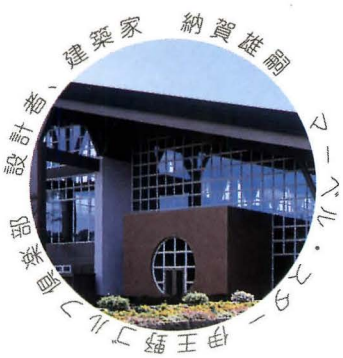
city	dates	conference	contact
Cambridge, Massachusetts	April 9-10	**Thinking About Landscape: Interdisciplinary Contributions of the 1990s,** sponsored by the Harvard University Graduate School of Design GSD uses Martha Schwartz's HUD plaza as touchstone for landscape contributions. 	(617) 496-8728
Italy	May 29-June 10	**"In the Footsteps of Edith Wharton" study tour** to Padua, Verona, Vicenza, and Florence, sponsored by the Cooper-Hewitt, National Design Museum	(212) 849-8380
Milwaukee	June 3-6	**Congress for the New Urbanism VII**	(415) 495-2255
New York City	March 12	**Universal Cityscape Conference,** cosponsored by the American Association of Retired Persons; Cooper-Hewitt, National Design Museum; MetLife Mature Market Group; and the New York City Department for the Aging	(212) 849-8380
Philadelphia	April 20	**Women in Design Forum and Master Class,** sponsored by the University of Pennsylvania Graduate School of Fine Arts	(215) 898-5728

competitions

competition	deadline	contact
1999-2000 Western Home Awards, cosponsored by the AIA and *Sunset* magazine	March 8 (registration)	(650) 321-3600
ACSA/Wood Products Council Carl E. Darrow Student Design Competition for a regional meteorological center and field station	March 8 (registration)	(202) 785-2324
DuPont Benedictus Awards for innovation in architectural laminated glass	March 8	(202) 393-5247
Presidential Design Awards 2000, sponsored by the U.S. General Services Administration, to recognize federal design projects	April 8	(202) 501-1888
Van Alen Institute Dinkeloo Fellowship "Green Portfolio" Competition for the Year 2000	May 7	(212) 924-7000
What Is Shelter? Resort Concept Competition for an environmentally sensitive portable tent village	May 15	(415) 276-5958



Seattle's Lawrence Architecture won 1997 Western Home Award for this house near Winthrop, Washington.



"We considered other windows. But to get what we wante

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TRIBUTE

Architecture Loses Two Patron Saints

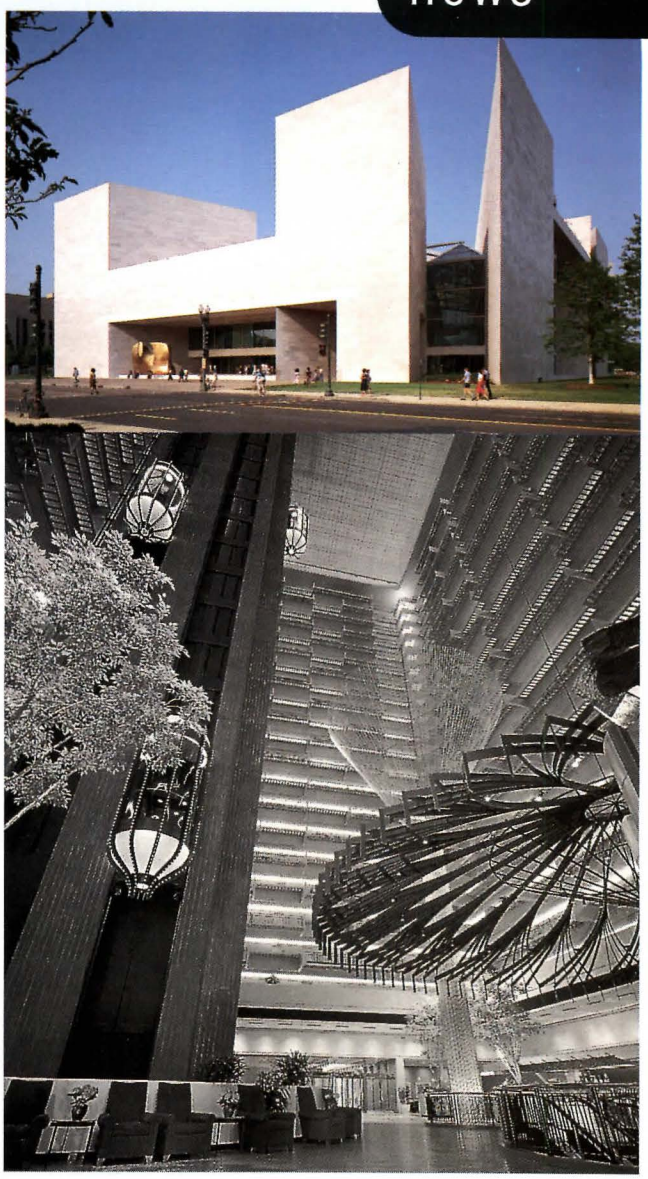
National Gallery Booster Mellon, 91

Philanthropist Paul Mellon, who gave nearly $1 billion to arts and environmental causes, died on February 1 at the age of 91. Mellon's myriad contributions included $500,000 to restore Thomas Jefferson's Monticello and the funding of Louis Kahn's $10 million Yale Center for British Art at Yale University (1977) and I.M. Pei's $94 million National Gallery of Art East Building (1978) in Washington, D.C.

Mellon inherited the latter project from his father, the industrialist and financier Andrew Mellon, who anted up $15 million (and his extensive art collection) to build the original, John Russell Pope-designed structure in 1941. Over the next five decades, Mellon served on and off as president and trustee of the gallery, donating hundreds of English and French masterworks along the way. His will bequeaths $450 million in cash to the gallery.

Mellon always considered his charity a catalyst to encourage other donors. As a result, many of the causes he underwrote do not bear his name.

Mellon is survived by his wife, Rachel Lambert Lloyd Mellon (known as Bunny); his son, Timothy; his daughter, Catherine Conover; and three grandchildren. *Michael J. O'Connor*



Mellon donated $94 million to construct Pei's **National Gallery East Building** (above left). Portman-designed, Pritzker-owned **Hyatt Regency** in Atlanta (left) reversed smaller lobby trend.

Pritzker Prize Founder Dies at 67

Jay Pritzker, a name synonymous with architecture since he founded an eponymous annual prize for architects, died of heart failure on January 23. Though he read Lewis Mumford as a young man, architecture was an acquired interest for the lawyer and businessman. With his brother, Robert, Pritzker commanded a vast conglomerate, the Marmon Corporation, and founded and chaired the Hyatt Corporation.

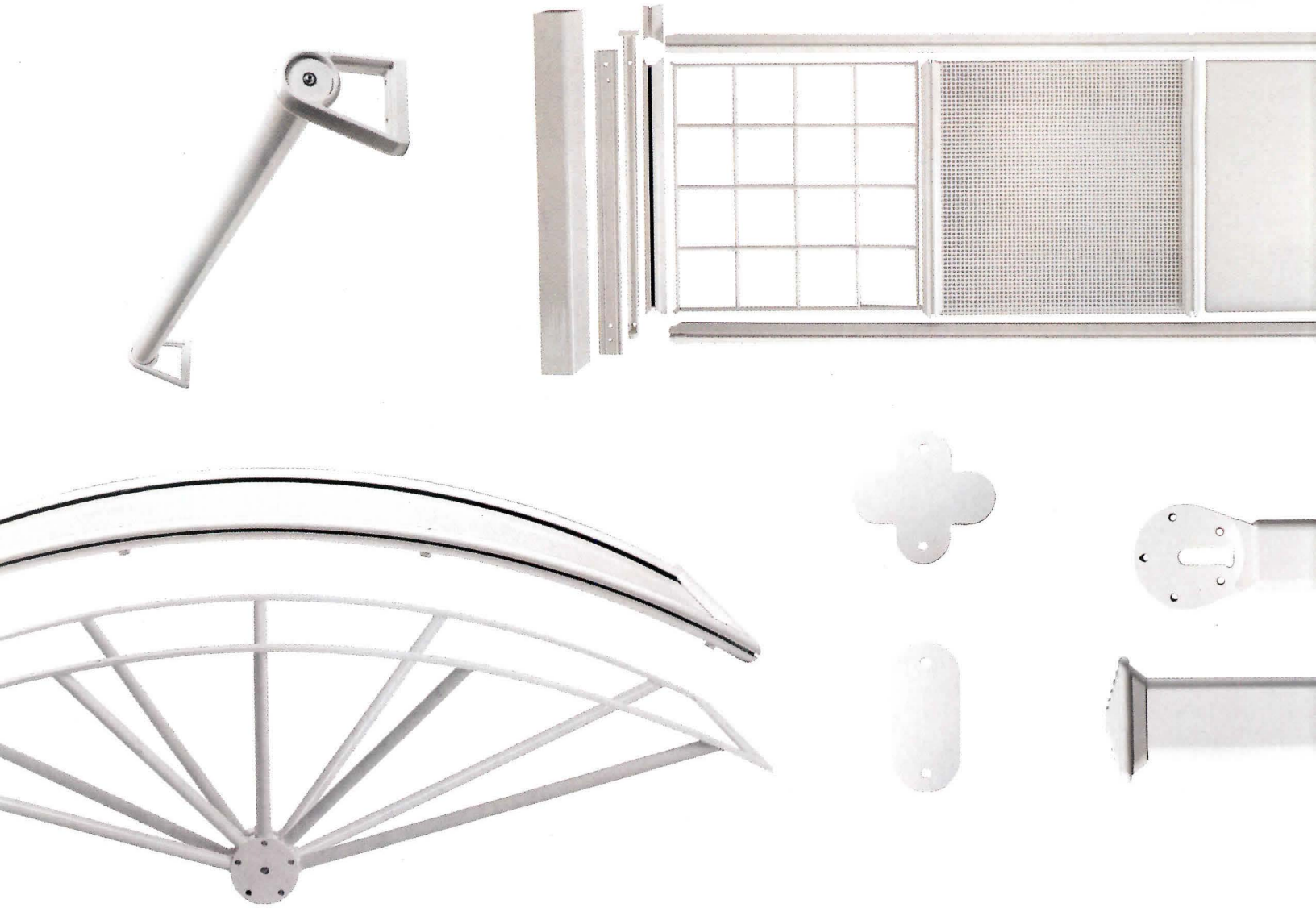
But it was not until Hyatt acquired architect-developer John Portman's hotel in Atlanta, then under construction and opened in 1967, that architecture made a strong impression on the hotelier. Portman's spectacular atrium revolutionized the building type by reversing the longstanding trend to reduce the size of lobbies. Says Pritzker's son, Tom: "The esthetic creativity translated into a kind of commercial creativity that made Dad aware of architecture's potential." It also gave Hyatt a reputation for recognizing good design as good business.

Thus, when New York City architectural critic and writer Carleton Smith was seeking a patron for an annual architectural award, he approached Pritzker. "Carleton wanted to do a prize, and with the Portman hotels, our image was heavily intertwined with architecture, so there was a fit," recalls Tom. The Pritzker Architecture Prize, awarded annually for lifetime achievement, quickly became an established institution, often called the Nobel of architecture. The prize acknowledges a living architect who has produced "consistent and significant contributions to humanity and the built environment."

"The greatness of Jay vis-à-vis the prize is the extraordinary forbearance he and his family exhibited in not interfering with the jury," says J. Carter Brown, chairman of the Pritzker Architecture Prize jury since its inception in 1979. "To his credit, he stayed at arm's length, and though he and his wife, Cindy, were passionately curious, there was never any lobbying, no nudging of any kind."

Frank Gehry, Pritzker laureate in 1989, says Pritzker was very outspoken. "When I finished Bilbao, Jay said, 'Quit now,'" remembers the Los Angeles architect. "For somebody who was kind of illegitimate, [receiving the Pritzker] gave a certain imprimatur. I had just won the Disney Hall competition, and it certainly reassured the Disney people. You're always introduced as a Pritzker Prize winner, so all of a sudden there's a different attitude."

In addition to his wife and brother, Pritzker is survived by his four children, Tom, John, Daniel, and Gigi; and 13 grandchildren. Tom Pritzker says the family will continue to support the prize. *Joseph Giovannini*



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SPACE

Riding on the Metro

There is a distinct theatricality to the 4.6 miles of new subway lines that Los Angeles's Metropolitan Transportation Authority will unveil in May. Artist George Stone (no joke) worked with architect Anil Verma Associates to create naturalistic boulder formations throughout the Beverly Boulevard-Vermont Avenue station to honor local geology. Other stations include replicas of landmarks like Mann's Chinese Theater and the Brown Derby.

GOVERNMENT

Housing Starts Hit 11-Year High in 1999

Exceeding even the bullish expectations of Wall Street, new housing starts in the U.S. rose to 1.72 million units last year, according to the U.S. Department of Commerce. Though the South posted the highest gains at 10.5 percent, the Northeast, Midwest, and West also experienced strong growth. Single-family dwellings account for most of the construction; the figure also includes 346,000 (and rising) multiunit residential buildings. ***M.J.O.***

AWARDS

Hancock Tower Wins 25-Year Award

In May, the American Institute of Architects (AIA) will bestow a series of awards to distinguished architects at its annual convention in Dallas.

Chicago's John Hancock Center (below), designed by Skidmore, Owings & Merrill, has been chosen for the 25-Year Award.

The Thomas Jefferson Award for Public Architecture will be given to Robert Kroin, chief architect of the Boston Redevelopment Authority, and Lewis Davis, founder of New York City's Davis Brody Bond. The Whitney Young Award honors Charles F. McAfee, a staunch advocate of affordable housing. For a lifetime of service, James R. Franklin will receive the Edward D. Kemper Award.

Young Architects Citations will go to designers Michael Maltzan and David T. Nagahiro; preservationist Victoria Tatnal Jacobson; Father Terrence Curry, founder of the Detroit Collaborative Design Center; and urbanist Peter Steinbrueck.

THE LAW

Trouble in Paradise

The Beach Village is the centerpiece of hip hotelier Ian Schrager's recent $5 million refurbishment and expansion of his Philippe Starck-designed Delano hotel. The soigné compound of wistful Starck-designed structures includes a 40-foot-tall lighthouse, billowing tents, and pinstriped cabanas—*all* rendered in sherbet-colored clapboard and sheer white drapery.

Unfortunately, this candy land-by-the-sea is illegal according to the City of Miami Beach, which has repeatedly rejected the hotel's bids for the concession agreement needed for the encampment to stand legally. The hotel secured only a series of temporary special-event permits, the last of which expired in December—after the structures were in place.

The city argues that the Delano simply packed too much on too small a site. The state has also censured the hotel for environmental insensitivity, citing possible damage to dunes and marine turtle nesting grounds and new palm trees that aren't salt-resistant or erosion-controlling. Supporters of the Beach Village argue that there are no clear guidelines for beach construction since no waterfront master plan exists.

Fantasy meets reality: Starck's Delano Beach Village is quaint, but illegal.

The Delano submitted yet another permanent permit application in early February, though without changing the scope of the village. The city, which is now considering implementing new design guidelines for beach structures, hopes to decide on the issue this month. Meanwhile, the beach goes on: Sunseekers continue to shell out $15 to rent a chaise longue in Starck's sublime seaside oasis. *Raul A. Barreneche*

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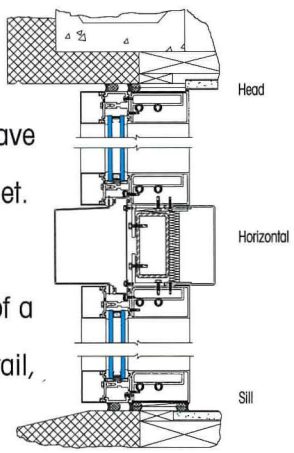

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WHAT IF?

The Spirit of Massachusetts

Boston's story is told through its Revolutionary War monuments: the Old North Church, the statue of Samuel Adams, the U.S.S. *Constitution*. And although monumental things have happened since then, there haven't been too many new monuments erected. The flap over the construction of Stanley Saitowitz's stark, frosted glass Holocaust memorial next to Faneuil Hall (1996) underscores the reason: Bostonians don't much care for change.

But over the next decade, the city will see a lot of it, including the depression of the Central Artery and the development of the Seaport District. In that spirit, designer Mark Weisbeck proposes "Water Spirits," a 100-foot-tall patinated bronze sculpture of two stylized figures that hold a polished bronze vessel skyward, for a waterfront site at Fan Pier. Adjacent is I.M. Pei's new courthouse and a proposed high-rise hotel.

Weisbeck would like to unveil the sculpture in time for the new millennium. Direct any inquiries to *m.d.sculpture.design@erols.com*. *M.J.O.*

PRACTICE

Spillis and DMJM Merge

The largest and oldest architecture firm in Florida, Spillis Candela & Partners, will merge with Los Angeles-based Daniel Mann Johnson and Mendenhall (DMJM) this month. Spillis Candela Chairman Peter Spillis explained that after the merger, his Coral Gables, Florida-based, 250-person office will be a stronger contender for large projects; DMJM's 1,700 employees will gain easier access to Latin American clients. Spillis added that both firms plan to retain their names, and that neither will restructure its staff or design direction. *Philip Arcidi*

TRANSPORTATION

Something Special at JFK

In 2006, the new American Airlines terminal at New York City's John F. Kennedy Airport (JFK) will be an airport unto itself: a $1.2 billion, 2 million-square-foot, three-level, 59-gate facility with a check-in area as large as Giants Stadium. The terminal's undulated roof will span 240 feet with three-sided trusses that rest on gargantuan steel columns. Designed by New York City-based TAMS on a fast-track schedule, the new structure will replace two terminals now occupied by American: one designed by Skidmore, Owings & Merrill in 1959; the other, designed by Kahn and Jacobs in 1960, featuring one of the world's longest stained glass facades. This job is a sort of coming home for TAMS: The firm designed the original Pan Am terminal (1961), which, along with Eero Saarinen's TWA terminal (1962), represents JFK's heyday, both architecturally and in air-traffic volume. *P.A.*

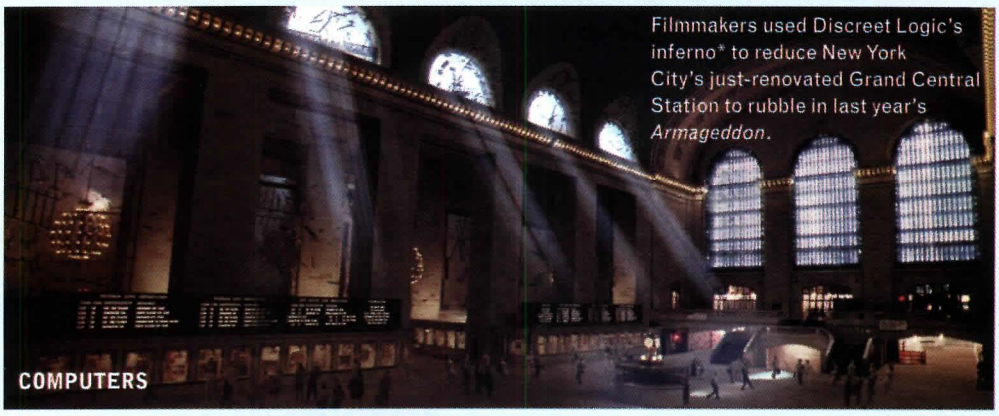
Gigantic new **American Airlines terminal** (foreground) will dwarf winged, Saarinen-designed TWA building (background).

OVERHEARD

Clinton Advocates Preservation, Community Development Initiatives

Following are excerpts from President Clinton's January 19, 1999, State of the Union address:

All our communities face a preservation challenge as they grow and green space shrinks. Seven thousand acres of farmland and open space are lost every day. In response, I propose two major initiatives: First, a $1 billion Livability Agenda to help communities save open space, ease traffic congestion, and grow in ways that enhance every citizen's quality of life. (APPLAUSE.) And second, a $1 billion Lands Legacy Initiative to preserve places of natural beauty all across America—from the most remote wilderness to the nearest city park. (APPLAUSE.) Barely more than 300 days from now, we will cross that bridge into the new millennium. This is a moment, as the First Lady has said, "to honor the past and imagine the future." (APPLAUSE.) Last year, I called on Congress and every citizen to mark the millennium by saving America's treasures. Hillary has traveled all across the country to inspire recognition and support for saving places like Thomas Edison's Invention Factory or Harriet Tubman's home. Now we have to preserve our treasures in every community. And tonight, before I close, I want to invite every town, every city, every community to become a nationally recognized "millennium community" by launching projects that save our history, promote our arts and humanities, and prepare our children for the 21st century.



Filmmakers used Discreet Logic's inferno* to reduce New York City's just-renovated Grand Central Station to rubble in last year's *Armageddon*.

COMPUTERS

Autodesk To Acquire Film Effects Firm

Symbolizing the growing sophistication of architectural presentation methods, Autodesk, the world's leading provider of CAD software, has acquired Discreet Logic, a Montreal-based firm that develops visual effects and broadcast graphics software.

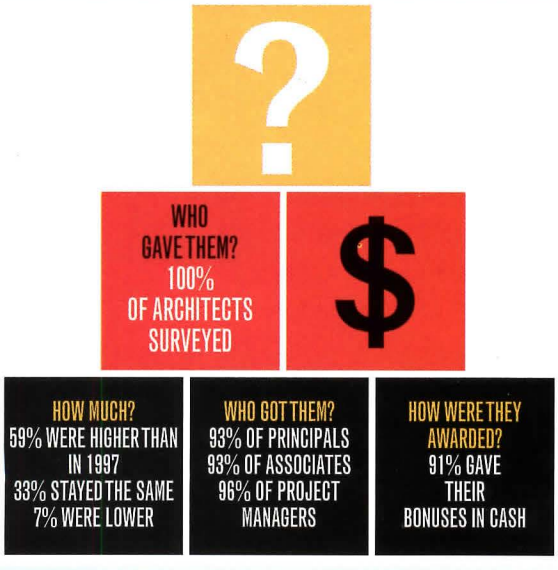
Fox Sports used Discreet's frost* real-time, three-dimensional broadcast graphics for its coverage of this year's Super Bowl. And Hollywood enlisted the company's inferno* visual effects tools for megahits *Titanic* and *Armageddon*. In fact, the company will receive a special Scientific and Engineering Award at this year's Academy Awards for its contributions.

Autodesk's two- and three-dimensional products are used in several industries besides architecture and engineering, including film and video production, video game development, and Web design. Pending approval by the Securities and Exchange Commission, Autodesk and Discreet hope to finalize the acquisition this month. *Sara Hart*

VITALS

Bonus Questions

A survey of 127 architecture firms on their 1998 bonus-giving practices suggests that architects wanting to get ahead with their employers should watch their bottom lines: Among the top reasons for giving a bonus were firm profitability, individual/team/group profitability, and contracts signed.



SOURCE: PSMJ RESOURCES

BUZZ

The United Nations has announced a $100 million preservation initiative to prepare Bethlehem for the onslaught of millennial-minded pilgrims. The City of Memphis, Tennessee, is soliciting ideas proposals for the adaptive reuse of the Lauderdale Courts public housing project, in which Elvis Presley grew up. Call (901) 576-7191 for more information.

I.M. Pei will collaborate with his sons' firm, **Pei Partnership**, on a $1.3 billion medical center at the University of California, Los Angeles. **Robert A.M. Stern** will demolish and replace a **Richard Neutra**-designed building at California State University at Northridge with a $16.8 million, 80,000-square-foot arts, media, and communications building that will evoke its predecessor.

Minneapolis's **Shubert Theater** now holds the world record as the heaviest building—at 2,908 tons—to be moved on inflated tires. The nonprofit **Artspace Projects** will restore the theater on a new site 1/4 mile away. New York City's **Museum of Modern Art** and **P.S. 1 Contemporary Art Center** have announced the merger of the two institutions, which will continue to operate separately, but will share collections.

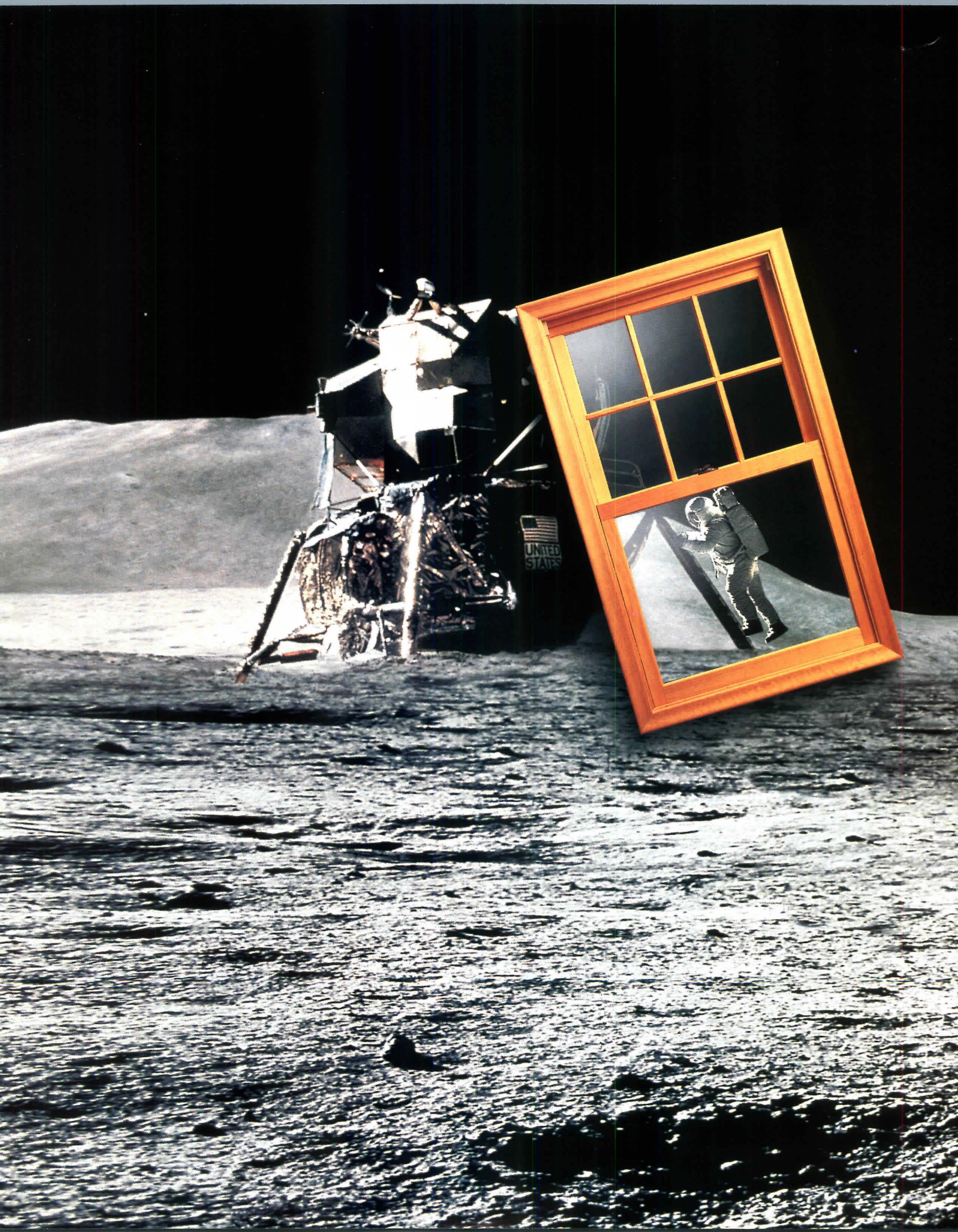
Ricardo Legorreta Architects and **Pender Architects** will team up on the $3.2 million South Texas Institute for the Arts in Corpus Christi. **Johnson Fain Partners** is working on a master plan for the historic area near Union Station in Los Angeles. **Hellmuth, Obata & Kassabaum** won the coveted $570 million commission to expand the fast-growing Orlando, Florida, airport.

Biting the hand that feeds it, **Reebok** has unveiled a sardonic billboard campaign that mocks using public funding to build sports facilities. In tabloid-style lettering, it screams: "Stadium Funding Finally Approved: Teachers Accept Pay Cut." Joining the Americans with Disabilities Act-violators club are the **New York Yankees**: Manhattan's U.S. attorney has signed on with a group of private plaintiffs who is suing the Bronx Bombers for lack of disabled access at Yankee Stadium.

Graham Gund Architects will design a 40,000-square-foot religious studies center at the College of the Holy Cross in Worcester, Massachusetts. **The Polshek Partnership** (note new name) has designed a $32 million arts center for Smith College. Hometown hero **Gary Cunningham** will design a $7.5 million arts complex for the University of Dallas. **RTKL Associates** is working on the $210 million renovation and expansion of the Plaza Las Americas retail development in San Juan, Puerto Rico, and is overseeing the renovation of the 250,000-square-foot headquarters of the *Baltimore Sun*.

Frank Gehry is rumored to be in talks with the Duke Ellington High School for the Arts in Washington, D.C., about a proposed expansion. Gehry also joins **Daniel Libeskind** and **Santiago Calatrava** on the shortlist for an expansion and renovation of D.C.'s Corcoran Gallery of Art.

OBITUARY: Prolific architect **Charles Luckman**, designer of Florida's Cape Canaveral, Madison Square Garden and Penn Station in New York City, Houston's Johnson Space Center, and the Aloha Stadium in Honolulu, 89.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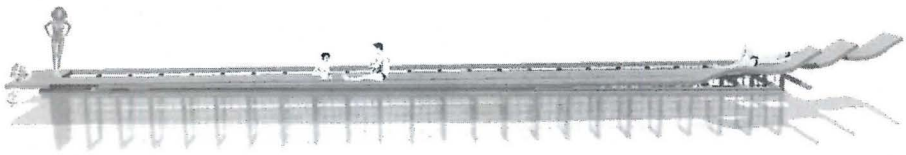


Down on the Delta

ROY, Okavango River Delta Spa, Okavango Delta, Botswana

In the heart of the African bush, the safari industry sometimes brings visitors much closer to nature than they ever wanted with accommodations that lean toward the extremely rustic. Identifying the need for more upscale, yet ecofriendly lodging, South African-born, New York City-based architect Lindy Roy has designed a spa-resort complex for Uncharted Africa, a private safari company, for a 2-acre site in northern Botswana's Okavango River Delta.

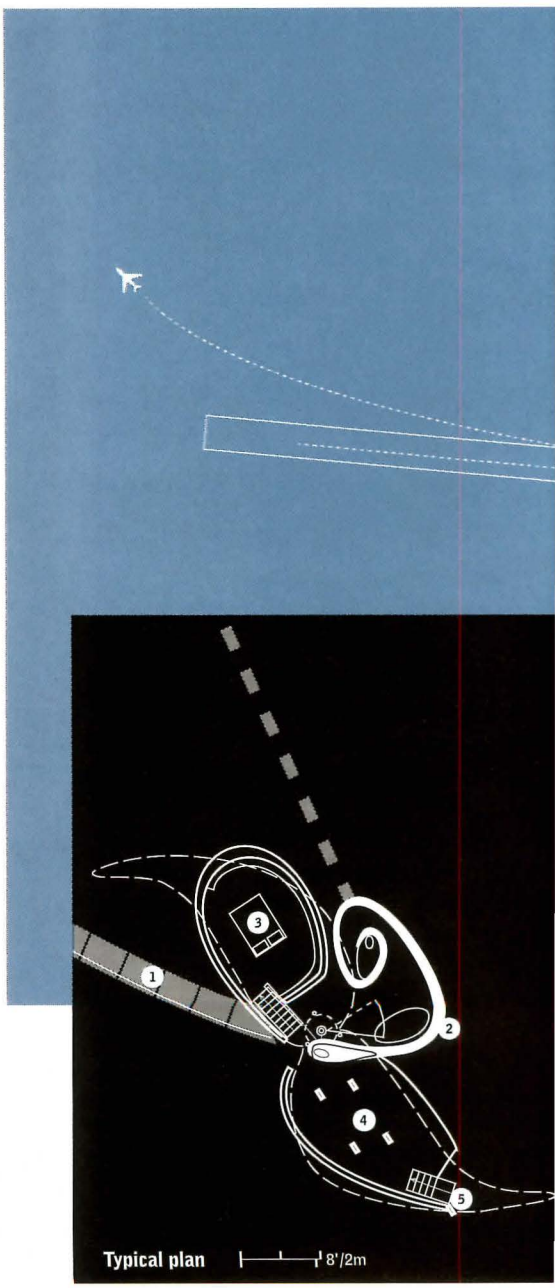
The delta is a unique environment. As the Okavango River approaches the Kalahari Desert, geological faults fragment the river into a swath of shallow channels that spread over 6,000 square miles. It is there, amidst a winding labyrinth of papyrus and reeds and small islands formed by abandoned termite mounds, which Roy envisions as a watery respite from the harsh desert climate. The complex includes seven individual guest pods, a bar and dining island, and a holistic health spa.

Though these elements appear to float on the water's surface, they are actually secured to the delta floor by ebony wood pylons that sit in concrete footers. Guests can roam these anchored elements via a dual circulation system—a series of arcs and a more regular grid—of buoyant walkways. Roy will use local artisans to create woven fiber-optic cable handrails for the paths.

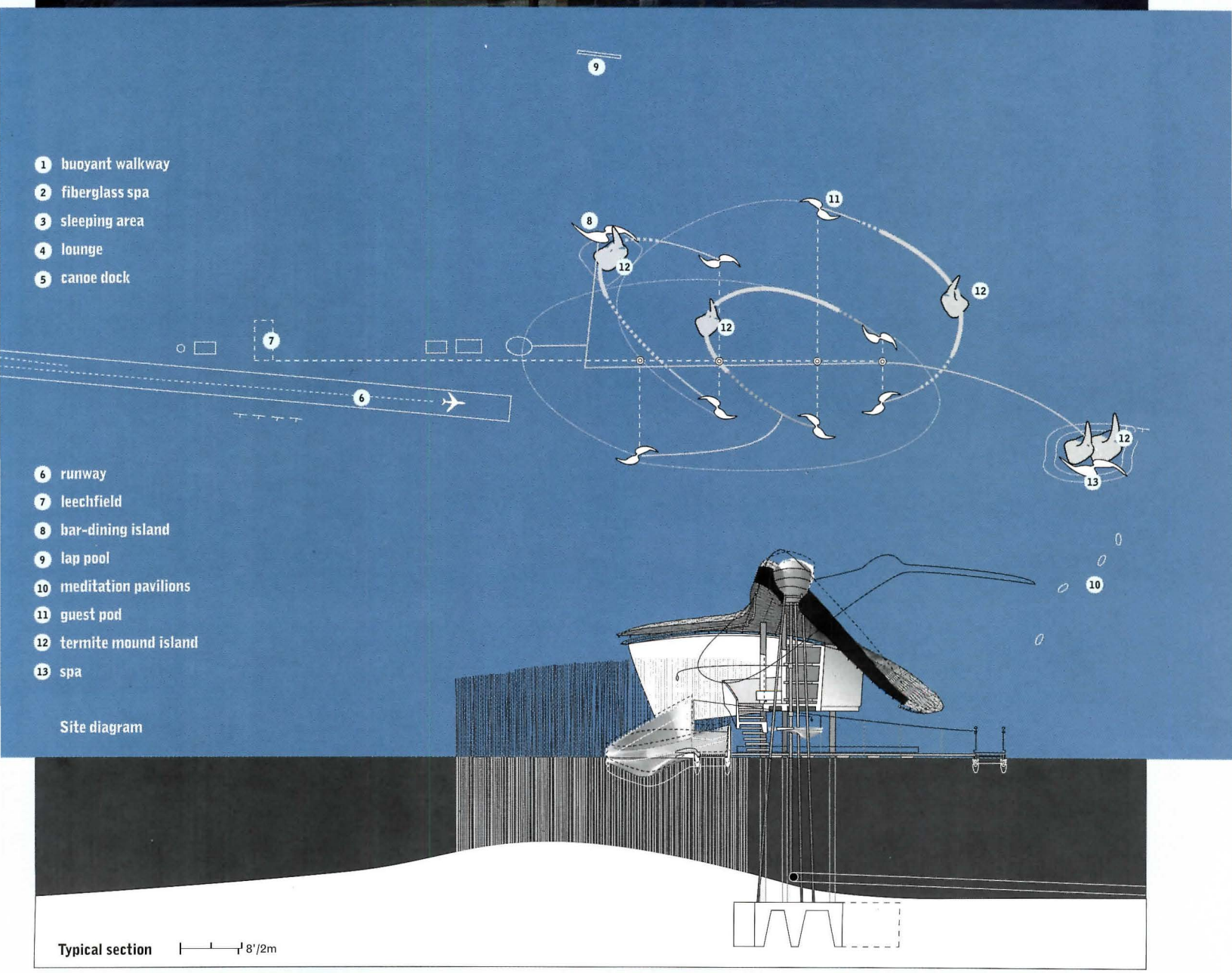
From this secluded waterborne blind, guests can view zebras, wildebeests, lions, hyenas, cheetahs, and leopards. A nearby airplane runway serves as the only means of access to the resort. Four meditation pavilions and a crocodile-resistant, wire-mesh lap pool can be navigated through the complex's waterways, powered by small outboard motors.

While the petal-like, thatched roof profiles of the 510-square-foot guest pavilions will vary somewhat, each solar-powered, tripartite pod comprises a wood-framed sleeping quarter, a lounge-massage area, and a floating, molded fiberglass bathing facility. Guests can close fabric scrims that run along a perimeter track for privacy or shade.

Roy has completed construction documents for the spa and is presently running the frustrating gauntlet of governmental site approval. The clients intend to begin construction this summer.
Michael J. O'Connor

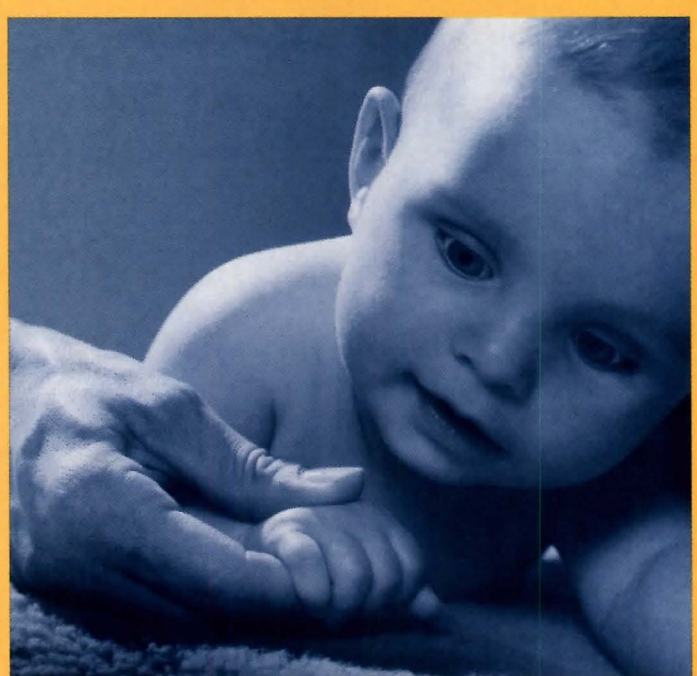


Motorized, wire-mesh **lap pool** (top) moves about Okavango spa to accommodate changing sun, shade, and water levels; guests swim in filtered delta water. Tripartite **guest pavilion** (right) comprises sleeping, bathing, and lounge areas. Siting of pods (facing page, site diagram) capitalizes on natural clearings between **termite mound islands** and stands of papyrus and reeds. Bar-dining island and holistic spa frame seven residential pods (facing page, top). Stair at pod's center mediates tide fluctuations. **Ebony wood supports** sit in concrete footers at delta bottom (facing page, bottom) where pipes carry waste material to distant leechfield.



Site diagram

Typical section 8'/2m



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In study of swimming pools, Thomas A.P. van Leeuwen, Dutch architectural historian, cites such pop culture examples as 1952 Esther Williams film, *Skirts Ahoy!* (right and facing page).

Splashing Through Modernism

A new book examines the cultural, social, and architectural impact of the swimming pool. Review by Christian Zapatka

The Springboard in the Pond: An Intimate History of the Swimming Pool
Thomas A.P. van Leeuwen (MIT Press)

The lure of forbidden water is as old as history: from the mythological hunter Actaeon transformed into a stag as punishment for spying on the bathing goddess Diana, to writer John Cheever's intrepid "Swimmer," who suffers an emotional breakdown while pool-hopping across a Connecticut suburb. Unspoken rules and regulations that govern poolside conduct are just some of the themes that Thomas A. P. van Leeuwen examines in his entertaining new look at the modern domestic swimming pool, *The Springboard in the Pond*, the second in the author's planned four-book study of the relationship between architecture and the elements. The book's somewhat cumbersome title refers to the assertion that any body of water, whether naturally or artificially produced, becomes a swimming pool the moment it acquires the devices associated with organized aquatic activity, such as diving boards, rafts, and floats.

The chief accomplishment of van Leeuwen's book is an astute analysis of the evolution of the swimming pool as an agent for the advancement of modernism, particularly in the United States. The author traces the formal development of pools themselves—from East Coast robber barons' clinical indoor plunges to curvilinear outdoor party sites that marked the mid-century California landscape. Size, shape, and use are all part of van Leeuwen's evaluation, yet the author never precisely examines the pools' designs in reference to the larger modernist canon. Instead, he offers intriguing interpretations of the human response to water as seen through history, cinema, and society.

Van Leeuwen cleverly classifies human psychosocial attitudes toward water—hydrophilia, hydrophobia, and ambivalence—according to the behavior of three equivalent animals: "the frog who lives in, the swan on, and the penguin next to, the water." Woven through this trilogy are references to the American obsession with physical activity, health, and hygiene. The more elusive duality of Eros and Thanatos—sex and death—is the book's other leitmotiv for assessing human behavior in the context of contained water: Convincing pop culture examples, from Esther Williams' underwater acrobatics to Dustin Hoffman's paranoid, scuba-assisted dip in *The Graduate*, illustrate aquatic eroticism and neuroses.

A glaring omission in this otherwise finely researched and cleverly illustrated book is a discussion of Adolf Loos's unbuilt house for the notorious 1920s striptease dancer Josephine Baker, in which a swimming pool was to have formed the very core of the house. This might have been where architecture and culture, hydrophilia and hydrophobia, could all have converged in a great big splash.

Architect Christian Zapatka is the author of The American Landscape *(Princeton Architectural Press, 1996).*

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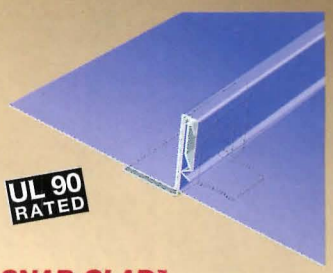

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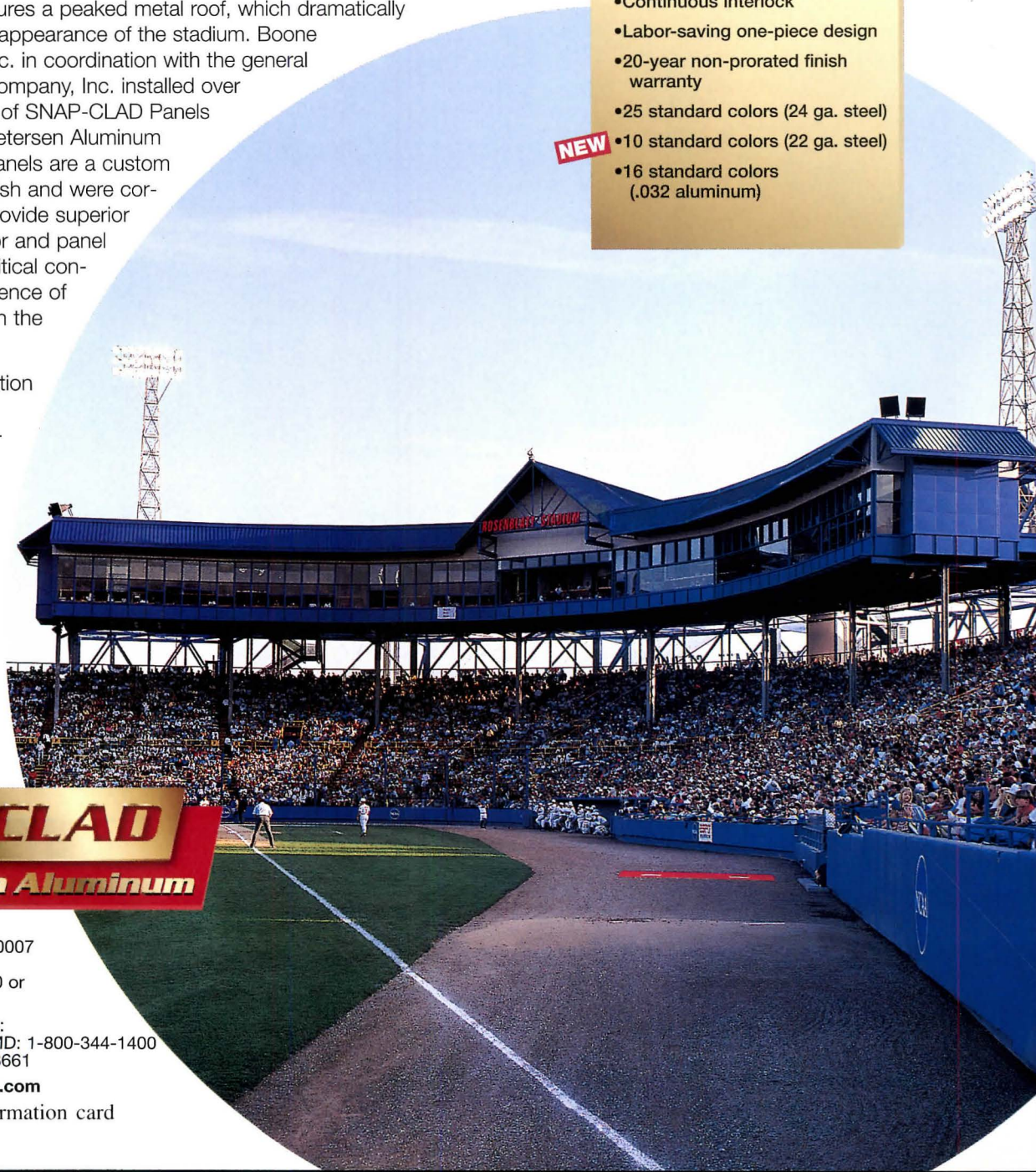

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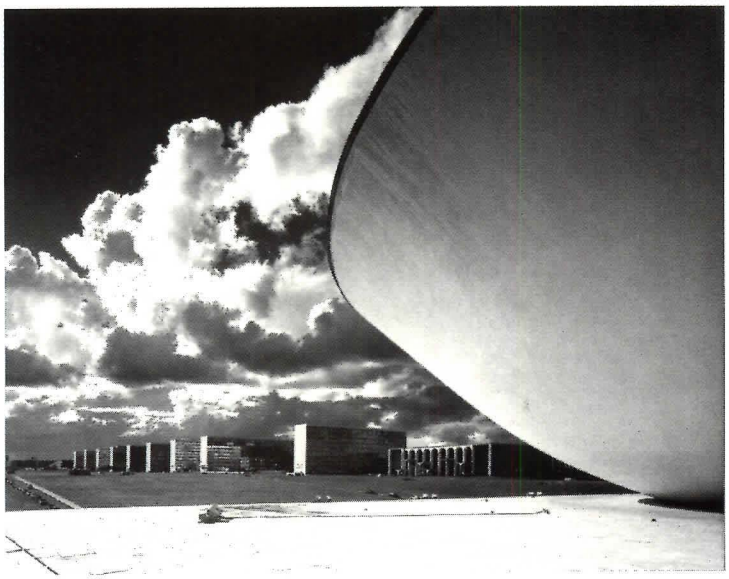

Will Brasilia, Oscar Niemeyer's new Brazilian capital (left) be a precedent—in intention, if not form—for Japan? A decades-long debate on Tokyo's future is coming to a head.

JULIUS SHULMAN

Japania?

Despite the ongoing Asian economic crisis, the Japanese government is planning to abandon earthquake-prone Tokyo and build a new capital. By Joseph Giovannini

For over 30 years the Japanese have ever-so-politely teased and traumatized themselves over whether to move their government out of Tokyo. Perennial truths—often veiled with envy of Tokyo—about overcrowded conditions in the city, the need to decentralize the country, the threat of a major earthquake overdue in the current capital, and the brain drain from the provinces have prompted politicians and architects to claim that Tokyo has reached its limits as a national capital and propose alternative locations. A generation ago the prevailing choice was the foot of Mt. Fuji, but the area's geological instability defeated the plan before the politicians could. In 1990, the Japanese National Diet officially sanctioned the Relocation of the Capital study (since renamed the Capital Functions Relocation study), a project that has been investigated by the National Land Agency and the Prime Minister's Office under the direction of the Diet.

The tantalizing state of shifting possibilities and designs has seemed endless, as has a longstanding pattern of postponed decisions. But if the optimistic, accelerated official schedule holds, this year the issue may at last come to a head, despite—or perhaps because of—the banking crisis and sustained recession of the 1990s that has crippled the economy and the government's ability to make decisions. In the next several months, the debate will intensify with nationwide town meetings and a national Web page—all intended to expose the complexities of establishing a new capital to the widest possible audience and to build consensus on a potentially divisive and even treacherous issue.

This fall, the Council for Relocation of the Diet and Other Organizations (an advisory body to the prime minister) will conclude

a study by recommending one of several potential sites for a 22,500-acre city housing about 600,000 inhabitants, with a cluster of small communities that would surround a central city, "floating like an island in a sea of green," according to the Web page. Candidate locations include the Chukyo area near Nagoya; Sendai (180 miles northeast of Tokyo); and Nasu, which is in the northern part of Kanto (the region where Tokyo is located). The study is being promoted by the ruling Liberal Democratic Party, and if it stays in power, the Diet will eventually vote the issue up or down. If negative, the decision will bring ceremonial closure to the longstanding issue. If affirmative, acquiring property and drawing a master plan will take about five to 10 years and cost an estimated $122 billion to implement.

The gutsiness of splitting Tokyo into a New York City and a Washington, D.C., is stunning at this dour time in Japanese fiscal history, but the government sees a capital move as an agent of more general change: In its Web site (*www.nla.go.jp/welcome-e.html*), the National Land Agency argues, "The history of Japan and other countries shows that relocation of the capital functions is an extremely effective means of ushering in a new age. Japan is now on the verge of relocating its national capital functions in the interest of vigorous promotion of reform in all aspects of national government for the 21st century." Japan has a culture of consensus rather than confrontation. No one ever says no and there are degrees of yes, so the temperature of public debates is hard to gauge: The politeness of the discourse should not be taken at face value. (Nor should the schedule: By some estimates, a site decision could be five years down the road, and the start of implementation, 10 years away.)

One much-visited locus of disagreement in the debate over the capital centers on the question of fixing Tokyo when many feel it isn't really broken. High on the list is earthquake anxiety. Unless they live in an unreinforced masonry building located atop the San Andreas Fault, Americans cannot really understand the earthquake anxiety that haunts Japan: Tokyo is long overdue for a Big One like the quake that leveled the city in 1923, leaving Frank Lloyd Wright's Imperial Hotel among the few major buildings standing. The memory of the recent Kobe earthquake lingers vividly and painfully, when even seismically designed structures, especially highways and bridges, behaved contrary to calculated expectations and failed. "Kobe's city hall and other buildings are virtually the same designs you see in Tokyo's ministry buildings, and it was those buildings that collapsed on the ground floor, and midway up," says Harold Adams, chairman and CEO of RTKL, now working on a $1 billion ministry building just outside Tokyo. Proponents of relocation maintain that by separating government from business and culture, the country could still operate in the event

of a major quake in Tokyo. Removing the bureaucracies, they claim, would also thin out the city and alleviate its long commutes.

Beyond the real earthquakes, there are cultural faultlines between rival Japanese cities. "If you look at the longer stream of Japanese history, there's a constant pull between Tokyo and Osaka, and the people in Osaka have never accepted that the capital is not there," says

Splitting Tokyo into a New York City and a Washington D.C., is stunning at this dour time in Japanese fiscal history.

an American official at the U.S. Embassy in Tokyo who asked not to be named. "There's a huge resentment about Tokyo in the rest of the country, which would like to cut the city down to size, and many parliamentarians from these areas are strong. The ancient capital was in Kyoto, before it moved to Tokyo several hundred years ago, so relocating the capital is not unheard of. The Japanese think long term." According to a National Land Agency survey, 50% of the population approves of the move and 20% is opposed.

While the good times rolled, the exorbitant property values in the bubble economy suggested the government relocate to less costly land. But after real estate values burst in the early 1990s and the recession settled in for a long stay, it became clear that for Japan Inc. (led by a Ministry of Construction that maintains cozy relations with the construction industry), building a new capital would amount to a public works megaproject. Japan has been called a construction state; it has traditionally (and some say pathologically) used public works to stimulate the economy. The move would include the Supreme Court, the Diet, the Cabinet and all main ministry headquarters, and foreign embassies.

The opponents of relocation include real estate-based railroads, department stores, and Tokyo developers, but there are numerous opponents with arguments beyond self-interest. Some maintain that the pile of reasons argued in favor of the move do not add up to a compellingly clear and demanding reason (like the geopolitics of a reunited Germany), and that if the earthquake is an issue the government should wait for the inevitable and simply rebuild in another location after nature's own demolition. Moreover, no area in Japan is immune to seismic disaster.

Critics also cite predictions for a drop in population (and therefore a stagnant economy on a per capita basis) and government downsizing due to radical administrative reform already under way. Some ministries are already being relocated—part of an overall decentralizing

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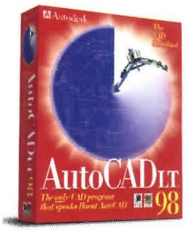

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scheme, independent of the capital relocation, to move some government offices outside central Tokyo. As part of this initiative, RTKL is partnering with two Japanese firms to build the 2,800,000-square-foot ministry complex for 6,800 people located 30 minutes outside Tokyo.

Other critics point to the simple magnitude of the task of moving a government that is entrenched not only physically but also institution-

Japan has been called a construction state; it has traditionally used public works to stimulate the economy.

ally: The Tokyo-based government has strong ties to industry, finance, and foreign communities. "Maybe the parliament , which is a bit of a shell, will move out, but you'll never move the whole bureaucracy—that would never work. You have the inertia of several hundred years of tradition," says the U.S. Embassy official. "People in Tokyo are skeptical whether the move of the capital will take place at any time in the foreseeable future. Nobody is banking on it, though people are talking about it because it's a politically correct thing to do. The power and the momentum to keep the capital in Tokyo are enormous."

Some argue that it's hard to justify a new Japanese capital as a public works project. "It'd be like blowing all their resources on one thing," says RTKL's Adams, who cites a recent article ["Implementing Japanese Recovery" by Adam S. Posen in the journal of the Institute for International Economics] that recommends "any form of tax cut" over "the wasteful public works spending repeatedly undertaken in Japan." These critics maintain that the first priority in a Japanese recovery is bailing out the banks. Other critics says it is far cheaper to stimulate the economy by building a new capital than to take on the bad debts of the banking system. The proposal has also divided ministries. The finance ministry is tacitly opposed, and the construction ministry, not surprisingly, is in favor. The move could not be made without the cooperation of the finance ministry.

While some argue the rationale and feasibility of a new capital, others, including many of the country's most prominent architects, question the vision itself. The proposal as it now stands comes illustrated with vapid depictions of a capital virtually and virtuously surrounded with greenery—palliative feel-good schemes designed not to alienate any constituents.

Kisho Kurokawa, known for his metabolist architecture, proposed an ecosensitive island that would clean up Tokyo Bay and accommodate part of the "capital function" while providing considerable housing. Yet he faults the idea of an isolated capital city for its simplistic and out-of-date logic. "To make a single symbol of a country may be necessary in a developing country to promote unity, but we don't need a huge type of single city," says Kurokawa. "This is inappropriate for Japan, which is globalized—one company may have a factory in Thailand, a head office in New York City, and a laboratory in Tokyo. The image we're seeing of the new capital presented by the committee is like Canberra, [Australia], and quite tiresome, like a garden city of the 19th century in the United States or England. A new capital should be an experimental city for the 21st century."

Kurokawa's own proposal is not to build a single city but distribute the capital in a linear "capital corridor" of several cities, from Tokyo to

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Osaka—some on his island in Tokyo Bay, the imperial family and education ministry in Kyoto, the trade and industry administration in Osaka, and science ministries in Nagoya. Kurokawa says, "I do not agree with the government's idea of a classic single city—that is not thinking about the future." He also observes that pumping large amounts of capital to an area removed from existing cities will not help revitalize the Japanese economy, especially with so much "sleeping property" already unoccupied in cities. One solution to the recession is to distribute government offices in unoccupied buildings in these cities, and to solve the national problem via the buildings at the root of the financial crisis: "The ministry of construction can rent the private sector's empty buildings," says Kurokawa. "The 21st century will be a more dynamic era for privatization of the public sector."

Tokyo architect Shin'ichi Okada remarks that arguments for a new capital should not be based on defeatist notions of overcrowding, economic stagnation, and the prospect of future calamities, but on the more positive basis of "planning a new capital with a comprehensive image truly suited to Japan's road to the future." Planting a new capital in a different area, like Brasilia, he says, is outmoded, and in any event would cost more than $873.9 billion. Like Kurokawa, Okada has proposed a design that rephrases Tokyo itself, but with "arms," or peninsulas, extending from the Imperial Palace into Tokyo Bay.

Fumihiko Maki, the dean of Japanese architects, saw a televised broadcast on the capital plans last April. He recognized the same mindset that created Japan's government-sponsored small-town developments of approximately 100,000, organized around education and research centers as part of a decentralization strategy. The image reminded him, he has written, of cheap real estate fliers, as if the government were simply planning a "New Town," like a private developer or World Expo promoter. For Maki, the televised schemes are not worthy.

The design of a new Japanese capital, Maki maintains, must be accountable to a higher standard. "In ancient Japan, a new capital was taken very seriously," he says. "The leaders understood the great historical impact with the Heijo period capital at Nara and the Heian period capital at Kyoto. But if the politicians now think this is just like building a 'New Town,' the government should not do it. Such an important undertaking requires intense discussion, as if it were creating major new laws. The capital must be drawn based on the outlook of the nation, and debated on the same level as the constitution." Even if Japan finally decides to move the capital, it may take another generation to agree on an appropriate design.

Monograph celebrates work of Lloyd Wright (at left), who struggled to loosen himself from the familial and esthetic grip of his famous father, Frank Lloyd Wright (at right). Lloyd Wright's son, Eric (foreground), contributed to book.

Wright the Younger

Frank Lloyd Wright, Jr., stepped out of his famous father's domineering shadow to develop a significant career of his own. By Ned Cramer

"Your eye is on me and my acts as you see them...turn it upon your own soul for your own good," Frank Lloyd Wright wrote to his son Frank Lloyd Wright, Jr. (known as Lloyd) in the early 1920s. "I have been your 'excuse' for too long, my son!" These harsh words contain more than a grain of truth: In his own egomaniacal way, Wright managed to characterize the complex, disjointed relationship between a titanic father and the son who would forever labor in his shadow. Lloyd was a highly accomplished architect, but is generally perceived as little more than an imitator of Frank Lloyd Wright: Many assume his Los Angeles projects are actually his father's. Fortunately, California photographer Alan Weintraub's new monograph, *Lloyd Wright: The Architecture of Frank Lloyd Wright Jr.* (Abrams), with fine essays by Thomas Hines and Lloyd's son, Eric Lloyd Wright, promises to give the overlooked progeny's reputation a leg up.

Lloyd Wright was born in Oak Park, Illinois, in 1890, the eldest son of Frank Lloyd Wright and his first wife, Catherine. Lloyd was in his second year at the University of Wisconsin when his father famously deserted Catherine for Mamah Cheney in 1909. Lloyd followed them to Fiesole, Italy, where the father and son compiled the drawings for the Wasmuth portfolio, which spread Wright's fame throughout Europe.

With money tight, Lloyd returned to the United States in 1911 and took a position at the landscape firm Olmstead and Olmstead in San Diego. Lloyd subsequently joined the office of Irving Gill, who had

worked with the elder Wright in the office of Louis Sullivan. Within a few years, Lloyd started an independent practice in landscape architecture with a colleague from the Olmstead office, Paul Thiene. But a lack of commissions reduced Lloyd to designing sets for Paramount, and in 1918, he left for New York City with his first wife, actress Kira Markham.

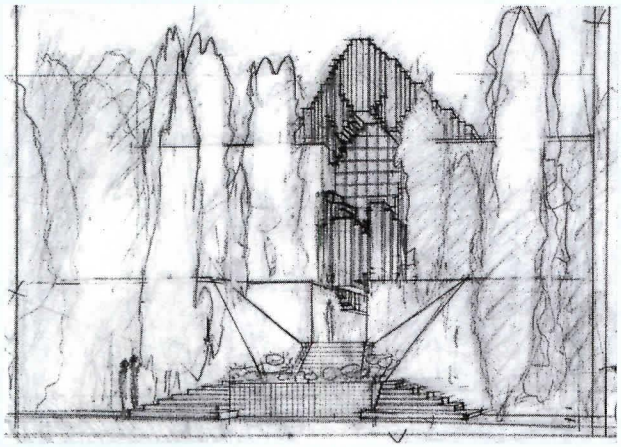
By the following year, Frank Lloyd Wright had hooked up with oil-rich heiress Aline Barnsdall, for whom he designed the Hollyhock House in Los Angeles, and Lloyd returned to California to work for his father. It was not a happy collaboration. In dealing with Lloyd, Wright rarely seemed able to see past his own ego and impossibly high standards. A letter from father to son, dating from this period, is a remarkable exercise in passive aggression: "I've just come from the Storer House. It's a tragedy from my standpoint, but I can see how hard you've worked to pull it out and I approve many things you did."

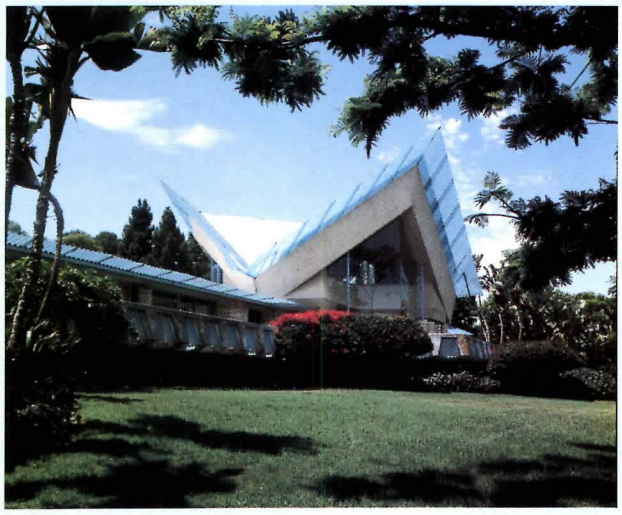
Meanwhile, Lloyd's independent Los Angeles practice was taking off, culminating in his own compact studio and home (1927) and the more expressive, expansive Sowden (1926) and Samuel-Novarro (1928) houses. The studio is a solid, worthy exercise in his father's patterned concrete block. But in the latter projects, which are among Lloyd's best, he livens up the Precolumbian pomposity of his father's California period with a jazz age shout: an art deco starburst of copper flashing in the house for actor Ramon Novarro, and syncopated concrete block compositions in the courtyard-style Sowden House. Lloyd's expressionist Yucca-Vine Market (1928), with its angular, undulated canopy and spiky sign-tower, anticipates the Googie roadside attractions of postwar Los Angeles by a quarter century.

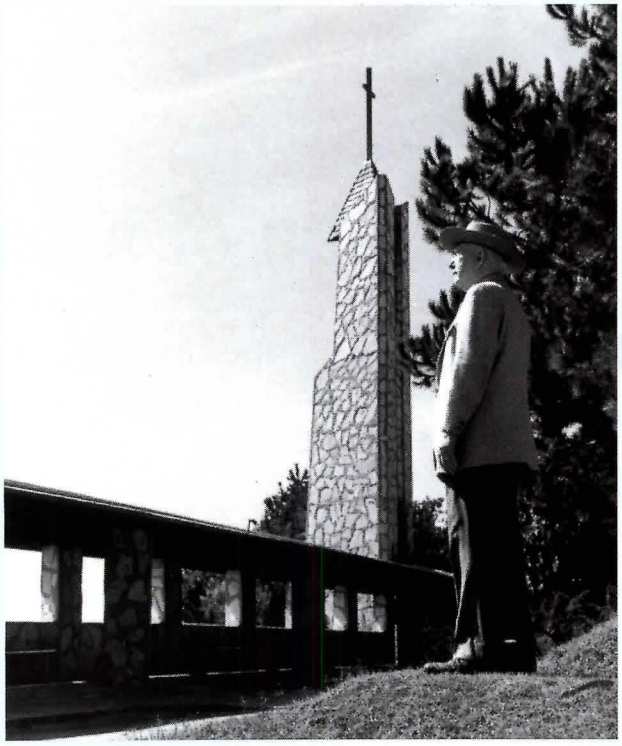
Both father and son's practices dried up during the Depression, and Lloyd was forced to accept such esthetically compromising commissions as a neo-Regency home in Beverly Hills for actress Claudette Colbert. But the postwar building boom put him quickly back on his feet. His first major commission of the period—for the Swedenborgian Wayfarer's Chapel (1951), dramatically perched on a cliff overlooking the Pacific Ocean in Palos Verdes—is widely considered his masterpiece. It's Fay Jones before the fact, a largely glass-roofed pavilion whose eight slender columns blend in beautifully with the surrounding redwoods. Frank Lloyd Wright's then pupil Bruce Goff asked the aging master what he thought of the Wayfarer Chapel. Wright tersely responded, "Well, the boy is getting lots of attention from it, but I don't care much for it." Incredulous, Goff pressed on, and Wright grudgingly admitted, with a smile, "Perhaps...a little."

Lloyd's practice, largely residential, boomed through the 1950s and 1960s. His work of the period takes unmistakable cues from Taliesin West and other Wrightian sources. But around the time of his father's death in 1959, Lloyd's latent expressivism, which passingly appeared in the Yucca-Vine Market, emerged unabashed. Projects like the Moore House (1956), and the Bowler House (1963) demonstrate as much bravura as the work of John Lautner. The Bowler House, with its triple-peaked roof edged with corrugated blue fiberglass walks a delicious line between nonconformity and kitsch.

Lloyd Wright died in 1978. In *The City Observed: Los Angeles*, Charles Moore wrote: "Frank Lloyd Wright, Jr....has received far less attention than he would have...if he didn't have the same name as the best-known architect of recent centuries." And perhaps it's true that Lloyd will simply be considered one of his father's finest followers. Given the act he had to follow, that's no mean accomplishment. ■







Lloyd Wright's oeuvre ranged in disposition from exuberant art deco Sowden House (1926, top) and borderline kitsch Bowler House (1963, center) to serene Wayfarer's Chapel (1951, bottom).

ALAN WEINTRAUB PHOTOS

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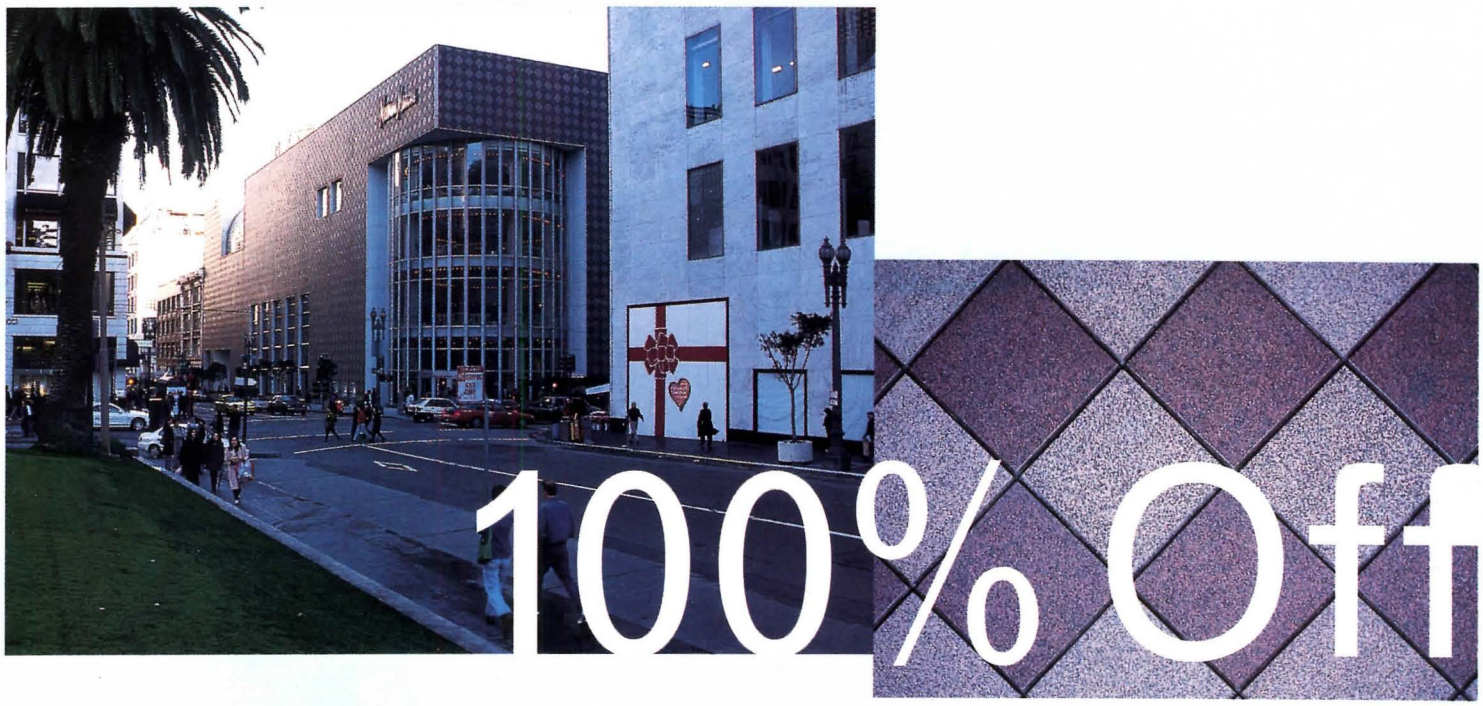

A misguided makeover of a San Francisco Neiman Marcus may get store credit, but sells out its distinguished postmodernist pedigree. By Michael J. O'Connor

Store's curved rotunda is active participant in **Union Square.** Neiman Marcus will scavenge decorative cornice from neighboring commercial structure on Geary Street (at far left) before leveling it. Renovation will **sandblast** mauve and gray harlequin pattern, rendering it allover beige.

They say that history repeats itself. In 1982, when Philip Johnson tore down the beloved City of Paris department store (1908) to build a new Neiman Marcus on San Francisco's Union Square, the city was outraged. A scant 17 years later, Johnson's building has gone from aggressor to victim in an insensitive renovation plan unveiled by its owner in January.

The 195,000-square-foot building—one of the chain's largest and most profitable outlets—will receive an additional 65,000 square feet, a new entry sequence, and a new exterior finish. Tom Lehnen, Neiman's senior vice president of real estate, properties, and new store development, tapped Atlanta-based Diedrich Architects and Associates—as he has many times before—for the job.

Diedrich's alterations are sound retail marketing. To accommodate more designer duds, the architect recommends demolishing a 1907 four-story commercial building the store acquired on an adjacent Geary Street site. To maximize marketable square footage at the store's Union Square entrance, he suggests removing the staccato mullions from and squaring off Johnson's interesting oval-on-the-diagonal vestibule that incorporates the City of Paris's ornate six-story rotunda. To assuage his client's delicate esthetic sensibilities, Diedrich wants to sandblast the store's granite exterior to remove the familiar harlequin pattern.

But these changes are bad karma and worse design. In one fell swoop, Diedrich will erase everything that distinguishes the Union Square Neiman Marcus from any suburban mall retailer. Further, leveling its Chicago-Style neighbor rather than incorporating it into a true urban solution continues the wrongheadedness that felled the City of Paris store in the first place. Carried to its logical extreme, the city of San Francisco will soon consist of nothing but uniform beige boxes.

Former Neiman Marcus CEO Stanley Marcus, who commissioned Johnson, was "very surprised," according to the architect, to learn that Diedrich hadn't consulted his predecessor on the job. Johnson, however, was not. In fact, he's downright practical about the planned changes. "It's not my building anymore," the elder statesman mused. "Sure, I wanted a curved surface on the square with repeated mullions, but they want to sell handbags."

Others aren't as laissez-faire—the preservationists at San Francisco Heritage, for one. Spokesperson Donald Andreini reports that the organization will fight the proposed redesign—at least until Neiman's agrees to utilize the adjacent property on Geary Street. Fortunately, Andreini and his colleagues have some time. Neiman Marcus's January announcement signaled only the commencement of the approvals process. There's still a long way to go before the new and sterilized Neiman Marcus store debuts in late 2001.

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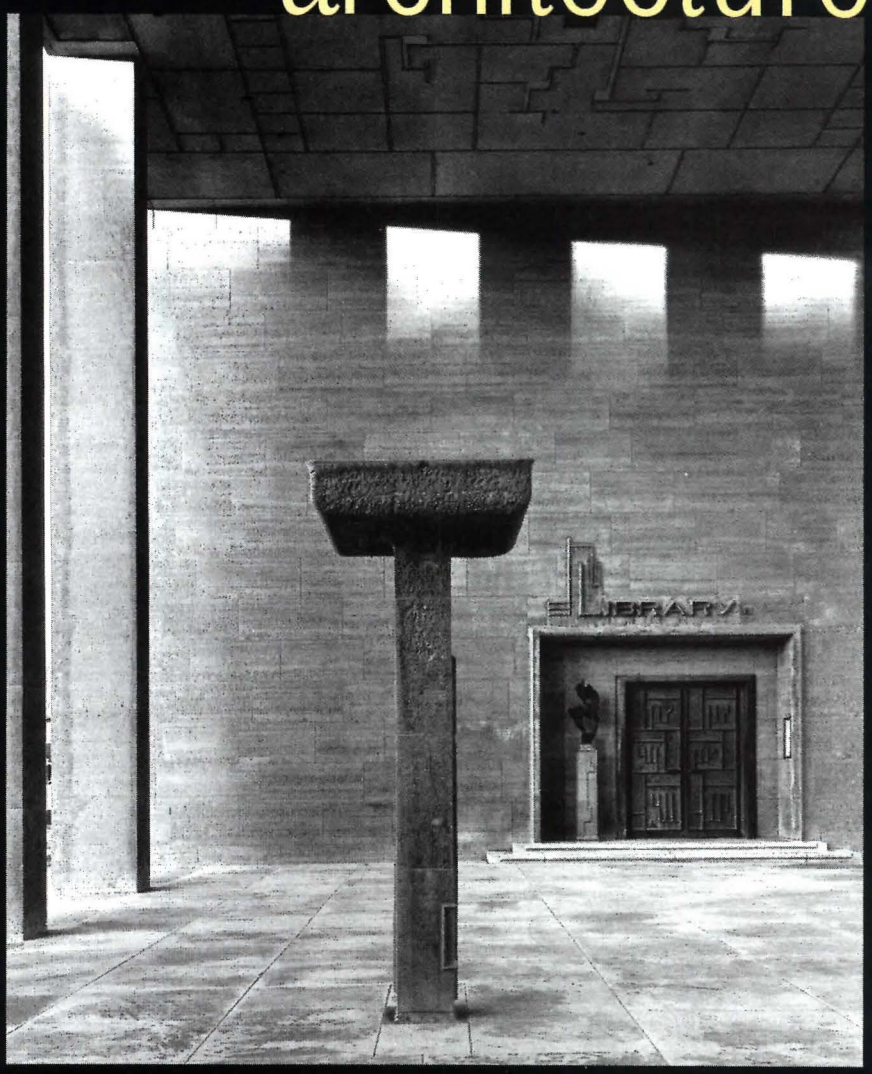
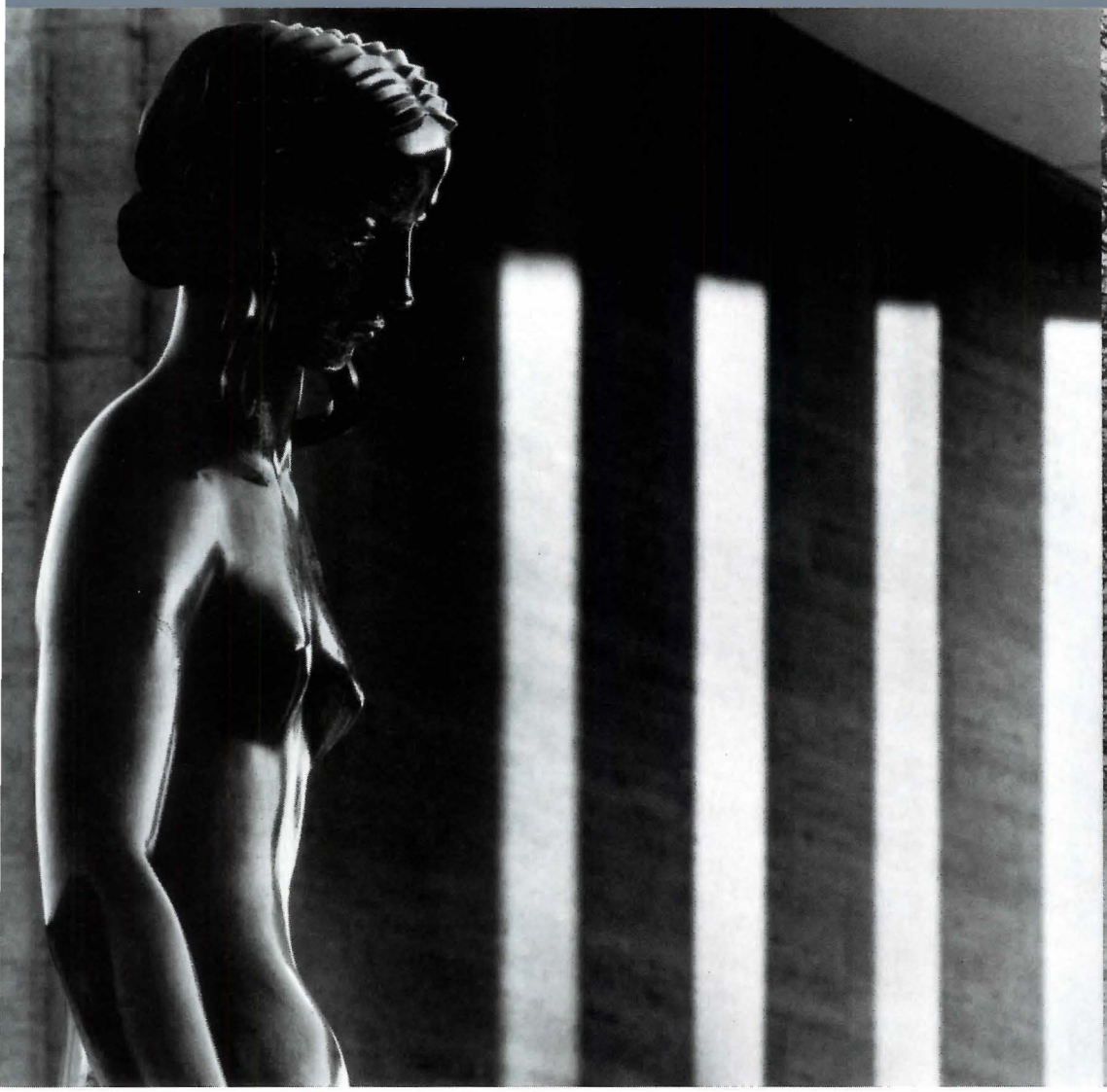
architecture

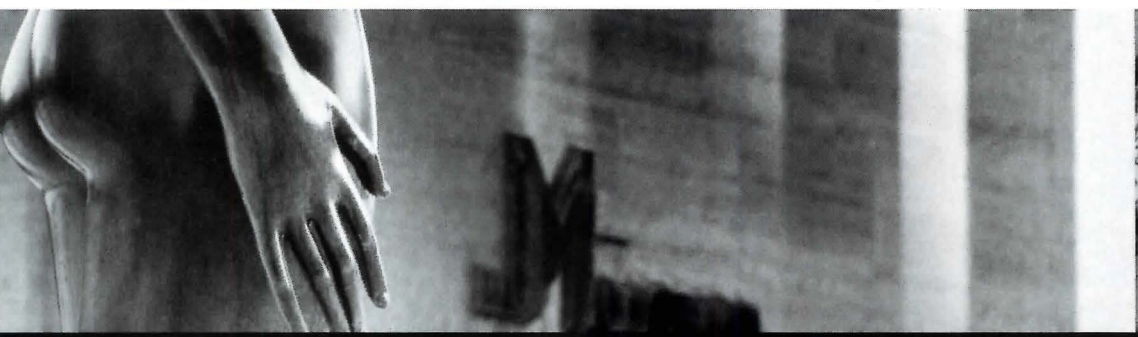


The Cranbrook Educational Community in Bloomfield Hills, Michigan, is possessed of an almost sacral character—the legacy of the Finnish architect Eliel Saarinen, who from 1925 to 1950 designed a brilliant succession of proud, intimate buildings on the campus. Confronted with such a prepossessing spirit of place in designing an addition to Saarinen's Institute of Science, architect Steven Holl looked to a fundamental tenet of chaos theory, strange attractors. The underlying idea is that systems—from weather to history—never repeat, but nevertheless form patterns. Holl applied the principle to circulation, creating linked but distinct paths of movement that tie his addition to Saarinen's original science center. But language is just as fluid: The term strange attractors is so evocative that when used to describe the building it surpasses Holl's intended definition. Variables such as context, craft, and typology impart new but related meanings to the term, enriching the dialogue between Saarinen and Holl, past and present, the handmade and the manufactured, and science and architecture.

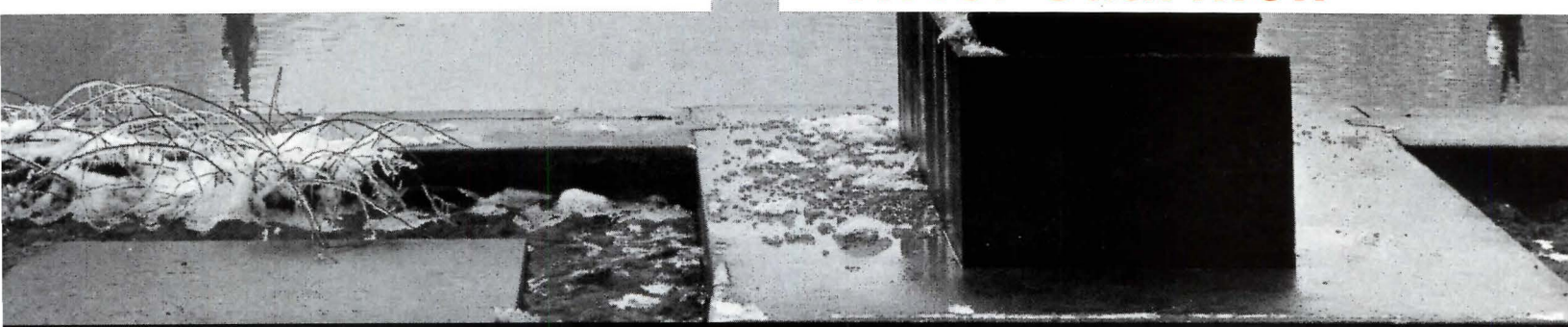
Totemic light standard guards entrance to Eliel Saarinen's library at Cranbrook.



Cranbrook



After Saarinen



The iconic institute builds on its progressive modern roots. By Kenneth Frampton

Cranbrook campus centers on Eliel Saarinen's monumental colonnade (1942), which serves as vestibule for both art museum and library. Figures by Swedish-born sculptor Carl Milles populate colonnade (facing page) as well as lawns and reflecting pools, which extend north and south (above).

Manifest destinies have a peculiar way of working themselves out, as we may judge from Steven Holl's recent addition to Eliel Saarinen's 60-year-old Institute of Science on the campus of the Cranbrook Educational Community in Bloomfield Hills, Michigan. For if ever an architect was slated to work at Cranbrook it was surely Holl, with all the subtle resonances that now appear to run between his own work and the legacy of Saarinen. One needs only to look at the cast bronze doors made to Saarinen's designs for the entrance to the Cranbrook Library and Museum complex of 1940 (page 75, this issue) to be reminded of Holl's work. However, Holl's science center is only the latest realized addition to an environmental magnum opus that has been evolving at Cranbrook throughout the entire century, from the time Cranbrook's founder, newspaper magnate George Booth, purchased an agricultural estate in 1904 that has grown to 315 acres, to the recently proposed addition to the art museum by distinguished Spanish architect Rafael Moneo.

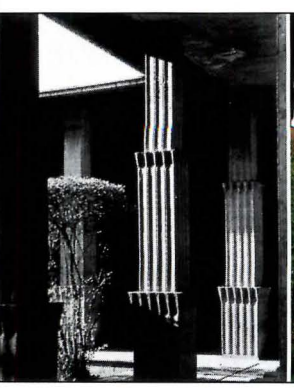
From the beginning, Booth and his wife, Ellen Scripps, sought to establish an Arts and Crafts community based in part on Booth's nostalgia for his father's English birthplace, the village of Cranbrook in Kent, where his family's craftsmen forbearers had lived for generations. After establishing his permanent home on the estate—a large Queen Anne house designed to his specifications by Albert Kahn in 1907—Booth began the painstaking assembly of his Arts and Crafts utopia beginning with a meeting house that he designed in 1918. This was completed in 1939 by his tyro architect son, Henry Scripps Booth, as a highly romantic complex complete with a Nordic tower. In 1996, architect Peter Rose added an Arts and Crafts extension to the building that, while contextually appropriate, is perhaps too elaborate in its details.

The annus mirabilus for Cranbrook was clearly 1925, when Booth (largely at his son's recommendation) appointed Eliel Saarinen as the institution's prime architectural mover. Cranbrook would blossom over the next 25 years as a mecca for humanist education in the arts at every conceivable level, from prekindergarten to a postgraduate academy. Thus the meeting house (now the Brookside Lower School) would be successively joined by five major complexes designed by Saarinen over the next decade: the Cranbrook School for Boys (1926-30), the Kingswood School (1930-31), the Cranbrook Academy of Art and Library (1925-38), the Cranbrook Institute of Science (1936-37) and, last but not least, the cryptoclassical museum completed in 1942 as a monumental centerpiece for the entire campus.

It is clear from his Sittesque plan of 1925 that Saarinen originally thought of Cranbrook as a microcosmic city, replete not only with multiple institutions but also with a supporting residential fabric. However, despite the dorms that were essential for the boarding schools and the accompanying faculty housing for the schools and the academy, a city-in-miniature is the one thing that Cranbrook never became. Today, as one tramps across the bucolic grounds, one comes to feel this as a lost opportunity. Clearly what Saarinen envisaged at the beginning was an academic garden city of a kind that has rarely been achieved anywhere. In his original scheme, one building is joined to the next in such a way as to form a continuous fabric, a closely woven, civic structure that would also have been permeated by resplendent nature. Despite the fact that Booth is supposed to have been opposed to this more comprehensive vision, one may still hope that the next century will see Cranbrook mature into the academic city it has always been destined to become.

Unlike many of our prestigious universities, prone as they are to inexplicable lapses in taste, Cranbrook has yet to put a foot seriously wrong as an architectural patron. This is as true for the small-scale addenda that Dan Hoffman designed during his tenure as architect-in-residence

Saarinen and his predecessors defined Cranbrook campus as cluster of courtyard buildings (below right), merging Arts and Crafts esthetic (below center) with Art Deco, classical, Asian, and Scandinavian influences (below left). New projects (facing page, left to right) include buildings by Dan Hoffman, Peter Rose, Tod Williams and Billie Tsien, and Steven Holl.



(1986-1996) as it is for the commissions that Cranbrook has recently put in hand—Rose's Brookside School, Steven Holl's addition, and the natatorium for the Cranbrook School by Tod Williams and Billie Tsien.

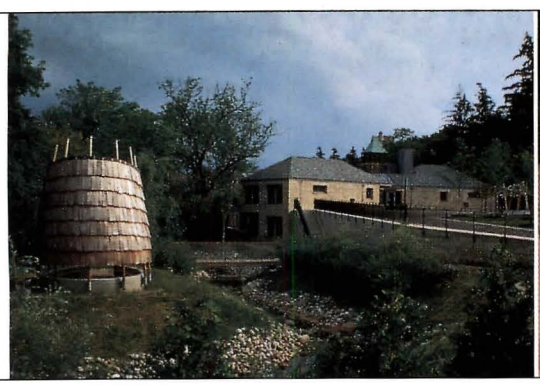
Holl is one of few architects practicing today who habitually engenders his work through interlocking heuristic devices: a particularly sensitive reading of the context, an internalization of the proximities required by the brief, and the evocation of a quasimythic narrative that endows the work with its lyrical context. In this case the heuristic myth came from Edward Lorenz's chaos-theory concept of a "strange attractor," which Holl exemplified in his *U*-shaped plan. It nestles within the wings of Saarinen's building as though these forms were irresistibly attracted to each other, one hovering in the arms of the other.

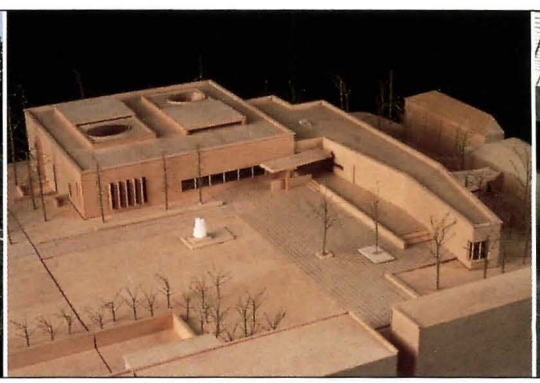
An equally "strange attractor" seems to be coming into being under the judicious guidance of Williams and Tsien. Recalling through its elliptical top lights not only Alvar Aalto but also the occuli of Tony Garnier's hydrotherapy building in his Cité-Industrielle of 1917, Williams and Tsien's natatorium—the first phase of a larger athletic complex—comprises a large, top-lit, multipurpose gymnasium-cum-swimming-hall complete with cantilevered viewing galleries of sufficient joint size to hold the entire body of the school. That these architects are as sensitive as Holl when it comes to respecting Saarinen's legacy is borne out by their approach to the task of adding to the existing fabric of the Cranbrook School. Thus they write: "By the end of the 1920s, Eliel Saarinen's contributions to the boy's preparatory school at Cranbrook had established an extraordinarily strong relationship between architecture and landscape; and within the architecture, he had formed the same relationship between the world of academic and athletic life . . . It was not until nearly 40 years later, and long after Booth's and Saarinen's deaths, that another structure related to the athletic program was made. When built, these next two structures, an indoor hockey rink and enclosed tennis 'bubble,' had nothing to say to the ethic of 'body and mind' and nothing to give to the landscape. Our proposal insists that, despite their apparent differences, the academic and athletic must once again be integrated."

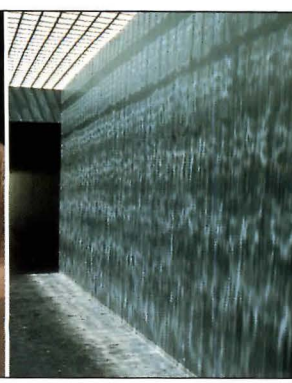
Equally susceptible to the Saarinen tradition was Dan Hoffman's decision to reestablish the Finnish architect's Cranbrook Architectural Office in 1996. From this didactic base, which provided practical training for students, Hoffman continued to design and realize the remarkable, strategically situated landscape interventions that he began while professor of architecture. Hoffman integrated Nordic references with Native American building culture in a gateway to the campus (1995) and a nearby mailbox pavilion (1996), a "covered" pedestrian bridge (1993) in laminated timber (the structural trellis will eventually be covered with vines), as well as two kivalike structures: a shingle-clad storytelling pavilion (1997) on the grounds of the Brookside School and a so-called "ghost-catcher" folly proposed for the woods nearby. In an uncanny way these two quasiprimitive huts seem very close in spirit to the icehouse and vapor pit that are deployed as didactic elements in the courtyard garden of Holl's addition (pages 80-89, this issue).

All of Hoffman's structures are complemented by the elegant signage and equally elegant light fittings he designed and distributed throughout the campus, from low-level bollard lights made from spun aluminum to petal-shaped standard lamps, formally reminiscent of reflector fittings designed by both Aalto and Le Corbusier. In this manner, the Cranbrook environmental tapestry comes to be interwoven with the larger history of 20th-century design. Nowhere does this promise to be more the case than in Rafael Moneo's preliminary designs for a large addition to the art museum. As in the Institute of Science and the natatorium, this new wing maintains the horizontal profile of the overall campus while animating and complementing the rhythmic character of the surrounding space. One only hopes that the current Cranbrook administration will not lose their nerve over this building and that they will see fit to carry it through to completion, to become the crown of the institution—to consummate through its quiet, monumental form all the remarkable works that have been achieved over the past decade. ■

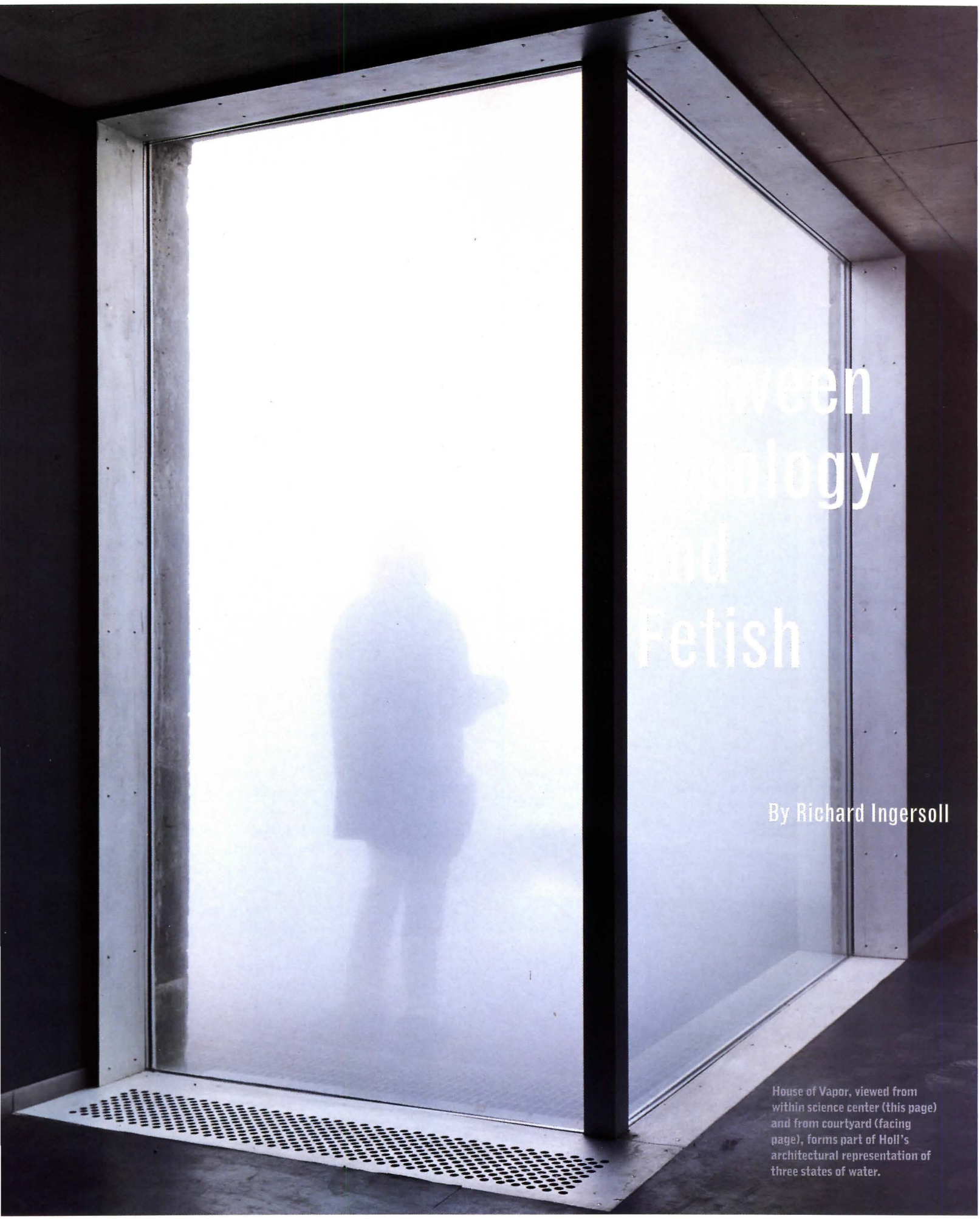
Kenneth Frampton is Columbia University's Ware Professor of Architecture.







Steven Holl Architects updates Cranbrook's crafted modernism in a sensuous yet spare museum addition.



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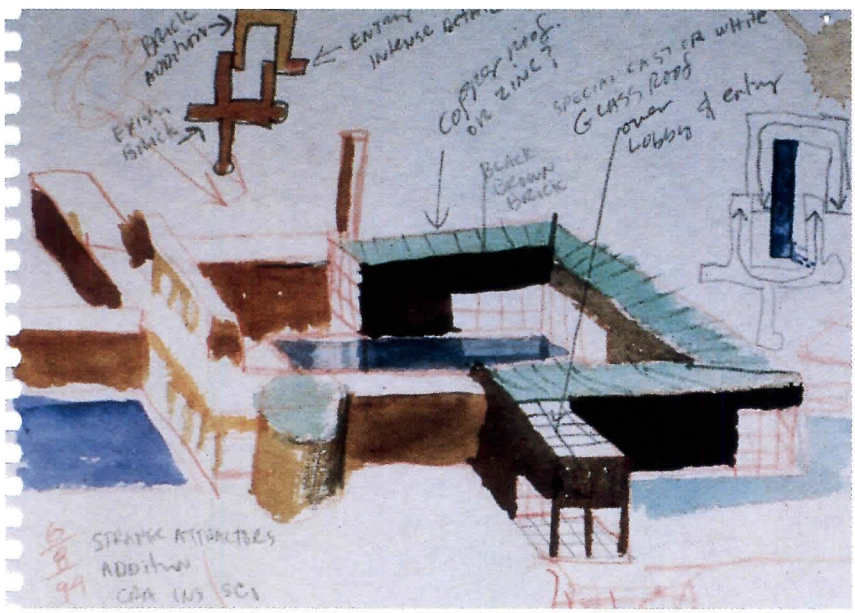
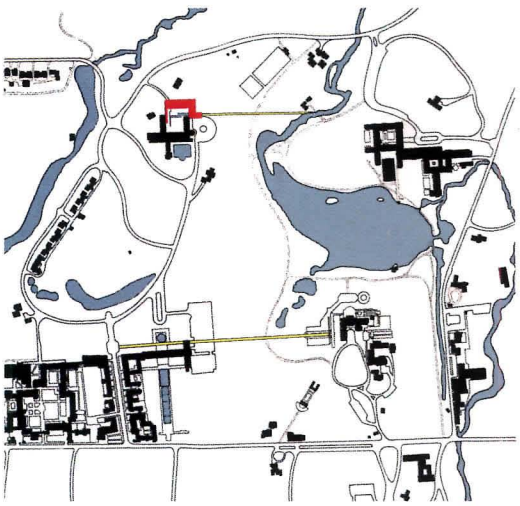
By Richard Ingersoll

House of Vapor, viewed from within science center (this page) and from courtyard (facing page), forms part of Holl's architectural representation of three states of water.



New entrance to science center (top, at right) faces Saarinen's domed planetarium (at left) and light pylon. Sketch by Holl (above) depicts interlocking relationship between *U* shapes of Saarinen's original and addition. Northwest corner of long-term exhibition gallery (below) cantilevers over field.

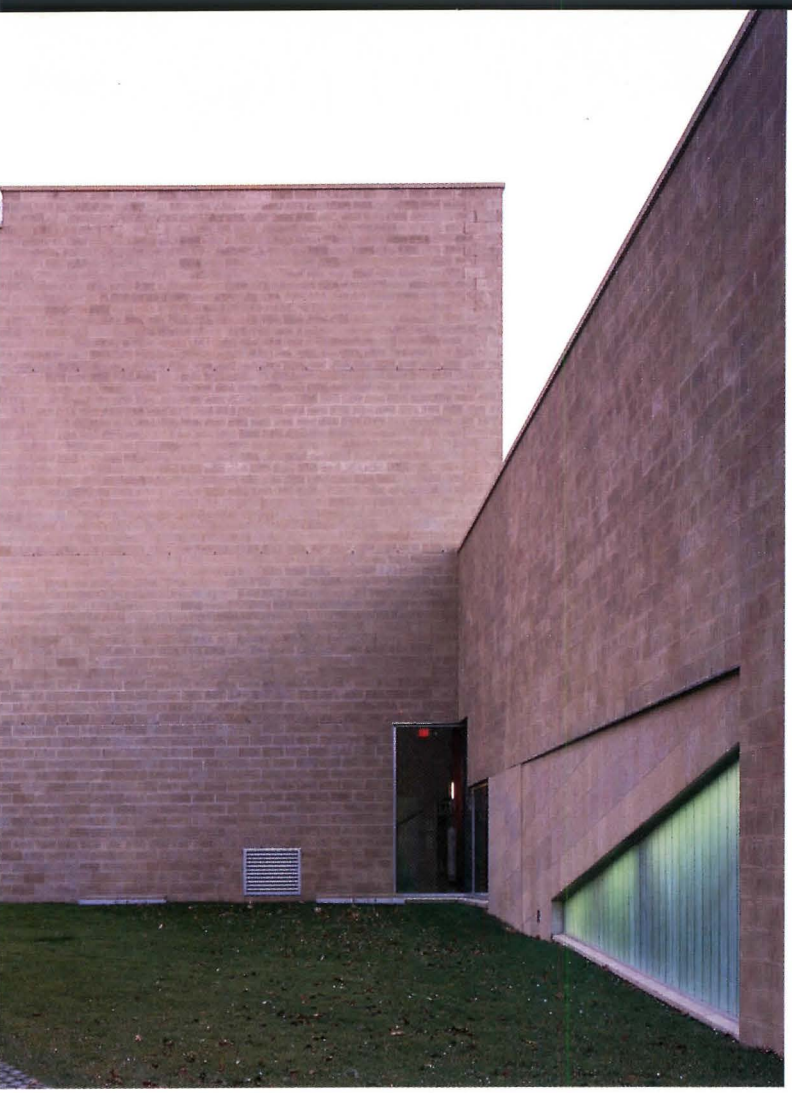


Site plan 390'/118m

With the completion of a major addition to the Cranbrook Institute of Science, Steven Holl has produced fresh evidence of his architectural ingenuity. He has designed a splendid building of looping volumes, whose kinetic effects are the confident outcome of two decades of typological research. On a more tactile level, he provides immediate, sensual rewards—unique encounters with eccentric, well-crafted details. At a time when there is dwindling confidence that architects can make much of a difference to either the quality of the environment or the quality of life, Holl has produced a building that is unequivocally ameliorative.

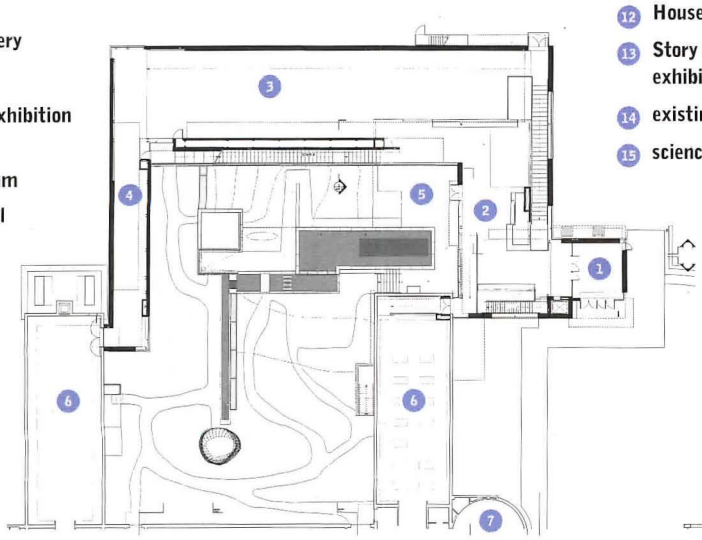
No doubt Holl's task was enriched by the highly charged context of the Cranbrook campus, America's closest equivalent to the Bauhaus, and largely the work of Eliel Saarinen (this issue, pages 76-79). Much credit is due to Cranbrook's enlightened capital improvement program, initiated by former director Lillian Bauder with the artistic counsel of Dan Hoffman, who until 1996 was Cranbrook's architect-in-residence. Hoffman's workshop, staffed by students, fabricated many of the details in Holl's building. The Cranbrook Educational Community, which comprises four independent private schools, an art academy, and a small art museum, as well as the science center, has commissioned significant additions for its centennial in 2004 by Peter Rose, Tod Williams and Billie Tsien, and Rafael Moneo. At 27,000 square feet, Holl's addition to the science center is the largest of these projects to date.

By all accounts, Eliel Saarinen's original Institute of Science, constructed in 1936 to house a series of educational dioramas, warehouselike displays of minerals and fossils, and a domed planetarium, was of minor architectural importance



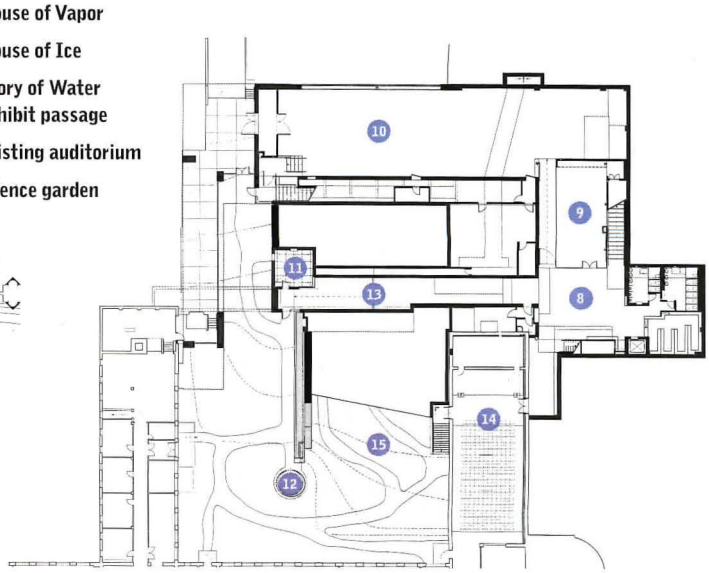
Addition's east facade (above left, at right) adjoins rear of entrance pavilion (at left); angled expanse of interlocking, translucent glass panels (at right) echoes slope of stair behind. Window in north facade (above right), which is clad in buff-colored concrete block and dolomitic limestone, provides filtered daylight to changing exhibitions gallery on ground floor.

1. Light Laboratory vestibule
2. lobby
3. long-term exhibition gallery
4. study gallery
5. terrace
6. existing exhibition gallery
7. planetarium
8. lower-level lobby

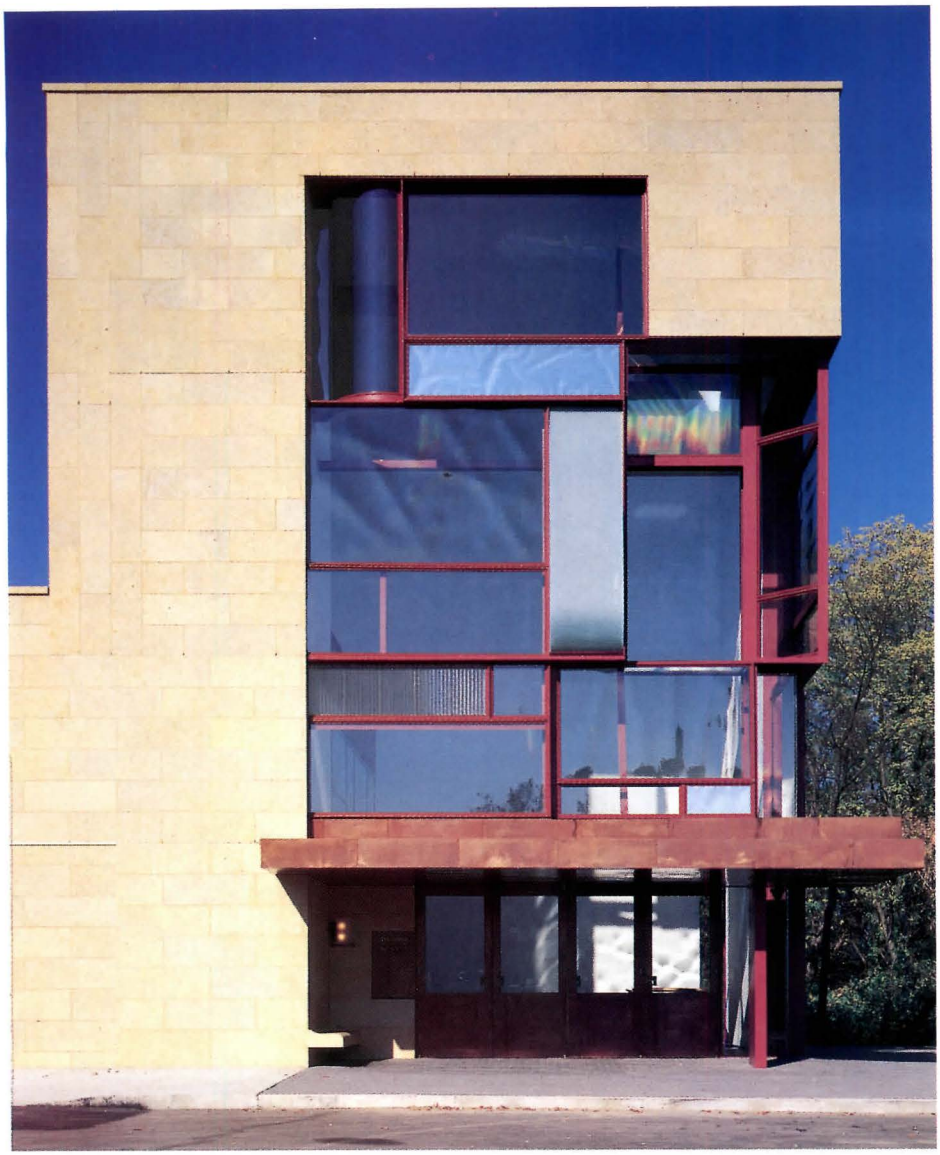


First-floor plan 33'/10m

9. museum shop
10. changing exhibitions gallery
11. House of Vapor
12. House of Ice
13. Story of Water exhibit passage
14. existing auditorium
15. science garden



Ground-floor plan



Acid-reddened brass canopy shelters doors to science center vestibule (top), which Holl calls Light Laboratory. Seven types of glass in curtain wall and skylights (above) create varied natural lighting effects on surface of interior (facing page), as seen through doors of lobby.

compared with the glories of Cranbrook's Kingswood School, Academy of Art, and Art Museum. The Institute of Science's exterior was organized horizontally, with low-slung, art deco-style eaves and mottled brick cladding. The functional difficulties of the old building were legion; its *U*-shaped plan hindered circulation between wings; a conservative approach to exhibitions provided scant natural illumination inside.

Holl's layout for the addition defers to the picturesque siting of Cranbrook's buildings, which are casually laid out on a series of knolls that overlook wooded vales. The new building improves access, circulation, and daylighting; it doubles the area of Saarinen's science center courtyard, and integrates itself with the surrounding landscape. Holl also establishes a palpable tension between Cranbrook's early modern ethic of craft, applied to the seriality of mid-20th century design (as practiced, for example, by Cranbrook's famous artists-in-residence, Charles and Ray Eames) and today's novelty of eccentrically crafted details, which is a rejection of standard details, a form of resistance to the banality of mass culture.

Holl's dialectic between typological conventions and the fetishism of craft is announced at the new entrance to the science center, a three-story tower that looms above the reclining coil of the new exhibition wings. The entrance's eroded outside corner suggests the zoomorphic outlines of a long-necked, prehistoric creature. Holl juxtaposes the tower's conventional limestone masonry against the rhythms of a staggered grid of mullions that frame diverse kinds and sizes of handcrafted glass. This tower is a luminous foyer, a Light Laboratory with evocations of a mythic passage, like a purification or baptism. Seven different types of glass—one pane convex, another dappled, another crinkled like an accordion—cast variously refracted, diffused, and prismatic coloration on the white interior walls.

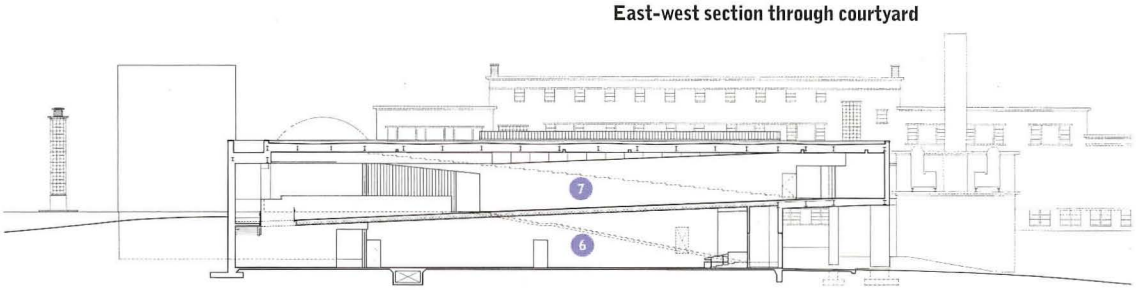
The terraced garden in the restructured courtyard is enclosed by the *U* shape of the new wings, which are attached in a staggered manner to the *U* of the old wings. The looping progress of the new building's long volumes that circumscribe the court followed an educated guess about the nature of science at the end of the 20th century: Holl was inspired by Edward Lorenz's model for "strange attractors" in chaos theory. This analogy is purely metaphorical and will not lead anyone to recognize the principles of chaos theory outlined in three dimensions. It nonetheless helped loosen the patterns of circulation, introducing several nodes from which the visitor perceives options of overlapping itineraries.

Holl heroically suspended the northwest corner of the addition like a bridge that turns a corner,

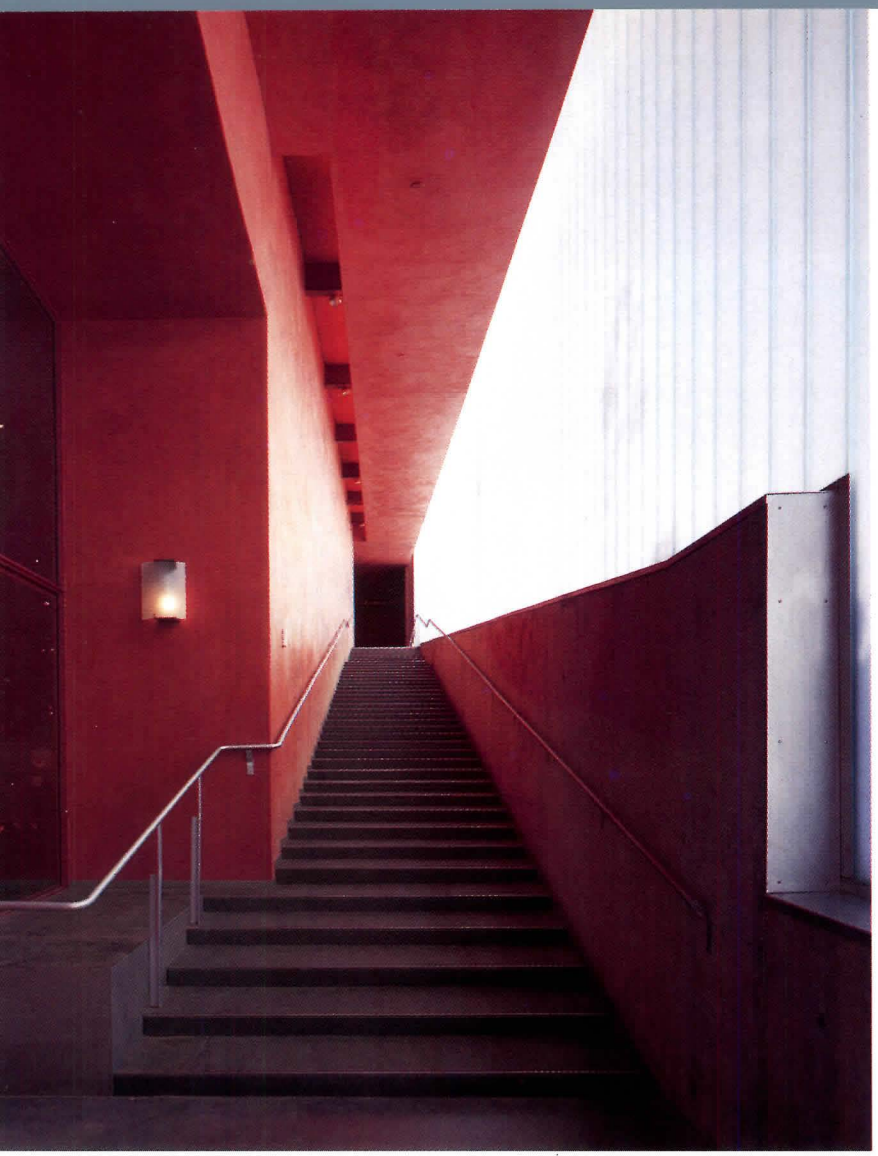
BALTHAZAR KORAB (BELOW)

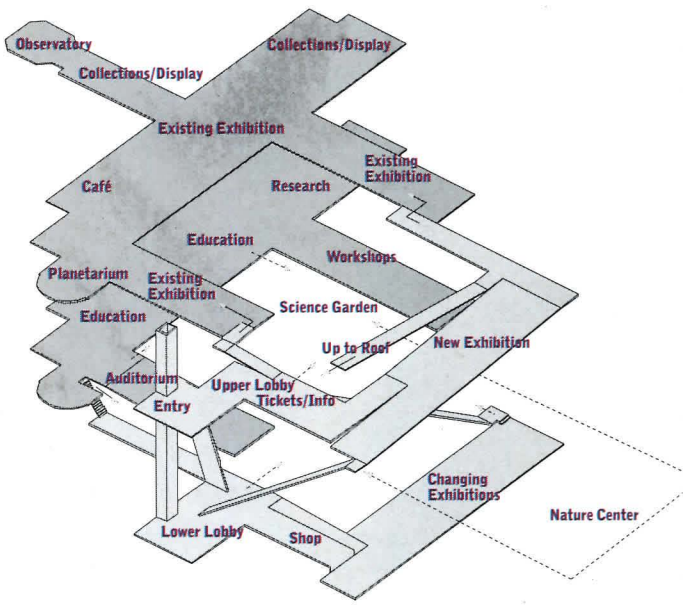
1. Light Laboratory vestibule
2. lobby
3. terrace
4. lower-level lobby
5. Story of Water exhibit passage
6. changing exhibitions gallery
7. long-term exhibitions gallery

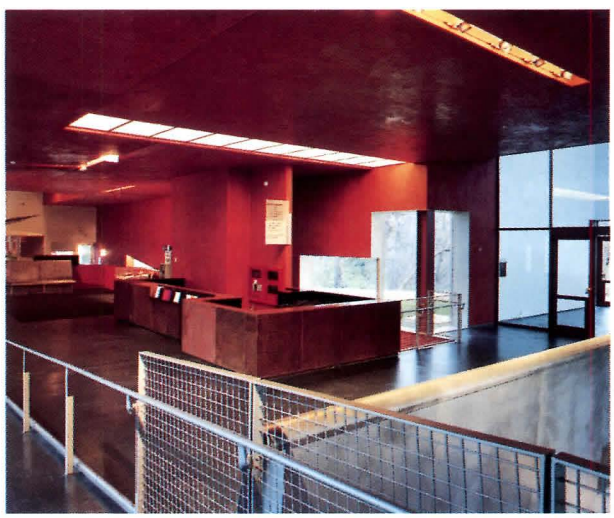
East-west section through courtyard



East-west section through galleries 17'/5m







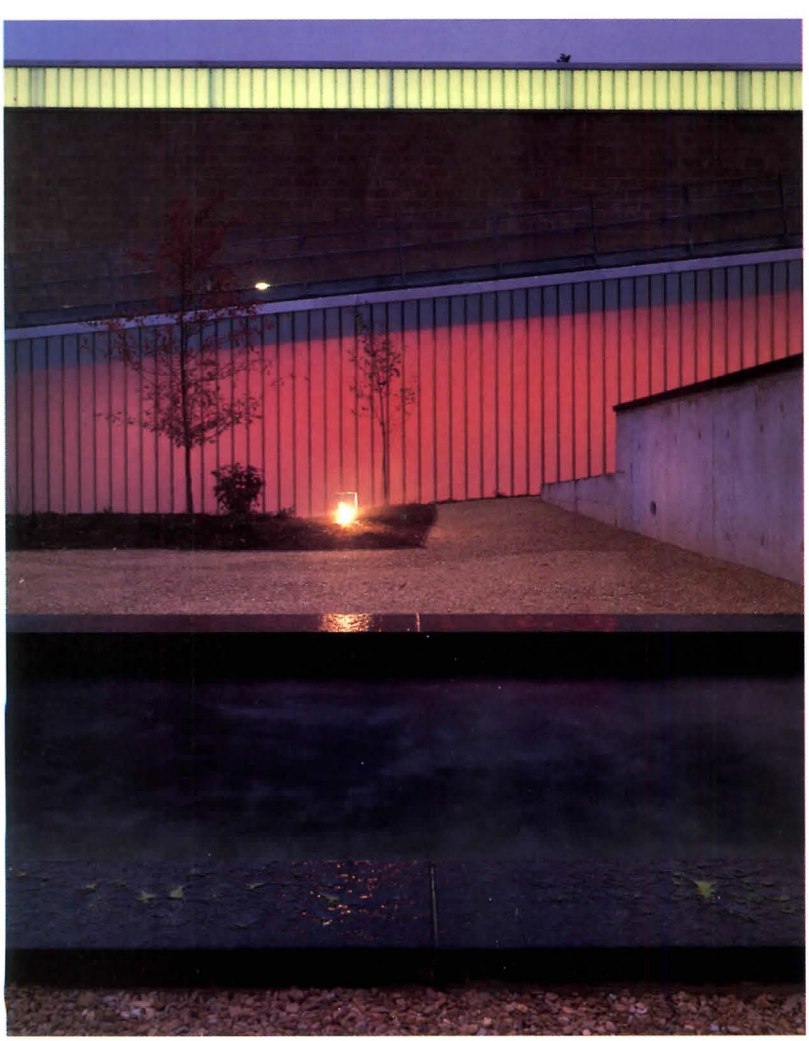
Stair (above), lit by wall of interlocking, translucent glass panels, rises from ground-floor changing exhibitions gallery to first-floor lobby (right and below right) and long-term exhibitions gallery (facing page). Diagram (above right) explains interlocking programmatic distribution of Holl's addition and Saarinen's original science center (at left).

allowing the gently sloping interior garden to spill out under the building toward the wooded vale below. This permeable relationship between courtyard and external landscape is, like much of Cranbrook, a weave of picturesque landscape and open courtyard. As with the entrance, where architecture demonstrates characteristics of sunlight, retaining walls in the sloping court illustrate the qualities of water. When visitors move from the lobby to the courtyard, they find a long, narrow fountain that flows over a transparent bottom through which wave patterns project onto a room below. Steam wafts from the floor of a compact, roofless outdoor chamber; in winter, one encounters water in its frozen state—sheets of ice form over a stainless-steel, teardrop-shaped frame.

Like a Renaissance architect, Holl studies architecture's rhetoric; he uses typological conventions and elements to create new meanings. In the Cranbrook science center, Holl begins with the basic vocabulary of foursquare enclosures infil-

Skylit long-term exhibitions gallery (above) features sloped floor and perforated plywood walls. Former Cranbrook architect-in-residence Dan Hoffman designed wooden igloo-shaped Connections Theater (background) as video projection booth.

Science garden courtyard is located between Holl and Saarinen wings of science center (above); garden contains welded-steel House of Ice (at right) as well as concrete House of Vapor (at center) as part of demonstration of three physical states of water. Tiers of pools (below and facing page) demonstrate water in liquid state; glass block bottom of uppermost pool (facing page, at right) functions as skylight to gallery below.

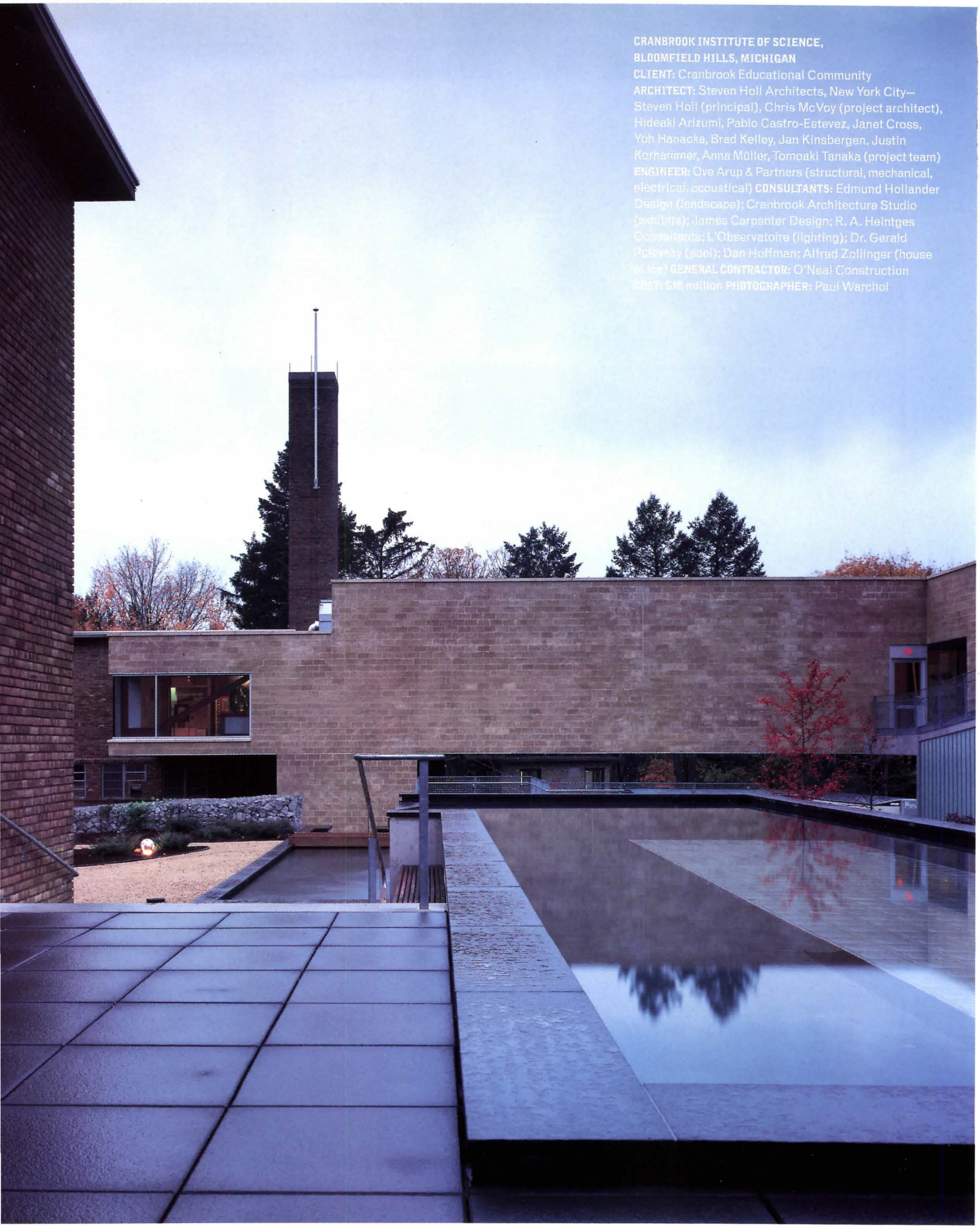


trated by oblique angles at facade openings. Some of the exhibit areas are ramped, which creates a studied contrast of perpendicular and oblique in plan and section. Holl transmits this contrast to the limestone and concrete block cladding of the building, where indented windows contrast with the orthogonal enclosing walls.

The new science center interior feels grand not only because of its double-height ceilings, but also because the oblong spaces are entered cross-axially. In the ticket hall, for example, one is given panoptic privilege: to glimpse diagonally the distant shapes of the information igloo and scale model of a dinosaur in the main hall; to look through glazed walls to the courtyard; to glance back at the Light Laboratory entrance; and to overlook the ramp and stair leading to the lower level. The spatial openness of Holl's interiors evokes the esthetic of such works as Ludwig Mies van der Rohe's 1929 Barcelona Pavilion, where independent planes create dynamic spatial contrasts.

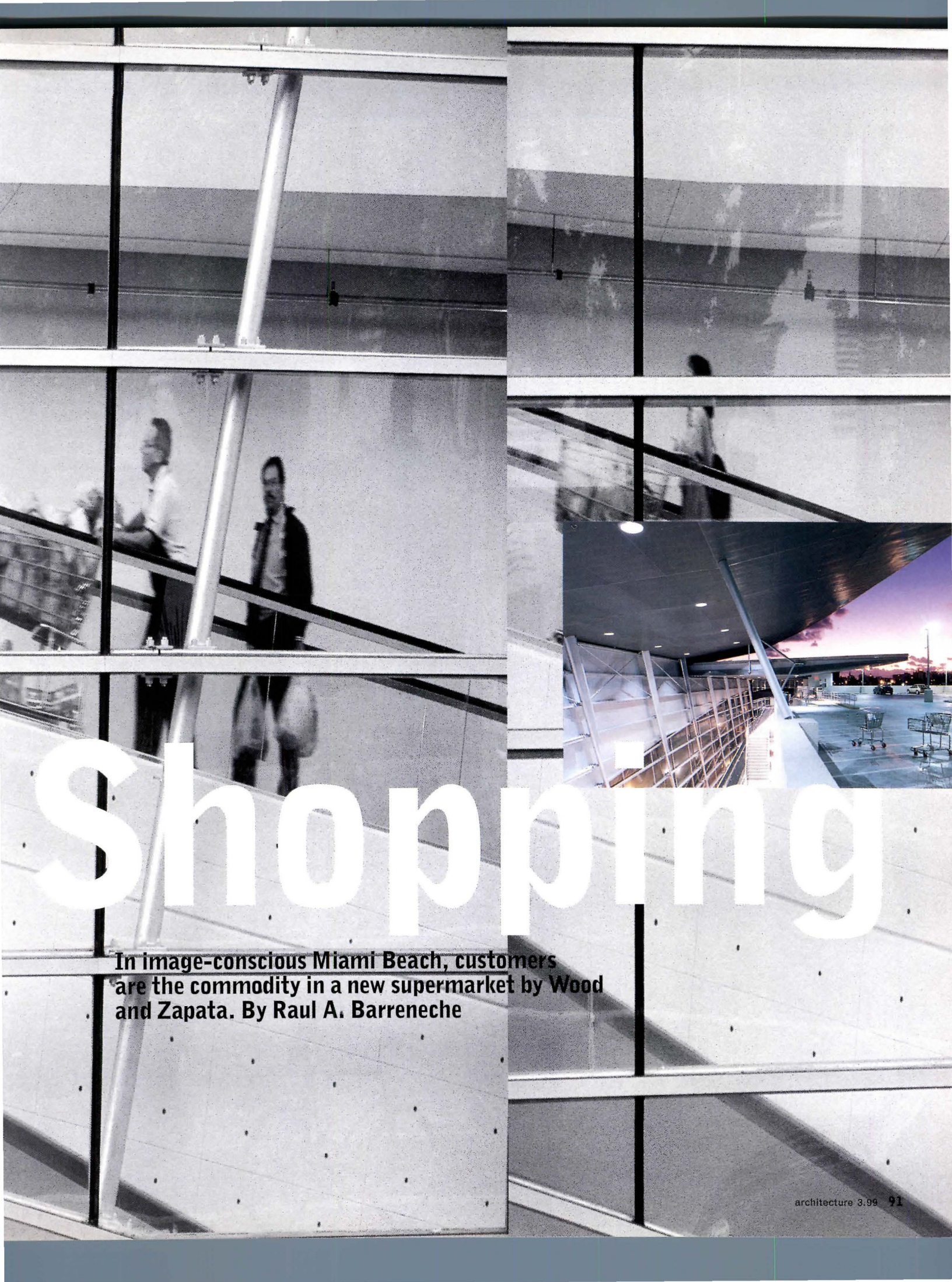
Holl's reproposal of flowing modernist space departs from Miesian connotations of universality when one encounters the mildly fetishistic, handcrafted brass door clasps, folded brass light fixtures, hand railings twisted like taffy against the walls, and highly polished aluminum benches molded into a single undulated leaf that folds over the banisters. The anonymity and speed of the free plan have been counteracted by the personalized slowness of craft. The equilibrium between handmade particulars and abstract universals continues in the main hall, where the walls are plastered with rough Pompeian red stucco, while opposite them is a magnificent expanse of translucent, interlocking glass planks that line a ramp down to the lower gallery. The floor gently rakes up to the second level of the old building while providing a dramatic base for the freestanding information igloo, designed by Hoffman and his students.

Holl's Institute of Science is not without flaws. For instance, the Light Laboratory works optimally in the low winter sun, but when the sun is high in the summer sky, it functions as a light filter for only an hour. And the incompatible tolerances between different materials have led the architect to fudge some building joints. But Holl's sensitive reaction to context, mature manipulation of typologies, and sensuous sense of color, light, sound, and touch transcend stylistic and technical matters. How rare to visit a building that feels real and confirms a sense of place; how extraordinary to be induced into a sense of drama by the subtle juxtapositions of materials. The rationality of tectonic logic finds its compensation in the voluptuousness of craft. ■



CRANBROOK INSTITUTE OF SCIENCE, BLOOMFIELD HILLS, MICHIGAN
CLIENT: Cranbrook Educational Community
ARCHITECT: Steven Holl Architects, New York City—Steven Holl (principal), Chris McVoy (project architect), Hideaki Arizumi, Pablo Castro-Estevez, Janet Cross, Yoh Hanaoka, Brad Kelley, Jan Kinsbergen, Justin Korhammer, Anna Müller, Tomoaki Tanaka (project team) **ENGINEER:** Ove Arup & Partners (structural, mechanical, electrical, acoustical) **CONSULTANTS:** Edmund Hollander Design (landscape); Cranbrook Architecture Studio (exhibits); James Carpenter Design; R. A. Heintges Consultants; L'Observatoire (lighting); Dr. Gerald Pelevsky (pool); Dan Hoffman; Alfred Zollinger (house of ice) **GENERAL CONTRACTOR:** O'Neal Construction **COST:** $16 million **PHOTOGRAPHER:** Paul Warchol


Window



Shopping

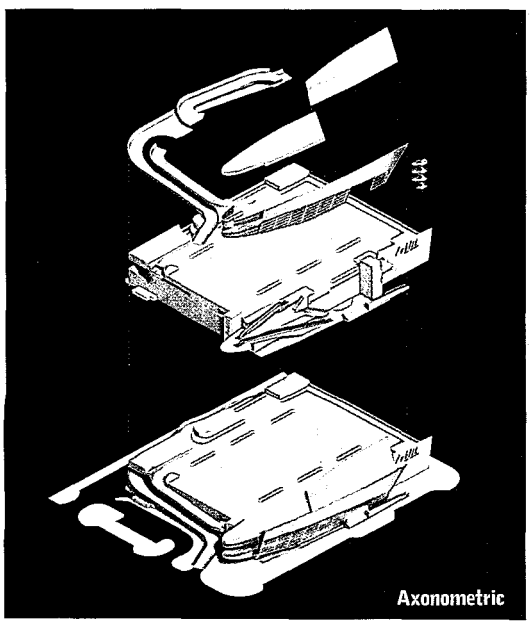
In image-conscious Miami Beach, customers are the commodity in a new supermarket by Wood and Zapata. By Raul A. Barreneche

Constant stream of shoppers on moving ramps animates supermarket's street face (previous pages). Streamlined aluminum and glass curtain wall (facing page, center left) creates diaphanous enclosure. Viewed obliquely, facade (facing page, right) reveals itself as thin veil grafted onto neutral box. Tubular steel structure that supports skin was prefabricated and assembled on site in three weeks. Sweeping lines of cantilevered parking ramps (facing page, bottom) complement curves of facade while emphasizing boxy quality of supermarket typology. Cantilevered, bullnose-shaped prow (facing page, top left) shelters open-air landing between ramps.

Miami Beach thrives on novelty. Throughout its history, the city has consciously turned architectural convention on its ear. To list the architects who helped build the city is to cite some of modernism's greatest iconoclasts—art deco masters such as Henry Hohauser and L. Murray Dixon, Morris Lapidus, Arquitectonica, and Philippe Starck. Since beginning its design-savvy urban revival in the 1990s (*Architecture*, April 1996, pages 98-107), Miami Beach has intensified its penchant for novelty. The question asked at the start of each and every winter tourist season is: What's new this year?

This season's most popular addition to the already edgy status quo is a supermarket, of all things. The flagship store for the Publix supermarket chain, designed by maverick modernist Carlos Zapata of Boston-based Wood and Zapata, is catching the eye of the novelty-seekers—though it is hardly an architectural flash-in-the-pan. Zapata completely reconsidered the supermarket typology, discarding the most basic conventions and assumptions about its image and function and letting his newly reconfigured circulation dictate the design.

The 50,000-square-foot store sits on a 1.92-acre site formerly owned by Florida Power & Light, just a few blocks away from the hubbub of Morris Lapidus's newly resplendent Lincoln Road promenade. Light-industrial buildings and mid- and high-rise apartment blocks enclose the cramped parcel. The city, not Publix, targeted the site for developing a supermarket and ultimately selected Zapata's scheme. Publix has been quick to point out that it views its South Beach outpost as a flagship store, not a prototype, given its high cost.


Axonometric

Although the city wanted a full-scale supermarket, it would have been impossible to fit the required sea of parking on the site. Zapata's solution to the problem is startlingly simple, despite its theatricality. He stacked two levels of parking above the basic box of the store (Publix didn't let the architect touch the interiors) and added elevators, stairs, and ramps along the street face to connect the parking decks to the market. Zapata wrapped these elements in a sleek, aerodynamic shell of steel and glass that encloses a soaring, three-story-high vestibule grafted onto the street front. The architect completely breaks the traditional supermarket box, yet respects its purity as a typological form enough to keep his manipulations distinct from it. "We wanted to show the space as an addition to the basic box, making it obvious that our piece was not connected," explains Zapata. Even the sweeping concrete ramps that lead to the parking levels cantilever from the rectangular container to emphasize their additive nature.

The circuit of shoppers' movements generated the form of the entrance hall: Customers descend to the store from the parking levels by elevators or by stairs that scissor down through the three-story space. Later, they return to their parked cars—shopping carts in tow—along moving electric ramps tucked just behind the thin glass facade. The ramps pause at a bullnose-shaped landing, then open to the sky, with a panoramic view of the deco baubles and chevrons that crown beachfront hotels on the opposite side of the island. Despite its brusque intrusion into the landscape, the building makes an effort to integrate itself with the city.

Zapata's supermarket is a beautiful object—it hums with kinetic energy, sweeping along and up the street like an elegant, silvery comet. But it is more compelling as the crystallization of a series of movements and circulation systems. Indeed, what animates the facade is not simply its graceful arc and the play of light on its skin; tracing the motion of shoppers as they glide upward with their carts just behind the surface brings the building to life. "I have always had an interest in fluidity and time as threads you follow," maintains Zapata. "This project was a chance to deal with motion in a concrete way: We made an event out of moving up."

Thanks to Zapata, shopping at Publix has become an event in itself. Tourists now leave their beach chairs and barstools to gaze at a supermarket; South Beach's legion fashion photographers are featuring the building in photo shoots; and residents from all over Miami brag about grocery shopping at the beach. As Zapata's building demonstrates, the city's love of novelty is thriving, as is its tradition of serious architectural invention.

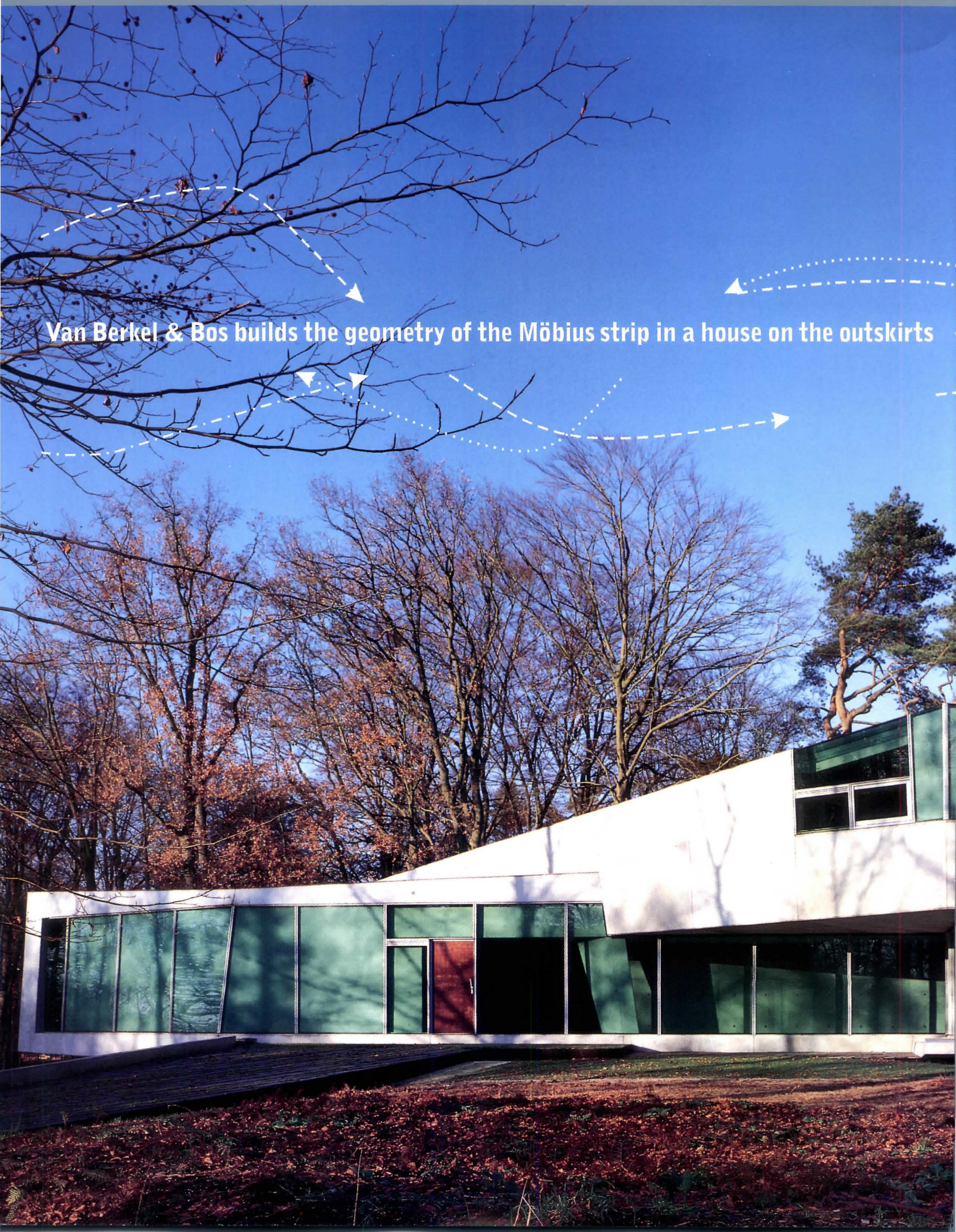

Publix

Publix

Soaring volume that encloses circuit of ramps and stairs (facing page and left) creates urban-scaled anteroom to supermarket. Open landing (above), Zapata's nod to window detailing by Morris Lapidus, provides panoramic views of art deco towers.

PUBLIX ON THE BAY, MIAMI BEACH, FLORIDA
CLIENT: Publix Supermarkets
ARCHITECT: Wood and Zapata, Boston—Carlos Zapata, Benjamin T. Wood (principals-in-charge), Wyatt Porter-Brown, Victoria Steven (project architects), Fred Botelho, Eric Klingler, Rolando Mendoza, Anthony Montalto, Pamela Torres (design team), Melissa Koff (project coordinator)
LANDSCAPE ARCHITECT: Rosenberg Design Group
ENGINEERS: Leslie E. Robertson Associates (structural); Thoms Engineering (mechanical, electrical); Bermello, Ajamil & Partners (civil)
CONSULTANTS: Werner Dietel & Associates (lighting)
GENERAL CONTRACTOR: Keene Construction
COST: Withheld at owners' request
PHOTOGRAPHER: Jeff Goldberg / Esto

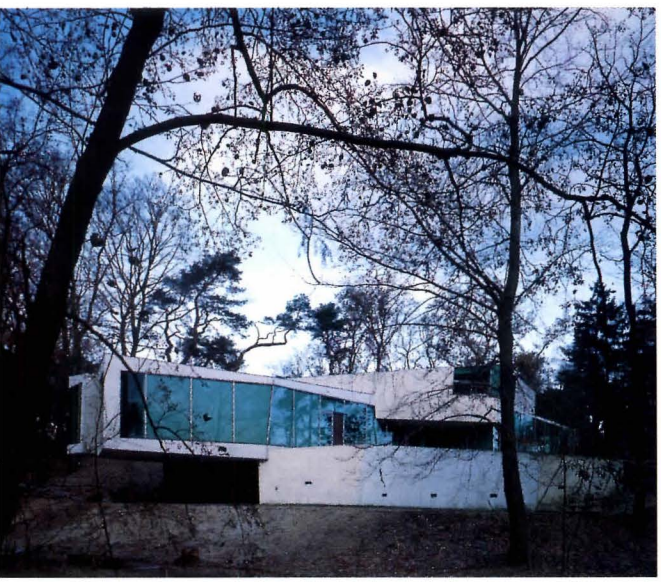

SHOPPING
CARTS
TO RAMP


Van Berkel & Bos builds the geometry of the Möbius strip in a house on the outskirts

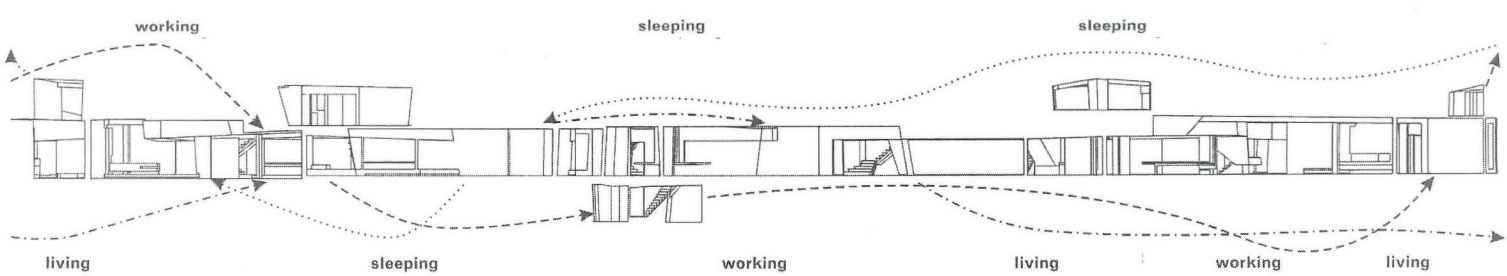
of Amsterdam.

Infinite Space

By Joseph Giovannini



Concrete volumes of Möbius House extend through and over glazed enclosure (previous pages). Looped circulation of stairs and corridors links interior spaces for working, living, and sleeping. Cantilever shelters first-floor entrance (above left) on sloped lot. On third floor, prowlike windows (above right) illuminate two bedrooms. Living room is glass box (facing page, left) whose flat roof is penetrated by concrete masses of top floor. At rear of site (facing page, right) glazed facade and roof enclose veranda adjacent to living room.

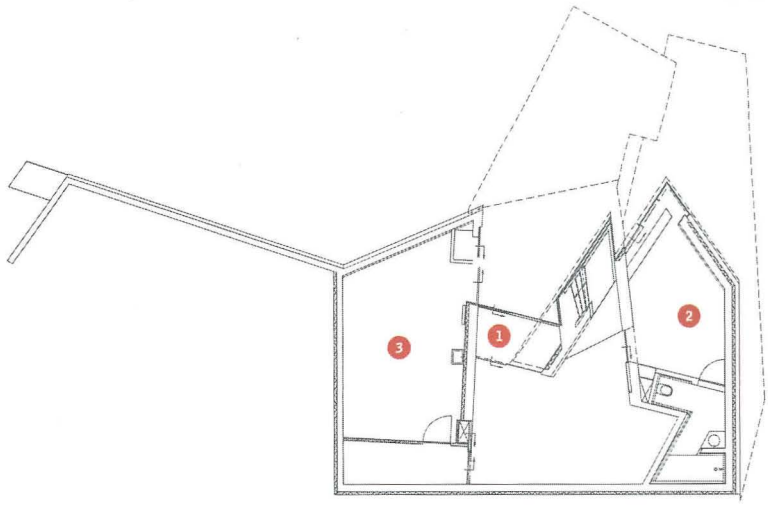


Looped section 16'/5m

INGMAR SWALUE (LEFT)

An undulated topography is not the usual condition in the Netherlands. But the site for a house designed by the Amsterdam firm Van Berkel & Bos was quarried many decades ago for sand. This created a terrain of dunes that recalls the naturalistic Romantic countryside in which English landscape architects fashioned paths that never terminate, but circle in patterns that create the impression of endlessness.

Van Berkel & Bos achieved this looped infinity in the house, recently completed outside Amsterdam. Based on an angular version of a Möbius strip, its parti drives the conventionally two-dimensional floor plate into the third and fourth dimensions: Looped circulation that is always rising or falling erases the distinction between floors, turning them, literally, into a rotating, revolving continuum of linked space, form, and time. The Möbius strip implies a continuously evolving surface, and by subsuming all the rooms in the circulation ribbon, the architect creates a relational environment of forms and spaces juxtaposed in evolving relationships.



First-floor plan 8'/2m

1 entrance
2 guest room
3 storage
4 studio
5 main bedroom
6 garage
7 kitchen
8 meeting/dining room
9 living room
10 veranda
11 bedroom

In 1993, the clients, a working couple with two children and offices at home, asked the architects for a three-bedroom, two-studio house with spacious rooms that would not seem pretentiously large. "We wanted an unusual house, a house of our time, but one that would not give the impression of being big," explains the husband. "We felt the house should be part of the landscape, like a sculpture lying within it," adds the wife. "We spent a lot of time discussing how to deal with the land and its diversity."

The Möbius circulation starts at the top of the entrance stair, one flight up from the lowest level, where the main bedroom and one of the studies are located. The path splits at this landing with a corridor that passes an informal kitchen and a large dining area that doubles as a conference room for at-home meetings. The path continues to a tall living room of variable height; the ceiling and floor shift at the center, splitting the room into low and high ground. The path doubles back on itself and climbs a half level to a corridor that serves the second home office, two bedrooms,

Ramped passage from second-floor entrance (facing page, left) beneath bedrooms leads to living room (facing page, right) with cantilevered concrete surface. Stair, seen behind glazed wall, leads to third-floor studio and bedrooms.

and a bathroom. This corridor continues to a stair that descends to the second-floor entrance hall to complete the circuit. All the rooms comprise a loop, "a 24-hour cycle of sleeping, working, and living," to use Van Berkel's phrase. The two-way, over-and-under loop halves distances between rooms on different floors, and keeps the daytime section and the nighttime wing close and accessible—the 5,900-square-foot house feels intimate. Each member of the family enjoys privacy along the perimeter that always leads back to the core, which collects people. The flow of space is simultaneously centripetal and centrifugal.

A fascinating, counterintuitive diagram characterized by form and circulation reversals, the Möbius strip, as applied to the house, makes the sequence of spaces intriguing—impossible to predict and difficult to grasp. Eluding easy understanding, Van Berkel & Bos's design works as a piece of environmental braille, with light, textures, and shifting planes that cue changing interpretations of its form. The house engages the

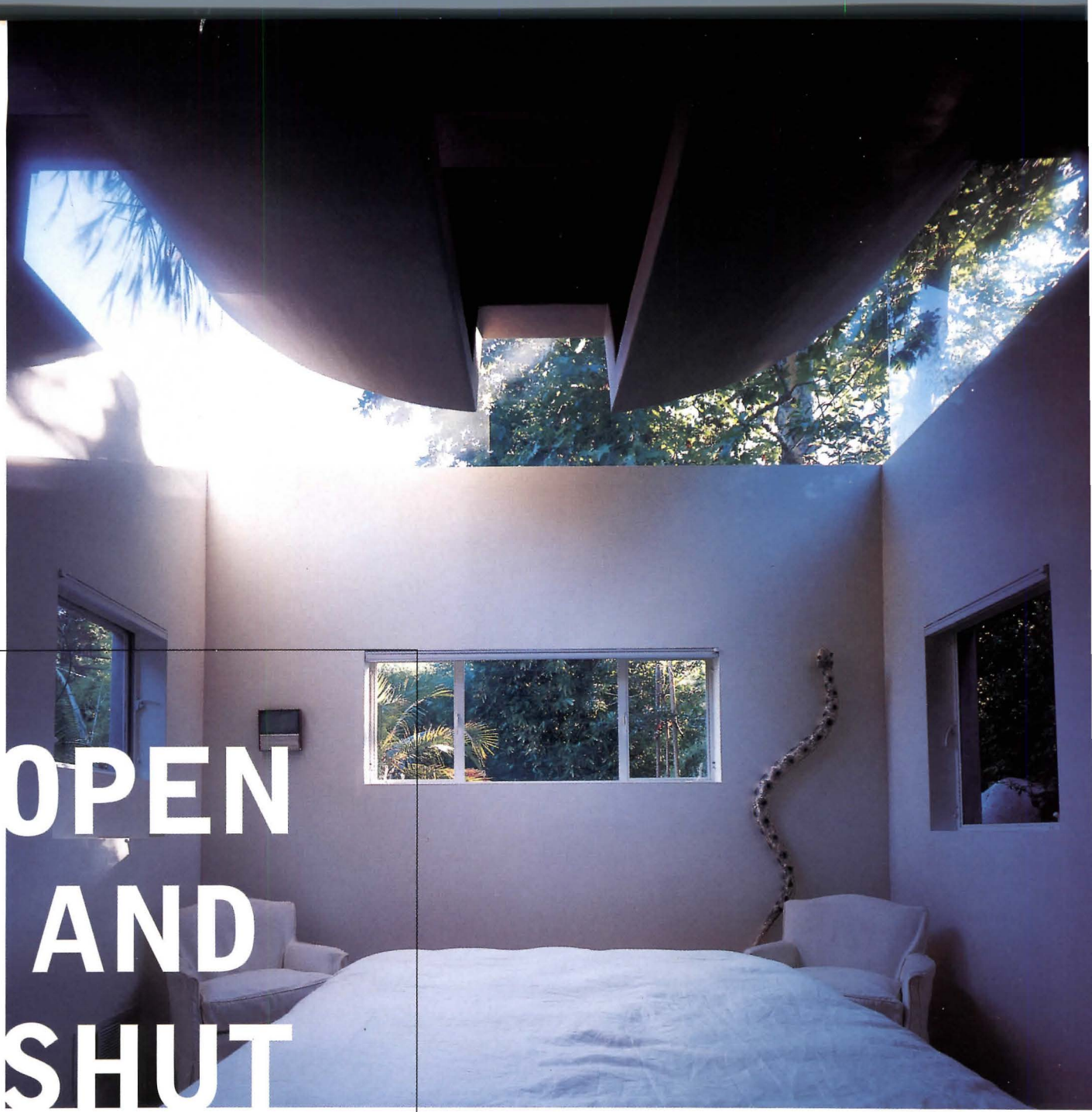
Glass wall to right of stair (above left) contains door to room (above right) for client meetings and family dining. Evening view (facing page, left) reveals dropped concrete ceiling, which aligns with bedrooms and studio upstairs. Third-floor hall (facing page, right) at top of double-run stair provides view down into living room and across to wooded landscape.

senses by inviting promenades that set the parts into kaledeiscopic rotation. Spaces that are alternately intimate and grand, warm and cold, abstract and tactile, closed and open, succeed each other in this time-based concept of a house understood through experience. The hypnotic sequence of expanding and contracting walls and ceilings and parallactic shifts of parts whets the curiosity and prompts more exploration.

The faceted forms may make the building appear fragmented, but the house behaves according to physics of continuity. Though spatially complex and elusive, the Möbius strip is a diagram of coherence. The architects have created a heterogenous rather than homogeneous environment, but their parti helps them smooth this heterogeneity into a spatial calculus of continuous difference. Van Berkel & Bos simultaneously creates complexity and difference within a unifying gesture. The firm is thus taking a philosophical stand at the edge of current theoretical debates: The world is complex, yes, and perhaps even beyond comprehension, but there is an underlying order. ■

MÖBIUS HOUSE, 'T GOOI,
THE NETHERLANDS
CLIENT: Withheld at owner's request **ARCHITECT:** UN Studio / Van Berkel & Bos, Amsterdam, the Netherlands—Ben van Berkel (principal), Aad Krom (project coordinator), Jen Alkema, Matthias Blass, Remco Bruggink, Marc Dijkman, Casper le Fèvre, Rob Hootsmans, Tycho Soffree, Giovanni Tedesco, Harm Wassink (project team)
LANDSCAPE ARCHITECT: West 8 Landscape Architects **ENGINEERS:** ABT; Heijckmann (structural); GTI (mechanical, electrical)
CONSULTANTS: Hans Kuyvenhoven (interiors) **GENERAL CONTRACTOR:** Kemmeren Bouw **COST:** Withheld at owner's request
PHOTOGRAPHER: Christian Richters, except as noted

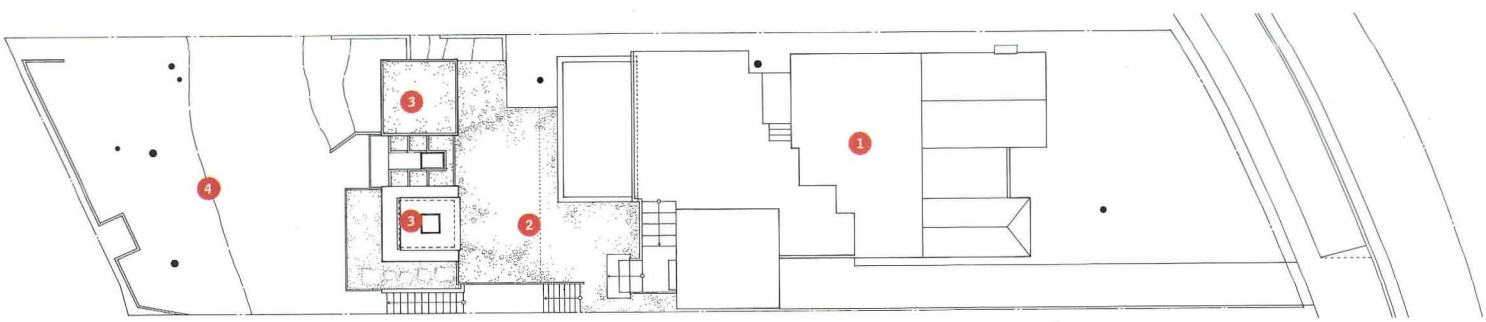
Lubowicki / Lanier pries open the boxy enclosures of a pair of guest pavilions. By Raul A. Barreneche



OPEN AND SHUT

Inspired by the most benign of climates, Los Angeles architects have long been consumed with redefining the architectural edge between inside and out. Some, like Austrian expatriate Rudolf Schindler, went so far as to build outdoor fireplaces and rooftop sleeping perches, though most have drawn the line at sweeping terraces and open arcades. In their work, local designers Paul Lubowicki and Susan Lanier of Lubowicki / Lanier Architects devise their own particular formal strategies to capitalize on California's climate. "We always try to create rooms within rooms that interlock inside and outside," explains Lanier. The firm recently designed a guesthouse extension to an old Spanish colonial-style bungalow in West Los Angeles, in which they created the illusion of pavilions literally exploding open to bring the outdoors in.

Located in a fairly dense neighborhood just a few blocks north of busy Wilshire Boulevard, the existing house looks from the street like another in a row of whitewashed prewar bungalows with red tile roofs. Moving back through the site, however, an unexpected setting unfolds: The house steps down as the ground beneath it slopes away from the street with a series of lushly planted terraces that crown each level. At the end of a long, narrow stair is a paved patio surrounded by a dense glade fronting a creek—



Site plan 15'/5m

a rare oasis in the arid Los Angeles basin. The new guest house wing opens onto this patio, taking full advantage of the lushly planted and intensely private backyard.

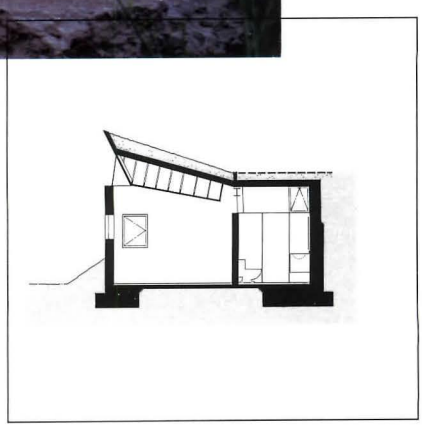
The parti of Lubowicki and Lanier's addition is simple: A pair of cubes separated by terraced planters pops out from the hillside, beneath a pool terrace. A slatted, copper-wrapped box contains a living room; a smaller box skinned in plaster shelters a bedroom. Linking the two pods is an open zone that houses a kitchenette and a dining area, which pokes out on the building's exterior as a series of stepped, stucco planters. Each of the building's parts conveys its own strong personality.

Though the program and parti are simple, the spatial dynamics are far from static. The living room resembles a giant upside-down fruit crate floating in thin air. Beautifully detailed strips of copper—finished in maple plywood inside—wrap the space in a seemingly permeable skin: Separating the solid bands are narrow strips of glass that dematerialize the container and allow light to filter in, as if it were "pouring through [gaps between] the slats of an old barn," principal Susan Lanier suggests. "It's an imperfect, yet carefully made object." Large square windows that front the garden and the stair further erode the guest house's sense of enclosure, as does the roof—which is permanently propped open like a huge escape hatch. It's not quite a skylight, but certainly not a solid roof, though clear bands of glass keep the openness purely visual.

Like the living room pavilion, the bedroom wing has blown its top, too. Here, the low, stucco-sheathed, wood-framed walls provide a solid, comfortable enclosure, but the roof seems to have been violently pried open. Frameless glass bands enclose the gap between the tops of the walls and the bottom of the angled roof, so guests lying in bed enjoy the sensation of a ceiling about to peel itself back. A strange, barrel-shaped plastered vault ceiling resembles the underside of a boat hull or the buoyant belly of a whale, adding a mysterious, aquatic dimension to the already strange room.

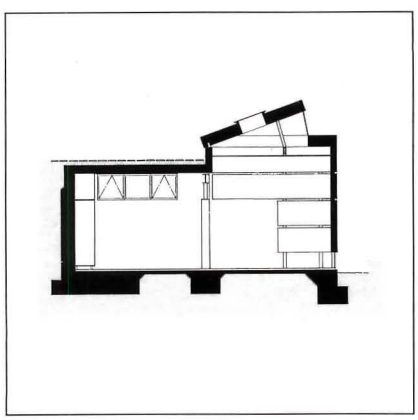
Lubowicki and Lanier took great pains to create a permeable enclosure that lets the outdoors rush in, at least visually; they also allowed for parts of the building to become an overscaled garden plot. For instance, the canted roof of the bedroom block doubles as a giant planter box, with reedy grasses growing over its edges. Seen from the pool deck above, the bedroom roof appears as an unmanicured swath of greenery that creeps up from the wooded site. The stepped planter boxes that separate the two wings of the addition are a more manicured, formal variation on the rooftop garden.

Tilted roofs of living room and bedroom (previous pages, left and right) create illusion of box tops peeled back. Mullionless glass panes wrap roof openings. Tiered, stuccoed planters (these pages) separate copper-clad living room (at right) from stucco-finished bedroom wing (at left). Stair leads down from main house to patio paved in broken concrete. Strips of maple plywood enclose living area (below right), which opens onto circulation spine at rear of guest house. Sections (below left and center) depict how bermed volumes engage hillside topography.

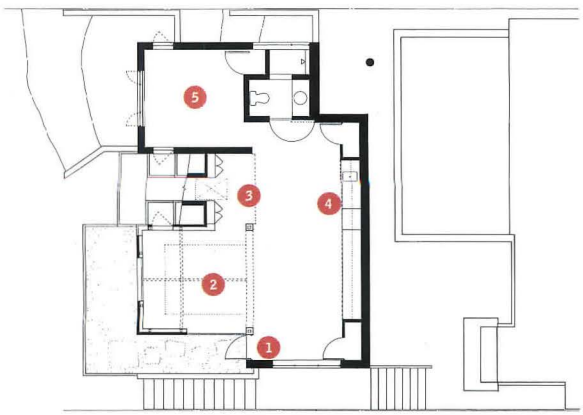


Section through bedroom

9'/3m

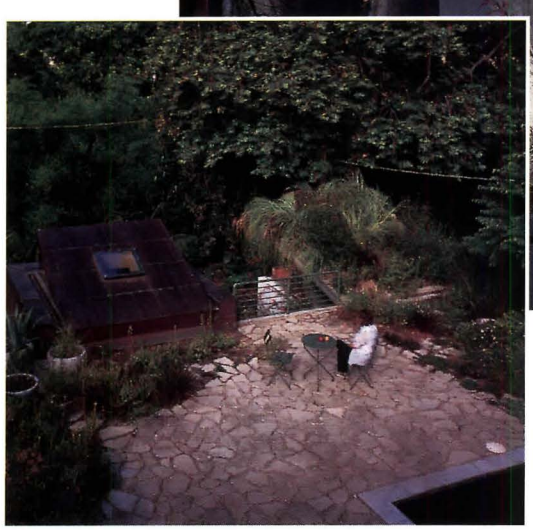


Section through living room



Plan 10'/3m

Though most of what Lubowicki / Lanier has done is no more than architectural sleight of hand—visual tricks that create the illusion of roofs peeling away or walls floating on air—they nonetheless turn perceived divisions of indoor and outdoor spaces topsy-turvy. But in focusing solely on visual permeability, Lubowicki / Lanier missed the opportunity to let in the air as well as the light; none of the glass strips that enclose the bedroom roof or the living room walls open up. Surely, part of the enjoyment of the mythical old barn that inspired the living room's design is feeling the breeze flow between the slats, not just watching streams of sunlight pour in. Visitors to Lubowicki / Lanier's guest house don't have to sleep on the roof or camp out in the garden to appreciate the outdoors, but they're missing a part of the experience.



Canted roof of bedroom wing (facing page) acts as giant planter for wild grasses. Glass strip along base of copper-clad living room (above) creates illusion of floating crate. Roofs of guest house peek out from beneath pool deck (left) behind main house.

O'NEILL GUESTHOUSE, WEST LOS ANGELES, CALIFORNIA
CLIENT: Donna O'Neill **ARCHITECT:** Lubowicki / Lanier Architects, El Segundo, California—Susan Lanier (partner-in-charge), Susan Addison, Joseph Holsen, Feliciano Reyes, Jr., David Spinelli, Timothy J. Williams (project team) **LANDSCAPE ARCHITECT:** Barry Campion **ENGINEERS:** Parker / Resnick Structural Engineers (structural); William Comeau Mechanical Engineer (mechanical); Athans Associates (electrical) **CONSULTANTS:** Simpson Gumpertz & Heger (waterproofing); Kay Kollar (stylist) **GENERAL CONTRACTORS:** Alexander Construction; Tony Morales Construction **COST:** Withheld at owner's request **PHOTOGRAPHER:** Erich Koyama

Egyptian Revival

ON HOLLYWOOD'S SUNSET BOULEVARD, HODGETTS + FUNG RESURRECTS A FABLED SID GRAUMAN MOVIE PALACE. BY AARON BETSKY

Egyptian motifs of restored plaster ceiling (facing page), including scarabs and pharoanic scepters, contrast with spare, technological esthetic of new auditorium enclosure. Ceiling ornament conceals historic pipe organ. Hodgetts + Fung planted palm allée in existing forecourt (above), creating open-air hypostyle that links Hollywood Boulevard with theater lobby. Flanking courtyard will be restaurant housed in renovated former shops.

In the American Cinematheque, the beginning of a show is in itself quite a show. As the lights dim, fiberboard panels emerge alongside the screen. Slowly, the cavernous space and Egyptian friezes of the old theater disappear, and viewers find themselves inside a modern steel cage. Then the film rolls on Hollywood's largest screen, and the magic is complete. "It's like being inside a camera," says architect Craig Hodgetts.

Hodgetts and his partner Ming Fung have brought back a sense of spectacle to what was once one of Hollywood's greatest movie palaces. The Egyptian Theater, which opened in December 1922 with the premiere of *The Ten Commandments*, has been reborn as the home of the American Cinematheque, a nonprofit organization that presents and provides a discussion forum for the finest American movies.

The original Egyptian Theater was the brainchild of showman Sid Grauman, who also created the famed Chinese Theater further down Hollywood Boulevard. Grauman originally asked architects Meyer & Holler to give him something with a Spanish theme, but in early 1922, King Tutankhamen's tomb was discovered, and the new theater joined the Egyptian Revival craze. The building's particular style mattered less than its dramatic spaces. Set behind a 150-foot-deep forecourt, the theater was a cavernous auditorium seating 1,760 viewers who were treated to a live show and organ music before the performance began.

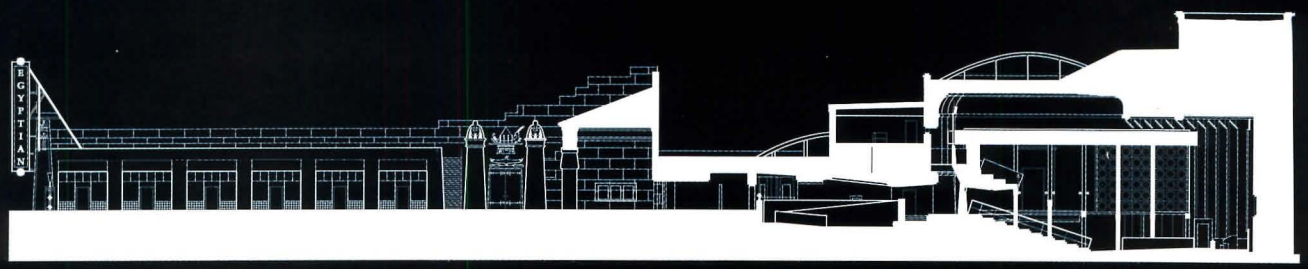
Unfortunately, the show did not go on too long. After Grauman sold the theater in 1928, it fell into a decline that saw almost every distinguishing feature, from the forecourt to the auditorium itself, covered up

or destroyed. The Egyptian closed in 1992, but the 1994 Northridge earthquake dealt it a final blow.

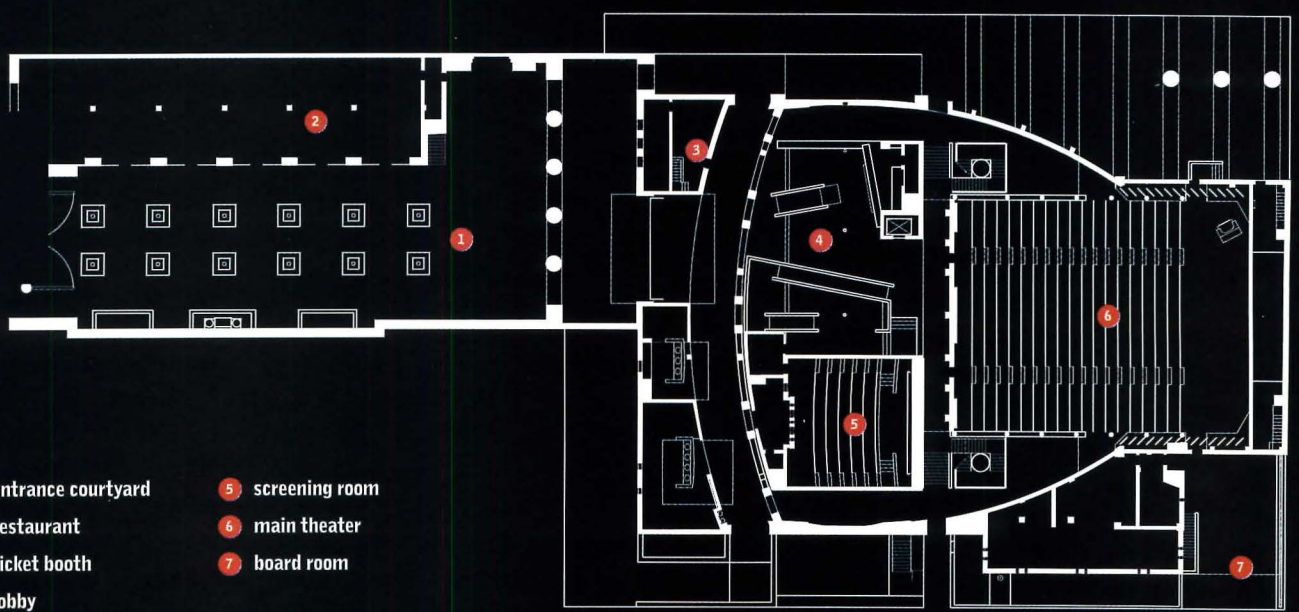
By then, however, the City of Los Angeles Redevelopment Agency had bought the theater, and was able to offer the facility to The American Cinematheque as its new home for $1, along with $3 million in insurance money and $2 million of FEMA funds that helped defray the renovation's $9.3 million cost. That's when the real trouble began: "It was a three-way struggle between the demands for historic preservation, modern life safety concerns, and our program," says Cinematheque Director Barbara Smith. Because the building had been added to the National Register of Historic Buildings in 1993, its original sections could not be substantially altered, while the Cinematheque needed a smaller, more modern set of theaters. To accomplish this transformation Hodgetts + Fung used the latest technology to update the historic shell and accommodate contemporary cinema.

Structural engineers Englekirk and Sabol came up with a hybrid system to reinforce the existing, hollow clay tile structure against future earthquakes. In places, they filled the clay with concrete, while in other areas they added steel reinforcing frames. Hodgetts + Fung then worked with historic consultants and scene painters to revive as much of the original decoration as possible, restoring the forecourt to its original loopy colors and decorations, and preserving and highlighting the original colors of the multicolored auditorium ceiling.

Then came the new. Where a neon sign spells out the Egyptian Theater's name on Hollywood Boulevard, Hodgetts + Fung added a steel truss that bridges over the entrance to announce the Cinematheque. Behind the lobby's entrance columns, a glass maw opens up into a world of red-painted ramps and drywall dividers. "We see it as a jump-cut, freeze-frame trip through time," Hodgetts explains. "You get the old, the new, and the old again in quick succession."

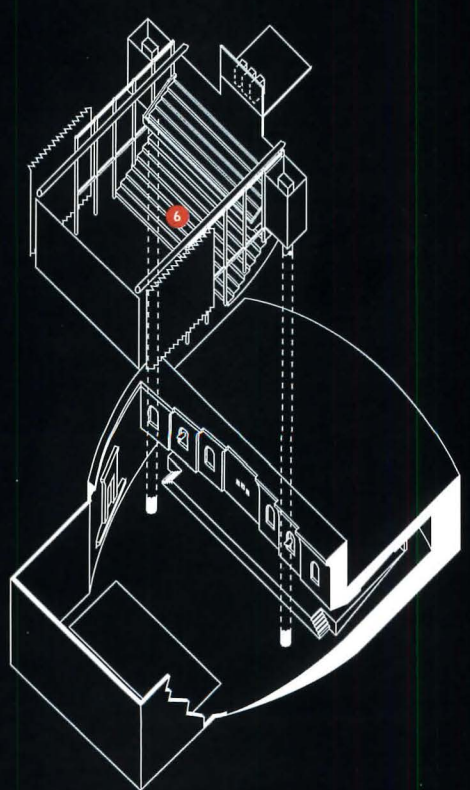


North-south section



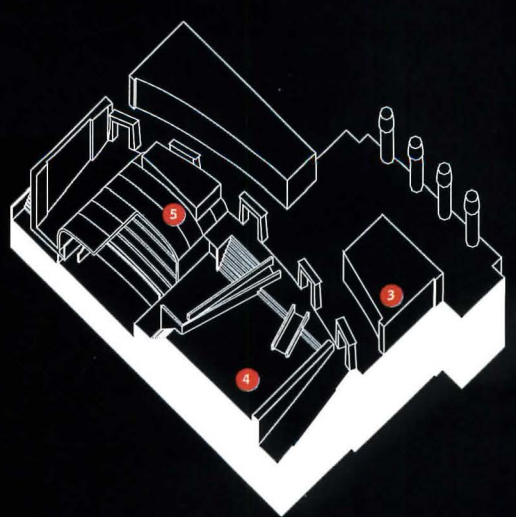
1. entrance courtyard
2. restaurant
3. ticket booth
4. lobby
5. screening room
6. main theater
7. board room

Plan 20'/6m

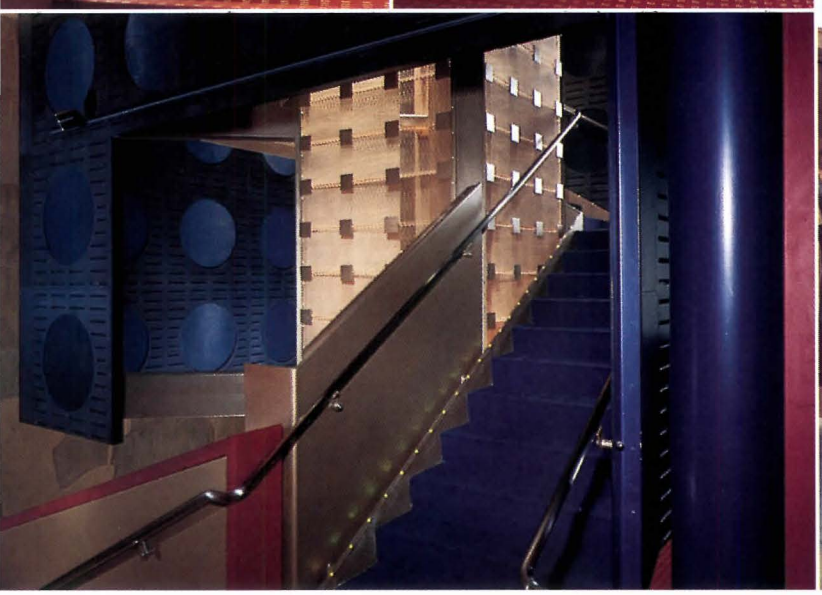


Axonometric of theater

Within historic shell of theater, steel structural cage (facing page, left) supports new balcony and projection booth; air ducts and sound system; and adjustable acoustic panels. Painted fiberboard panels are open before shows and during live organ performances, then slide shut during movies, covering restored plaster walls. Due to theater's landmark status, architects did not allow new materials such as glass canopy above snack bar (facing page, top right) to touch historic fabric. Gilded, sarcophagus-shaped ceiling of small screening room (facing page, bottom right) harmonizes with restored Egyptian-inspired friezes. Plan (above) and axonometrics (below left and right) illustrate insertion of smaller auditorium, screening room, and lobby into original theater volume.



Axonometric of screening room and lobby



The new 640-seat main auditorium (a second, 80-seat theater sits in a separate sarcophagus-like enclosure off the lobby) is a freestanding structure that attaches to the original walls in only a few places. This cage of blue-painted steel supports not just a new balcony and projection booth, but also the air supply ducts, lights, and sound system. It reduces the scale of the auditorium so that it becomes a much more intimate and modern room—especially when the panels, which serve as acoustic as well as light baffles, enclose the audience.

The new architecture is simple but dramatic. The structure has a sense of being a scaffolding, but Hodgetts + Fung did not, as Fung puts it, "want an industrial chic feel. We wanted it to be a modern spectacle that could respond to the old." Their strategy is clear in the stair that leads up to the balcony. Central columns, as big as the ones at the entrance, support cantilevered treads and an acoustical drapery of fiberboard panels. The stair's giant scale and dramatic forms offer a celebration of modern movement within the dim expanses of this old empire of tawny stucco.

Hodgetts + Fung, who has described the task as creating "stage sets," designed a scaffolding in which new forms reinforce and extend the majesty of a movie monument. Neither deferential to nor combative with the past, their architecture renovates the fantasy of Hollywood.

AMERICAN CINEMATHEQUE AT THE EGYPTIAN THEATRE, HOLLYWOOD, CALIFORNIA
CLIENT: The American Cinematheque **ARCHITECT:** Hodgetts + Fung Design Associates, Santa Monica, California—Ming Fung, Craig Hodgetts (principals), Eric Holmquist (project architect), Clover Lee, Andrew Lindley, Janice Shimizu, Michael Swischuk (design team), Stephen Billings, Alberto Reano (production team) **ENGINEER:** Englekirk and Sabol Consulting Structural Engineers (structural) **CONSULTANTS:** McKay Conant Brook (acoustics); Boston Light & Sound; THX/Lucas Sound (projection/sound); Historic Resources Group (historic preservation) **GENERAL CONTRACTOR:** Turner Construction Company **COST:** $9.3 million **PHOTOGRAPHER:** Tom Bonner

New stair towers that flank large auditorium lead to balcony (facing page, top center and bottom left). Painted fiberboard panels punctuated with circular cutouts—matching theater's movable acoustic walls—enclose stairs; inside are uplit, welded-wire mesh cores that create luminous glow. Outside, Hodgetts + Fung removed entrance doors at end of forecourt to reveal original portico (facing page, right). Rejuvenated Egyptian Theater rekindles glamour of old Hollywood captured in photo of 1920s movie premiere (above).

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architecture
Technology + Practice

Visitors interact with butterflies (above), at Perkins Eastman Architects' Butterfly Conservatory at American Museum of Natural History in New York City.

JOHN BENNETT

Exotic butterflies thrive in New York City in the dead of winter. By Sara Hart

Taking Flight

Butterflies are free at the American Museum of Natural History in New York City, so to speak. In a small biosphere within the Hall of Oceanic Birds, called The Butterfly Conservatory, live butterflies emerge from pupae, flutter and feed, breed, and expire within a normal life cycle of two to three weeks. The conservatory is a dynamic interruption in the museum's vast, inanimate ensemble of insect fossils, evolutionary artifacts, and dinosaur remains and replicas. Not only are the butterflies alive, they are free to interact with their human visitors in a meticulously controlled facsimile of their natural habitat.

The U.S. Department of Agriculture (USDA) has strict regulations regarding the erection of vivariums—enclosures to contain live animals for research or observation. The intention in this case was "to prevent the release of nonindigenous butterflies and moths" to the U.S. environment. Walls, ceilings, and floors must form a continuous impenetrable shell and be impervious to organisms, as well as repeated cleaning and decontamination; the space must have entrance and exit vestibules guarded on the interior by air curtains; there must be a slight negative air pressure within the vivarium to prevent air leaking into the exterior hall; all air supply and return openings must be covered in stainless steel mesh; and all penetrations must be sealed.

The museum had its own conservation-motivated restrictions. The new vivarium had to be structurally self-supporting. It could not touch the walls and ceiling of the hall in which it was to be located, and it could be bolted to the floor only at a few points. Existing environmental conditions had to remain stable to protect a ceiling mural. Museum entomologists requested that the design avoid right angles in the flight zone to protect the butterflies.

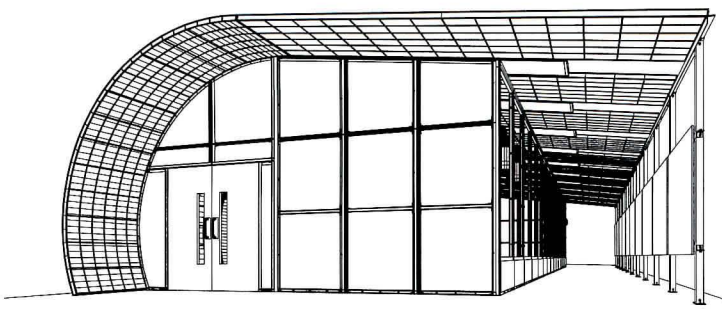
Thus, a simple one-room exhibition space became a complex problem enhanced by a tight budget, a tighter schedule, and a final requirement: The vivarium, intended as an annual winter exhibit, had to be designed for disassembly, storage, and reassembly. Last June, Director of Exhibitions David Harvey asked New York-based Perkins Eastman Architects to produce a scheme that addressed these issues.

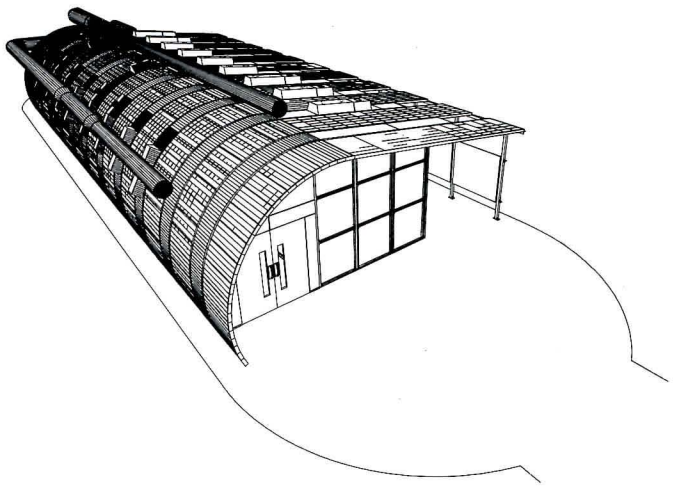
Nicholas Leahy, project manager for the vivarium, quickly surmised that disassembly suggested a "kit of parts" and that the design should not detract from the delicate beauty of the inhabitants. "The design needed to be bold, simple, and beautiful. We chose an arching shape that would evoke flight, imitate the vaulted ceiling of the hall, and eliminate corners in the flight zone," says Leahy.

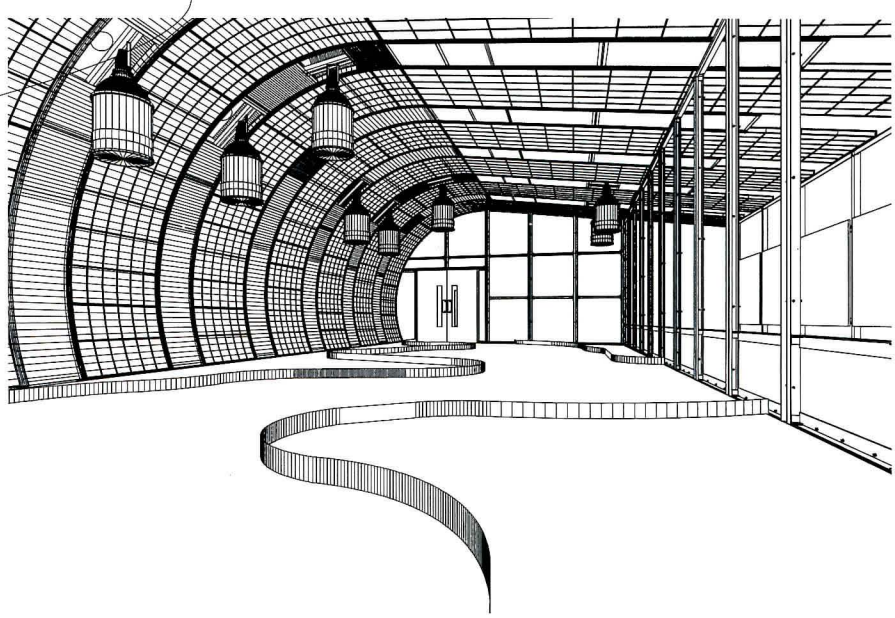
The project began on June 11 of last year with schematics due on June 30. Leahy quickly consulted with structural engineer Franz Safford, principal at Advanced Structures (ASI). After dismissing the idea of a fabric structure as too expensive, Safford suggested they investigate Kalwall, a translucent, fiberglass composite panel often used in skylights. "It's lightweight and structural, which we thought could be exploited," explains Leahy. "Because it's insulated and translucent, we thought we could make the vivarium glow. It's inexpensive and robust and can be manufactured to tight tolerances."

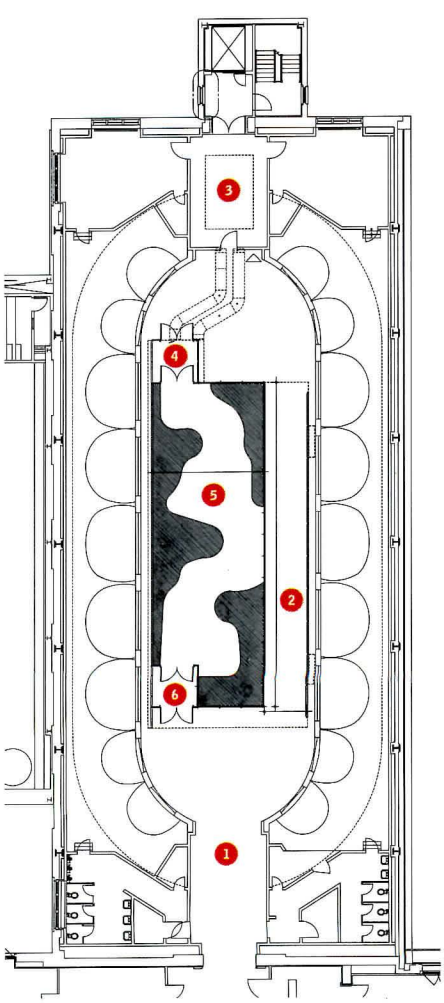
Based on a concept sketch, Safford submitted a guaranteed maximum price (GMP) for the enclosure to the museum, which was accepted. Then he and Leahy divided the project into a succession of deliverables in order to meet a September 14 installation start-date: Kalwall panels, aluminum end walls, acrylic window wall, light fixture enclosures, HVAC, service panels, and doors. They also agreed that these components could be assembled quickly and economically if they used off-the-shelf materials.

"We cut delivery time in half by purchasing Kalwall's product but not their engineering services," explains Safford. "Nick [Leahy] and I chose the largest standard panel, which is 4 feet by 20 feet. Halfway through design, we learned that the HVAC equipment was going to be more complicated than we thought. We quickly designed a plenum system to accommodate the air supply."







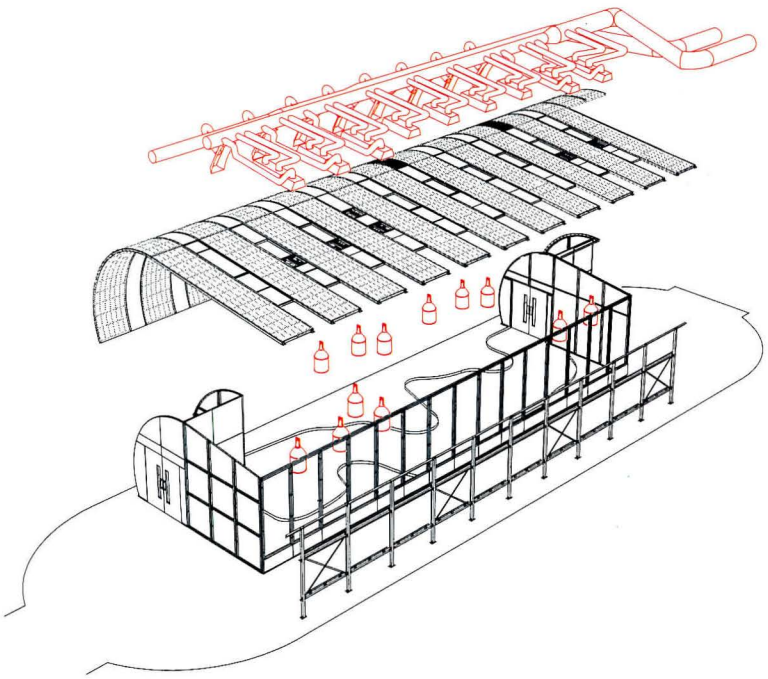


End walls of butterfly conservatory (top left) are 1/4-inch honeycomb aluminum panels on *C*-channel frame. Galvanized ductwork (top right) sits atop Kalwall arched panels and supplies hot, humid air to vivarium. **Twelve 1000-watt metal halide fixtures** (above) light the interior. Kalwall panels alternate with air supply and return plenums. Floor plan (left) shows 20-by-65-foot vivarium situated within the museum's Hall of Oceanic Birds. Visitors tour vivarium (following pages), where exotic butterflies flutter freely within biosphere. **Display case** shows fully formed adults emerging from pupal stage. Visitors exit through aluminum-clad fire doors.

1. exhibition entrance
2. passage
3. service room
4. entrance chamber
5. flight area
6. exit chamber

Floor plan 16'/5m


The Butterfly Conservatory
The Butterfly Conservatory



Exploded axonometric (above) shows architect's "kit of parts": spiral ductwork, Kalwall arched panels, service plenums, metal halide light fixtures, aluminum frame, and graphics wall.

The Kalwall frame consists of aluminum *I*-beams, separated by service plenums of 1/16-inch aluminium sheets on both sides of a *C*-channel frame. The fabricator used a roller bending process to arch the Kalwall and plenum panels. The arch pieces were lifted by hand into place. The seams are sealed with the standard Kalwall cap system: bolted inner and outer pressure plates with gaskets, which are attached to base channel anchors. Because the museum restricted penetrations in the floors, channel anchors are held in place with double-sided tape.

The viewing wall that runs the length of the vivarium consists of 1/2-inch clear acrylic panels bolted around their perimeters to aluminum angles, which are then bolted to a frame of 2-by-4-inch aluminum channels. Workers cut portholes into two sets of standard hollow metal doors in each vestibule and clad them in aluminum. The existing terrazzo floor is covered with sheets of recycled rubber, held down with double-stick tape.

To comply with USDA regulations, the museum had to seal the entire structure. "Except for the Kalwall panels, most of the other connections were metal-on-metal," says Safford. "Wet silicone would have undermined our 'kit of parts' strategy." He specified a dry silicone gasket system made by Eckelt Glass of Austria and ASI detailed clearances to match the width of the silicone, which is pushed in by hand and can be removed and stored.

Mark Richter of Atkinson Koven Feinberg Engineers in New York City designed the HVAC system. A vivarium-designated air handling unit was installed in the ceiling of an adjacent service room. The unit was connected to the museum's chilled water and steam plant. In order to keep the temperature at a constant 80 degrees Fahrenheit and the humidity at 80 percent (offices are usually designed for about 50 percent), Richter designed the system for 20 air changes per hour, or a complete air change every *three minutes*. Steam from the boiler is injected directly into the ducts.

Uninsulated, galvanized steel spiral ducts snake out of the air handler unit across the roof of the vivarium and feed into aluminum plenums that run between the Kalwall panels. Return ducts at locations throughout the vivarium exhaust hot air from the space and heat from the 1000-watt metal Halide fixtures. The project reached substantial completion in six weeks.

This delicate, 1,300-square-foot environment must be monitored 24 hours a day, seven days a week. Computer-controlled temperature and humidity sensors placed throughout the space connect to the museum's building management system. If the temperature or humidity rises or falls, alarms alert the maintenance staff who immediately make the necessary adjustments. The dew point must remain at 73.5 degrees to prevent condensation in the ductwork.

"Never having done a project like this before, we made our calculations based on assumptions," explains Richter. Commissioning took place over a three-week period, allowing Richter to test his educated guesses and make adjustments. The *only real problem* concerned the steam supply, which was not adequate to maintain the high humidity. Replacing the museum's steam pump solved the problem, leaving only a few minor operational difficulties to be resolved.

The engineers borrowed patch cabling methods that performing arts designers and filmmakers use to bring power to temporary sets. The cables are plugged into a patch panel in the service room and travel across the top of the ducts to each of the 1000-watt light fixtures. The ballasts, however, weigh 45 pounds each (too much weight for the structure) and are located next to the patch panel. Cables also pass through two entry ports at either end of the space and provide outlets for additional lighting.

Since November 27, over 80,000 visitors have moved along the vivarium loggia, where panels on the right tell the story of butterflies and where the temperature is still that of the hall. On the left, they can view the vivarium through an acrylic wall. Entering through the north vestibule's two sets of doors and through an air curtain, they follow a curving path with trees and plants, hanging nectar feeders, information panels, and, of course, butterflies. Exotic and colorful, the butterflies flutter overhead, alight on visitors, and hurry through their two-week life cycle. In mid-April, the exhibit will be disassembled and stored. Then next November, it *will reappear*, the pupae will arrive, and the cycle starts again.

THE BUTTERFLY CONSERVATORY, NEW YORK CITY
CLIENT: American Museum of Natural History **ARCHITECT:** Perkins Eastman Architects, New York City—Jonathan N. Stark (principal-in-charge), Richard Northway (resource principal), Nicholas Leahy (project architect), Tammy S. Lee (designer) **ENGINEERS:** Advanced Structures (structural); Atkinson Koven Feinberg Engineers (mechanical, electrical) **CONSULTANTS:** Showman Fabricators (installation); John Mini Landscaping (landscape); PJ Mechanical (mechanical); Colorx (graphics); Cole Gilman Associates (expediting); Zubatkin Associates (construction manager) **COST:** $743,000 **PHOTOGRAPHER:** John Bennett

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PRESERVATION

Sage Solution?

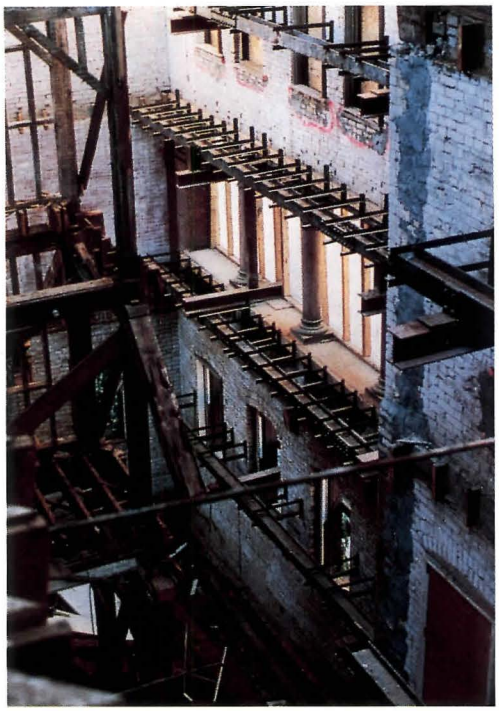
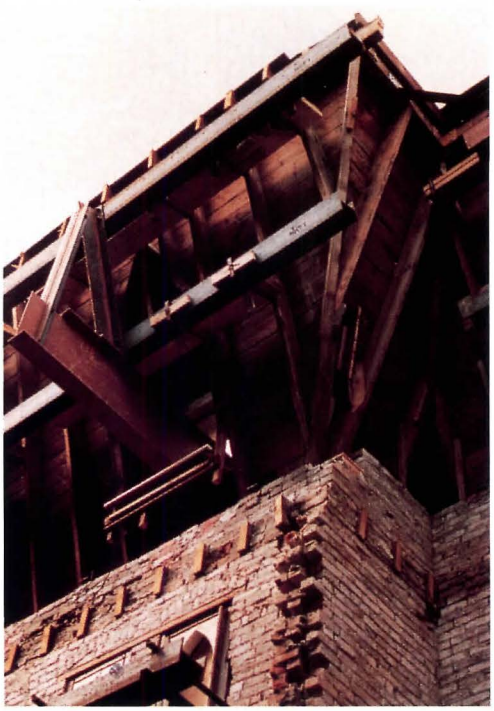
Pushing adaptive reuse to its limits, The Hillier Group virtually destroys Cornell University's colorful and historic Sage Hall in order to save it. By Eric Adams

The renovation of Cornell University's landmark Sage Hall, a bright orange and yellow piece of Victorian Gothic eye candy, leaves one's impressions in a twist. Though the building's original exterior is newly revived and certainly magnificent, as is the overall effect of a dramatic interior modernization, the sheer degree of intervention that was necessary—an unabashed gutting—weakens the experience, and in the end one wonders if the soul of Sage Hall might indeed have left the building.

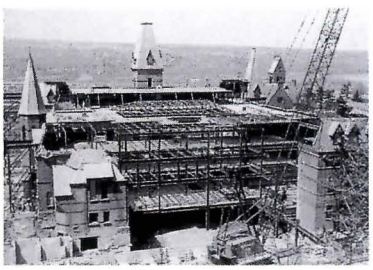
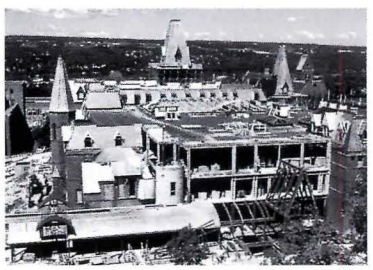
Designed by Cornell's first dean of architecture, Charles Babcock, the 1875 structure sits perched high on a hill overlooking Ithaca, New York. The building was originally the Sage College for Women, part of a then-radical experiment in coeducation. It later became a dormitory and dining hall, and ultimately a rapidly decaying campus catchall. It is now a newly refitted home to Cornell's Johnson Graduate School of Management.

Both the school and the architect, The Hillier Group of Princeton, New Jersey, examined every option for preserving the building's interior. But that proved impossible for many reasons: derelict and frequently altered structural components; multilevel floors—there were 14 levels in the four-story building—that severely limited accessibility; tons of asbestos; and a variety of other problems made the building unworkable as a home for a modern business school. Led by Principal Alan Chimacoff, a Cornell alum, the project team decided it had no option but to scrap the building's interior. Leaving only the exterior walls in place, the team built an entirely new structure inside that features a dramatic skylit atrium, a cafeteria, eight amphitheater classrooms, 25 student meeting rooms, a library, computer facilities, a fully operational stock trading room, and numerous faculty and administrative offices. By adding a basement level and a new wing, which closed off the formerly *U*-shaped building, Hillier increased usable space by 41,000

Sage Hall (c. 1880, facing page) was originally Cornell University's Sage College for Women. **Rehabilitation and expansion** (above) converted building to Johnson Graduate School of Management. New conservatory's **vaulted roof** is covered with zinc, titanium, and copper alloy with preweathered patina. To enable interior demolition, contractor built **steel exoskeleton** (left) that braced exterior walls.



Their efforts to retain the interior failed to produce the space and accommodations the school needed, so they resorted to gutting the building.

square feet, bringing the total to 145,000 square feet. The three-year, $37 million rehabilitation created a modern, state-of-the-art facility. It also pushed the notion of adaptive reuse to its limit.

Early consultation

The Johnson School began seeking a new home in 1988. Several false starts were abandoned because of high proposal costs or unsuitable sites. Eventually, school Business Manager John McKeown and Dean Robert Swieringa crossed paths with university planners who were trying to decide what to do about Sage Hall, and the solution became evident. "We were struggling to find a location that was central to the campus," McKeown explains. "Accessibility to other university facilities is key to how we operate, and, along with a first-class facility, an important part of drawing top students and faculty."

Hillier developed several proposals in 1993 that attempted to retain the interior, primarily by leveling the floors and conducting a $2 million asbestos abatement. Their efforts failed to produce the space and accommodations the school needed, however, so they resorted to gutting the building. Both architect and client knew that this would raise eyebrows in the campus and city community, so they sought community input as early as possible. Because there was no federal or state money involved in the project, the design team wasn't obligated by law to meet any preservation standards relative to interior work. Ithaca, however, does have laws governing changes to building exteriors, and the team needed a blessing from the Ithaca Landmarks Preservation Commission before construction could begin. Hillier and its client discussed their plans at several public meetings and brought numerous conceptual drawings before the commission—a segmented review process that allowed the designers to alter their plans early if the commission opposed something.

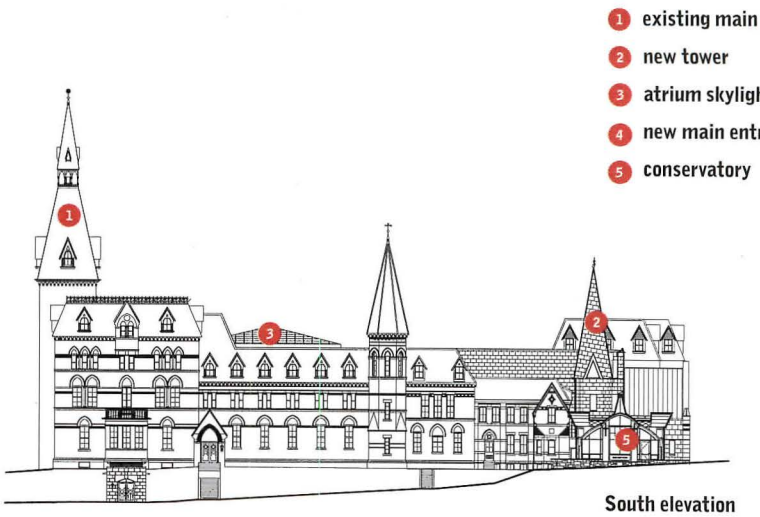
Preservation advocates, including Historic Ithaca and the Syracuse, New York-based Heritage Coalition, attended the public meetings and voiced concerns about the appropriateness of the work. At one meeting, the Heritage Coalition brought in Richard Longstreth, director of the historic preservation program at George Washington University in Washington, D.C. Longstreth raised the specter of "facadism," which frustrated the project team: "He came with a bunch of slides showing extremely bad versions of facadism—such as enormous

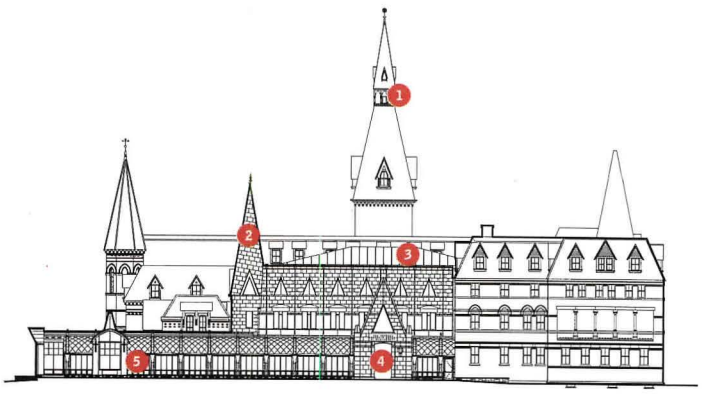
glass offices built around tiny historic facades," Chimacoff recalls. "They were alarmist and implied that was what we were doing. I was so outraged that I asked for a few minutes to respond to what I thought was truly a misrepresentation of our plans."

The Landmarks Preservation Commission, which is largely impotent when more than just a facade is threatened, ultimately approved the plans with only a few recommendations. But before construction could commence, the Heritage Coalition filed a lawsuit alleging that Cornell was destroying the building's historic fabric and that the segmented review process was flawed because the landmarks commission saw the project in pieces. The coalition wanted the court to overturn the commission's approval. The case and its appeal were thrown out after the New York State Supreme Court ruled that the review segments showed the project in its entirety, not in pieces, and that the commission's decision was valid. The suit stalled the project for six months.

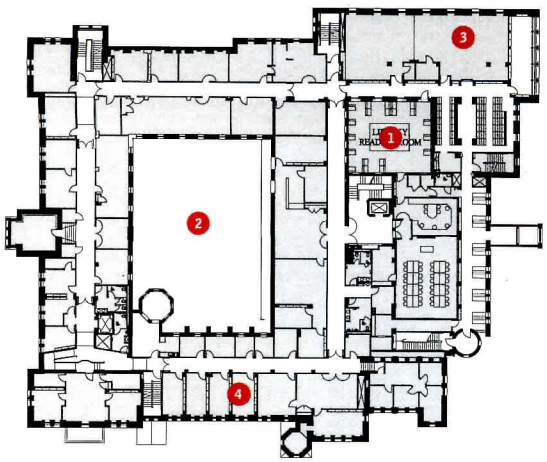
Many things new, few old

After getting the legal go-ahead, the construction team had to stabilize the exterior walls to enable interior demolition and construction. General contractor Beacon Construction Company, of Ithaca, and New York City-based Robert Silman Associates, the project's structural engineer, designed a 45-foot-tall exoskeleton—a system of struts and piles anchored 5 feet into bedrock—that propped up the wall to ensure it would not collapse during construction. The new structure built within those walls is five floors of offices, classrooms, and meeting rooms.



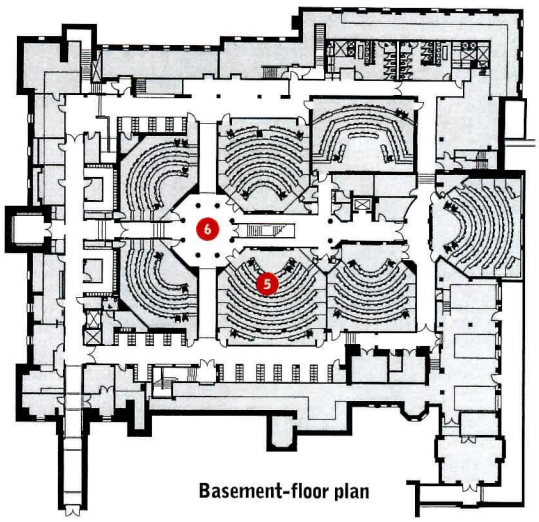


In addition to attaching exoskeleton to walls (facing page, top left) and mansard roof (facing page, top center), contractor inserted **struts through windows** to further brace wall from inside. With wall secured, crews commenced demolition (facing page, top right). **Construction sequence** (facing page, bottom, left to right) depicts original structure with interior wing (later demolished), creation of basement, insertion of steel frame, and construction of addition. Hillier modeled Sage Hall's new **skylit atrium** (left) after Great Dinosaur Hall at Oxford's University Museum, which also inspired Sage's original architect, Charles Babcock. **Atrium floor** evokes crypt floor of Cornell's Sage Chapel, also by Babcock.



Second-floor plan

36'/11m



Basement-floor plan

1. library reading room
2. atrium
3. computer lab
4. administrative offices
5. classrooms
6. classroom lobby

The above-ground levels wrap around a 5,000-square-foot atrium, which has similar dimensions and positioning as the building's original courtyard but includes new interior facades and a 3,500-square-foot, glass-and-steel skylight. At the ground level, a corridor connects the new entrance on the east side with the courtyard in the middle and the original, less-used entrance on the west side. This central corridor also contains a stair that leads to the basement classrooms, immediate access to the library, and access to another stair that leads to the offices above.

The new interior is distinctly modern. While it takes multiple design cues from the original structure—materials and motifs are repeated everywhere—some of its offices and administrative centers are average in that they resemble most academic buildings constructed today. But many rooms, such as a two-story skylit study hall, the stock trading room, and the classrooms are much more striking, with rich wood detailing and high-tech styling. The interior atrium is especially inspiring. Chimacoff took cues for it from the Great Dinosaur Hall at Oxford's University Museum—the building that inspired the building's original architect as well. The atrium is now the school's most active meeting place.

The 40 percent increase in Sage Hall's square footage comes courtesy of the new basement and a handsome, modestly scaled addition. Hillier's new exterior work comprises a three-story corner wing on the building's east end that closes off the former courtyard, and a one-story library extension designed to replicate a conservatory that was torn down in the 1920s. The new conservatory includes gables similar to those on the original, and emulates its plan and vaulted roof as well.

Very little remains of the original Sage Hall, but what is left—the exterior walls—are the most visible part. The architect switched into historic preservation mode while addressing the exterior. After a careful repointing and cleaning, the once deeply soiled brick facade's bright orange hue was revealed, accented by multicolored brick bands and detailing. Elsewhere, workers cleaned and repaired red granite columns, limestone capitals, arched windows, and the slate roof and gables. They also rebuilt a 30-foot steeple that fell off the main tower during a storm more than 50 years ago.

Too impatient?

Whether or not more than this exterior could realistically have been retained is uncertain. Kermit C. Parsons, professor with Cornell's College of Architecture, Arts, and Planning and a leader in the opposition, admits that he likes the new facilities, but remains distressed by several factors: the thoroughness and relative ease with which Sage's original function was abandoned, the city's refusal to acknowledge anything beyond the facade as important, and the general dismissal of architectural heritage. "It could certainly have served as an excellent dormitory or even a general office space had they really tried," Parsons suggests. "While the effort required to preserve the building's interior would have been substantial, the purpose in terms of preserving the building's symbolism in women's education and Cornell's history would have been very valuable."

But another ardent preservationist, New York City architect Paul Byard, loves the new interior, and even applauds the modernization-by-replacement. "Nothing could be better!" he enthuses. "If there wasn't anything there to preserve, there's nothing wrong with it. They're trying to give this building a nice new life."

Nevertheless, it's possible that in a few years, Sage Hall could indeed have found an owner who wanted to use the building close to the way it served earlier in its life. If that's the case, then whatever character or merits the interior once had should be mourned. On the other hand, if this building was doomed to demolition, then the university can be applauded for saving what it could. At the very least, Sage's fans can take comfort knowing that if the building's "soul" did leave the building, at least the architect was talented enough to give it a new one.

SAMUEL CURTIS JOHNSON GRADUATE SCHOOL OF MANAGEMENT, CORNELL UNIVERSITY, ITHACA, NEW YORK
CLIENT: Cornell University
ARCHITECT: The Hillier Group, Princeton, New Jersey—Alan Chimacoff (director of design), Peter Hoggan (project manager), Joseph Tattoni (project architect), Stephen Diehl, Charles Maira (technical leads), Arvind Tikku, Bonne Rawley (project coordinators), Janet Garwood, Timothy Maness, D. Tom Stearns (landscape), John Bosio (graphics), Weichi Chen, Royce Epstein, Nicholas Garrison, John Graham, Gregory Moten, Sergey Olhovsky, Mac Rawley, Robert Ritger, Joseph Rizzo, Deborah Rockey, Abeth Slotnick, Joel Spaeth, Pat Tine (design team)
ENGINEERS: Robert Silman Associates (structural); Van Zelm Heywood & Shadford (civil) **CONSULTANTS:** Acentech (acoustics); Electronic System Associates (data and communications); Daedalus Projects (estimating); LDC (lighting); Haley & Aldrich (geotechnical)
GENERAL CONTRACTOR: Beacon Skanska
COST: $37 million

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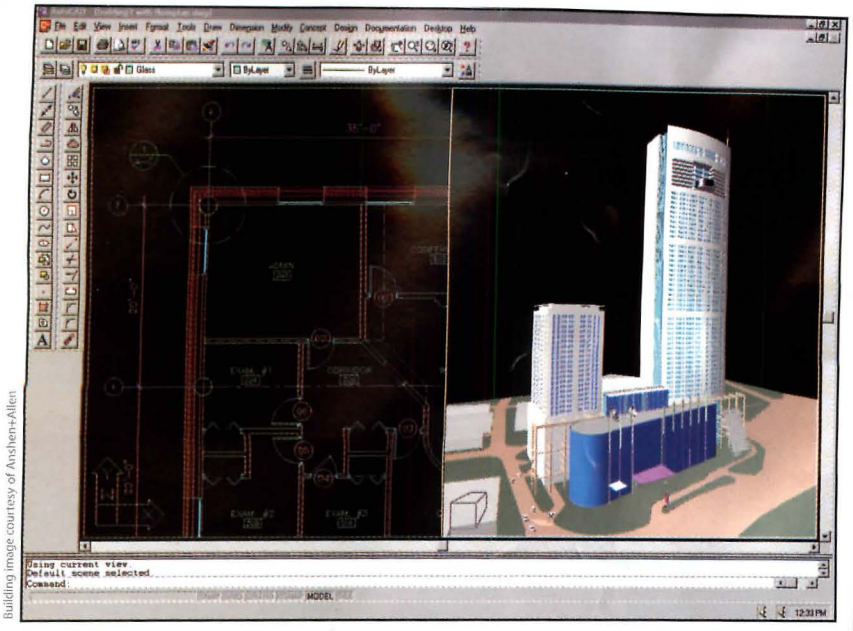

Building image courtesy of Anshen+Allen

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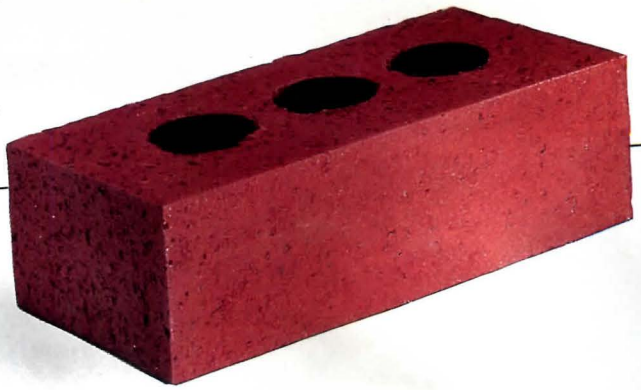

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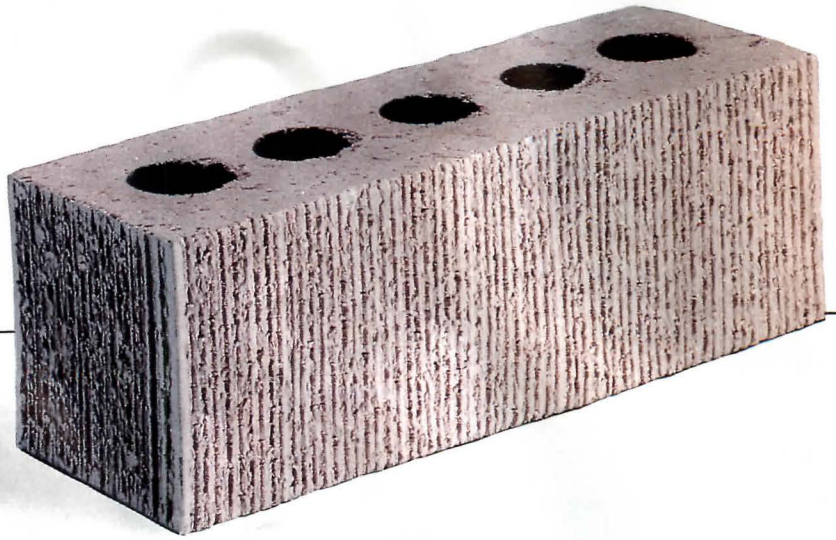

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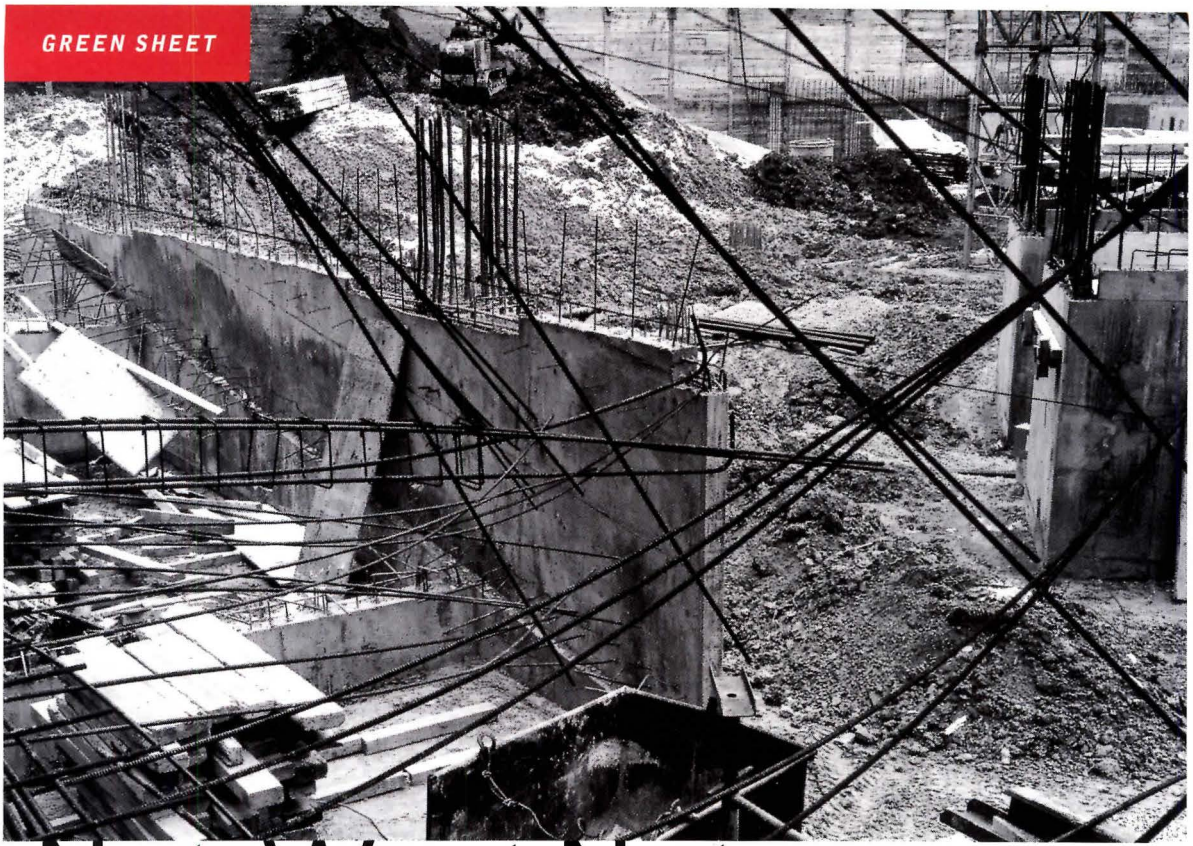


Waste Not, Want Not

Despite efforts to reduce solid waste, the construction and demolition sector continues to produce debris with abandon. By Gina Goldstein

The U.S. Environmental Protection Agency (EPA) reports the gritty truth: Constructing, renovating, and tearing down residential and commercial buildings in this country produced almost 136 million tons of waste in 1996, the equivalent of 2.8 pounds per person per day. Despite increased recycling, most of the debris still winds up in landfills, where its sheer volume imposes an enormous environmental burden. The problem of construction and demolition (C&D) waste has always taken a back seat to municipal solid waste—the ordinary garbage produced by households and businesses. Totals are hard to come by, but according to the EPA report, C&D waste in the United States amounts to more than half the municipal waste stream, far exceeding previous estimates.

According to the EPA study, demolition debris makes up 48 percent of the C&D waste stream, so leaving existing building components in place or reinstalling them later on is an obvious way to prevent waste. One of the latest strategies is the careful dismantling of a building to maximize the reuse of its materials. Deconstruction can also be linked to a concurrent construction project to maximize efficiency. In Portland, Oregon, 92 percent of the waste produced when several existing structures were torn down to build a new arena for the Portland Trail Blazers basketball team was recycled. Concrete, asphalt, metal, drywall, rebar, cardboard, and paper were either reused in construction or sent to recycling facilities. Deconstruction currently costs slightly more than demolition, but savings are expected to increase as contractors gain experience and the market for used materials grows.

The key to making building reuse economical—and reducing the 44 percent of C&D waste contributed by renovation debris—is to design for disassembly. At the simplest level, this strategy involves using a screw instead of a nail, for example. So far, design for disassembly has been used most frequently in Europe in response to extended producer responsibility (EPR) laws that require companies to take back and recycle their products. In Germany, for example, the automotive industry pioneered techniques for disassembly that the construction industry employs. There are currently no such EPR laws in the United States, but private industry may be forced to change its practices, as landfills overflow and tipping fees soar. By the time today's buildings outlive their usefulness, demolition may no longer be an option.

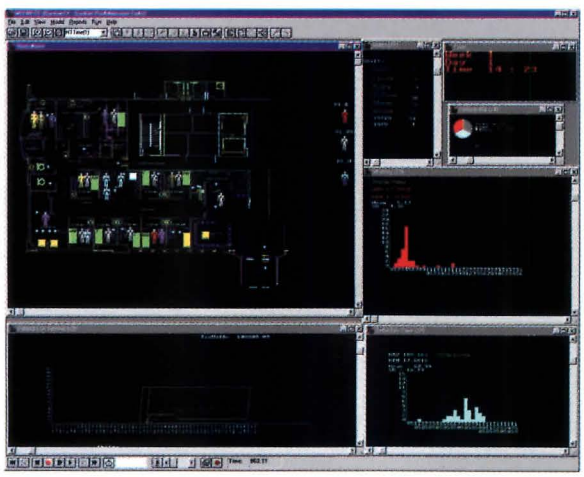
Gina Goldstein is an editor at INFORM, Inc., a New York-based nonprofit organization that identifies practical ways to achieve environmental sustainability. For more information about waste management visit INFORM's Web site at www.informinc.org.

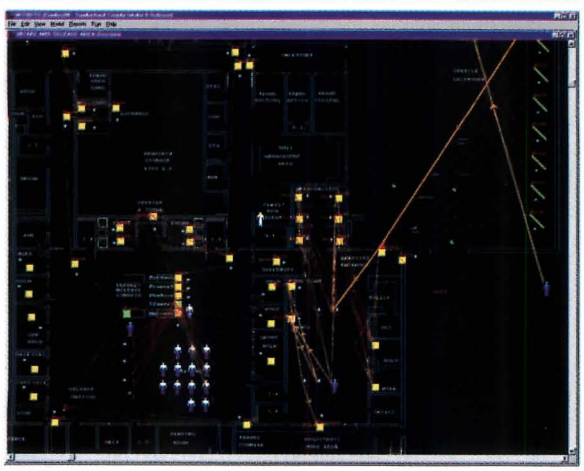
Learning From the Product Makers

The sophisticated tools and techniques of industrial design offer architects the freedom to explore new forms and materials. By Patrick Mays

In the near future, buildings will regularly be designed and constructed directly from three-dimensional computer files in a paperless process. Architects may help manufacture as well as design custom details. They will transmit change orders via E-mail to sites anywhere on earth. Contractors will oversee construction with handheld computers connected to secure construction-management Web sites or extranets. Eventually, facilities managers will replace blueprint-stuffed files with handheld communication devices that store CAD files.

Unprecedented advances in both computer and manufacturing technologies—a phenomenon often called "technology transfer"—mean architects may now borrow the tools and techniques of seemingly unrelated industries, from industrial design to automotive and aerospace engineering to computer game and film industry technology, and apply them to their own trade. Some of the advances may boost both efficiency and creativity, while others open doors for new services.





Freeman White Architects used **computer simulation** (right) to predict that trauma center's additional equipment purchase increased hospital staff efficiency. Simulation of proposed jail design (below right) predicted problems with prisoner traffic well in advance of construction document phase.

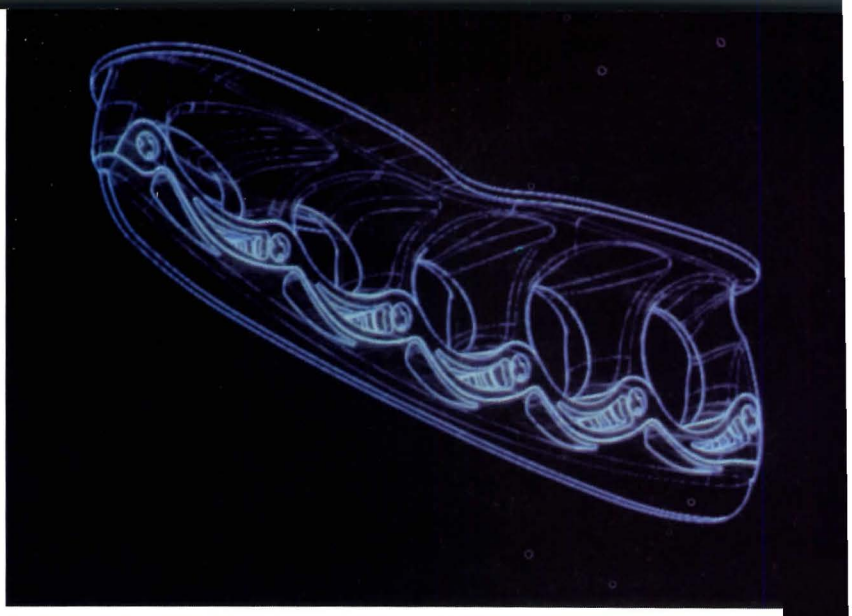
Behavior analysis

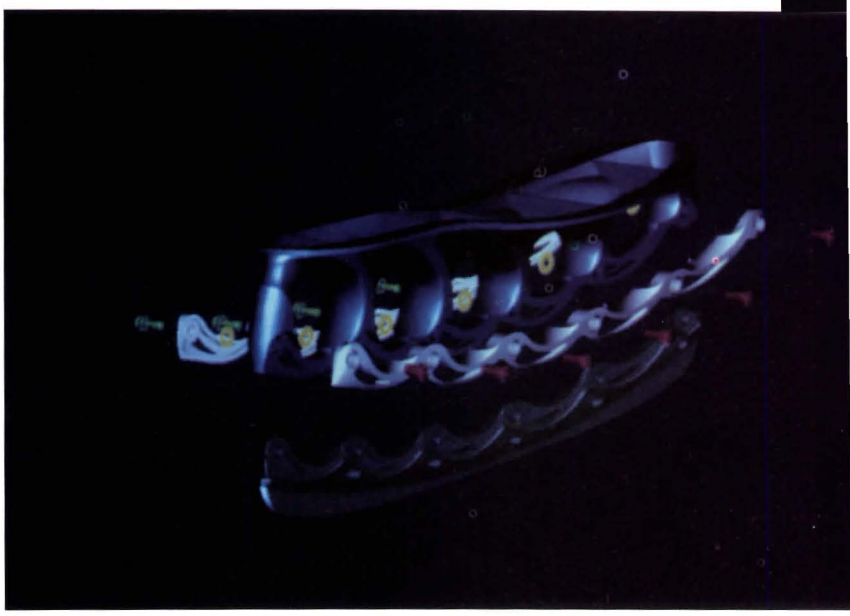
Industrial designers perform many of the same functions as architects: They program projects with clients, devise interfaces to make devices or spaces function efficiently, and make models to study and refine their designs. Simulation software, such as Lanner Group's Witness or Systems Modeling Corporation's Arena (both PC-based simulation and animation packages) allows them to study and analyze behavior in a virtual workplace.

Some architects are providing similar behavior analysis as an additional service, especially with regard to space planning. Carson Benson of Freeman White Architects in Charlotte, North Carolina, recently said to attendees at a Federal Facility Council seminar on technology in Washington, D.C., "Once we establish the design issues, we continue working with the client to optimize staffing and operation of a facility, even providing interactive simulations for staff training." Benson provides these added-value services with Witness simulation software. "Architects can create virtual prototypes of a proposed space and then analyze the performance of hypothetical activities in it," he explains.

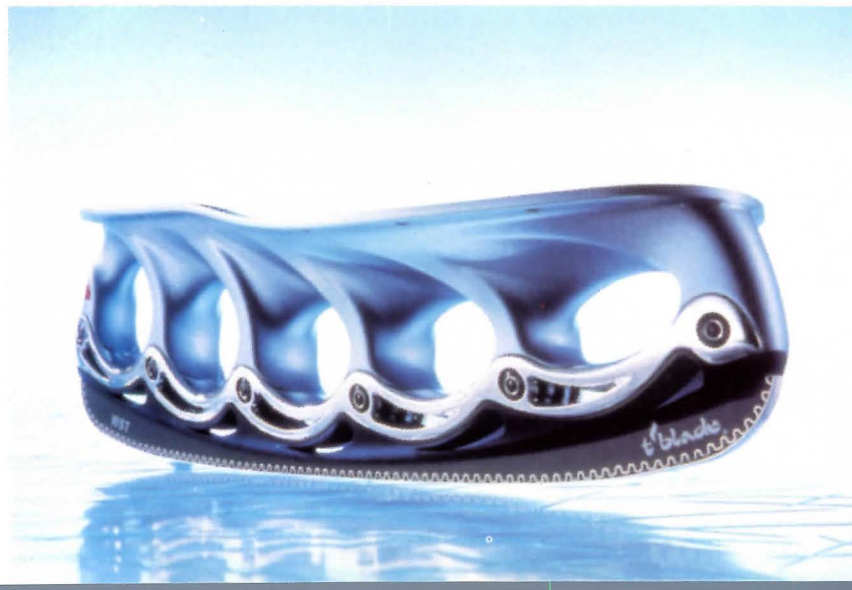
The (new) machine age

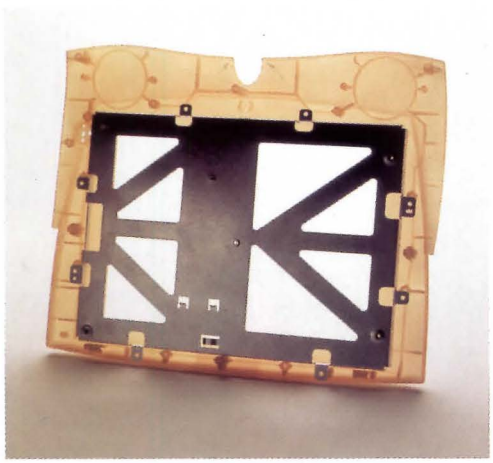
Besides software, industrial designers use sophisticated modelmaking machines, which allow them to produce





In redesign of professional ice skates for German ice hockey enthusiast, frogdesign created assembly system similar to razors with disposable blades. **Digital modeling** allows for many options to be explored without commitment of physical materials. Three-dimensional models show essential part (top and above) of design solution: removable blade. **Four components** of blade prototype (below left), were assembled for testing (below) and refinement prior to production. **Final product** (above left) is mounted to skate body.





Using ProEngineer, multisolution integrated engineering software, frogdesign created computer terminal for disabled for Assistive Technologies that uses **touch-screen technology** and voice synthesis. Designers created study model of terminal frame (above left) using **stereo lithography** (SLA). Prototype of terminal (above right) is tested with working Apple 5300 motherboard. *Final version* (top) is smaller than typical computer in response to client's space and ergonomic requirements.

study models in a fraction of the time it would take to make a model out of wood or chipboard. One modeling strategy is rapid prototyping, which begins with the creation of a 3-D CAD model on a computer. Designers transfer the files to a milling machine with a router that carves a precise model of the design in high-density Styrofoam. Some designers then carve and reshape the foam models by hand and scan the 3-D geometry back into the computer using 3-D digitizers. In this cycle of virtual and actual modeling, designers learn about the look and feel of the product at each point in its evolution.

Architects can do the same thing and keep physical models current with their 3-D CAD designs; users can generate models at almost any scale directly from the computer files. Custom hardware can be fabricated at actual size; facade details can be studied at one-quarter size or life-size to scrutinize connections.

Sunnyvale, California-based frogdesign has extensive facilities for rapid prototyping and stereo lithography (SLA). Using milling machines to cut parts in various foam densities, frog's designers work through complicated component assemblies. SLA, the upper end of computerized modelmaking, creates extremely complex shapes by firing a laser through an expensive liquid resin. At $400,000, few industrial designers or architects can afford this equipment, so specialty shops often manufacture components of a design for a fraction of the cost of a machine. These shops can fabricate the final design and create master molds from which an item will be manufactured. frogdesign uses SLA selectively to create fully functional prototypes; functioning circuits and motors are placed inside to determine how the final product will actually look, feel, and work. Designers then make adjustments or tweak the model before undertaking expensive moldmaking. This new technology allows architects to build models of designs with compound curved surfaces that would not be possible with traditional modelmaking techniques.

Obstacles to expanding architectural services are dissolving. Architect as behavioral scientist, manufacturer, and technical coordinator may describe the specialties of the next century.

Diversifying services

Because industrial designers create user interfaces that are integral to the product they design—an LCD screen on a cell phone or a microwave oven, or a keypad entry system for a television remote control or thermostat—their techniques will become more important to architects as clients begin to demand smart buildings. For example, energy-conscious clients are already requiring room occupancy sensors to turn lights on and off and adjust temperatures according to whether or not a room is occupied. Architects may want to go beyond specifying the sensors to designing the interface that will allow a building's maintenance staff to maintain the equipment.

Carson Benson insists that these advancements will profoundly change the practice of architecture. His firm, which specializes in institutional architecture, is already moving in the direction of process and interface design. He's less enamored of the sophisticated modelmaking machines than he is of the improvements in software. Calling himself a simulation evangelist, Benson prefers to take clients on a simulated project fly-through and leaves modelmaking to publicity and marketing factions.

"I often develop virtual control panels for prison and hospital facilities. During the 18 months or so that an institution is under construction, we create virtual scenarios in which current staff or trainees can learn to respond to situations that might not be covered in their procedure manual," he explains.

Obstacles to expanding architectural services are dissolving. Architects can now think beyond the creation of static spaces, simple structures, and limited obligations. Architect as behavioral scientist, manufacturer, and technical coordinator may very well describe the specialties of the next century. The added value to clients will be a property with a current history and an architecturally incorporated system for anticipating problems, prescribing treatments, and extending the life of their investment. ■

Patrick Mays is chief information officer for NBBJ Seattle.

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Seeing the Light

Until the AIA revises its standard agreements to balance liability and reflect owner concerns, architects will have to do their own revisions. Here's where to start. By Barry B. LePatner

American Institute of Architects (AIA) standard contract agreements provide a foundation for negotiation between architects and their clients. But this foundation can prove extremely unstable if architects blindly accept the generic provisions the standard forms incorporate. As discussed last month (*Architecture*, February 1999, pages 106-109), AIA's owner-architect B141-1997 agreement makes broad assumptions about the architect's involvement in a project, the need for legal counsel, the willingness of clients to accept the terms set forth in the contracts, and the form's applicability to a range of projects. Unless architects pay close attention to contract document drafting and negotiation and make careful modifications to the AIA forms—suggestions for which follow—legal liabilities may ensnare even the most cautious.

Architects must recognize that their agreements reflect their professionalism. Contracts that do not carefully spell out responsibilities and intentions can readily generate disagreements and claims. This is no time to be timid: Architects who fear that prolonged contract negotiations endanger client relationships, or who resist seeking legal advice, face the prospect that their positions relative to their clients will be weakened substantially.

Until the AIA revises B141-1997 to address its flaws, it is up to architects to ensure that their agreements offer a better balance of both the architect's and the owner's interests. While the suggestions offered in this article are not intended to be binding legal advice, they will help correct some of the contract's most significant flaws. Architects, of course, should go through all project agreements carefully with their attorneys to ensure appropriate modifications are made.

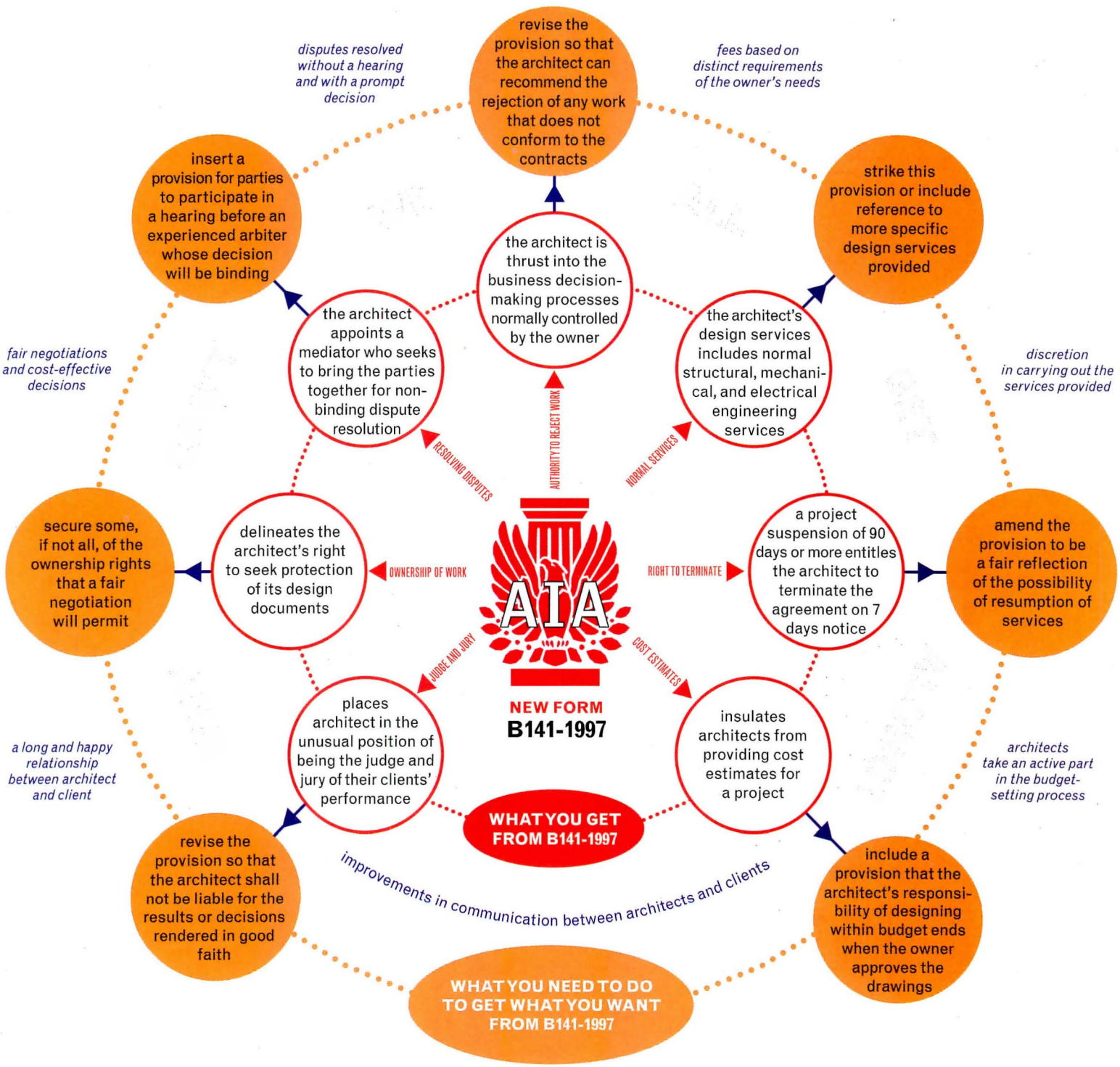
Judge and jury

Inherent throughout B141 is the recognition that the architect, as a licensed professional and independent consultant, advises the owner during the period of contracted services. Yet surprisingly, B141 creates a conflict of interest for architects by placing them in the position of being the judge and jury of the performance of their clients. Specifically, the contract requires the architect to "interpret and decide matters concerning performance of the Owner and the Contractor under, and requirements of, the Contract Documents on written request of either..." (Sections 2.6.1.7) and to "endeavor to secure faithful performance by both Owner and Contractor, [and] not show partiality to either" (Section 2.6.1.8).

Consider, for example, a dispute that arises between the owner and the contractor regarding the contractor's performance and the owner's contract obligations. B141 allows the contractor to require the architect to review, judge, and provide a written finding of the contractor and owner's contractual compliance. If the architect finds in favor of the contractor, he must explain his or her reasoning, and the owner is obligated to accept his ruling (Section 2.6.1.9). Moreover, if the tenets of Section 2.6.1.8 are strictly observed, the architect must take some affirmative action to "secure the faithful performance of the Owner" if the latter does not accede to this finding.

This places the architect in an uncomfortable position, considering that the contract repeatedly states that the role of the professional is to be an independent consultant to the owner, not the contractor. Were the architect to issue one or more rulings adverse to the owner's interest, such a conflict of interest can have obvious consequences for the long-term relationship with the client. The astute architect should revise this provision to read as follows:

> 2.6.1.7...The Architect shall interpret and decide matters concerning performance of the ~~Owner and the~~ Contractor ~~under, and requirements of,~~ pursuant to the Contract Documents ~~on written request of either the Owner or Contractor,~~ and advise the Contractor. ~~The Architect's response to such requests shall be made in writing within any time limits~~



Improving AIA contracts for fairness and balanced liability. To read about all provisions described here, see expanded article at *www.architecturemag.com*.

~~agreed upon or otherwise with reasonable promptness~~ of the need to correct or repair any Work that fails to fully conform to the Contract Documents.

2.6.1.8...The Architect shall endeavor to secure faithful performance by ~~both Owner and~~ the Contractor, and shall not be liable for the results or interpretations or decisions so rendered in good faith.

Resolving disputes

To avoid exorbitant costs in both time and money, architects must select a dispute-resolution mechanism that is cost effective, timely, and certain. Further, securing a fair result in a dispute resolution forum requires full access to the facts or documents in the possession of the other participants involved in a project. The AIA's documents ensure neither.

Section 13.4 of B141 suggests that the parties to the agreement seek the prompt appointment of a mediator to secure a nonbinding resolution of any dispute. If this fails, the parties must resolve the matter through binding arbitration under the auspices of the American Arbitration Association. Architects who accept this provision will likely encounter legal and procedural complexities that can create an unending source of liability and risk. Not least among these is the difficulty of securing a resolution within the bounds of each of the separately negotiated contracts between the owner, contractor, subcontractors, and consulting engineers.

To avoid such dispute disasters, architects should insert provisions that limit the use of arbitration to disputes that do not exceed a specified dollar amount; require all parties to participate in a brief hearing before an agreed-upon arbiter with design and construction experience, whose decision will be binding; and call for litigation for all conflicts that exceed the bounds of such limited issue disputes. In this fashion, arbitrable disputes will either be resolved by the parties before the hearing to avoid its cost, or will result in a prompt decision. (Read the full text of such provisions at *www.architecturemag.com.)*

Authority to reject work

Section 2.6.2.5 of B141-1997 thrusts the architect into business decision-making processes normally controlled by the owner. This section grants the architect the "authority to reject Work that does not conform to the Contract Documents," permitting him or her, when "necessary or advisable," to inspect or test the work regardless of its level of completion.

Although only the most uninitiated professional would issue an outright rejection of construction lightly, even an experienced architect could find that acting in strict conformity with this provision could create a host of project-threatening ripples. However correct an architect's decision may be, or however certain one is that the contractor has substituted improper materials for those covered by the contract documents, the ultimate decision to reject work must lie with of the owner, not the design professional. If an architect observes work that is deemed in violation of code, a hazard to workers or bystanders, or a life-safety or structural threat, he or she should take immediate action to alert all project parties and any appropriate governmental officials. In all other cases, the client may have reasons for accepting otherwise defective work—the most obvious being the need to stay on schedule—and be willing to accept a credit from the contractor for the error.

This provision of B141 should be revised to read:

2.6.2.5...The Architect shall ~~have authority to~~ recommend to the Owner the rejection of any Work that does not conform to the Contract Documents. The Owner shall advise the architect in writing whether it wishes that the Contractor be instructed to remove, repair, or replace such work or take other action as, in the best interest of the project, shall be appropriate.

The AIA's standard owner-architect agreement is less than businesslike. Instead, it jeopardizes architects' practices, triggering massive modifications that make it more difficult for architects to secure a fair arrangement.

> Whenever the Architect considers it necessary or advisable, the Architect ~~will have authority to require~~ shall recommend to the Owner the inspection or testing of the Work in accordance with the provisions of the Contract Documents, whether or not such work is fabricated, installed, or completed. The Architect retains the right to immediately reject and halt any work that is deemed to be hazardous, in violation of code, or otherwise involving a health or safety issue that jeopardizes workers or the public at large.

"Normal" services

Professionals in all design fields recognize that every project is unique. As a matter of course, they craft discrete services for even the most basic projects, and structure fees and teams based on the distinct requirements of the owner's needs. Thus section 2.4.1 denigrates the nature and extent of the profession by stating that "the Architect's design services shall include 'normal' structural, mechanical, and electrical engineering services."

One rarely encounters an architect who professes to providing "normal" services. Moreover, how can architects justify higher fees for complex projects when their contracts state that "normal" services are being offered? Whatever the AIA intended with this provision, architects benefit from a careful and specific recitation of their services rather than an innocuous reference that diminishes their role in the eyes of their clients.

Right to terminate

Architects build relationships with clients over time—with the client's belief that the architect is not looking for every opportunity to gain control of the relationship. Thus, owners rarely accept the renegotiating leverage sought by B141's Section 13.8.3. This provision provides that a project suspension of 90 days or more entitles the architect to terminate the agreement on seven days notice. Section 13.8.3 should be amended to fairly reflect the possibility of a resumption of services, with wording such as the following:

> The Owner may, at any time for good and sufficient reason, direct the Architect to suspend, stop, or interrupt the performance of its services or any part thereof for a period of time. Such direction shall be in writing and shall specify the period during which the performance of the services is to be stopped and the reasons therefore. The Architect shall resume the performance of services upon the date specified in such directive or upon such other date as the Owner may thereafter specify in writing. The Architect shall be entitled to an adjustment to the Project Schedule for the number of days the performance of services was delayed as a direct result of such suspension, stoppage, or interruption, and to an adjustment of its fee by an amount equal to the costs and expenses actually incurred by the Architect as a direct result thereof.

Such a provision reflects the architect's understanding that a project may not always proceed without an unanticipated delay or suspension. By including a provision that seeks to fairly adjust the architect's compensation if this situation arises, the design professional does not seek to gain unfair advantage in the event of delays.

Where an owner either breaches an agreement or otherwise permanently suspends or abandons a project, the architect is fully entitled to terminate the agreement. Section 13.8.4 should be modified to permit the architect to terminate upon abandonment as an additional basis for the owner's substantial failure to perform in accordance with the agreement.

Cost estimates

Except for the AIA's encouragement of architects to retreat from construction administration, perhaps no

area of the standard AIA agreements causes owners to lose faith in the profession more than section 2.1.7, which seeks to insulate architects from providing cost estimates for a project by placing full control with the owner. Historically, architects gained stature in the eyes of their clients by delivering designs that matched project budgets established by the client. By retreating from providing this service, architects have painted themselves into a corner: They provide design services with only limited construction involvement and are unable to protect the client from overcharges by the contractor.

By agreeing to work closely with an owner's or his or her own cost estimation consultant, or with a construction manager, architects can play a more significant role in a project without increasing liability. Those concerned about risk can minimize their exposure with a specific contract provision that recognizes the architect's responsibility to make design changes to meet the project budget, at no cost through the design development phase. Once the owner approves the design development documents as conforming to the project budget—based on confirmation from an outside cost consultant—there can be little or no liability flowing to the architect if subsequent bids come in higher. The detailing that comprises the construction document phase should not drastically alter the estimates of the construction manager or the outside cost consultant.

Final goal: improved communication

There will always be architects who view the contracting process as a "play-it-safe" area of their practices; they want to limit contacts with their clients to design issues. However, the changing nature of the real estate, design, and construction world leads many to see the benefits of adopting a more businesslike approach to the drafting and negotiation of their project agreements. As it is offered right now, the AIA's standard owner-architect agreement is less than businesslike. Instead, it jeopardizes architects' practices, triggering massive modifications by owners that make it more difficult for architects to secure a fair engagement. Hopefully, the AIA will realize that the volume of the changes needed to improve its standard contracts very often precludes their use. When the AIA recognizes the value of making improvements to these agreements, architecture will be a stronger profession for it.

Construction law specialist Barry B. LePatner is founding partner of Barry B. LePatner & Associates (www.bblesq.com) *in New York City.*

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Collins & Aikman Floorcoverings recycles old carpets to make new carpet backings.

1	Old carpets fed into grinder
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4	New carpet backing generated
5	Recycled backing inventory ready for carpet manufacturing

Facing a growing demand for environmentally responsible building products, carpet manufacturers are starting to jump on the "green" wagon, working to create carpets that use postconsumer and postindustrial materials in their production and, in some cases, creating carpets that are themselves recyclable. The industry is so ardent about this that its national association, the Dalton, Georgia-based Carpet and Rug Institute (CRI), conducts a testing program to verify that carpet products meet minimum levels of environmental safety by limiting the emission of dangerous compounds during manufacturing or after disposal. The CRI even provides "eco" labels that specifiers can look for when selecting carpets.

But choosing an ecofriendly carpet for a project takes more than label shopping. It takes an honest weighing of the carpet maker's efforts to minimize their products' environmental impact. Some manufacturers have better green programs than others, and specifiers need to ask the carpet maker detailed questions to discover the extent and success of their recycling programs and recycled products. For example, a few manufacturers sell recovered carpet tile backings to cement manufacturers for use as fuel in their kilns. This is low-level recycling, but it's better than dumping the carpets in landfills. Next on the ecoscale is selling recovered nylon or backing material for use in other industrial products, such as automobile car-

as Long as it's Green

Environmentally sound carpet programs differ greatly in value, so shop around before specifying. By Chris Santilli

pets. DuPont Flooring of Kennesaw, Georgia, sends 1.5 million pounds of broadloom carpet to car manufacturers each month. At the highest level of environmental friendliness are carpets that themselves contain recycled materials from carpet and noncarpet sources—a category that is limited right now, but growing.

Indeed, very little carpet-to-carpet recycling is currently done. CRI estimates that 4 billion pounds of carpets and rugs enter landfills each year, which the EPA says constitutes about 1 percent, by weight, of the dumps. And there's more than just nylon fibers being disposed: The polyvinyl chloride (PVC) found in many carpet products creates additional pollution. Millions of square yards of PVC backings have been installed on carpet tiles in the last 25 years, and PVC has become the carpet industry's antigreen poster child because of its potential toxicity when produced, installed, or dumped. "At the very least, try to use only manufacturers with an established PVC recycling program," recommends Penny Bonda, director of interior design at architectural firm Burt Hill Kosar Rittelmann Associates in Washington, D.C. "Unfortunately, though, not many have one." She suggests questioning the maker closely to determine the extent of their PVC recycling.

Some manufacturers are, in fact, making substantial progress in actual carpet recyclability. Collins & Aikman Floorcoverings in Dalton, Georgia, recycles about 98 percent of their products' nylon face along with the backings into new carpets, and Shaw Industries of Dalton, Georgia, now markets a polyolefin-backed tile designed to be turned back into new carpet after its first use ends. By next year, Interface Flooring of La Grange, Georgia, expects to release a carpet tile made of only one plastic, such as nylon, which makes it easier to recycle because its constituent parts don't have to be separated.

While carpet manufacturers are striving to improve their track records in terms of postuse recyclability, they are also trying to prevent their products from being disposed of in the first place. To that end, they are delaying the need to recycle for as long as possible by creating longer lasting carpets that consume less original material. "In the past, the myth was 'the more raw material the better,'" says David Oakey, president of carpet design firm David Oakey Design, also of La Grange, explaining that fuller carpets cost more and thus increase profits. "Now 'less is more' applies," he explains. Oakey sees a trend toward increasing the overall number of yarns per square inch, but using a lower pile height. This requires less nylon overall. Interface reduced material use in its new Wabi carpet tile line by lowering the nylon face weight—the amount of yarn in the carpet face—to 14 to 16 ounces per square yard, compared with a typical face weight of 22 to 24 ounces. This product also comes "zippered," which means the carpet separates easily into its different components, thus facilitating recycling. Shaw has a new carpet tile product, EcoWorx, that has a similarly low nylon face weight and incorporates EcoSolution Q's nylon, which is 25 percent recycled nylon.

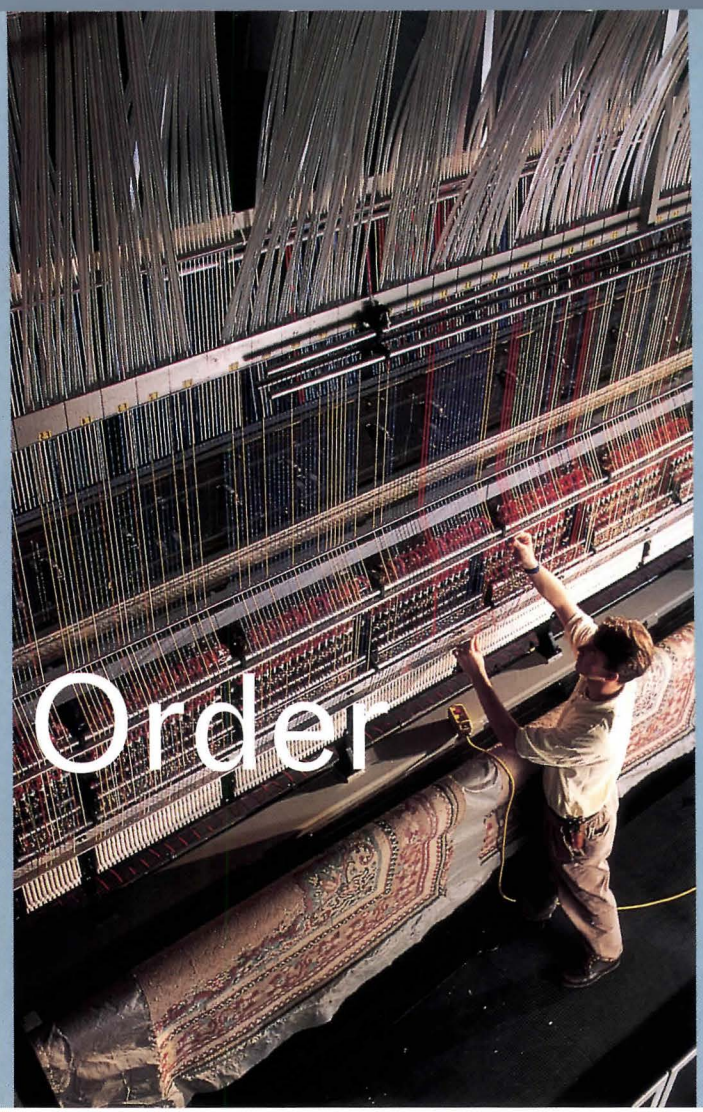
But until manufacturers truly make recyclability de rigeur, cutting through a carpet manufacturer's definition of "green" will be the real trick for specifiers. Keep this rule in mind: The greenest carpets not only incorporate recycled products, but they can be collected for reuse or recycling at the end of their useful lives.

Chris Santilli is a Villa Park, Illinois-based freelance writer.

Made To Order

Custom carpets become the norm with computer-controlled mills.

By Chris Santilli



Tapistron's Precise Yarn Configuration (PYC) Machine (left) allows up to six yarn options per needle, enabling carpet manufacturers that operate machine to create intricate custom patterns quickly and economically.

In the last five years, carpet manufacturing technology has improved so drastically that many mills now have the capacity for mass customization—something unheard of only a few years ago. While some custom-carpet manufacturers still take minimum orders of 250,000 to 500,000 square yards, others will custom-make carpet for as little as 25,000 square yards. "The custom versus off-the-shelf cost is starting to blur," says architect Peter Conant, a partner at Swanke Hayden Connell Architects in New York City. "Five or ten years from now, most carpet will be made to order, which will radically change how we specify because there'll be fewer limitations."

Computers, of course, are leading this revolution, easing everything from precision thread placement to on-the-fly pattern modification. The latter is one of the most dramatic developments: Designers are no longer limited in color and pattern choices thanks to the immediacy and flexibility of executing pattern changes through a computer rather than expensive manual reconfiguration of milling machines. "Computer-driven carpet patterning opens a floodgate of new ideas and opportunities," says Eva Maddox, principal of Eva Maddox Associates in Chicago. "It pushes the envelope of creativity."

Among the systems now at architects' disposal is carpet manufacturer Milliken's Millitron, a computer-controlled dye injection technology that applies precise, seamless color to a white or colored carpet tile base. The Millitron permits the perception of infinite colors by using different ink colors close to one another so the human eye blends them when viewed from a normal distance. The machine allows three different color groups of 12 dyes (jewel tones, neutral, or cool shades) to yield thousands of colors. This dye injection technology can handle small floral and leaf patterns because the inks can be placed more exactly on the carpet surface than a mechanized needle can using standard carpet-tufting technology.

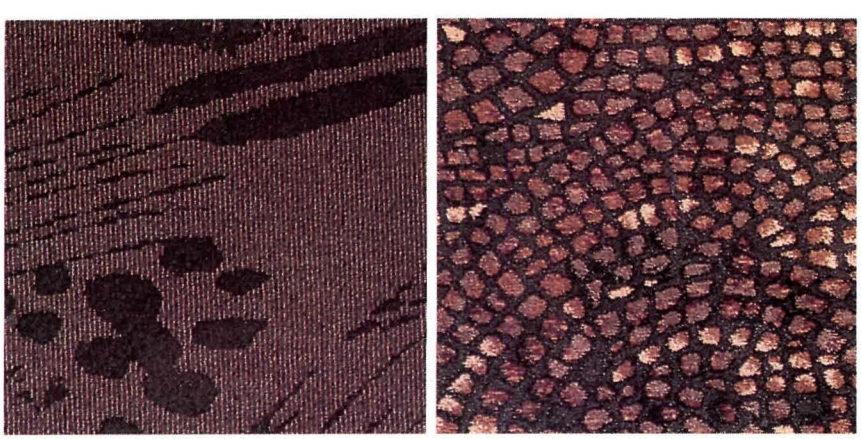
But even that needle technology is improving. To gain the detail needed for his turn-of-the-century-styled carpeting, Don Rives, a designer for Quaintance-Weaver Restaurants & Hotels in Greensboro, North Carolina, employed the precise yarn configuration (PYC) technology used by carpet manufacturer Lees for its ModaVation Hospitality Carpets line. The PYC equipment uses hollow needles that carry six different yarns each instead of just one. Computer software electromechanically places the appropriate yarn into position within the machine's hollow needle configuration. "This machine allows you to blend different yarns to put a spot of color where it's needed or blend it with another," says Rives.

"New machines also permit yarn tensions to differ so the machines can incorporate differing pile heights to bury some yarns for subtle colorations," explains Allen Parker, general manager at Lees. Pattern repeats also are possible at widths wider than the standard 18 inches. Now, larger and more complex patterns up to 36 inches wide are possible. These machines can also build in more finely tuned pile height differences with more than four or five levels of textural change.

Specifying style is best done hand-in-hand with the carpet manufacturer of choice, says Graham Scott, vice president of technical advisory services at Interface Flooring in LaGrange, Georgia. "The average spec writer isn't expected to know everything about selecting carpets," he says. Ultimately, Scott recommends that designers bring the traffic pattern information, maintenance budget, and desired color and pattern to the manufacturer to ensure that esthetics and functionality meet.

Style and Substance

New carpet products feature high-tech styling and environmental friendliness. Compiled by Eric Adams



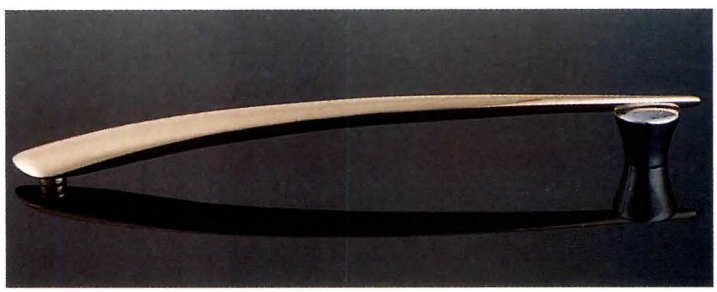
Déjà vu all over again Carpeting reaches maximum ecofriendliness with Interface Flooring Systems' Déjà Vu collection (top left). Déjà Vu is fusion-bonded carpet that is made from nearly 100 percent recycled content. The face yarn is recycled nylon, manufactured from postindustrial yarn waste. The yarns are colored in an over-dying process designed to achieve the earthy palette that defines this collection. The backing is also made from recycled content. Specifiers can request that their existing tile be reclaimed so its backing can be recycled into new material. Another ecofriendly carpet by Interface is Wabi (top right), which is made with a unique low-level loop technology that provides necessary durability while using the least amount of raw materials possible. Wabi is available in both stripe and weave patterns, and is designed to meet heavy-duty commercial standards. *Circle 294 on reader service card.*

Precision patterns Technology meets imagination in Mannington Commercial's new carpet line, Beyond NeoTec, (above left) which uses exclusive tufting technology that allows for precise patterning of organic, geometric, and freeform designs. Thirty-three patterns are available in 12-inch widths, and specifiers can modify the designs by choosing from 48 color offerings. Designers can also create their own patterns for custom applications. *Circle 295 on reader service card.*

Inspiring design Hoping to inject new life into the drab carpet patterns typically seen in the hospitality market, Lees introduces its ModaVation line of customized carpets (above right). With help from the new Precise Yarn Configuration machine manufactured by Tapistron, ModaVation offers detailed custom patterns as well as its own original traditional patterns, which feature classic mosaic and tapestry designs. In addition, designers can alter gauge and stitch performance requirements, variable yarn textures, lustre levels, and dye affinities.The carpets are created with yarn-dyed fibers treated with DuPont Antron Legacy and Duracolor, which provides permanent stain, soil, and fade resistance. *Circle 296 on reader service card.*

Touch and Go

PRODUCTS



CLOCKWISE FROM TOP LEFT: **Quick Pix** Silicon Graphics introduces a new line of graphic workstations that combine state-of-the-art visual computing capacity with economy. The model 540 incorporates Integrated Visual Computing (IVC) architecture, which has features that typically would require separate additions to the hard drive, and replaces it with a Cobalt Graphics chip set. This results in a rapid increase in speed and allows for integration with video as a graphic component. *Circle 297 on information card.* **Hot Print** Hewlett-Packard introduces the Color LaserJet 8500 Printer, which is equipped to support AutoCAD and other graphic 3-D programs that provide CAD professionals with high-quality color copies. Print quality is enhanced by varying amounts of toner color that is placed within a single dot. HP Color LaserJet 8500 printer produces six pages per minute and prints up to 12-by-18 1/2 inches on different media stock. *Circle 298 on information card.* **Stellar Performance** Forms + Surfaces introduces the Orion Collection, a new addition to their doorpull designs. The design consists of three hardware components: standoff, grip, and ball that can be mounted side-by-side or offset, with either end up. The Orion doorpulls can be specified in polished, satin, stippled, and black patina stainless steel, or polished, satin, and oil-rubbed bronze. *Circle 299 on information card.* **Folding Chair** Kartell introduces their first folding chair, Dolly, designed by Antonio Citterio with Oliver Löw. The seamless frame made of fiberglass-reinforced polypropylene hides the open-close mechanism and gives it the look of metal. The Dolly's design is appropriate for school auditoriums, commercial facilities, and outdoor use. It's also available in an upholstered version. *Circle 300 on information card.*

Compiled by Joelle Byrer