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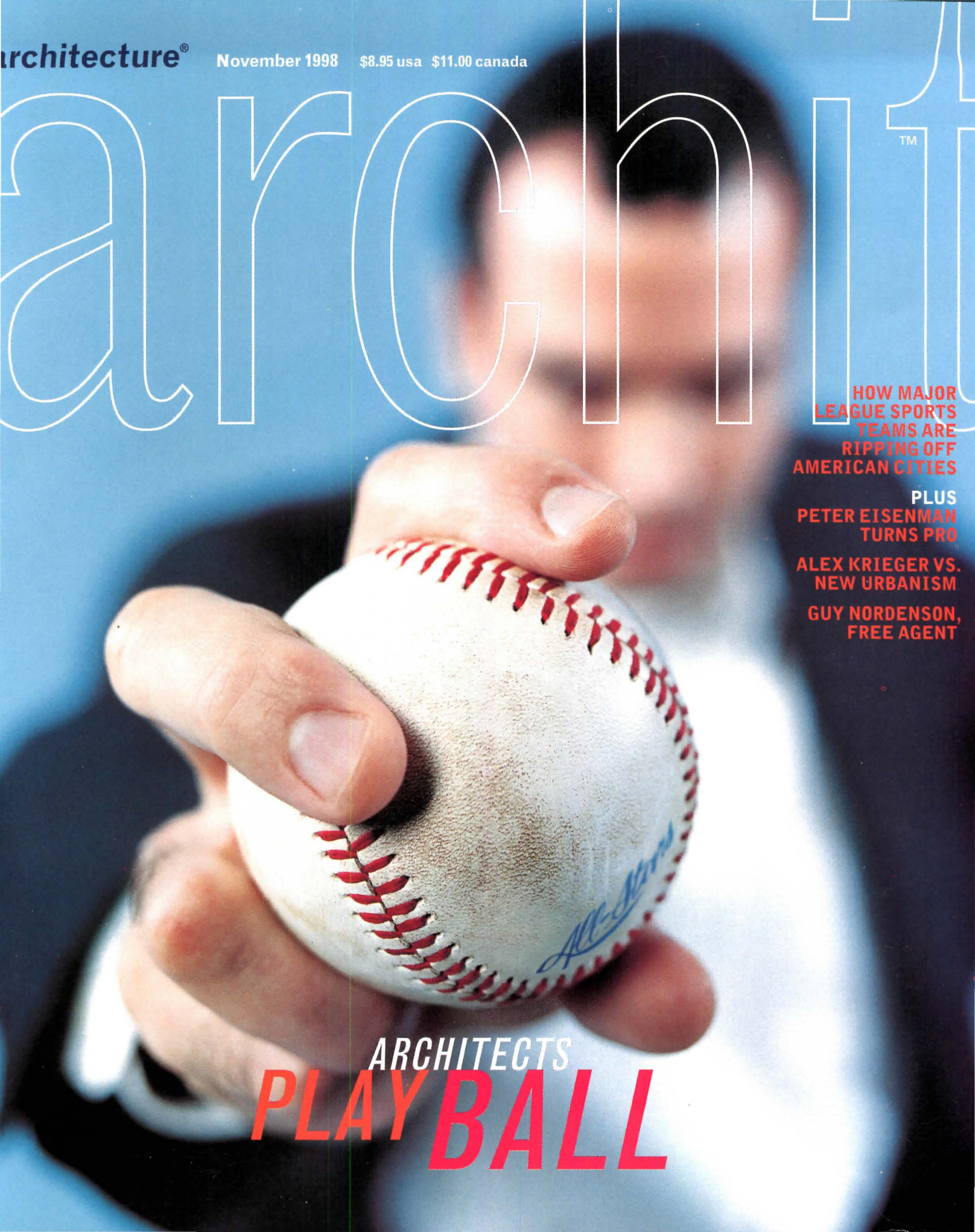


HOW MAJOR LEAGUE SPORTS TEAMS ARE RIPPING OFF AMERICAN CITIES

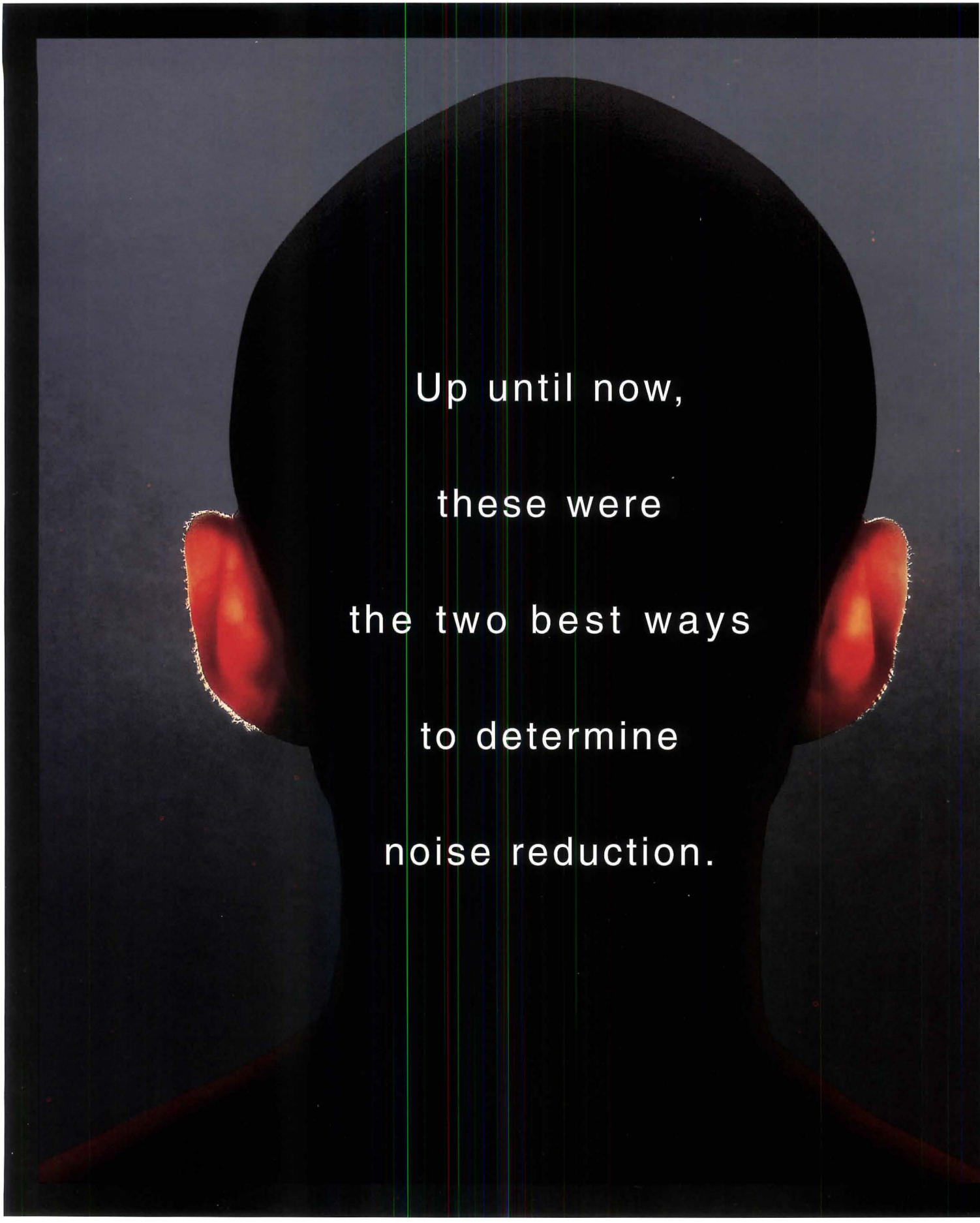
PLUS

PETER EISENMAN TURNS PRO

ALEX KRIEGER VS. NEW URBANISM

GUY NORDENSON, FREE AGENT

ARCHITECTS PLAY BALL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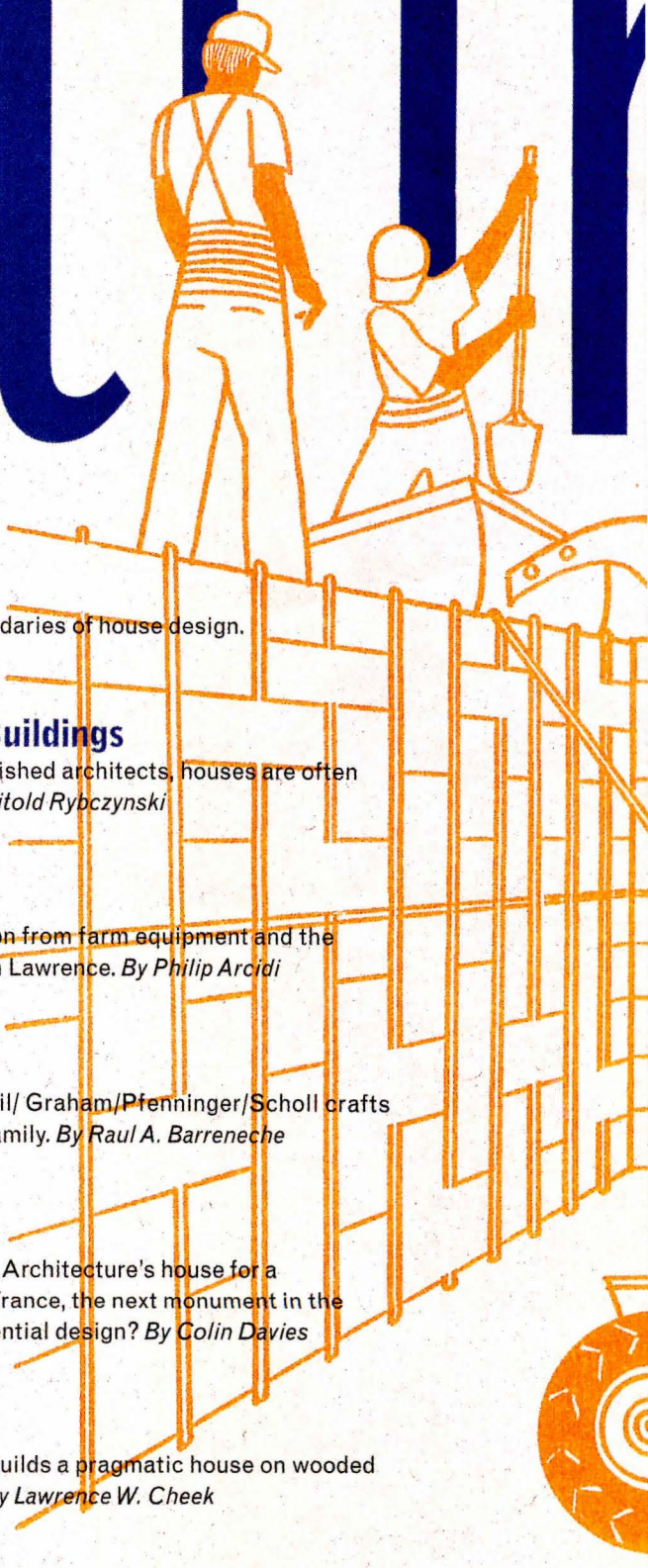


Pay to Play

Good design can't hide the cost of major league sports stadiums.

Architect Peter Eisenman would have us believe that the 63,000-seat stadium he has designed for the Arizona Cardinals (page 127, this issue) is more than just that. Inasmuch as the sprawling complex also includes two 1,250-room hotels and a 1 million-square-foot convention center, he is right. "It's a hybrid building," Eisenman offers enthusiastically, suggesting that the additional facilities make the stadium economically feasible. But he's got it backwards: Without the ballfield, there would be no need for hotels or a convention center in Mesa, a suburb of Phoenix.

To be sure, Eisenman's proposal is extraordinary—a swirling, sinuous apparition will rise like a metal and glass tornado from the desert floor. It is one of several such commissions in his office (pages 124-127, this issue), and if built as designed, Eisenman's stadiums promise to do for sports facilities what Frank Gehry has done for art museums: employ dramatic forms to repackage, and thus reenergize a familiar, stolid building type. For an industry besotted with the cheap nostalgia of brick and ivy, his vision is a bracing, welcome tonic.

But in service to what? The Cardinals stadium is a $1.2 billion extravaganza—around the same price as Richard Meier's palatial Getty Center (1997)—that hugely ups the financial ante in an already extortionate game of pay-to-play that professional sports teams are waging against American cities (page 132-135, this issue). Like his colleagues across the country, Cardinals owner Bill Bidwill is demanding that local taxpayers cough up $244 million to underwrite his privately-held, for-profit enterprise. This is in addition to the $238 million Phoenicians dropped into their baseball stadium just 3 years ago, and $35 million that funded a basketball arena in 1992.

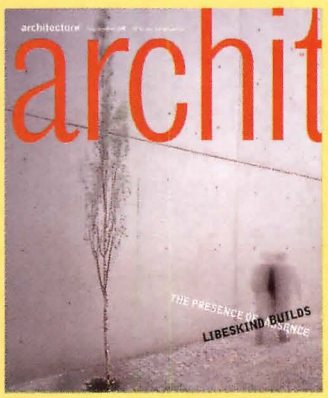
Bidwill, at least, is not threatening to move the team if the city doesn't pay up—yet. But Arizonans are only too aware that they got the Cardinals because he did exactly that to St. Louis in 1988, when the Missouri city couldn't scrape together enough to buy him off. Bidwill's strategy is not unique: The Padres are ready to abandon San Diego if they don't get their new Antoine Predock-designed stadium (page 129, this issue). And George Steinbrenner is actually playing one borough of New York City against another in his attempt to move the Yankees from the Bronx to Manhattan.

Team owners across the country routinely bully their host cities into ever more extravagant facilities—few of which return money on the investment, and many of which are simply unnecessary. In Arizona, for example, the Cardinals could reasonably renovate Sun Devil Stadium—where the team currently stumbles from loss to loss, and where fewer than half the seats are ever sold—for a fraction of the cost of the proposed Eisenman stadium. There is little doubt that Eisenman's daring design would work wonders for the Cardinals' sagging attendance. The question is, why is it even being contemplated by a city with choking air pollution, rising crime, and runaway growth?

Part of the answer is that professional athletics have become a national obsession. In the face of digital dislocation and suburban anomie, sports offer fans the opportunity to share a rare communal moment; as such, they have social value. But the lavish budgets and ballooning programs of these Shangri-las of sport come at the expense of community enrichment projects with lifespans longer than four quarters and a half-time show. The question for architects—and taxpayers—is whether the design revelation promised by Eisenman (or the historical reiterations pumped out by less adventurous practitioners) is worth the opportunity costs? Regrettably, I think not. *Reed Kroloff*

Shell shock

Thanks for the protest page on San Juan's La Concha Hotel (*Architecture*, September 1998, page 77). My wife and I stayed there in the 1980s, and the hotel is an important work of its period, not just for Puerto Rico, but for the world. Osvaldo Toro and Miguel Ferrer captured the essence of the period with the egg crate slab concept, the distinctive concrete masonry grilles, and the shell itself, which is at once pure and voluptuous. It's a rare survivor, because we have already obliterated so many works of 1950s Modernism.
John Morris Dixon
Greenwich, Connecticut



Raul Barreneche was not wearing his glasses when he looked at this 1950s example of pure ugly (*Architecture*, September 1998, page 77). This building is an extremely poor example of period design, and in no way compares to the creativity of Morris Lapidus's Miami work. And just because the proposed replacement is of a "Disneyesque" Mediterranean style does not make it bad. Should we destroy the Parthenon because the columns of stone were fake representations of carved wood columns?
Eric Kuritzky
Orlando, Florida

Whitewashed

I applaud *Architecture* for its criticism of the federal government's effort to dilute the artistic visions of individuals such as Martha Schwartz (*Architecture*, August 1998, page 45), whose sculpture fronting the U.S. Department of Housing and Urban Development (HUD) now retains little of the original concept's vivacity. The sanitation of architectural designs in Washington, D.C., has created of late only banal, anonymous relics of a political process gone awry, in which bureaucracy has compromised original intentions.

This is particularly disappointing given HUD Secretary Andrew Cuomo's previous statement to *Architecture* (August 1997, pages 44-49) that a "rigid federal bureaucracy is not only inefficient, but counterproductive to innovation..." The result is once again the compromise of a bold statement, robbing Schwartz's design of vibrancy and color that Marcel Breuer's building cannot alone provide.
David P. Mogensen
Springfield, Virginia

Where's the tension?

After reading *Architecture*'s August 1998 cover ("Architecture and Sculpture") I thought that you had arrived. Finally, a vision past stereotypical project types by either a mundane (predictable) unknown, or an eccentric (predictable) trendsetter.

I read Mark Robbins' "Notes on Space" (*Architecture*, August 1998, pages 48-51), an interesting article that got me excited. I wanted to read about what other architects view as tension between art and architecture. And then I turned the page to more meaningless architecture.
Adin L. Dunning
Vancouver, Washington

Monograph madness

Bradford McKee (*Architecture*, August 1998, pages 126-128) calls for more serious monographs, and states that the best ones "have a polemical edge." We agree, and believe the best way to determine serious work is through exchange and debate of ideas in different forums, including architectural monographs. He also goes on to assert that "the best monographs tend to be about dead architects," suggesting that the quality of the medium is optimized by looking backward for truths. While the biography might chronicle events, amuse, and at times provide insight into motivations, its contribution to contemporary thinking is limited by its historical framework.

As a medium for critical thinking, the monograph plays a serious role in understanding a body of work, historical or contemporary. Even when that body is incomplete, the presentation of a limited oeuvre can serve to construct an argument that is provocative and persuasive. While we strongly believe that the continuing development of a critical apparatus to promote quality is essential, limiting the domain of exchange grounded in a fear of "blasphemy" is counterproductive.
Ron Golan
Eric A. Kahn
Russell N. Thomsen
Central Office of Architecture
Los Angeles

To infer that HKS is attempting to "manufacture a phony mythos around mediocre talent" (*Architecture*, August 1998, pages 126-128) by developing a monograph is highly objectionable to me and the 460 individuals working for our firm—with most subscribing to your magazine.

The publications or monographs that you describe almost as art books are many times more economical and effective than brochures in communicating a firm's abilities and philosophies, both in esthetics and function. You are under a false impression that this is an act of vanity rather than a way to market one's firm.
H. Ralph Hawkins
Executive Vice President
HKS
Dallas

CORRECTIONS

The title of the bottom bar graph on page 141 of the Multinational Report (*Architecture*, October 1998) should read "Average Gross Annual U.S. Vs. Non-U.S. Fees of Multinational Firms."

Architect Nader Tehrani of Office dA (*Architecture*, September 1998, pages 130-135) was born in Iran.

Eric Owen Moss began teaching at SCI-Arc in 1974; Ray Kappe designed the Pregerson House in 1966 (*Architecture*, August 1998, pages 37-43).

WE WANT TO HEAR FROM YOU!

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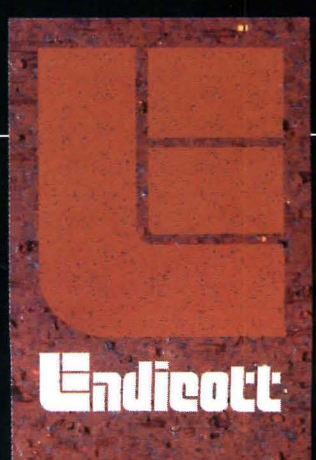
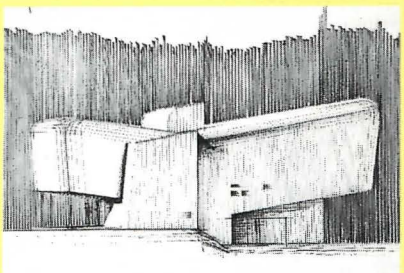
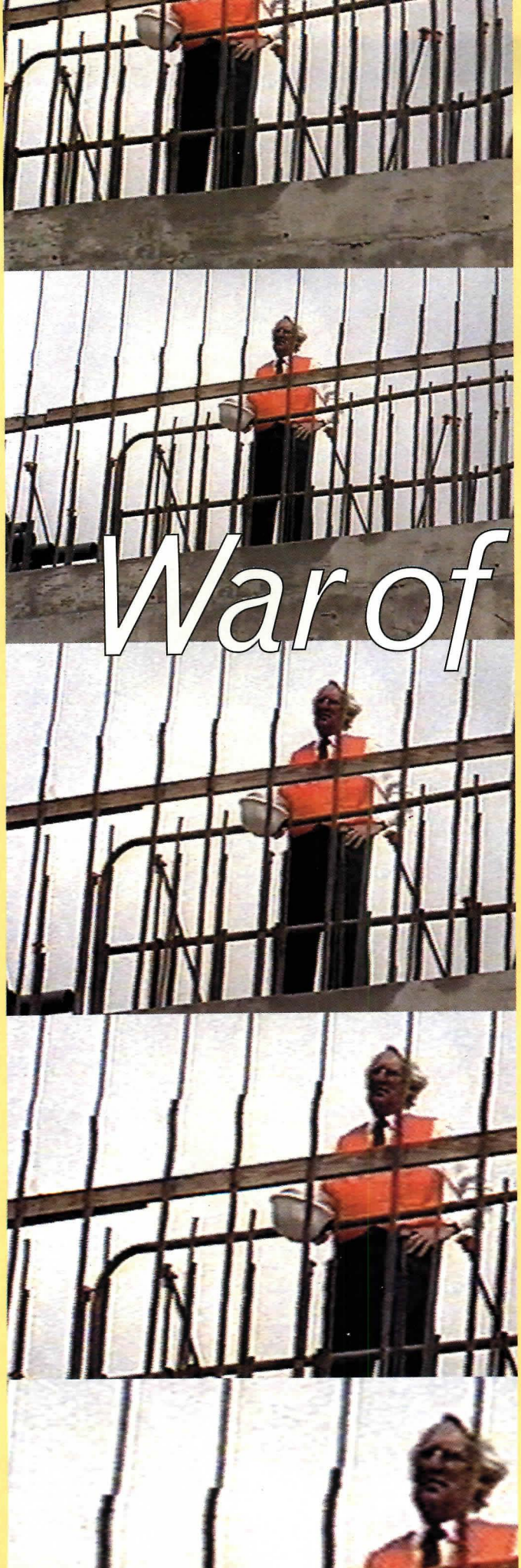


exhibitions

city	dates	exhibition	contact
Berlin	through January 3, 1999	**Berlin Biennial for Contemporary Art** at the Central Post Office, the Center for Contemporary Art, the Art Academy, and the House of World Culture	(49) (30) 2859-9148
Montreal	through January 3, 1999	**The Presence of Objects: Gaetano Pesce** at the Montreal Museum of Decorative Arts	(514) 284-1252
New York City	through January 10, 1999	**Premises: Invested Spaces in the Visual Arts, Architecture, and Design from France, 1958-98** at the Guggenheim Museum SoHo	(212) 423-3500
Santa Monica, California	through January 10, 1999	**Architecture Principe: The Oblique Function** at Form Zero Architectural Books + Gallery	(310) 450-0222
Washington, D.C.	through February 28, 1999	**City Satire: The Cartoons of Roger K. Lewis** at the National Building Museum	(202) 272-2448



Form Zero's exhibition of 1960s Utopians Groupe Architecture Principe includes 1966 sketch of St. Bernadette Church in Nevers, France.



A new documentary depicts the bruising construction battles of Richard Meier's Getty Center.

War of the Wills

When filming commenced in 1986 on the newly released documentary *Concert of Wills: Making the Getty Center*, the camera captured the architect Richard Meier, younger and quicker to smile, trooping along a daisy-covered ridge in the Santa Monica Mountains. "I don't want anyone to say, 'What have you done to this wonderful site?'" he declared. The cameras didn't stop rolling until October 1997, when the Getty Center opened, and the film portrays Meier as a lone, black-suited silhouette on a sun-flooded balcony. "I don't want to leave," the architect protests. "I'm happy here. I want to keep working."

Concert of Wills is as epic in its breadth (though not its 100 minute duration) as the undertaking it documents. The Getty Center, a widely criticized, 100-plus-acre catalog of Meier's ideas about architecture, can be viewed as a living monograph. But all is not harmonious on the mountaintop. This film, which the Getty Trust paid for, is filled with scenes depicting conflict you'd think the foundation's check-writers would rather forget.

Filmmakers Bob Eisenhardt, Susan Froemke, and Albert Maysles—members of a documentary collective that brought cinema verité to America in the early 1960s—use their omniscient camera to record a seemingly endless string of arguments over Richard Meier's favorite color. There is Meier versus the suspicious Brentwood Homeowners Association, which objected to, among other things, the idea of reflective white walls atop their local mountain; Meier versus outspoken Museum Director John Walsh, who refused to display his collection of pre-20th century art in white-walled galleries; and Meier versus Thierry Despont, the suave society decorator hired to bring color, wainscoting, and maybe even cornices, to Meier's purist exhibition spaces.

The angriest exchange recorded, however, is between Meier and the artist Robert Irwin, who designed the garden between the

Architect Richard Meier (left, following page), wearing orange safety vest, surveys Getty Center construction site in stills from Concert of Wills.

Becoming American

For Romanian-born Andrei Codrescu, baseball drives home the difference between a crowd and a mob.

I became an American when I understood baseball. I lived for a time in the 1970s on Melville Street in Baltimore (named after an obscure city councilman, not the writer) in the shadow of the old Memorial Stadium. On game nights, the stadium lights lit up Melville Street like a stage. Neighbors sat on stoops with their transistor radios, and you could hear the crowd clamoring on the radio a fraction of a second before the sound of the real crowd reached us. I was writing a book called *In America's Shoes*, and I used the crowd as an editor. When they booed, I crossed out what I'd just written. When they cheered, I admired my acumen.

I didn't set foot inside Memorial Stadium until my son, who was already an American and played Little League, took me to a game. I was impervious to the charm of the evening for nearly five innings, because the crowd scared me. I was born Jewish in a provincial former Austro-Hungarian city at the edge of Europe where crowds spelled trouble. An ancient and unbridgeable hostility divided guys with muscles from guys with glasses. There was little more terrifying than walking home with a book under my arm in the path of an angry crowd returning from a game lost by the home team. I was fresh meat: a four-eyed scapegoat, responsible, I knew, for the home team's loss, and for every other historical misfortune that had afflicted the natives.

But Memorial Stadium was not the soccer stadium of my youth. By the fifth inning I began to enjoy the rumble of the crowd, the smell of hot dogs and beer, the good-natured roar in the stands, the velvety feel of the summer night, and my son's unabashed joy in the Orioles' hits and runs. I allowed myself to relax, and I understood the difference between the democratic ease of America and the still-simmering resentments of Europe. I understood the difference between a crowd and a mob, and that democracy stands between them.

I have been in many American ballparks since then: lovely, old, intimate spaces like Chicago's Wrigley Field, and new domes like the New Orleans Superdome, and have always felt secretly grateful, after some initial apprehension. American stadiums define in many respects the character of their cities, more so than the teams themselves. These days, few players in the major leagues were born in the cities whose pride they supposedly uphold. Most of them are traded and sold, and have no qualms about playing for their traditional enemies. The survival of local pride is testimony to the power of advertising and the desperation of people to belong to a community, but also to the physical stadiums themselves.

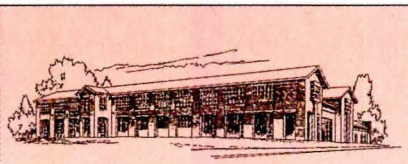
Louisiana State's Tiger Stadium in Baton Rouge, for instance, is a monument to both the Southern religion of college football and the grandeur of Southern politics. Governor Huey P. Long, the emperorlike ruler of Louisiana in the 1930s, wanted to build a stadium, but had federal money that could only be used for public housing. So he combined them—he built the housing in a horseshoe shape, and topped it with bleachers. Voilà, a stadium!

Large structures like stadiums are intrinsically ambiguous. As Michel Foucault proved in his book, *The Birth of the Asylum*, such spaces cannot stay unoccupied for long. They demand to be used. Thus, when leprosy mysteriously vanished, 17th-century Europeans used the old leprosariums to house mentally ill people, thus giving birth to the modern institution of the asylum. While American stadiums are happily filled with the citizens of a democracy resolving their conflicts in sport, it isn't a stretch to conceive of other uses for them. The New Orleans Superdome recently became the world's largest emergency shelter during Hurricane Georges. The citizens were grateful, though it didn't stop them from making off with a few chairs. Happily, they didn't spill into the streets, calling for blood. *Andrei Codrescu*

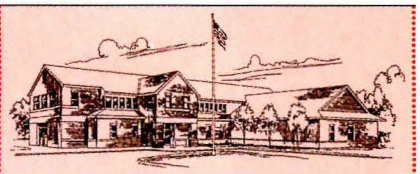
Andrei Codrescu is a New Orleans-based poet and essayist. His commentary is featured regularly on National Public Radio's All Things Considered.

CONSTRUCTION COST COMPARISONS PER SQUARE FOOT • NOVEMBER 1998

GYMNASIUM
1 story building with 25' story height and 20,000 square feet of floor area



LIBRARY
2 story building with 14' story height and 22,000 square feet of floor area



POLICE STATION
2 story building with 12' story height and 11,000 square feet of floor area

	GYMNASIUM		LIBRARY		POLICE STATION	
	3rd Q 1998	3rd Q 1997	3rd Q 1998	3rd Q 1997	3rd Q 1998	3rd Q 1997
Atlanta	$ 76.22	75.32	78.41	78.32	104.23	103.43
Boston	101.17	101.13	104.43	105.17	138.78	138.76
Chicago	96.05	95.42	99.37	99.23	129.94	128.00
Dallas	75.11	74.55	77.68	77.53	102.71	101.09
Kansas City	83.74	82.30	86.14	85.59	114.51	111.03
Los Angeles	96.03	96.02	99.16	99.85	131.43	131.39
New York City	116.30	115.70	119.63	120.32	159.03	158.18
Phoenix	78.10	77.79	80.43	80.89	106.80	106.70
St. Louis	88.87	88.18	91.77	91.70	121.52	118.76
San Francisco	107.58	107.52	111.00	111.81	147.11	147.07
Seattle	90.97	90.91	93.89	94.54	123.86	123.32
Washington, D.C.	83.06	82.30	85.44	85.59	113.58	112.67

Each month Architecture takes a snapshot of U.S. construction – looking at average costs and upcoming projects for different building types. News on projects is provided by Construction Market Data and cost information by R.S. Means – both CMD Group companies.

NOTE: Cost comparisons shown here are for the basic building without sitework, development, land, specialty finishes or equipment. Actual square foot costs vary significantly from project to project based on quality, complexity and local economy.

UPCOMING PROJECTS

Costa Mesa Recreation Facility
Location: Costa Mesa City Park, Costa Mesa, Orange County, CA
Project Value: $2.4 million
Size: 15,000 sq ft, 1 floor above grade, 1 structure
Contract Type: Open Bidding
Current Project Stage: Planning; Working Drawings
Status: Working Drawings in Progress; Bid Schedule Not Set
Owner: City of Costa Mesa Community Services; Keith Van Holt; 77 Fair Drive, PO Box 1200; Costa Mesa, CA 92698-1200
Phone: 714.754.5300; **Fax:** 714.754.4943
Architect: Martinez & Amador Architecs Inc.; Tony Morera; 8405 Pershing Drive, Suite 201; Playa del Rey, CA 90293
Phone: 310.306.4708; **Fax:** 310.306.8896

Polytechnic Univ Metro Tech Ctr 1A Gym
Location: Brooklyn, Kings County, NY
Project Value: $2 – $5 million
Size: 20,000 sq ft, 1 floor above grade, 1 floor below grade, 1 structure
Contract Type: Open Bidding
Current Project Stage: Planning; Schematics
Status: Schematics in Progress; Design Development To Begin 10/98
Start Date: 6/1/99
Project Scope: Recreational & Athletic Building with Gymnasium
Owner: Polytechnic University; Richard Thorson; 6 Metro Tech Center; Brooklyn, NY 11201
Phone: 718.260.3665; **Fax:** 718.260.3755
Architect: Davis Brody Bond; Tony Sieverding; *315 Hudson Street, 9th Floor*; New York, NY 10013
Phone: 212.633.4700; **Fax:** 212.633.4762

Sharon Forks Branch Library
Location: Old Atlanta Road & Sharon Road, Cumming, Forsyth County, GA
Project Value: $2.7 million
Size: 4 acres, 20,000 sq ft, 1 floor above grade, 1 structure, 120 parking spaces
Contract Type: Open Bidding
Current Project Stage: Planning; Schematics
Status: Schematics in Progress; Bid Date To Be Set Approx 03/99
Project Scope: Offices, Restrooms, Storage Area, Study Area; Steel Frame, Brick EIFS Exterior Finish, SS Metal Roofing, Metal Aluminum Decking, Split System HVAC
Owner: Forsyth County Library; Jon McDaniel; 585 Dahlonega Road; Cumming, GA 30040
Phone: 770.781.9840; **Fax:** 770.781.8089
Architect: John Heard Associates Inc.; Greg Pruitt; 100 Colony Park Road, Suite 203; Cumming, GA 30040
Phone: 770.889.0111; **Fax:** 770.844.7650

Baker Branch Library
Location: Groom Road, Baker, East Baton Rouge Parish, LA
Project Value: $2.4 million
Size: 15,000 sq ft, 1 floor above grade, 1 structure
Contract Type: Open Bidding
Current Project Stage: Planning; Schematics
Status: Schematics in Progress; Bid Schedule Not Set
Owner: East Baton Rouge Parish; John Richard; Baton Rouge City/Parish Govern PO Box 1471; Baton Rouge, LA 70821
Phone: 225.231.3700; **Fax:** 225.389.3127
Architect: Cockfield-Jackson Architects (CJA); Steve Jackson; 6717 Perkins Road; Baton Rouge, LA 70808
Phone: 225.761.1680; **Fax:** 225.761.1681

Euless Police & Courts Building
Location: Industrial Boulevard & State Highway 10, Euless, Tarrant County, TX
Project Value: $7 – $9 million
Size: 8 acres 53,000 sq ft, 2 floors above grade, 2 structures
Contract Type: Open Bidding
Current Project Stage: Planning; Design Development
Status: Design Development in Progress; Bid Schedule Not Set
Project Scope: Building A: 2 Story Police Building; Building B: 1 Story Court Building
Owner: Euless Department of Purchasing; Cheif McKamy; 201 N Ector Drive; Euless, TX 76039
Phone: 817.685.1400; **Fax:** 817.685.1440
Architect: Phillips Swager Associates; Greg Schon; 7557 Rambler Road, Suite 670; Dallas, TX 75231
Phone: 214.692.6115; **Fax:** 214.692.6118

Cooper City Police Station
Location: Cooper City, Broward County, FL
Project Value: $2.9 million
Size: 24,000 sq ft, 1 floor above grade, 1 structure
Current Project Stage: Planning; Schematics
Status: Schematics Complete; Bid Schedule Not Set
Architect: Manuel Synalovski; Manuel Synalovski; 3109 Stirling Road, Suite 202; Fort Lauderdale, FL 33312
Phone: 954.961.6806; **Fax:** 954.961.6807

THE INCORPORATION OF HAZARD MITIGATION PROVISIONS INTO THE CODES COULD BRING INCREASED BUSINESS OPPORTUNITIES FOR ARCHITECTS.

Performance Codes: A Whole New Ball Game

The International Performance Code, which will be part of the ICC family of codes, is in draft stages now, with no definite publication schedule. The final report from the Performance Code Committee of the International Building Code Development Committee is due in early 2000, according to Beth Tubbs of ICBO.

Designers will have the option of using the performance code instead of the IBC or IRC for certain building components, or for the entire building, if the codes constrain their design too much. The requirements of the performance code will be stated in design goals, such as "a wall that will resist fire for three hours," instead of stating specific design, material, and construction requirements, as the conventional prescriptive codes do. Additionally, this option will require more engineering calculations to prove that the performance criteria have been met.

"We're calling it a report instead of a draft because we already have the draft IBC," says Tubbs. "The process for the performance code is pretty informal. We're looking for feedback. At this point what's in the documents doesn't matter as much as getting people used to its existence."

Part of educating the building industry about performance codes is holding conferences where American building officials can learn from their counterparts in other countries. This year, at the Second International Conference on Performance-Based Codes and Fire Safety Design Methods, officials from New Zealand, Australia, and Canada explained how their nations are moving toward performance-based codes. "The main focus of the conference was on how people are designing, doing inspections, regulating, and getting plan review through," explains Cheryl Melendez, ICBO vice president of publications services. "It's a whole new ball game."

it will provide increased opportunities for design professionals (see sidebar). It will also allow architects to reassert their roles as design team leaders, integrating their work with that of engineers to achieve more creative designs.

Fire code dispute

One benefit that the IBC apparently will not deliver—even though everyone involved initially hoped it would—is coordination of building codes with fire codes. Fire codes and building codes sometimes conflict, and it looks as though this problem will exist for the foreseeable future. The National Fire Protection Association (NFPA) and the ICC had agreed to work together to consolidate the NFPA's code and building codes, but their agreement to collaborate on the International Fire Code (IFC) fell apart last spring.

NFPA and ICC were strange bedfellows to begin with. For years, the NFPA has claimed that its "American National Standards Institute consensus-based code development process," which brings all parties (including those with a financial interest) to the table, is technically superior, because private sector interests and fire code officials have the widest knowledge of the fire protection business. The building code officials disagree, and accuse fire equipment manufacturers of dominating the NFPA. For two years, the rival groups worked on a blended code for the IFC, only to have the arrangement collapse because of committee structure agreements.

Process arguments aside, there's the overriding issue of the competing financial interests of the NFPA and ICC. "We're dealing with strong turf. Code bodies make money by selling codes," observes Bill Chambless, Jr., a Macon, Georgia, building official who chairs the International Building Code Development General Subcommittee. Only the AIA, it seems, clings to the hope that the differences will be resolved. "We're not giving up. We want to get them back together," says AIA Government Affairs Director Jim Dinegar. "A unified fire code is a high priority for a workable code environment."

Arthur E. Cote, NFPA Senior Vice President of Operations, says the NFPA will continue to work with the ICC: "Certainly if there's going to be a single building code, NFPA will work to coordinate with that building code," continues Cote. "We will be explicit on where the differences are, and tell code officials how, if they adopt the [NFPA fire code], they must amend the [ICC building code] to avoid conflict. The architect should not to have to figure that out."

Difficult process

While the consolidation of all U.S. fire codes and building codes is still only a dream, the organizations have made progress. Consolidation of the three U.S. model building codes is a considerable achievement, and it will be a reality very soon.

"The process was incredibly difficult," says Bill Tangye, SBCCI chief executive officer. He explains that whenever groups are so entrenched in their positions, it is difficult to make progress. Initially, code officials from different regions all felt their codes and organizations were best. "It was easier once we began to talk about the issues rather than which code they came from," Tangye says. "*Over time, the people got to know each other, and achieved progress.*"

tects, the proposed family of international building codes—which are international only in the sense that developing countries might adopt them—offers a number of benefits and opportunities. One of the greatest benefits is streamlined implementation of the ADA. "One of the frustrations with the ADA is that the Justice Department hasn't certified local codes," asserts AIA Government Affairs Director James Dinegar. "If they could certify one model code, it could end the confusion."

The international codes also offer state-of-the art hazard mitigation: The council is incorporating the most current wind, seismic, and flood criteria into the IBC and IRC. One of the biggest changes from old codes is the adoption of the more stringent Southern Building Code wind provisions for low-rise buildings (up to four stories). "Previously, the one-and-two-family dwelling code didn't have seismic and wind [guidelines], so it wasn't adopted in certain areas," explains National Association of Home Builders (NAHB) codes spokesperson Ron Burton. "We've ensured that the new residential code has provisions for wind and seismic criteria, and will qualify for the National Flood Insurance Program."

As the Building Seismic Safety Council (funded by the Federal Emergency Management Agency and administered by the National Institute of Building Sciences) publishes new seismic maps that more accurately depict earthquake zones, near-fault areas that presently do not have seismic provisions in their building codes—even though they lie near active faults—may consider adopting them.

The incorporation of hazard mitigation provisions into the codes could bring increased business opportunities for architects. "The residential code has prescriptive requirements, so builders will still be able to do simple houses without assistance [from architects]," maintains Burton. "But the trend will be toward increasing the use of design professionals to help meet hazard requirements in low-rise residential, larger high-rise residential, and commercial buildings." That's good news for architects who design such buildings. The IRC also includes a simplified energy-efficiency requirement that is similar to the Model Energy Code (now the International Energy Code—see sidebar, "What's in a Name?"). "For the first time we have an energy code people can understand," Burton says. "It's all in one table."

Finally, the most revolutionary aspect of the IBC will be the eventual inclusion of a performance code, which will specify design goals for building components such as roofs and lighting systems, and allow designers more freedom to achieve those goals. Designers will be allowed to opt out of any portion of the conventional codes, which achieve design goals through rigid requirements, and design to the performance codes instead. They will most likely do this in situations in which the conventional, prescriptive codes constrain design options.

Most knowledgeable sources in the codes field agree that it will take years for the concept of performance codes to take hold, but when it does,

Technical Issues

In any code development process, the devil is in the details. Here's a rundown of some of the issues being discussed as the international codes progress:

DEFINITION OF A DESIGN PROFESSIONAL

The AIA is up in arms about language inserted by the American Society of Interior Designers (ASID) in the current draft of the IBC (but not the IFC or IRC) that defines a "registered design professional" as "an individual who is registered or licensed to practice their respective design profession ... in the state in which the project is to be constructed." AIA lost challenges to revert to the traditional restriction of "design professional" as architects and engineers. Linda Newton, chair of the ASID National Codes Committee, contends that interior designers only want to sign or seal drawings for "nonstructural-nonseismic" interior drawings, and that lighting designers and landscape architects also want to be able to practice within the scope of their respective professions.

The fear is that the allied professions are not always competent within their stated scopes of practice. "The interior designers argue that they can do nonloadbearing partitions," explains Charles Spitz of the National Council of Architectural Registration Boards (NCARB). "And the majority are not trained by education or experience to do so."

FIRE CODE PARTICULARS

The Portland Cement Association (PCA) has taken issue with the so-called "heights and areas" provisions of the IBC, which generally relax requirements for fire resistance ratings because they adopted the most lenient areas in the three codes, and allow even less fire-resistant construction in sprinkler-equipped buildings. "Larger buildings will be constructed with combustible materials and/or without providing fire resistance rated construction," maintains Joseph J. (Jim) Messersmith, Jr., PCA's coordinating manager of regional code services. "The likely consequence of this will be larger fires, which will result in higher fire losses." This battle is the latest round in a long-running conflict between the concrete industry and the steel frame and wood-frame interest groups.

Another conflict is the American Iron and Steel Institute's concern over a major change in the IBC regarding the thermal resistance of steel framing. "Steel was considered thermally restrained, meaning it wouldn't shake off fireproofing or lose strength when thermally stressed," explains the Institute's northeast regional manager Jonathan Humble. "Under the current draft of the IBC, design professionals must do an engineering analysis of the steel to prove a steel frame is restrained. Unless architects undertake an engineering analysis, they will have to double the thickness of sprayed-on fireproofing for an unrestrained condition."

Practice

Leveling the Field

Collaboratively produced International Building Codes will soon be a reality, and architects stand to benefit from reduced confusion and increased business opportunities.

By Karen Haas Smith

As any architect who practices in more than one region of the United States knows, differences among building codes regularly cause confusion, inefficiency, and frustration. Designs that are readily approved in one city may be nonconforming in another. The problem stems from the fact that the U.S. has three model code groups that promulgate building codes used by state and local jurisdictions, and each group publishes its own model code. The Building Officials and Code Administrators (BOCA), dominates in the Northeast; the International Conference of Building Officials (ICBO), reigns in the West; and the Southern Building Code Congress International (SBCCI) rules the south. With the anticipated publication of the first editions of the International Building Code (IBC) and the International Residential Code (IRC) in May of 2000, however, the balkanization of American building codes will effectively cease. The international codes, which will consolidate the three model codes, will almost certainly end the confusion, because jurisdictions that want to have updated codes will have no choice but to adopt them.

The three groups joined together in 1994 to form the International Code Council (ICC), based in Falls Church, Virginia. Since then, the ICC, which is funded and staffed by the three groups, has been developing the international codes, while its component groups maintain their separate, regionally-based organizations servicing the building code community. The ICC released the latest international building code drafts (which include a building code, a fire code, and a residential code) last summer, with fall deadlines for submission of proposed code changes. There will be hearings on the international building codes in March at an ICC conference in Costa Mesa, California; the council will publish the results for "public comment." The code bodies will then meet at a September 1999 conference in St. Louis to approve the final versions of the codes, which are scheduled for publication in May 2000.

Pushing for unity

The American Institute of Architects (AIA) has been pushing for a single building code since the 1970s. "The benefits to the design profession [of a unified code] are great," maintains David C. Bullen, director of the AIA Center for Building Performance. "The design process would be simplified, and the cost of producing design and construction drawings reduced. Companies building in more than one region of the country or in foreign countries will benefit from following a coordinated set of building codes."

The model building code groups finally embraced the idea of a unified building code in the early 1990s, motivated by fear that the federal government would force them to do so in the increasingly global construction market. Rather than face the possibility of a government-directed process, BOCA, SBCCI, and ICBO decided to take action. For archi-

How many international codes are there?

The ICC is no stranger to consolidating existing codes into international standards. The group has already published:

INTERNATIONAL ENERGY CONSERVATION CODE (an earlier version was the Model Energy Code; a simplified version will be incorporated into the upcoming International Residential Code)

INTERNATIONAL FUEL GAS CODE (NFPA has a competing code)

INTERNATIONAL MECHANICAL CODE

INTERNATIONAL ONE & TWO-FAMILY DWELLING CODE (former CABO code; will be replaced by International Residential Code)

INTERNATIONAL PLUMBING CODE

INTERNATIONAL PRIVATE SEWAGE DISPOSAL CODE

INTERNATIONAL PROPERTY MAINTENANCE CODE

INTERNATIONAL ZONING CODE

Upcoming regulations are:

INTERNATIONAL BUILDING CODE (nonresidential)

INTERNATIONAL FIRE CODE (NFPA has a competing code)

INTERNATIONAL RESIDENTIAL CODE (includes hotels and motels, apartments, townhouses, and single-family)

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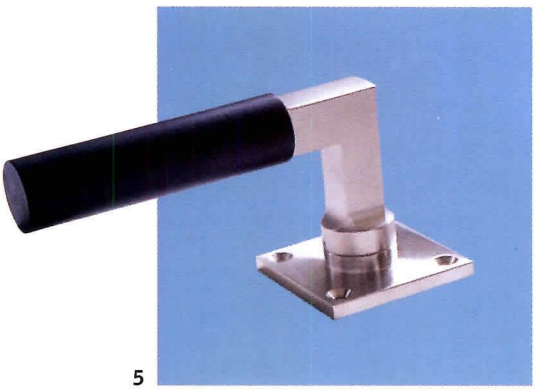

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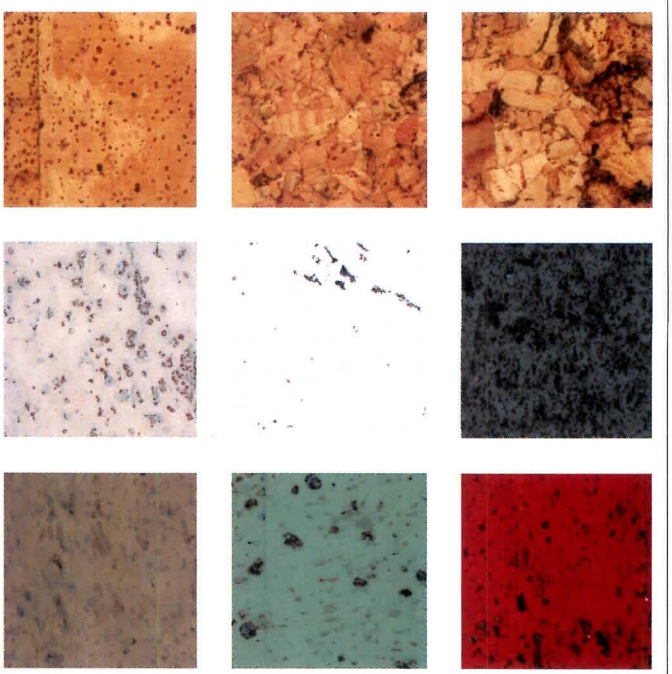

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4 Tied to your desk?
Richard Holbrook of Herman Miller has designed a new computer workstation centered around the user. The still-to-be-named height-adjustable tower can be lifted, lowered, removed, or locked into place, using a simple pneumatic lift that allows for a 15-inch height adjustability range. The tower, which comes in two base finishes and a variety of work surface finishes, can be used alone or in combination with other Herman Miller products.
Circle 298 on information card.

5 Bauhaus brass
New York City-based hardware manufacturer NANZ reached deep into 20th-century industrial design for its new door handle—an exact replication of a 1920s Walter Gropius design. The No. 2006 Lever, which is accompanied by supporting hardware, is made from solid brass, and can be finished in satin or polished nickel, silver, or patinated finishes.
Circle 299 on information card.

6 Put a cork in it
Wicanders, founded in Sweden but now based in Portugal, and the leading source of cork in the world, introduces a new line of cork flooring, which has versatile surface textures and colors and can be combined for specific patterns. It is also available in a traditional wood veneer. These glue-down floors are easy to install and sound-absorbent, making them suitable for both commercial and domestic use.
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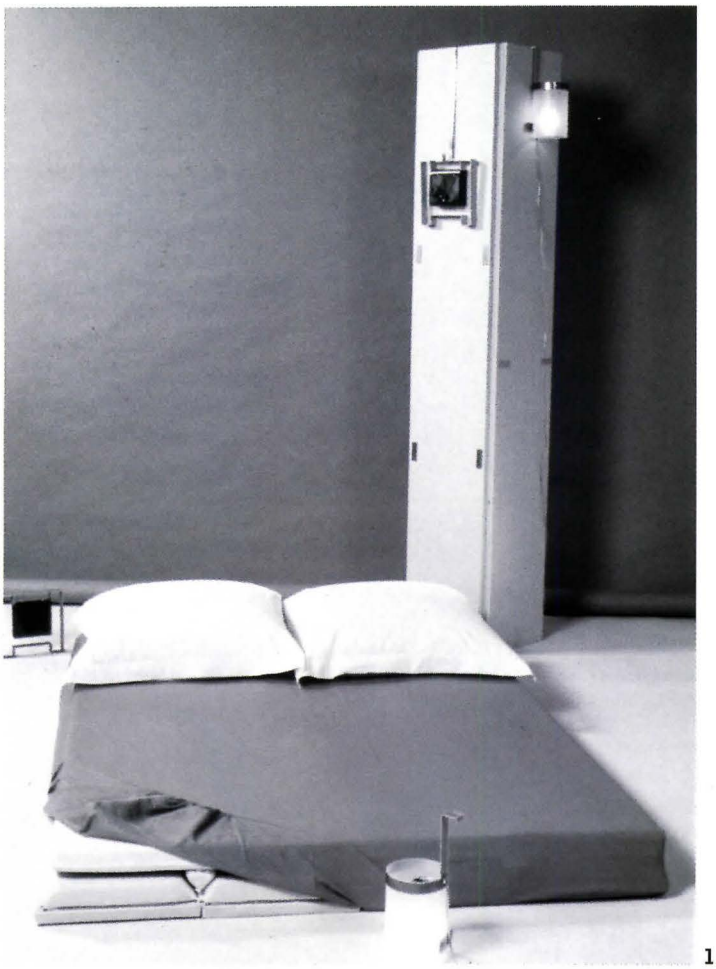
Products Support and Surfaces



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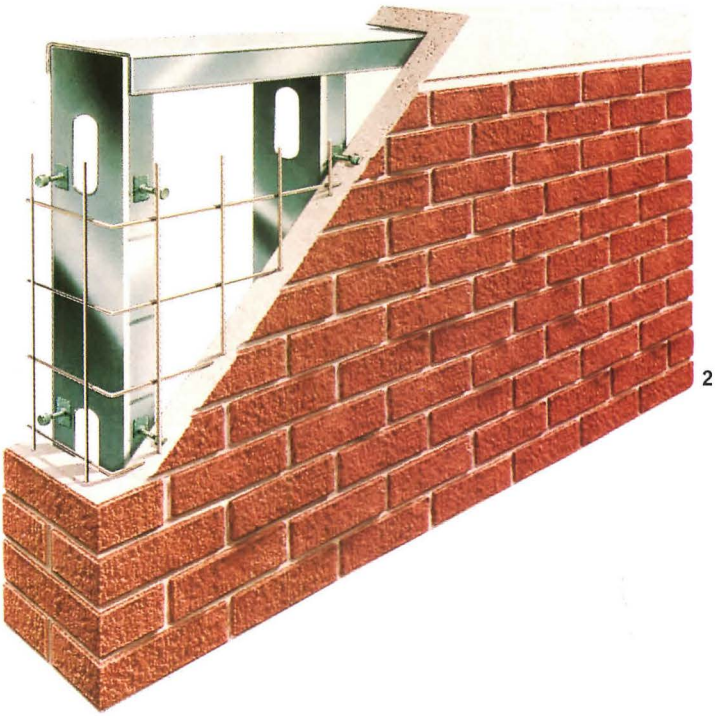

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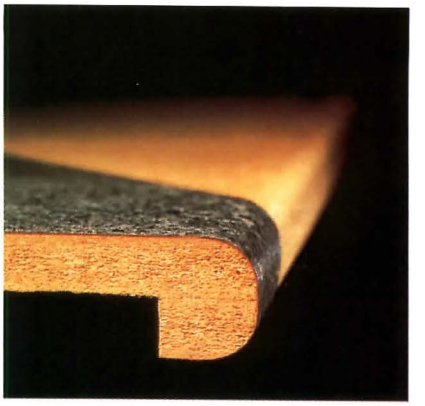

3

1 Modern Murphy bed
Your guests won't have to worry about putting you out when you can put them up in style, thanks to Paris-based designer Matali Crasset's new spin on the old Murphy bed. Appropriately named "When Jim goes to Paris," the 6-foot-by-4-foot bed folds out from a 4-inch-square column-shaped case and is accompanied by an alarm clock and lamp. The case comes in yellow, navy blue, and aluminum finishes.
Circle 295 on information card.

2 The skinny on a new wall system
Easi-set Industries introduces Slenderwall, a new exterior cladding panel made from lightweight precast concrete and heavy-gauge galvanized steel stud panels. The panels are 40 percent lighter than similar precast systems, weighing only 28 pounds per square foot. Slenderwall is available in brick, tile, polished granite, and exposed aggregate. The steel frame accepts plumbing, electrical wiring, and insulation, eliminating the need for additional framing.
Circle 296 on information card.

3 Amber grains of wheat
Canadian manufacturer Isobord Enterprises, based in Elie, Manitoba, introduces an engineered particleboard made from straw fibers and nontoxic resins. Similar in character to medium-density fiberboard, these panels weigh 15 percent less than other engineered boards and are made without formaldehyde. Panel thicknesses range from 1/4 inch to 1 1/2 inches and are designed for use in furniture, countertops, and cabinets.
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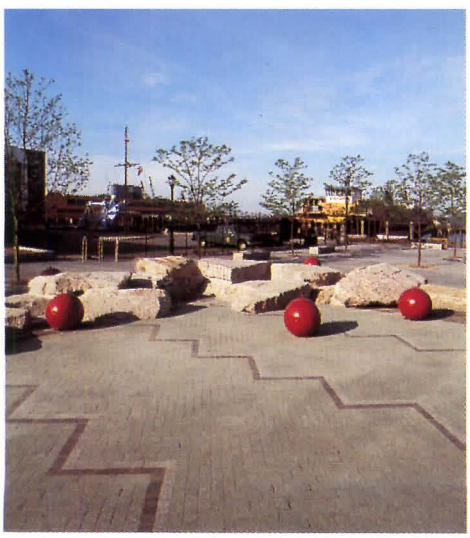

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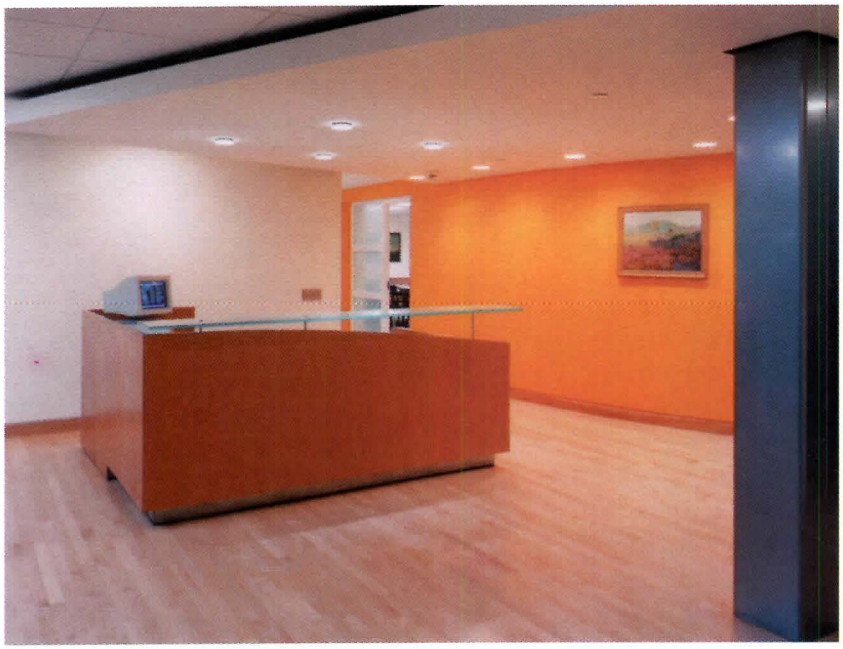
visible in walls or ceilings, but Kupka explains that such an approach would have compromised the room's integrity—now, they are virtually invisible. "I hope that nine out of every 10 people aren't aware of the sources of the air," he says.

Adding a new air-handling system in buildings never intended to have them was the next challenge, and the design required input from several groups. Hoping to prevent noise pollution in this historic area, the local planning commission required the architect to test the noise level the new mechanical equipment would create. In its assessment, acoustical consultants TechEnvironmental, of Waltham, Massachusetts, found that locating the 20-foot-long units on top of a smaller building linking Plummer Hall to Daland House significantly cut noise levels. Nestling the system between two larger buildings also eliminated the need for screening walls.



In Bowker building—museum's new, modern office space—layered effect accentuates ceiling of front lobby (above), while covering transfer beams that could not be removed. Architect cleaned, repaired, and repainted Bowker building facade (above right).

New office space

The Salem Historic Commission required fencing for a similar system placed on the second-floor roof of the new administrative office space in the Bowker building. To fit the large units into a small space, the architect separated the condensers from the air handlers by placing them on the lower portion of the roof 15 feet away. A wood fence with lattice detailing provides the necessary cover.

Splitting the systems represents only one of the innovations required in developing workable, modern office space from the 168-year-old building. The structure, built to house three separate retail operations, had two

WITH THE MUSEUM ADMINISTRATION SETTLED IN, PLANS ARE NOW UNDERWAY FOR THE FINAL PHASE OF THE MASTER PLAN

12-inch-thick brick firewalls running across its width that, for structural reasons, could not be removed. The architects designed a large conference room in the center of the first floor, enclosed by firewalls at either end, and new anterooms behind them. Transfer beams, integral to the building's structure, are worked into the plan by creating layers of drywall ceiling at focal points, such as a lowered ceiling in the reception area. And throughout the building, badly warped floors required the installation of wedge-shaped wooden inserts to level the surface.

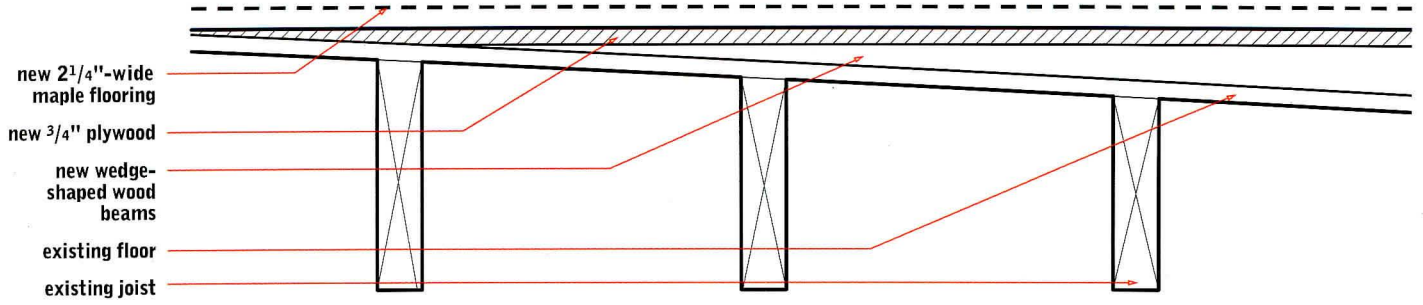
Other restrictions in the 19th-century building proved to be more problematic. The required air ducts and mechanical equipment would have further diminished the existing low floor-to-ceiling height. One system designed by the engineers would have placed 23 variable air volume (VAV) boxes in the ceilings, setting ceiling heights "unacceptably low," Kupka maintains. Instead, the architect used VAV diffusers by running air ducts throughout the ceilings, providing each office with individually controlled air circulation. The two conference rooms contain VAV boxes, where greater volumes of air are needed.

Final phase

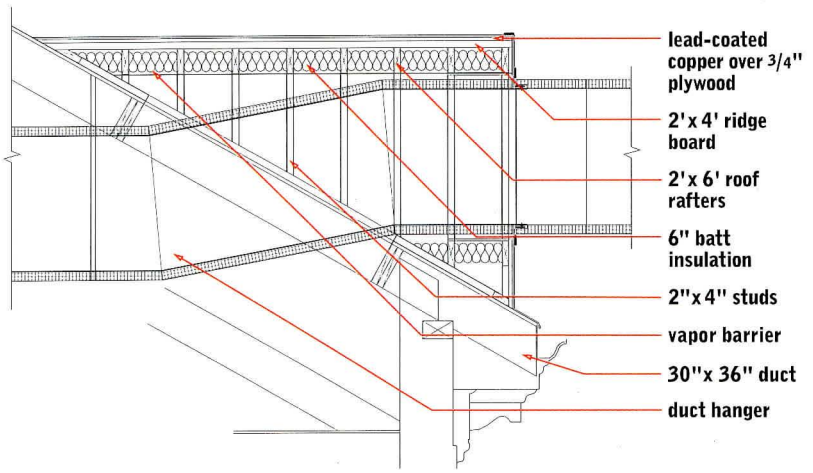
With the museum administration settled in, plans are now underway for the final phase of the master plan—the expansion of gallery space. Safdie has designed a two-story building with a sweeping glass canopy over an interior pedestrian corridor that will connect with the National Park Service's visitor center in the adjacent armory. When complete, the Peabody Essex will be properly equipped for its next 200 years.

Michael Maynard is a freelance writer based in Providence, Rhode Island.

Air circulates evenly throughout storage facility (above) in armory basement to maintain artifacts and paintings. Lattice fence obscures air handlers on second-floor roof of Bowker building (below right and bottom right). Same system for library is hidden on smaller connector building between Plummer Hall and Daland House (below left and bottom left), requiring no fence.



Section through leveled floor in Bowker building (not to scale)



Section of Plummer Hall duct penetration 1.5'/45cm

brick wall. Where the wall was wet, a cementitious waterproofing material troweled onto the brick supplemented this system. An underslab drainage system, previously installed in anticipation of such a project, shifts water away from the building.

Engineers were challenged with providing a mechanical system for the basement "that would accept the imperfections of an old building and yet be strong enough to pull out moisture," says architect Kupka. Vanderweil Engineers, a Boston engineering firm, chose a "desiccant" system in which moisture is absorbed into the unit, treated by a blower containing lithium chloride (which dries the air), and then vented out of the building. This added $40,000 to the original cost estimates, but promised to counteract the moist environment.

While the system maintains the climate at a museum-specified 52 percent relative humidity and 68 degrees, a separate rooftop air-handling system feeds air to the basement. The climate is monitored continuously to maintain these conditions. Readings have remained constant since the basement's completion last November.

While climate stability is important, the flow of air is critical to preserve the museum's artifacts: Pockets of still air can create mold and mildew, which can destroy delicate fabric and strip away pigmentation on the museum's 19th-century oil paintings. By carefully spacing shelves and then bringing in engineers to design the duct system, the architect ensured that the air, aided by fans, would circulate evenly throughout the space.

The humidity fluctuations that plagued the armory basement were less onerous in the Plummer Hall basement, where the museum keeps manuscripts, books, and newspapers dating from the 18th century. But special care was still required because of greater infusions of fresh air from library staff who enter on a regular basis, and also because of air that seeps into the dehumidified basement from the floor above. To combat these forces, the architects designed an insulated ceiling, floor, and walls similar to those in the armory basement to create another "box within a box," Kupka explains.

Light-handed retrofit

In the above-ground museum projects, the HVAC systems had to conform to the existing architecture. The 45,000-square-foot Phillips Library, of which 25,000 square feet were renovated, required particular historical sensitivity because of its age and significance. By bringing on a historic preservation consultant, Building Conservation Associates, the architects determined a color scheme appropriate to the era of the building's construction. They then disguised the added contemporary effects, such as an automatic temperature-control system that sets the climate. Air diffusers fit within the ceiling's existing moldings.

The centerpiece of the project was restoring the library's reading room. "The library is both a resource and an artifact," notes S. Ali Rizvi, the firm's principal-in-charge. In addition to refinishing the room's interior surfaces, the architect revived its original use with new bookcases and desks, which take design cues from the existing architecture. C&R/Rizvi also added diffusers to the existing ceiling coffers at the base of the chandeliers to distribute conditioned air. Diffusers are typically

Restoration of reading room (top) entailed reproducing historically accurate color scheme, including gilding of columns. Architect removed bookcases to create unobstructed site lines, which are critical to library security. Exterior of Plummer Hall (1856, above left), connects with exhibition hall in museum's Daland House. Vents installed in track lighting of portrait gallery (above), which connects to reading room, *circulate air.*

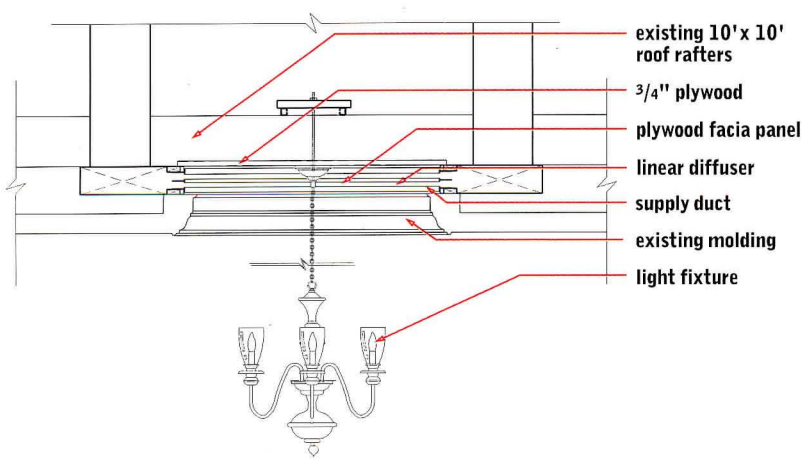
Removing the Hex

Restoration of the Peabody Essex Museum in Salem, Massachusetts, also solved problems that plague most museums—storage space and climate control.

By Michael Maynard

While Salem, Massachusetts' Peabody Essex Museum is a valued treasure trove of history and art, as well as this country's oldest continuously operating museum, the venerable institution until recently had a catalog of deficiencies that would make any curator cringe. The museum, established in 1799, had run out of space for its extensive Asian art collections, early American portraits, costumes, and other decorative arts. To make matters worse, museum administrators were scattered among several buildings, and the lack of an air-circulation system in the museum's research library made conditions so stifling in the summer that the staff had to warn elderly patrons that remaining inside too long could be harmful.

Finding the space to expand the Peabody Essex was not an issue: A 1995 master plan prepared by Boston architect C&R/Rizvi had identified how to solve the museum's most pressing problems. For museum-quality storage, the architect could retrofit the 11,000-square-foot basement of a burned-out armory across the street from the gallery, as well as the basement of Plummer Hall, which, along with the adjacent museum-owned Daland House, contains the Phillips Library. The architects also suggested the 1830s Bowker Place building, across a pedestrian walkway from the gallery, for new administrative offices. In 1997, the museum hired C&R/Rizvi to implement the first phase of the master plan. (The second phase, an addition by Moshe Safdie, will begin construction late next year and open in 2001.)



Section through reading room ceiling coffer 1.25'/38cm

The $5 million effort began with converting the former armory and Plummer Hall basements for storage. Restoring Plummer Hall and renovating the Bowker building into the museum's administration building followed. All three projects were in separate buildings in two blocks of an historic commercial district near the center of Salem.

The armory basement and the office were completed in October 1997, while Plummer Hall reopened last May. Each project involved a range of technical and design components. Creating basement storage spaces required technological expertise: designing the best system to preserve artifacts, manuscripts, photographs, and newspapers. Renovating Plummer Hall's first-floor gallery and second-floor library and reading room required a more delicate balance. The architect restored the grand reading room to its 19th-century splendor, and also retrofitted it with a climate-control system.

Designing storage

The Peabody Essex's most pressing need was for a storage facility. "The museum had things all over the place," recalls Don Kupka, associate principal of C&R/Rizvi, "in attics, basements, and nooks and crannies without any humidity control or climate control." The musty, unheated basement of the Salem Armory seemed an unlikely place to house the rare, fragile collections. The basement, a former drill shed, was "a rundown disaster area," recalls Associate Director of Facilities Planning and Expansion William Phippen, who, along with John Grimes, is overseeing the museum's recent growth.

For the architect and engineer, the first priority was basic: keep the water out. As built, water would roll down the basement's brick walls and pool on the concrete floor. "We realized that this old building was never going to be truly watertight," says Kupka. So the architect created a humidity-controlled shell inside the basement by designing new walls within the existing walls that responded to varying conditions. In areas where the old walls were dry, the brick was left exposed. In areas where it was damp, the architects created new walls consisting of 5/8-inch thick, moisture-resistant drywall interior surfaces in front of a six-mill polyethylene vapor barrier, 3 1/2 inches of insulation, 1 inch of vent space, and then the existing

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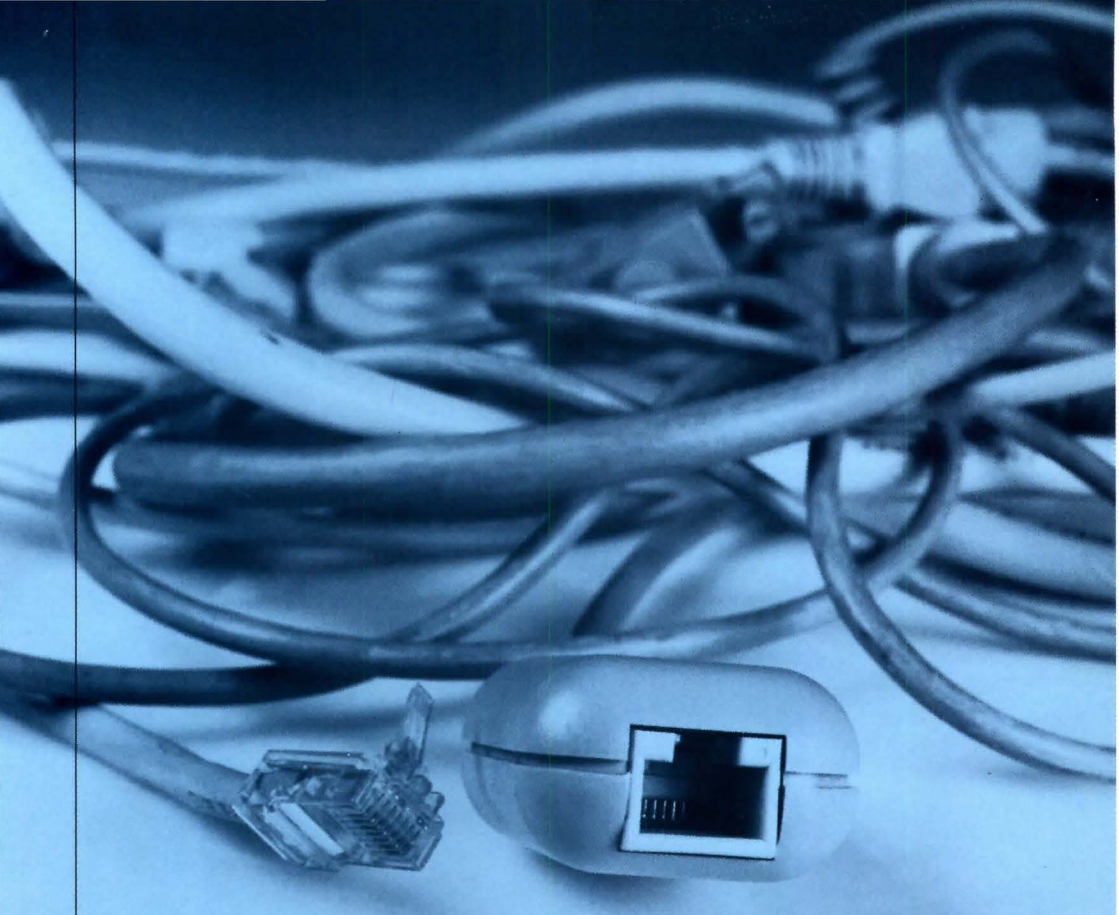


WHILE THE FRONT-END COST OF HARDWARE AND SOFTWARE ARE THE MOST OBVIOUS EXPENDITURES, THEY ARE SOMETIMES NOT THE LARGEST.

For Callison, measures of return are more intuitive than most accountants advise. "The tendency is to look at something and say, 'Well, it completes a task three times faster than it did before; therefore, we are three times more productive,'" says Epple. But faster does not always mean more effective. The best measure is a better product, better-resolved design, better-quality documents, and better communication.

This brings up another measure of return on investment: recruiting. "There is no question that our ability to offer top-quality tools pays off in the talent we attract," says Epple. "Top quality people want to work in a place that is committed to the tools and training that make their jobs better." With much of that hardware and software now in place, Callison will beef up spending on formal staff training this year.

David Morton manages Callison's 12-person information systems (IS) team, four of whom are devoted to research and strategy. "Callison researches on the bleeding edge and implements on the leading edge," explains Morton. The goal is to ensure that technology is never a barrier, and always a tool. For example, Callison is enacting a video-conferencing program that uses a mix of technologies to facilitate desktop conferencing. "Until we could make video-conferencing work from the desktop as a tool for more effective communication, it was more of a hindrance than a help," Morton notes.

The small to medium firm

Manhattan-based design and production firm Montroy Andersen Design Group believes that it is imperative to invest in and commit to technology to maintain a reputation as a cutting-edge office. The firm feels this levels the field with some of the bigger players within the industry, while maintaining the integrity of a smaller shop. In recent years, more of the 20-person firm's technology investment has been going into training and support.

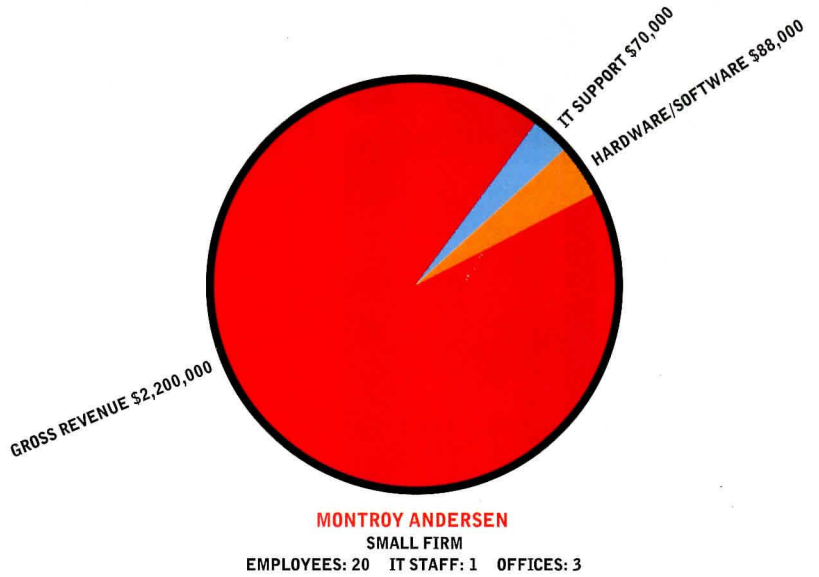
Investing in back-end technology support enables Montroy Andersen to compete with larger firms by offering an expanded scope of services. Explains Chief Financial Officer Peter Friebe, "This year, we allotted 46 percent of our capital budget for equipment, which includes everything from PC workstations to printers, and 35 percent to software. That leaves 19 percent for nontechnology items such as leasehold improvements, furniture, and other equipment."

When Montroy Andersen opened a Los Angeles office this year, dollars previously assigned to nontechnology expenses were reallocated to establish a private communication network between New York and Los Angeles. With the recent addition of a London office, technology has now given the firm the capability to run 24 hours a day, a service many similar-sized firms cannot offer their clients. For example, at the end of the day in London, drawings can be transmitted to the New York or Los Angeles office for production and returned to the London office the next morning.

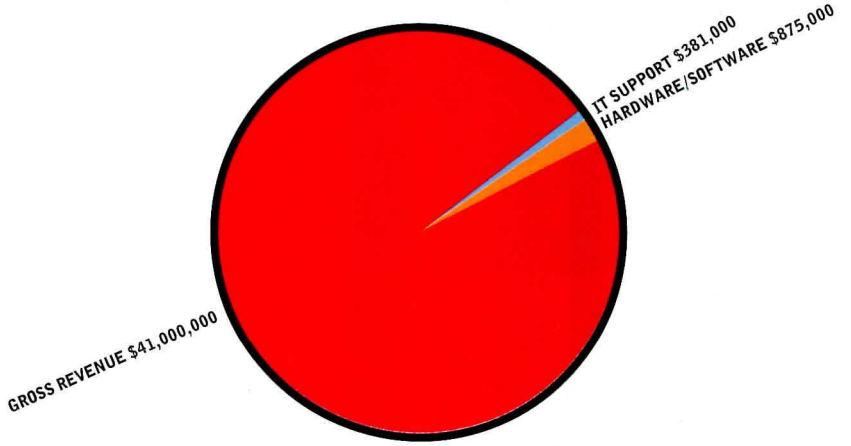
Saturation points

Most firms are now reaching a point where every employee has a dedicated computer with network and Internet access. This does not necessarily mean that costs will begin to fall off dramatically; it may mean that costs will shift from infrastructure investment to training. But one thing is certain: Firms are not backing down on their commitment to technology—or its associated costs.

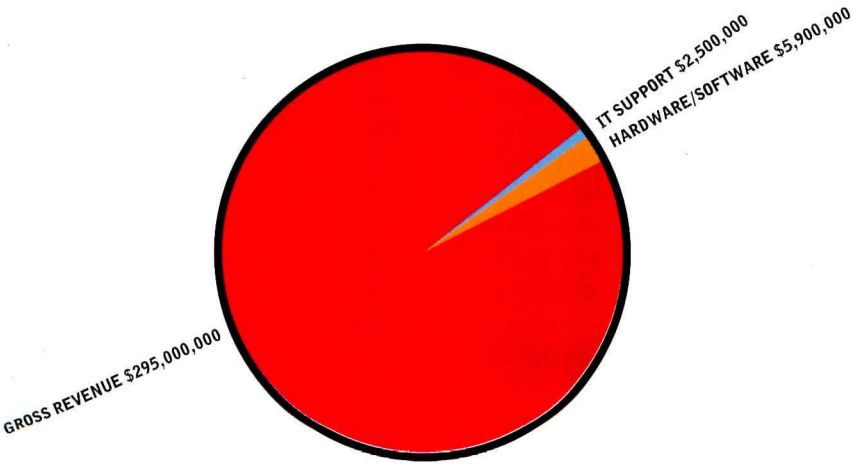
Patrick Mays is a principal and chief information officer for NBBJ Seattle.



MONTROY ANDERSEN
SMALL FIRM
EMPLOYEES: 20 IT STAFF: 1 OFFICES: 3



CALLISON
MEDIUM FIRM
EMPLOYEES: 400 IT STAFF: 12 OFFICES: 1



HOK
LARGE FIRM
EMPLOYEES: 2,000 IT STAFF: 48 OFFICES: 24

Pie charts illustrate front-end (hardware/software) and back-end (IT support) expenditures at representative small (top), medium *(middle)*, and large (bottom) architecture firms.

and software for each employee. The focus then shifts to maintaining the investments, which includes seemingly endless software upgrades. HOK is exploring a different approach to this ongoing problem by allocating computer and software costs for each employee as a monthly operational expense rather than a one-time capital expense. This approach provides some tax advantage, as the firm can write off operational lease costs as operating expenses.

HOK's middle tier is managed centrally in St. Louis. HOK has folded a system of interconnected local area networks into a single wide area network to increase network infrastructure consistency. A team of network professionals, distributed among various offices, manages the entire network.

HOK's top tier is managed by design professionals who understand IT issues and can balance the local office's needs with firmwide centralization. They manage the base tier at their location with the outsourced staff, and coordinate with the middle tier by providing local system administration. The IT team's most important role is to integrate technology into the project delivery teams, including training, management of the data standards, and software customization required by the teams.

The medium to large firms

Commitment to technology has long been integral to the success of Callison Architecture, a 400-person studio-based design firm in Seattle.

Callison invests between 3 and 4 percent annually of the firm's gross billings in new technology, in a 3:1 ratio of expenditures hardware and software to maintenance (support, training, and research expenditures).

"More than anything else, we want to know how much an investment in a particular tool will add to the process or product," says Callison's principal in charge of technology, Steve Epple.

Computers

The High Cost of High-Tech

Untangling after-purchase costs is the key to creating returns on computer investments.

By Patrick Mays

In today's increasingly technology-dependent work environment, many architecture firms find a growing portion of their capital budgets allocated to computer-related expenses. While the front-end costs of purchasing hardware and software are the most obvious expenditures, they are sometimes not the largest. Instead, overhead costs for supporting computer systems, and the salaries and training of staff—known collectively as back-end costs—often exceed the cost of hardware and software combined. For example, a typical desktop station with software may cost $6,000, but training an architect to take full advantage of a variety of computer applications may cost an additional $8,000 in billable time.

Budgets and computer needs vary based on firm size and organization. Studio-based firms, for example, have different needs than design and production firms, and different types and scales of projects require various digital infrastructures. A small firm designing only single-family residences may not require an interoffice computer network, but most large firms cannot operate without one. The basic issues of scale are similar in training architects to use computers, but the support and training associated with Internet access, printers, plotters, and desktop stations can vary widely. Comparing firms of different sizes reveals some of the priorities architects develop in spending a firm's computer dollars.

Three tiers of support

In-house information technology (IT) teams generally provide services through a three-tiered system, especially within medium and large design firms. The bottom tier involves the management of end-user computing, which includes allocating workstations to staff, installing the appropriate software for specific tasks, maintaining hardware and software, and relocating equipment.

The middle tier consists of the management of network infrastructure, including local area networks (LANs), wide area networks (WANs), and shared systems such as Web sites, e-mail, voice mail, and telephone systems. This level of management also requires developing backup and archival systems, as well as disaster recovery plans. IT staff at this level also set data standards that include file naming, directory structure, and CAD conventions.

The top service tier—the application of technology on all projects—is the most important. To realize fully the value of its computer technology, a firm must customize generic software to fit its practice. Most CAD programs, for example, are generic drafting packages, which must be adapted to the requirements of architectural practice. Without savvy management of the top tier, technology—no matter how sophisticated—cannot be cost-effective.

The large firm

Hellmuth, Obata & Kassabaum (HOK), a 2,000-person architecture and engineering firm based in St. Louis, has 25 offices worldwide. HOK organizes its offices by discipline: architecture, planning, interiors, and engineering, and project teams are formed on the basis of the client's projects. The management of information technology in such a large firm allows for more economies of scale than in smaller firms: There is greater discount-buying power and less IT staff redundancy, because a wide area network allows staff in one location to support many offices. However, hardware, software, and data management solutions are more difficult to organize.

Ken Young, HOK's chief information officer, says "We're focusing our efforts on controlling the total cost of ownership, while putting emphasis on how our designers use technology on projects." But design firms such as HOK solve design problems through exploration and experimentation. HOK's IT managers stress the balance between the freedom to experiment and the need to standardize and control computer protocols. Each project team can make choices to best serve their client, but they must follow some standards that allow staff to move from job to job with a minimal learning curve.

HOK has begun to centralize much of the management of core network infrastructure technology in St. Louis, but the firm outsources bottom tier desktop support. Young explains this approach allows for growth and reduction cycles in staff, without the commitment of purchasing.

In the outsource model, a leasing company takes over the supply and support of desktop equipment. Most design firms purchase computers

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the risers above, thus relieving the tremendous torsion on that last secured riser," Nordenson says.

"Because we intended to express the stair's structure directly, it was important to bring Guy to the process early," says ARO Principal Adam Yarinsky. "Instead of working in the typical linear fashion, we prefer to work using feedback loops. As you gather more information, you're able to revisit your assumptions. We would sit and sketch with Guy. Sometimes solutions would come immediately; sometimes we'd take the information, examine it individually, and then return to the table."

Nordenson laments the loss of an intimate knowledge of materials that, before the 20th century, was the tradition of building. For instance, Palladio was a stonemason before he was an architect. He understood stone and, through trial and error, was able to predict its behavior under different conditions. Though Nordenson depends on the computational and analytical tools of his profession, the imaginative features of his solutions come from his working closely with architects who experiment with materials in order to discover hidden potential.

Nordenson follows the same approach regardless of the project's scale. "I was approached in 1995 by architect Thomas Marvel [partner of Puerto Rico-based Marvel Flores Cobian & Associates] to enter a competition with him to design a bridge over the Rio Grande de Loiza, connecting metropolitan San Juan with the farming region of Fajardo in the east," says Nordenson. Puerto Rican Secretary of Transportation Carlos I. Pesquera saw an opportunity to connect the country's urban and rural regions in a way that would symbolize Puerto Rico's commitment to a technologically innovative, environmentally responsible future. Nordenson, then still with Ove Arup, and Marvel won the competition with a cable-stayed bridge design that would feature an elevated pedestrian walkway and a scheme for a riverside park. Because the project's future is presently uncertain for economic reasons, the design remains an imaginative abstraction.

NORDENSON LAMENTS THE LOSS OF AN INTIMATE KNOWLEDGE OF MATERIALS THAT, BEFORE THE 20TH CENTURY, WAS THE TRADITION OF BUILDING.

"The decision to build a cable-stayed bridge was a design decision. This kind of structure lends itself to dramatic expression, and the program called for the bridge to be a grand gateway to San Juan," explains Nordenson. Cable-stayed bridges look similar to suspension bridges, but they perform very differently. Suspension bridge cables are threaded through the towers to anchorages at either end of the bridge, which bear the load. In cable-stayed bridges, the cables are attached to the towers so that the towers bear the load.

In this case, the tower would actually be two separate piers tied with cross beams every 40 feet, 118 feet above the walkway. The opening between the piers marks the pedestrian entrance onto the bridge. Attaching the cables to the inside of the road decks gives motorists an unobstructed view of the river, a clever but not original move: In 1988, the Sunshine Skyway bridge that crosses Tampa Bay in Florida was one of the first cable-stayed bridges to attach cables to the center of the roadway. However, the effect this has on the pedestrian walkway would be dramatic. Pedestrians rise above the traffic, pass through the open pylon, and cross the river between the cable curtains.

With the bridge, the stair, and other projects, Nordenson puts form and continuity ahead of pure structural functionalism. Referring to Michael French's 1994 book, *Design and Evolution*, in which the author distinguishes between evolved form and invented form, Nordenson laments 20th-century dependence on invented form, such as skyscrapers, which has rendered the design process linear and formulaic. Evolved form is the cantilevered stair, the Gothic cathedral, the racing canoe, the bridge. "The Aleutian Indians had a tradition of kayak-making. For hundreds of years, they refined and adjusted the design, learned from failures and successes, accumulated knowledge, and passed it on. Because of this continuity of tradition, their kayaks are still as fast as those made today of carbon fiber," says Nordenson.

Another tradition will be documented by *Bucky's 100*, a collection of essays by 100 of Buckminster Fuller's colleagues and collaborators and edited by Nordenson. (The essays are written, but there is no publisher yet.) "In 1993, I was going religiously to concerts by and in honor of [avant-garde composer John] Cage, commemorating his 80th birthday. They were sacred," muses Nordenson. He was especially touched that the concerts continued even after Cage, a Fuller contemporary and friend, died in August of that year. To him, it was a continuation of a musical tradition.

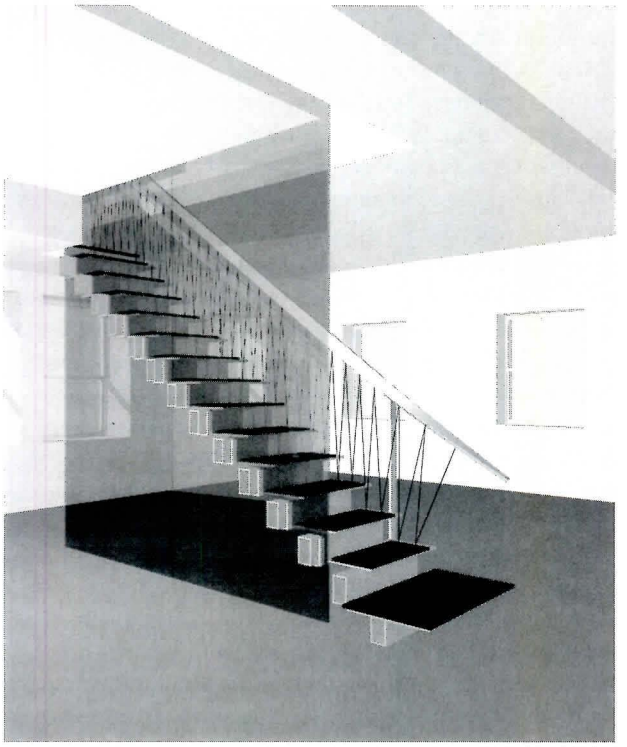
Fuller, who died in 1983, would have been 100 in 1995, so Nordenson conceived a "Bucky Circus," similar to the long-playing Cage celebration. "I realized that would be beyond me to organize so I thought of a printed circus, which became this book. Of course, it was to honor Fuller, but also to remember the kind of culture he was part of, along with Cage, Noguchi, Black Mountain College, Greenwich Village in the 1920s, and so on—the culture we want to keep alive."

This fall, undergraduates in his architecture and engineering studio at Princeton University will explore the innovative bridges of Swiss designer Robert Maillart (1872-1940), among others, and understand the mindset behind his concrete, often controversial bridge designs. They will use advanced computer technology to experiment as artists with his structures, rather than as analysts or diagnosticians. Forms will evolve from the process, not the calculations—and so the tradition continues.

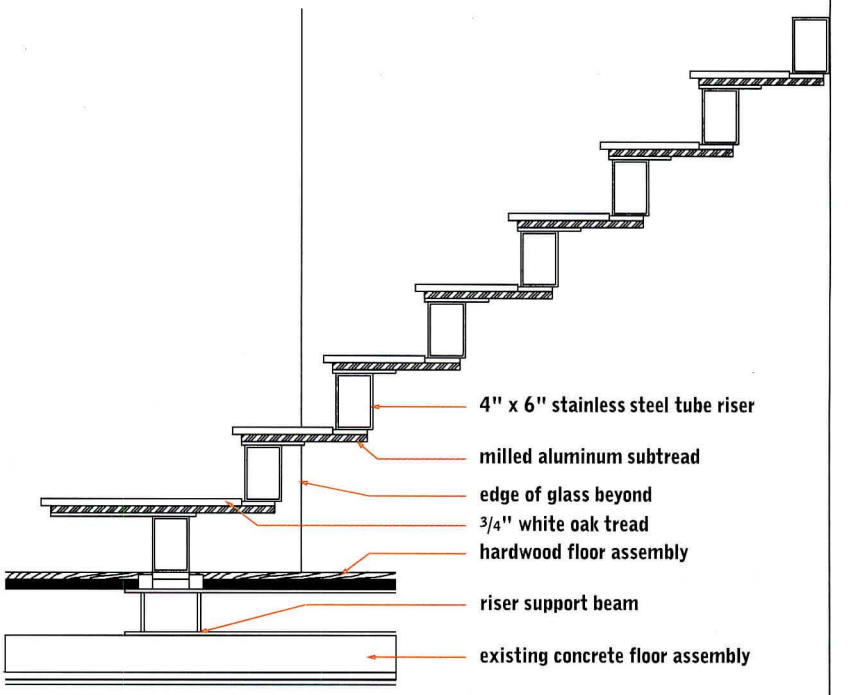
Editor's note: Links to related Internet resources accompany this article at www.architecturemag.com.

SoHo Loft, New York City

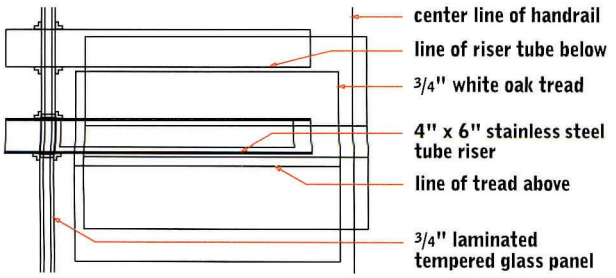
DESIGN ENGINEER: GUY J.P. NORDENSON & ASSOCIATES
ARCHITECT: ARCHITECTURE RESEARCH OFFICE



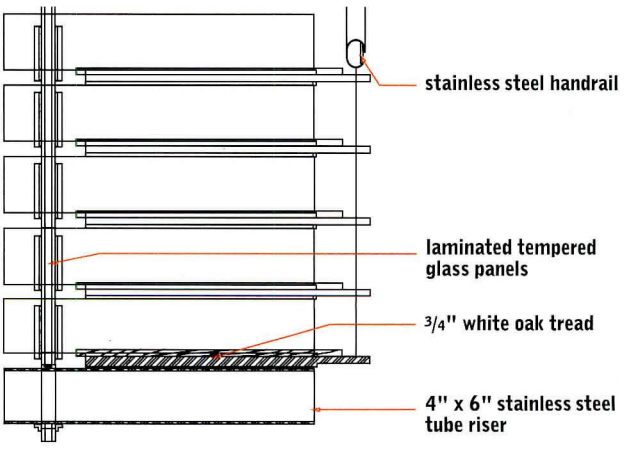
Computer model shows 3/4-inch-thick plane of glass that supports one end of Nordenson's cascading stair (above). Second riser from floor (top right) is free-floating; all risers above are secured to waterjet-cut openings in glass plane.



Section



Plan at typical riser

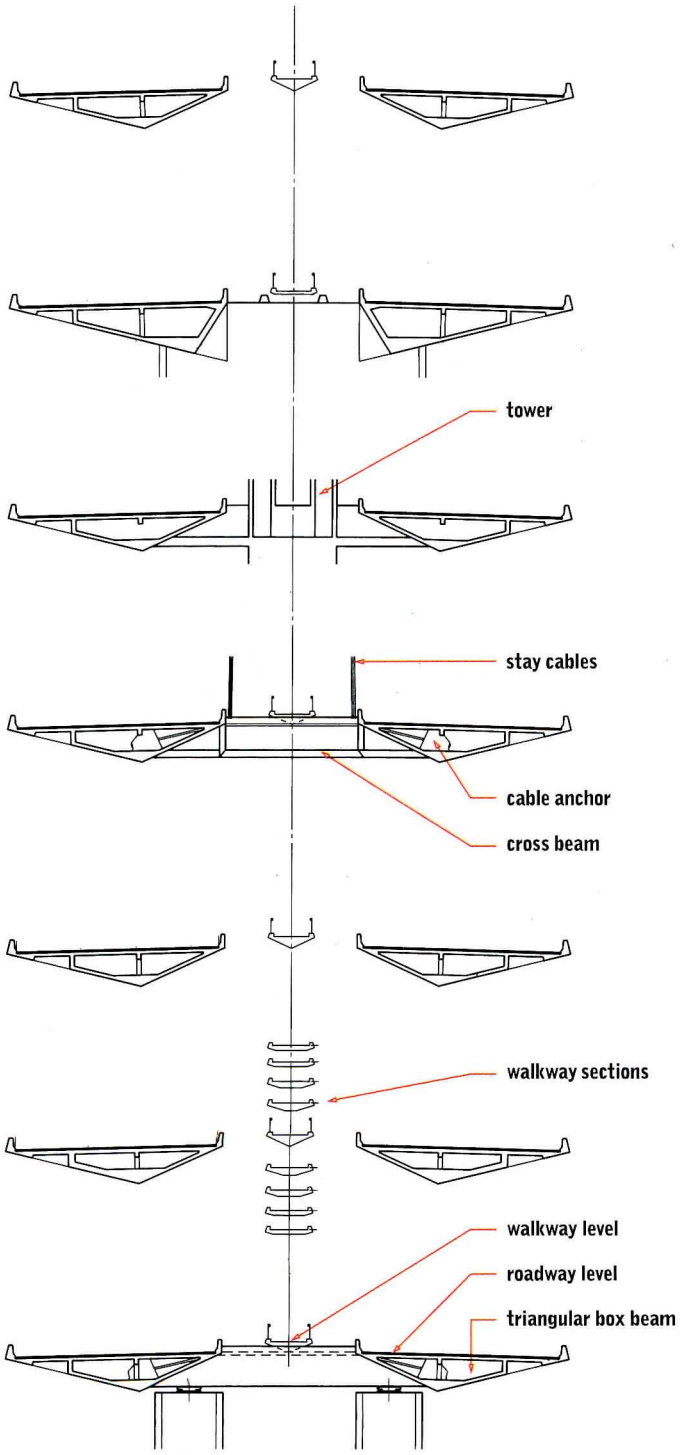


Elevation and section through typical riser-tread assembly

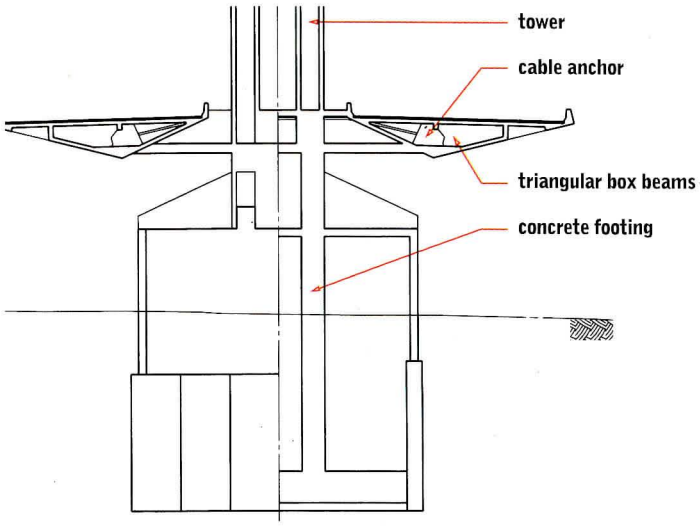
BRIDGE DETAILS

Cable-Stayed Bridge, San Juan, Puerto Rico

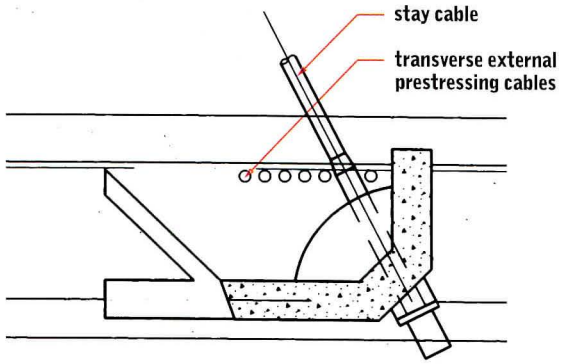
CLIENT: PUERTO RICO DEPARTMENT OF TRANSPORTATION
DESIGN ENGINEER: GUY J.P. NORDENSON & ASSOCIATES
CONSULTING ARCHITECT: MARVEL FLORES COBIAN & ASSOCIATES, SAN JUAN, PUERTO RICO—THOMAS MARVEL (PRINCIPAL)
STRUCTURAL ENGINEERS: OVE ARUP & PARTNERS; CMA ARCHITECTS AND ENGINEERS



Walkway and roadway sections



Section at tower



Cable anchor detail

Cross beams connect parallel roadways (left) every 50 feet. Stay cables (above) attach to intersection of cross beams and box beams. Stays compress box beams so that only farthest end of main span requires additional posttensioning.

ANNE KATRINE SENSTAD PHOTOS

Nordenson describes design process behind cable-stayed bridge construction.
Elevation of San Juan bridge shows two spans: 787-foot-long main span and 492-foot-long back span, which are supported by tower of cast-in-place, slip-formed construction.

The Engineer's Hand

Guy Nordenson talks about his work, tradition, collaboration, and the art of structural design.

By Sara Hart

"Dare to be naive." Those are the words architect, visionary, and inventor R. Buckminster Fuller spoke often in the Long Island City, New York, studio he shared with his partner, architect Shoji Sadao, and frequent collaborator, artist Isamu Noguchi. Their young draftsman, Guy Nordenson, once a reluctant engineering student from the Massachusetts Institute of Technology with a passion for comparative literature, thrived in the heady environment. Watching the three collaborate in different media and scales, he absorbed their unbounded world view and their methodology of exploration and experimentation.

Sadao, the surviving member of the triumvirate, and currently executive director of the Isamu Noguchi Foundation, remembers a quiet young man who worked very hard. "At the time [1974], we were working on the inaugural exhibition at the Cooper-Hewitt museum, which was curated by Austrian architect Hans Hollein and had a room devoted to Bucky's work, designed by Noguchi. Guy worked on the models for it. He was very excited," Sadao recalls.

Nordenson, 43, completed his graduate studies at the University of California at Berkeley and worked in San Francisco before moving to New York City to teach at Columbia University. In 1987, he joined Ove Arup & Partners, the global multidisciplinary consulting firm and structural engineer-of-choice for architects who experiment on grandly complex scales, such as Renzo Piano and Richard Rogers' Georges Pompidou Center (1977) in Paris and Jørn Utzon's Sydney Opera House (1973). He established the firm's New York City office with Tony Broomhead and Greg Hodkinson and was a director until 1997.

During his tenure there, one of Nordenson's favorite projects was a canopy over the ticketing area at the U.S. Airways terminal at New York City's La Guardia Airport, completed in 1989. "The canopy was a wonderful instance of serendipity: Client, architects, engineers, and fabricators were all captivated by an idea—to construct the first carbon-fiber canopy for less money than the proposed alternatives, faster, and under the nose of a large conservative bureaucracy," explains Nordenson. All the players were committed to trying something innovative: using racing-hull technology to create the structure.

The project illustrates what Nordenson calls "the culture of architecture," which assumes a collaboration of minds, rather than a single vision passed along to an engineer for analysis and rationalization. It's the tradition of Fuller, Sadao, and Noguchi, and Nordenson adheres to it in his own practice today. Whether he engineers a staircase, a roof, or a long-span bridge, his work often draws on historical precedent or the technology of a seemingly unrelated field.

Nordenson uses advanced structural analyses to evaluate even a small single-run stair, even though he understands that the structural principles that make it work were established centuries ago. For instance, the so-called cantilevered stair (risers and treads attach to a supporting wall on only one end) appears to depend on technical virtuosity for its gravity-defying rise, but Nordenson remembers that the great Renaissance architect Andrea Palladio built the first "flying" stair in Venice around 1560.

Nordenson has engineered a similar stair for a loft renovation designed by New York City-based Architecture Research Office (ARO) in Manhattan's SoHo neighborhood. The sun's daily course through the loft inspired the architects' treatment of space and surfaces. The morning light penetrates the glass walls of the bedroom, then travels through the kitchen and dining areas. Translucent and opaque surfaces transmit, refract, or absorb the rays as the sun moves from east to west. At the southwest corner, a stair will float upward to the roof terrace, appearing to defy gravity; its steel-tube risers are supported at one end only by a 3/4-inch-thick vertical plane of laminated, tempered glass.

"It's more accurate to describe the structure as cascading rather than cantilevering. It's not a true cantilever because each riser rests on the back edge of the tread below so the load cascades down the steps and into the floor," explains Nordenson. This creates torsion in the glass plane. Its thinness and transparency make the glass appear wholly inadequate for the task, but in actuality, its only structural purpose is to resist the twisting of the steel tubes.

"Typically, as the load cascades down the staircase, the torsion accumulates so that the last riser carries the largest load. In this case, that would mean a lot of twist very close to the edge of the glass," Nordenson continues. The current scheme, however, leaves the next-to-last riser to project unsecured beyond the glass edge. The condition appears to render the stair unstable, but in reality, it solves the torsion problem. "Analysis showed that the unanchored riser twisted in the opposite direction of

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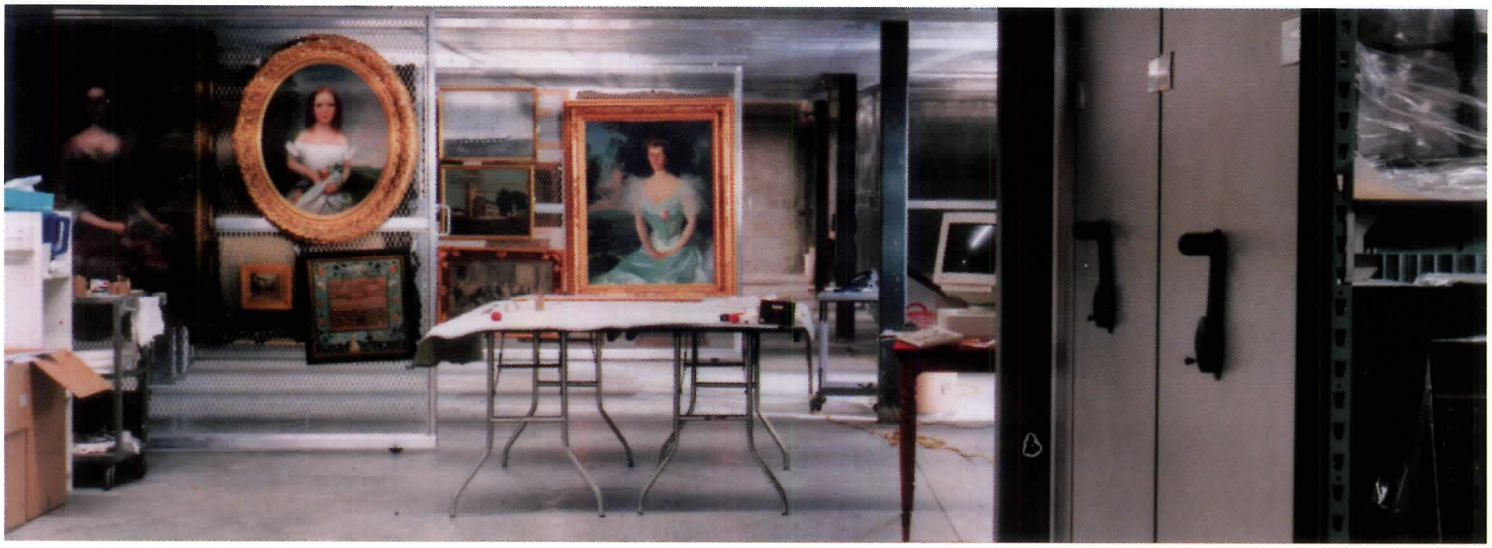

In order to create modern storage for Peabody Essex Museum (above) in Salem, Massachusetts, architect C&R/Rizvi inserted state-of-the-art ventilation system into 19th-century armory.

PETER VANDERWARKER

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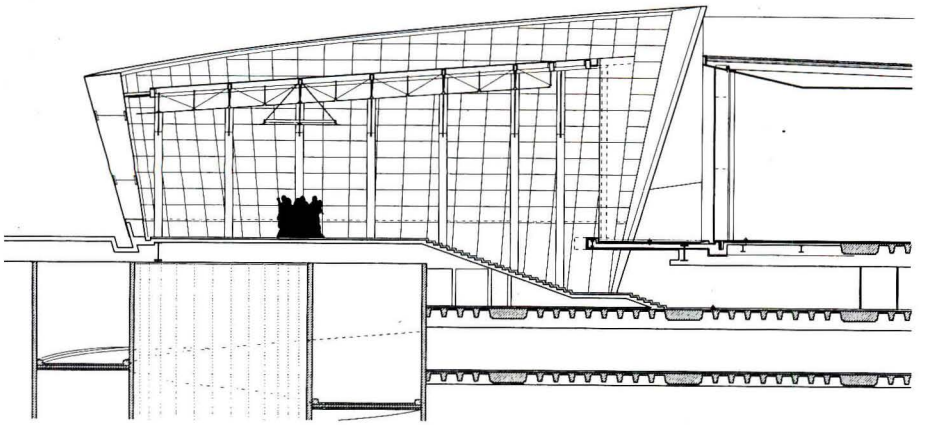
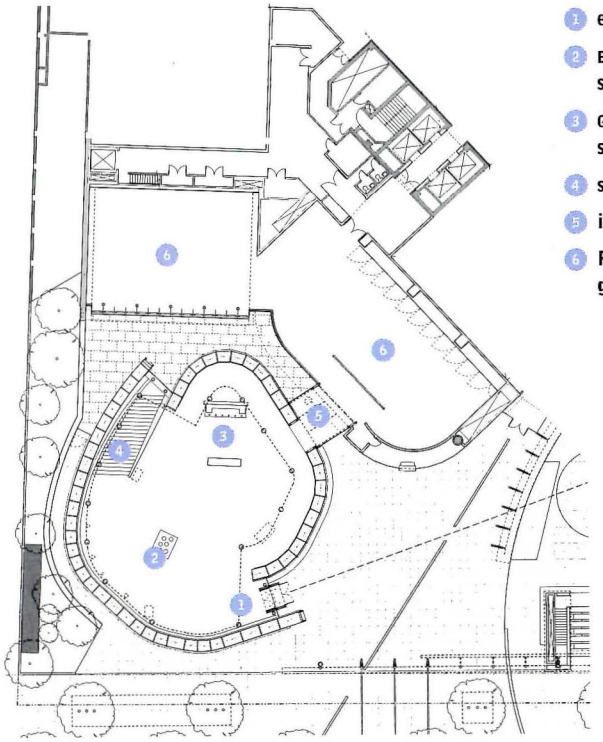
Flanked by tubular steel columns and canted translucent glass wall, tapered stair (left) leads from exhibit floor down to subterranean gift shop. Shop connects to Samsung Plaza's underground food court and retail arcade in strange mix of high art and fast-food culture. Randomly placed transparent panels on exterior skin (facing page) reveal sleek construction of double wall. Cast stainless steel prongs on frame support individual glass panels. Steel rods inside roughly 3-foot-wide airspace stabilize envelope's frame. Ventilation ducts tucked into stainless steel base blow hot or cold air into cavity, depending on outside temperature, to prevent condensation.



East-west section

70'/21m

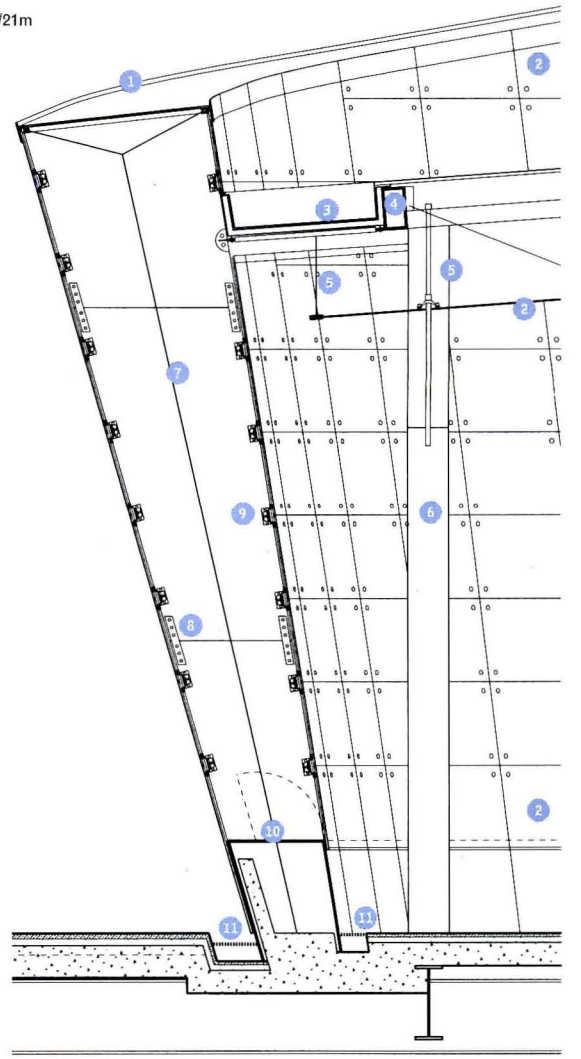
1. laminated glass coping panel
2. laminated glass panel
3. metal gutter
4. stainless steel ring beam enclosure
5. stainless steel support rod
6. stainless steel column enclosure
7. stainless steel cable
8. bolted steel splice connection
9. stainless steel glass connector
10. operable air supply diffuser
11. metal diffuser grille



Ground-floor plan

240'/72m

1. entrance
2. BURGHERS OF CALAIS sculpture
3. GATES OF HELL sculpture
4. stair to gift shop
5. information booth
6. Rodin Museum gallery



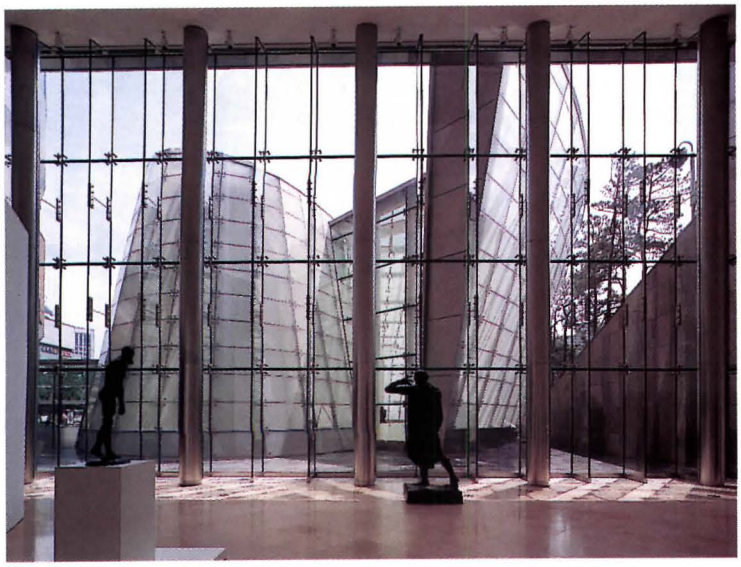
Wall detail

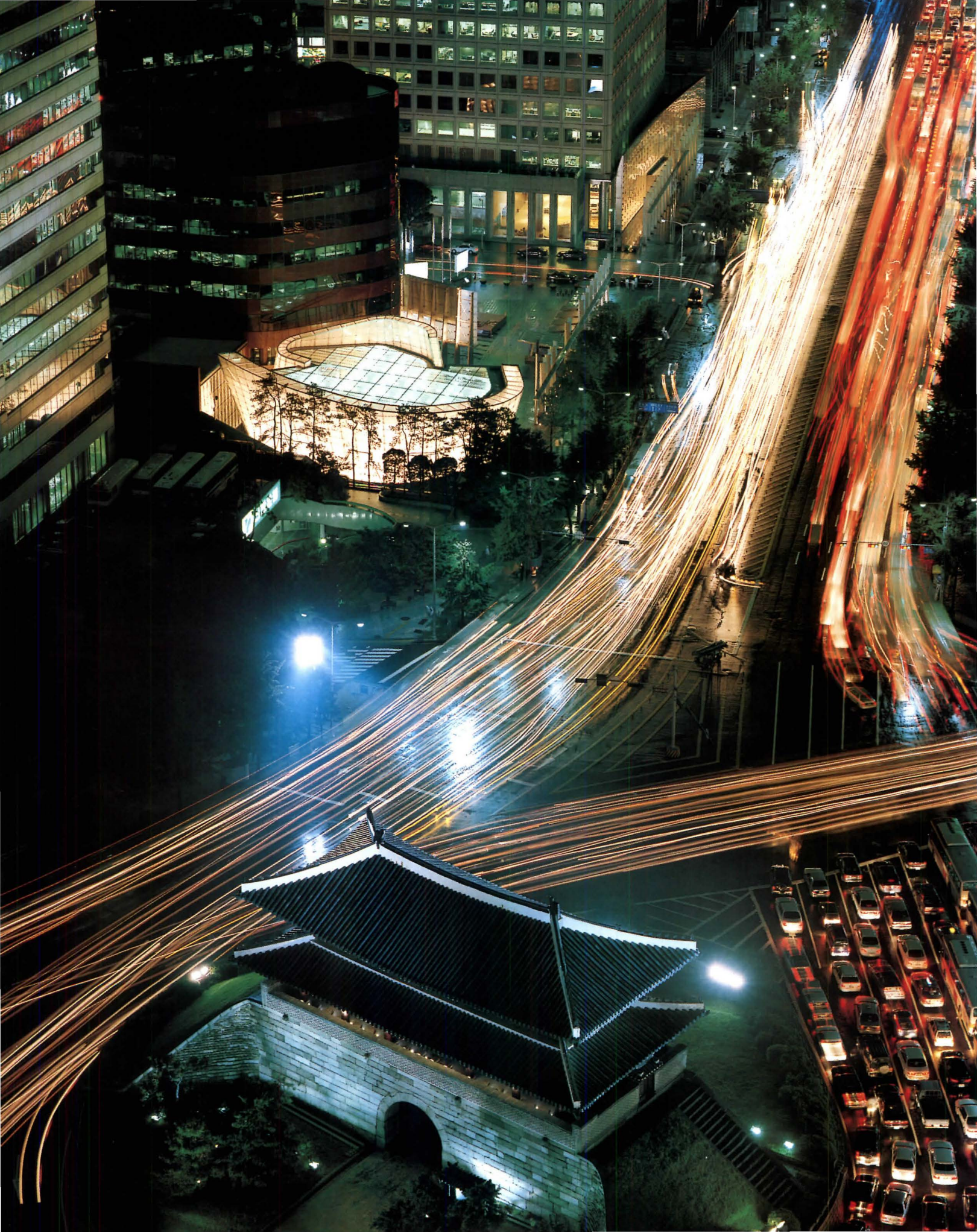
126'/38m

SAMSUNG PLAZA AND RODIN MUSEUM PROJECT, SEOUL, KOREA

CLIENT: Samsung Group, Seoul, Korea **ARCHITECT:** Kohn Pedersen Fox Associates, New York City—Kevin Kennon (design principal); Gregory Clement (managing principal); Andreas Hausler, John Locke (project managers); Luke Fox, Marianne Kwok (design team leaders); Francis Freire (coordination leader); Vladimir Balla, Christopher Ernst, Andrew Kawahara, Michael Marcolini, Chulhong Min, Cordula Roser, Aida Saleh, Trent Tesch (project team) **ASSOCIATE ARCHITECT:** Samoo Architects & Engineers, Seoul, Korea—Suk Ho Lee (president), Ju Hwan Cho (principal-in-charge), Woo-Chun Rah (project manager), Taean Kang (designer) **LANDSCAPE ARCHITECT:** Rolland/Towers **ENGINEERS:** Ove Arup & Partners (structural); Cosentini Associates (mechanical, electrical) **CONSULTANTS:** Thomas Thompson Lighting Design (lighting); Cerami & Associates (acoustics); Sussman/Prejza & Company (graphics); Shen Milsom & Wilke (audiovisual); Donald Spector Architect (specifications); Entek (maintenance); Gary Haven Smith Studio (stone); Heitmann & Associates; James Carpenter Design Associates; Tripyramid Structures (exterior wall); Hanscomb Associates (cost estimating) **GENERAL CONTRACTORS:** Samsung Construction; Joseph Gartner & Company; Bruder Eckelt & Company **COST:** Withheld at owner's request **PHOTOGRAPHER:** Timothy Hursley

From plaza, visitors enter pavilion (right) through stainless steel portal in 13-foot-wide gap between curving exterior walls. Additional galleries (bottom left) located in ground floor of office tower offer views of semidetached, free-form pavilion through double-height window wall. Tubular steel columns (bottom right) on gallery's perimeter support ring beam and roof trusses. Stainless steel rods support acid-etched and sandblasted glass ceiling from trusses. BURGHERS OF CALAIS occupies east side of paved pavilion; silkscreened image of forthcoming GATES OF HELL is located on west. Wall detail (facing page) shows construction of hollow double-wall envelope, which interior steel frame stabilizes.





Like his Impressionist counterparts in painting, the sculptor Auguste Rodin broke art world conventions with emotive displays of expression, ambiguous scale, and spatial complexity in his larger-than-life bronze sculptures. Some works, like his *Burghers of Calais* (1886), draw viewers in with their wandering gazes and muscular surfaces. The observer doesn't quite know how to approach the *Burghers*: There is no single focus, and the fluid, irregular spaces between the statuesque figures are as interesting as the hefty solids themselves.

More than a century after its creation, the *Burghers* and several other Rodin bronzes have migrated to an unlikely setting far from the artist's Paris atelier: the collection of Korean electronics giant Samsung. The pieces are now on display in the $10 million Rodin Pavilion designed by Kevin Kennon of New York City-based Kohn Pedersen Fox Associates (KPF), which adjoins Samsung's headquarters tower in downtown Seoul. More than just a sleek repository for Rodin's treasures, Kennon's enigmatic gallery captures many of the same spatial and formal qualities of the sculptor's oeuvre, and re-creates the moody light of Paris in downtown Seoul.

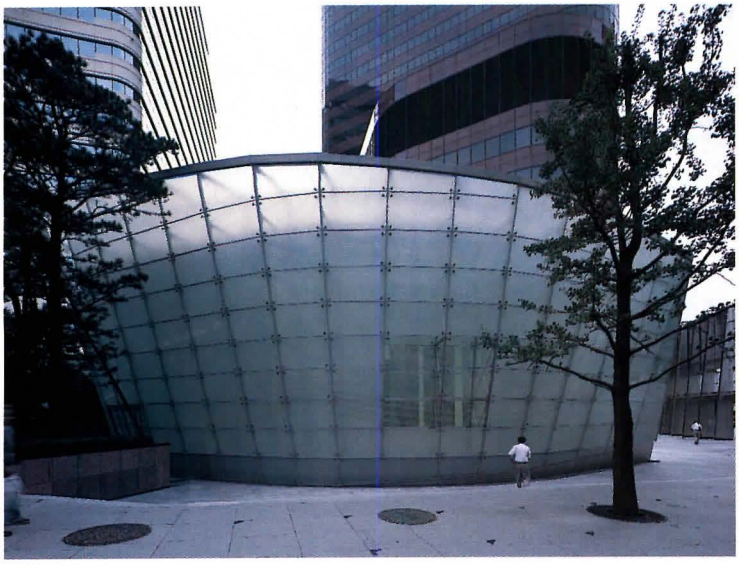
The 12,500-square-foot Rodin Museum fills a corner of Samsung's 26-story headquarters' ground floor. The amorphous pavilion will display only two Rodin sculptures: the *Burghers*, and the yet-to-be-installed *Gates of Hell*, a massive, ornamental portal originally destined for the entrance of the Musée des Arts Decoratifs in Paris. (Samsung, hesitant to draw attention to the purchase of expensive art in the midst of Korea's financial woes, has postponed installing *Gates of Hell* until early next year, according to Kennon.)

The pavilion takes its form from a strikingly simple gesture: A flat, glazed roof joins two nested glass walls, each canting and curving at different angles and heights. Visitors enter through a steel-framed portal in the slot between the curving walls—a threshold similar to the gap between the steel wrappers of Richard Serra's *Torqued Ellipses* (1997). While Serra's thin, waxy steel surfaces imply motion and enclosure, KPF's elliptical walls evoke a more static feeling by revealing their thickness at the entrance. Though the hollow, lightweight envelope is a result of two layers of glass bolted to an internal steel frame, the clearly expressed depth and faceted, gridded skin gives it a monolithic appearance.

Inside, Rodin's *Burghers* sits squarely in front of the entrance. At the opposite end of the space is a life-sized, silkscreened image of the *Gates of Hell*, which marks the spot where Samsung will install the ornate, 21-foot-tall portal in a limestone frame. An angular bench matching the tawny French limestone flooring is the only other object in the sweeping space: An information desk is hidden inside the office tower's base, and a gift shop is tucked downstairs, beneath the gallery. Free of distractions and superfluous program, the space provides a pure, luminous vitrine for Rodin's monumental sculptures.

Kennon fine-tuned his architecture to the art contained within it. The easternmost wall that surrounds *Burghers* is shallower in curvature and lower in height than the western wall behind *Gates of Hell*. The shallowness allows visitors to amble around the bronze figures of *Burghers*, to experience its multidirectionality and innately spatial character. "The sculpture's spiralling composition suggested how to move around it, and how to create an architecture that would reinforce that movement," suggests Kennon. By comparison, the steep, almost apsidal shape of the opposing wall will cradle *Gates of Hell* and present visitors with only a frontal view of the gateway. The portal becomes a giant fulcrum that holds the fluid architecture around it in place, while the curving wall embraces and shelters the art.

Though highly sculptural, Kennon's building remains rational: Even its fluid walls are conceived as segments of large cones to allow fabricators to build them from rectangular glass panels. Perhaps it is this underlying rationalism that keeps the building from drowning out the sculpture inside. In addition, the architecture complements the exhibits by creating a serene new realm for Rodin's pieces, visually and experientially detached from the crowded, noisy city outside. The atmosphere of this quiet sanctuary, with its filtered daylight reflecting against the warm limestone floor, recalls the soft Parisian light in which the bronzes were created. Like Rodin, the architect has sculpted a beguiling space that begs viewers to enter and revel in its presence as much as its absence.



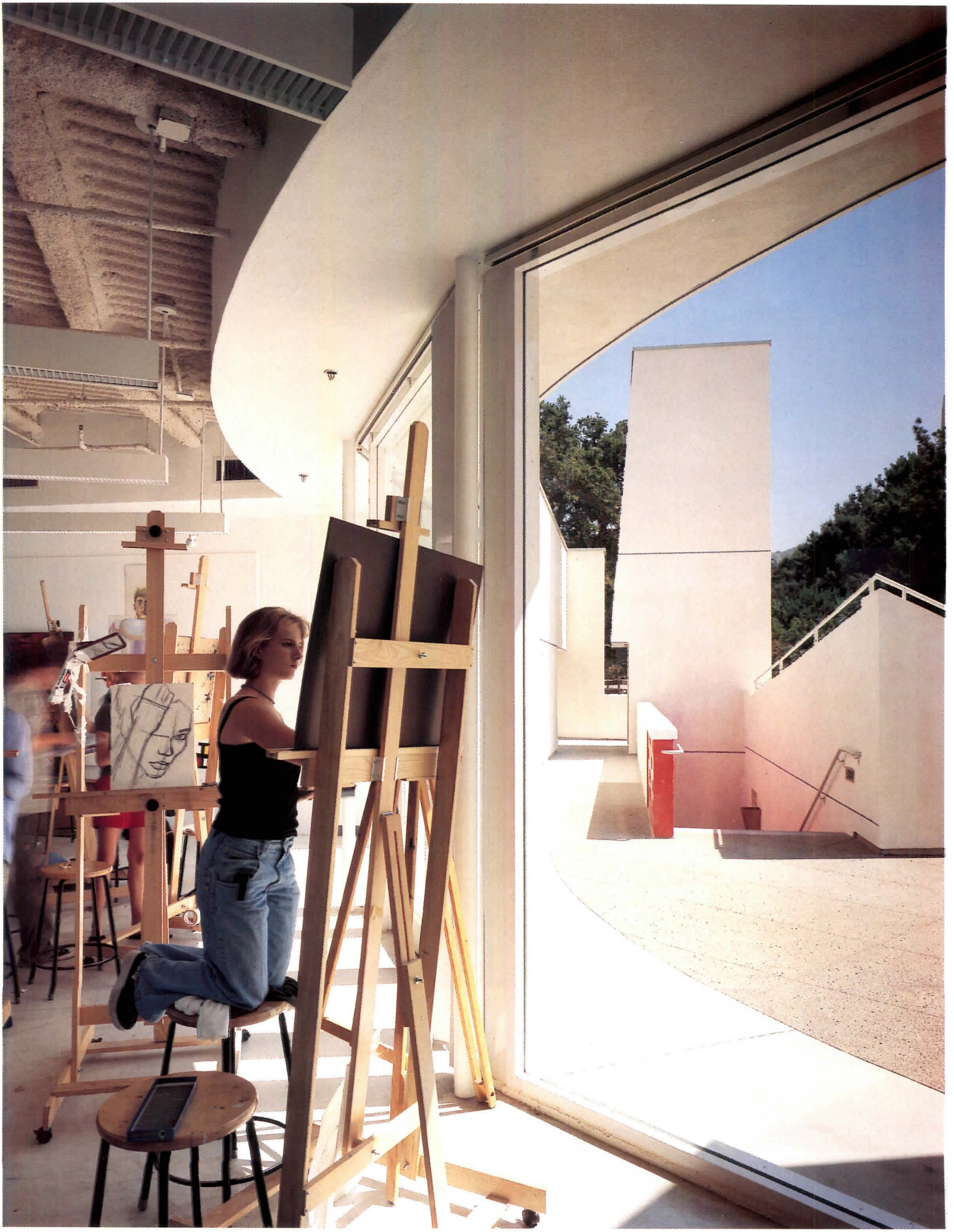
Pavilion's curved glass skin (left) hugs southern edge of site and adjoins high-rise office towers. At night, amorphous volume of gallery (facing page) glows from within, creating luminous counterpoint to pagodalike South Gate on Seoul's busy Taepyung-Ro. Structure terminates south end of forecourt leading to Samsung Plaza retail complex, which replaces former parking lot.

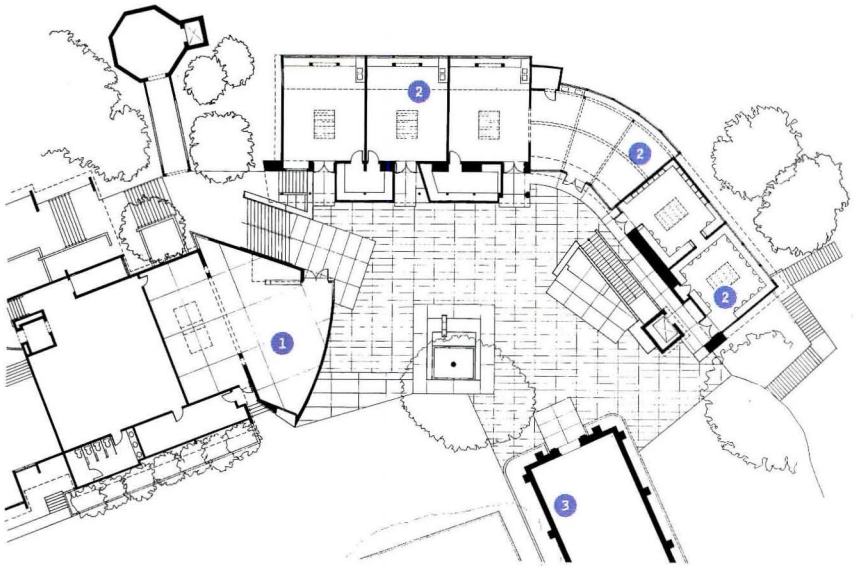
Softly filtered daylight fills sweeping expanse of Rodin Pavilion. Interspersed among panels of acid-etched and sandblasted glass, swatches of clear glazing on exterior walls give glimpses of street life. From chamfered limestone bench (at left), visitors can contemplate Rodin's GATES OF HELL (not shown) and BURGHERS OF CALAIS (at right).

GALLERY OF GLASS

Kohn Pedersen Fox creates a luminous sanctuary for a pair of Rodin bronzes

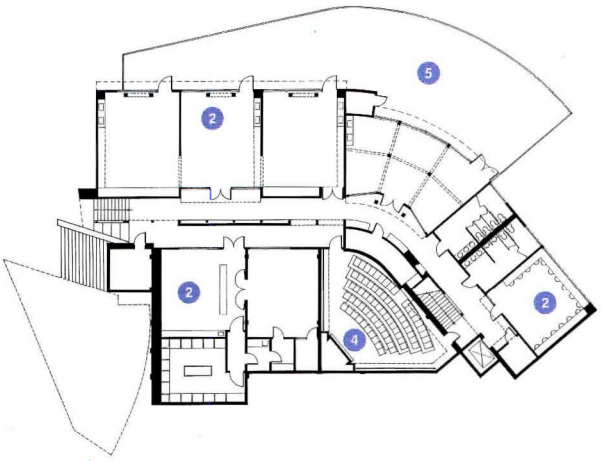
BY RAUL A. BARRENECHE





First-floor plan

1 gallery
2 studio
3 chapel
4 lecture hall
5 deck



Lower-level plan

25'/7m

Triangular front room of gallery (above) has lookout window over lower campus; reception desk (partially visible at right) aligns with dropped ceiling and clerestory. Studio on plaza (facing page) is flanked by outside stair to studios and classrooms below, behind back wall of stepped seating and elevator housing.

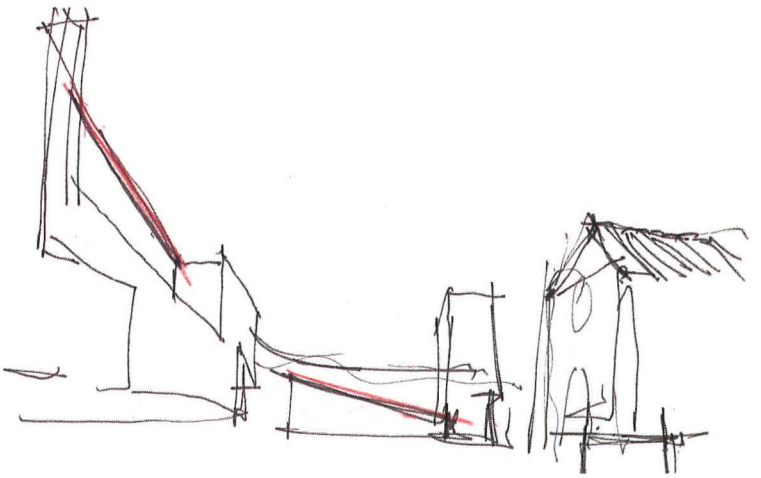
Maltzan was inspired by Richard Serra, who wants viewers to "realize" the relation of his sculpture to its site as they walk about it.

bilitated lecture hall and two photography and video studios. Maltzan added a periphery of five studios on this lower level, aligned vertically with six studios upstairs, on the plaza level. Students enter each of the upper studios directly from the plaza.

While Maltzan's arts center defers to the chapel, his new gallery is a pivotal hinge to the rest of the campus. Its front exhibition space, triangular in plan, has three glazed corners; one provides entry from the plaza, another is a promontory on the campus below. This narrow window is complemented by a large window with deep reveals at the northeast corner, adjacent to the nearly windowless east facade. Looking in this window one can see the east facade bowed by the pneumatic volume within the gallery. Seen from the outside, this wall—indeed, the gallery itself—politely encroaches on the plaza, flexed just enough to make its presence felt.

Maltzan prudently defers from citing any specific links between his work and that of Frank Gehry, his employer from 1988 to 1995. He offers Alvar Aalto as an important, if less obvious influence. Nevertheless, his canted and bowed elevator housing, and the taut facade of his gallery imply that these enclosures surround potentially kinetic volumes. Maltzan's buildings conserve their strength: They are quietly assertive, their durability ensured by their understatement.

FELDMAN/HORN CENTER FOR THE ARTS, LOS ANGELES
CLIENT: Harvard-Westlake School **ARCHITECT:** Michael Maltzan Architecture, Los Angeles—Michael Maltzan, Christopher Mehren (principals), Vigan Pezeshkian (project architect), Shane Acker, Paul Lee, Melanie McArtor, Jeff Stern (project team) **LANDSCAPE ARCHITECT:** Nancy Goslee Power & Associates **ENGINEERS:** King Benioff Steinmann King (structural); Danalex Engineering (mechanical); V&M Electrical Engineering (electrical); Iacobellis & Associates (civil) **CONSULTANTS:** Lam Partners (lighting); Environmental Signing (signage) **GENERAL CONTRACTOR:** Weinstein Construction **COST:** $5.5 million **PHOTOGRAPHER:** Tom Bonner

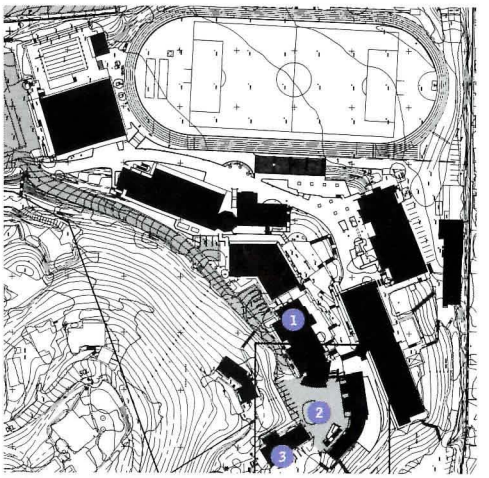


Gallery (facing page, at right) and studio and classroom building (facing page, at left) frame new stair from lower campus to arts plaza. Open corner with pipe column reveals two floors of studios beneath elongated parapet. View from plaza (top left) surveys east facade of gallery (at left) and massing of studio and classroom building (at right) with stepped seating (foreground). Late afternoon shadows (top right) highlight sculptural nature of Michael Maltzan's stucco building. Elevator housing (above left), seen from studio, becomes sculptural counterpart to campus chapel. In sketch by Maltzan (above right), abstract volumes of studio and classroom building respond to mission-style chapel.

1. studio
2. elevator housing
3. chapel
4. deck

East-west section

20'/6m



Site plan

Maltzan's design method was optimal for Harvard-Westlake: the school is housed in an uninspired array of 20th-century buildings sited poorly on a luxuriant hillside. "Public spaces on the campus existed only as a trace of the movement of students from one place to another," Maltzan explains. His 23,000-square-foot, $5.5 million arts center, built on the upper reaches of campus this past spring, provides a focal point that compensates for the concatenation below.

Maltzan's unconventional site strategy yielded a splendid plan. He provides Harvard-Westlake its first approximation of a courtyard and unifies art facilities once scattered across campus. Students enrolled in art history and studio courses use Maltzan's new classrooms, studios, and 1,800-square-foot gallery, distributed in a pair of off-white stuccoed buildings on a wedge-shaped plaza. Maltzan's monochromatic structures, like houses on a medieval town square, are a foil for the campus chapel, an 80-year-old mission-style church moved here from the Los Angeles basin in the 1930s.

Students approach the arts center on an established campus walkway that climbs uphill toward the chapel. Maltzan installed a half flight of stairs at the junction of this path and the new plaza. It is framed by the wedge-shaped gallery, annexed to the library, and the studio and classroom building. The school's top floor aligns with the plaza, whose first floor is tucked below with windows on one side. The compressed ascent gives his two buildings a prominence without overshadowing the chapel: They frame the approach to the plaza, but one sees the studio and classroom building as a long, indented wall, and the gallery as a bowed, nearly blank facade when one reaches level ground.

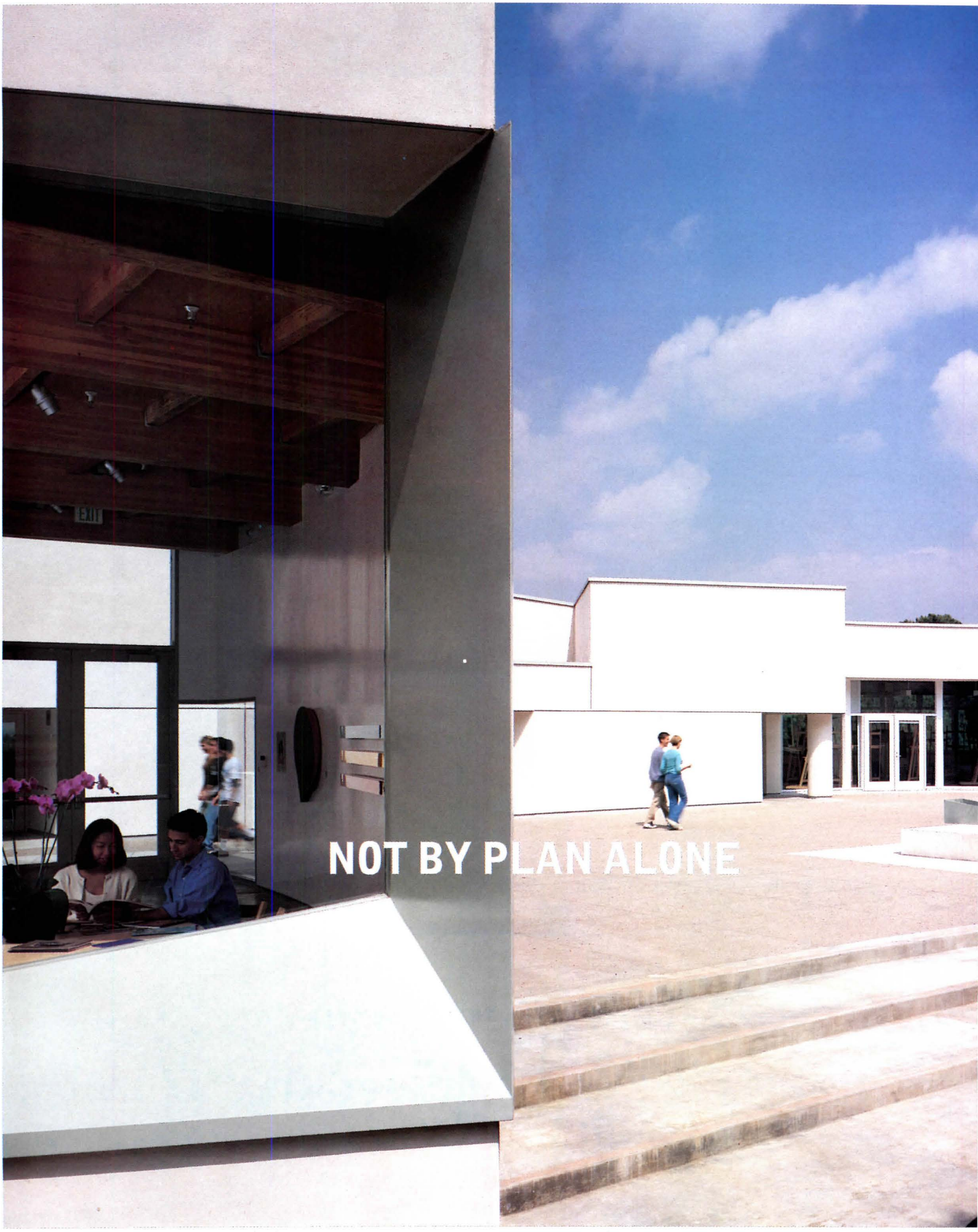
A stripe of red slices across the muted tones of the plaza. It is a half-height concrete block wall, the only piece left above grade from a 1940s studio building tucked into the hillside. A stair next to the wall, and a new elevator (housed in a two-story, windowless box), lead below the plaza to a reha-

Michael Maltzan's new arts complex crowns a hillside campus in Los Angeles.

BY PHILIP ARCIDI

Most architects hold the plan sacrosanct, but Michael Maltzan, a 38-year-old Los Angeles architect, considers it a limited design tool. Commissioned by the Harvard-Westlake School, a private academy in North Hollywood, to design the Feldman/Horn Center for the Arts, he designed a pair of buildings for galleries, classrooms, and art studios, with only an oblique regard for their site plan. Maltzan focused instead on how a person's procession affects his or her perception of mass and volume. Maltzan was inspired by Richard Serra, who wants viewers to "realize" the relation of his sculpture to its site as they walk about it. Accordingly, Maltzan predicated his buildings on the campus's idiosyncrasies, creating a place that unfolds as one walks within it.

Gallery (at left) and building housing classrooms and studios (background) frame new plaza at Harvard-Westlake School. Elevator housing with curved side provides access to lecture room and studios beneath plaza.



NOT BY PLAN ALONE

Ramp landing (above) gives visitors lookout over fjord below; laminated plywood and glass (facing page top) comprise recessed entrance facade, at opposite end of museum. Double-height window (facing page bottom) flanks panel of thatched bracken (woven boughs of juniper bushes native to Norway). Bracken could be removed in future if museum executes Snøhetta's proposal for second concrete box that would flank existing structure.

concrete floor seems to be an extension of the surface of the sea.

The building is not without flaws—afflictions of a budget too tight for scrupulous detailing or site inspections by the architects. (Thorsen managed to catch up with contractors on family visits.) An odd juxtaposition of clunky wood blocks and glass fins supports the window wall on the fjord; several concrete edges and metal seams around windows are coarse; blemishes on the exterior bespeak compromises in concrete pouring.

But Snøhetta's patrons, a grassroots community group, bravely commissioned a museum whose references to history are abstract, rather than literal. They accepted a structure without an ounce of sentiment. The architect's solution was as frank as the fishermen of Karmøy; Snøhetta had the maturity to let a low-cost box look economical. Its refinement resides in its simplicity.

KARMØY FISHING MUSEUM, KARMØY, NORWAY
CLIENT: Stiftelsen Karmøy Fishing Museum
ARCHITECT: Snøhetta, Oslo, Norway—Craig Dykers, Christoph Kapeller, Kjetil Thorsen (principals), Lisbeth Funk, Ragnhild Momrak, Rainer Stange, Knut Tronstad (design team) **ENGINEERS:** Peter Rasmussen (structural, mechanical, electrical) **GENERAL CONTRACTOR:** Einar Tangjerd **COST:** $570,000 **PHOTOGRAPHER:** Jiri Havran

Debut

Interesting Fact:

Architecture goes to the opera: Snøhetta's namesake is the mountain in central Norway where legend (and the composer Richard Wagner) sites Valhalla, the heavenly abode of Viking spirits.

Snøhetta

Principals:

Craig Dykers

Ole Gustavsen

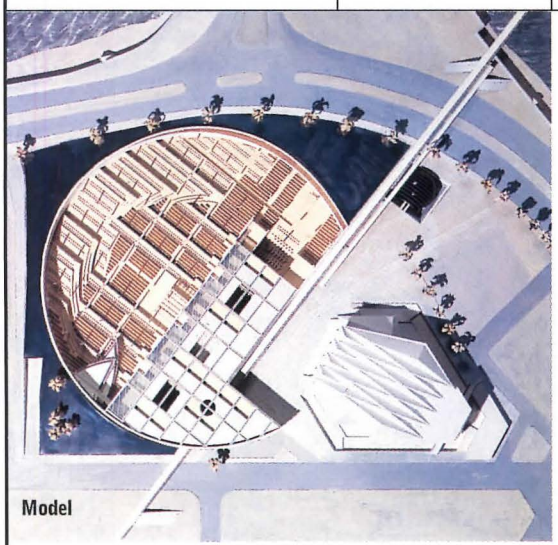
Christoph Kapeller

Kari Stensrød

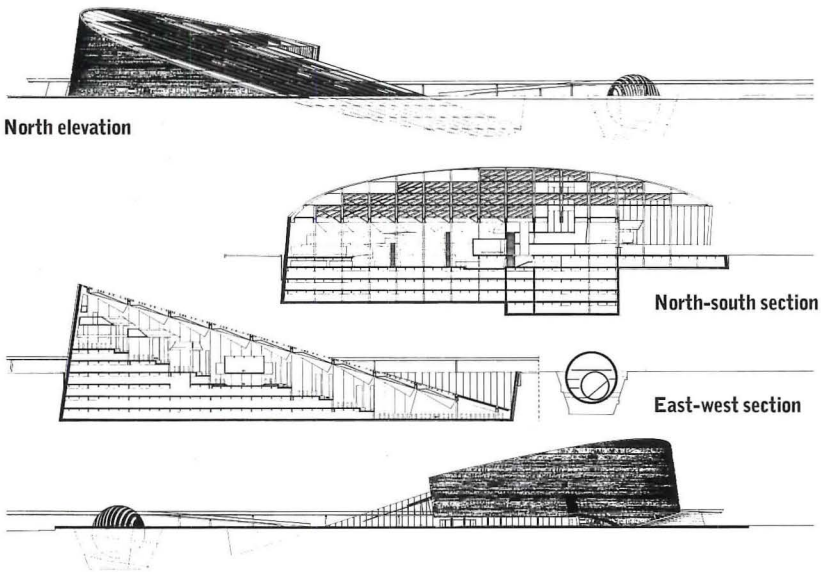
Kjetil Trædel Thorsen

Oslo, Norway

Snøhetta staked its reputation on the Egyptian shores of the Mediterranean: The 10 architects and designers who constituted Snøhetta in 1989 (they restructured a two-year-old Norwegian firm) were the designers of the first-place entry in an international competition for the Alexandria Library, a modern counterpart to Egypt's ancient, long-vanished library. The future partners of Snøhetta designed their competition entry from the U. S. and Norway, united by fax machines and a brief design charette. Snøhetta manifests both the enterprising spirit identified with the U. S. and the clarity of design that Americans admire in Scandinavian architecture. According to Craig Dykers, Snøhetta's American partner, the aura of Scandinavian design promises more than it delivers to Norwegian architects. They face a paradoxical culture: Private clients are wary of buildings that call attention to themselves, yet the government sponsors design competitions and commissions that give young architects exposure their American counterparts would envy. In recent years, Snøhetta has garnered several of these commissions: It has built a museum in Lillehammer; its Norwegian embassy in Berlin is under construction; and a town hall in Hamar and a library in Fjaler are on the boards.

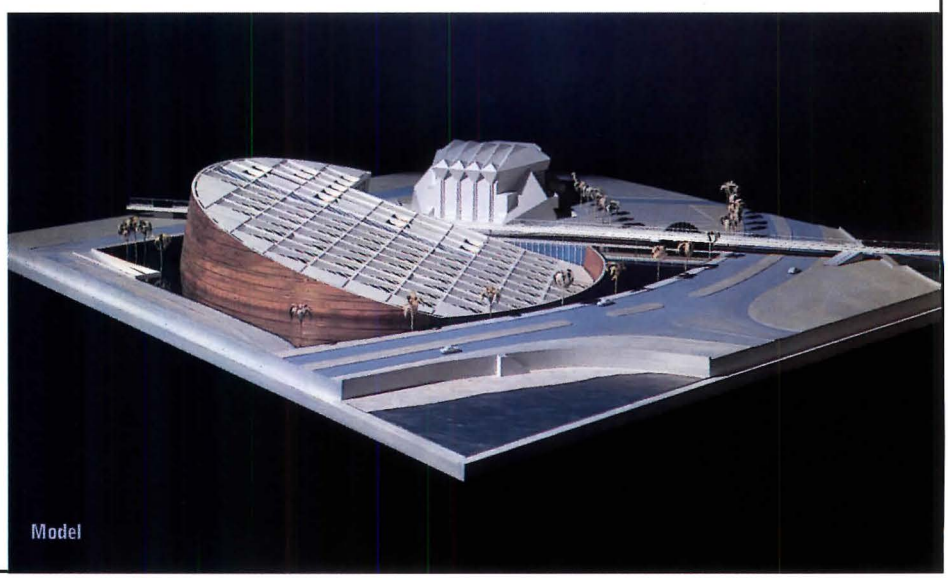


Model



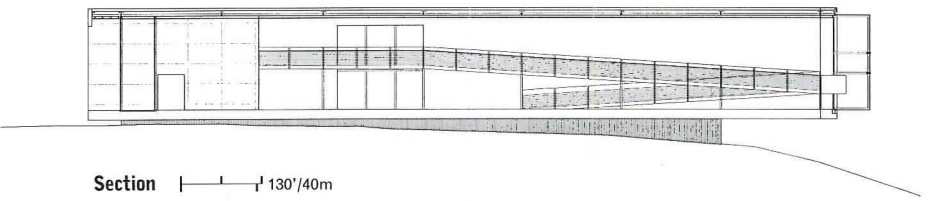
Current Project:

Snøhetta's Alexandria Library, now under construction in association with Hamza Associates of Cairo, is a hybrid of the archaic and the modern. It comprises a 524-foot-diameter disc, shaped like the Egyptian hieroglyph f or the sun, with an inclined roof of gridded skylights that alludes to a microchip. The stone facade, which rises from a pool of water, bears the letters of languages of the world, from ancient to modern. Inside, an open hall that comprises 14 half-levels of tiered floors will be one of the largest reading rooms in existence; closed stacks will be in the sections without access to daylight. The roof rises from 39 feet below grade to 105 feet above street level, a metaphor for the passage of time from past to future. Library patrons will approach the building along a bridge that flanks a conference center built in 1985 and extends to the University of Alexandria and the Mediterranean Sea.

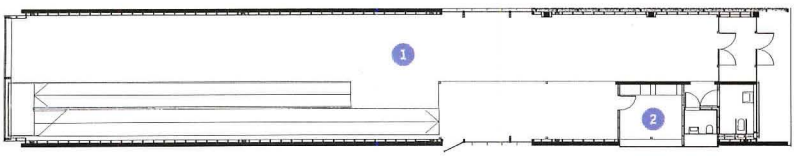


Model

Seen from across fjord (top) museum seems lifted from land, its scale and platonic form in contrast to vernacular structures nearby. Opposite side of museum (above), seen from meadow, implies massive building planted on rocky slope.



Section 130'/40m

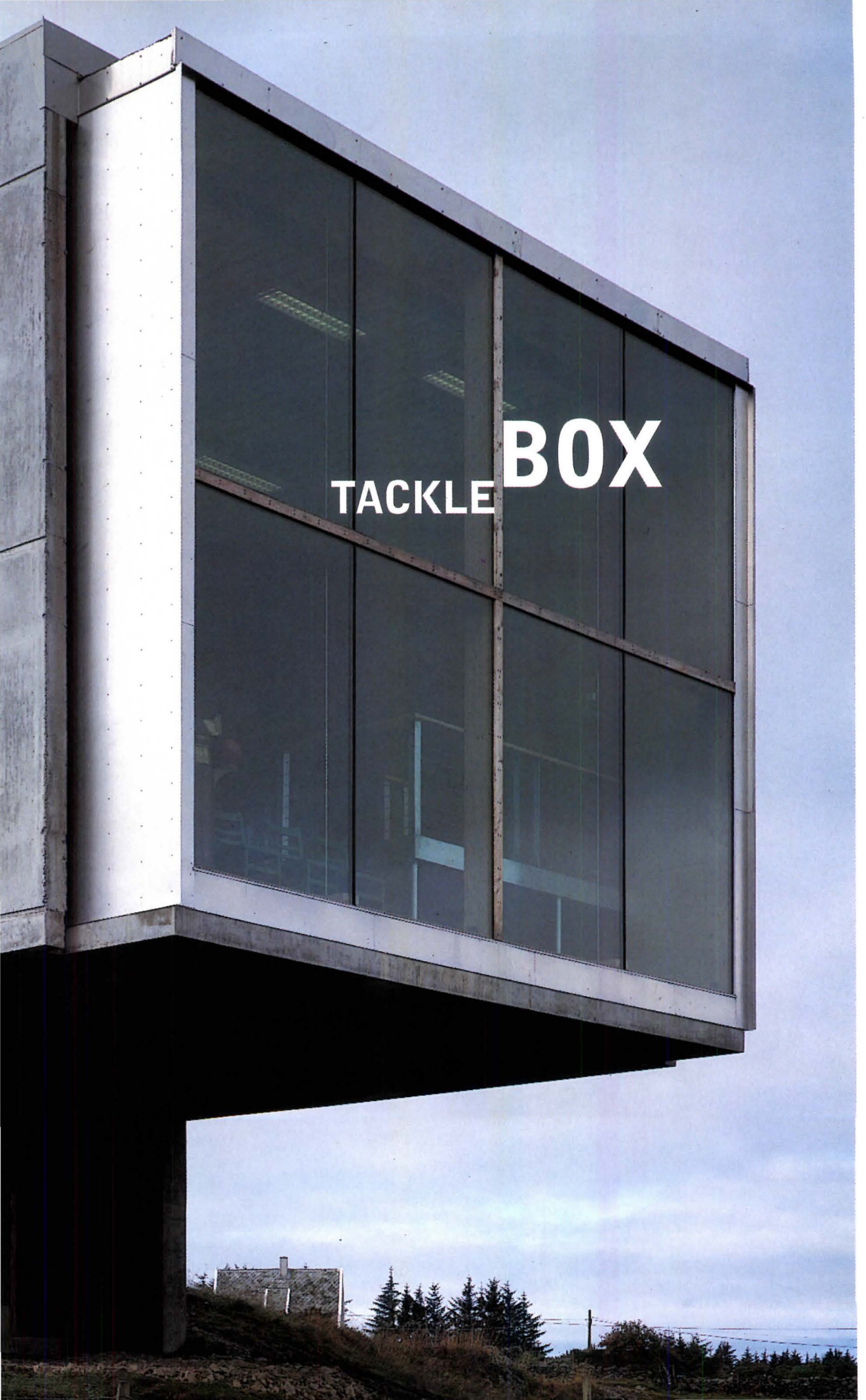


1 exhibition area
2 kitchen

First-floor plan 90'/28m

a structure that "looks to the future as well as the past," in the words of Craig Dykers, one of Snøhetta's partners. Kjetil Thorsen and Lisbeth Funk, the firm's architects directly involved in the museum, grew up on the island of Karmøy, whose 25,000 residents are a day's drive northwest of Oslo. Funk considered the ground beneath the museum a delicate surface: She didn't want the museum to dig into the earth. Yet she envisioned the museum as a landmark, heftier than the nearby shed that previously housed its artifacts. Canted upward, the oblong structure, in her words, "lays steadily on the ground, but looks as if you could take it away."

Funk describes the museum, whose interior is as reductive as its massing, as an enclosed walkway that flanks a gravel road hundreds of years old. She and her colleagues envision it as a 148-foot-long, 23-foot-wide enclosed passageway toward the fjord, amid fishing implements and suspended boats (little has been installed yet). The exhibit space, a wood-clad, 20-foot-tall hall with a metal ceiling, has a kitchen, but no on-site archival storage. A ramp extends two-thirds the length of the exhibition space, up to a small mezzanine, where visitors can see sheep meadows through floor-to-ceiling windows on the two long sides of the museum. When one looks at the fjord through the window at the northwest end of the museum, the green-tinted



TACKLE BOX

A minimalist museum interprets the life of Norway's fishermen.

BY PHILIP ARCIDI

For architects who dream of building on the edge of a fjord, the Fishing Museum in Karmøy, Norway, is a vicarious delight. Designed by Snøhetta, an emerging architecture studio in Oslo, the museum is a long box with a two-fold nature. At one end, it seems to be lifted, where it cantilevers over a meadow that descends to a fjord. Alternately, when one walks away from the fjord and looks at this concrete extrusion from a distance, it seems as grounded as the ancient stone walls piled on the rolling and rocky terrain.

The 3,400-square-foot museum is a startlingly *modern* incursion among the wood-frame houses sprinkled along the fjord, an abstract form that stands out from the pitched roofs of its neighbors. Snøhetta parlayed their commission—to build a new home for artifacts of Karmøy's vanishing fishing industry—into

Fishing Museum of Karmøy, Norway (above and facing page), cantilevered above rocky meadow, is built of reinforced concrete. Exterior is treated with additive that will produce green tint over time.

privately funded parks hurt the fan: To obtain the loans to build the stadiums, owners add surcharges onto tickets that price them out of the range of the average sports enthusiast.

"I have no sympathy for preserving buildings that are unprofitable," White Sox team owner Jerry Reinsdorf intoned as he set to knock the old Comiskey down, and thereby eloquently, if sadly, set the stage for the new philosophy in stadium design and construction.

Reinsdorf also set the stage for the more ominous events in Baltimore, where then-Orioles owner Edward Bennett Williams, the late trial lawyer, in one of the great performances of his life, took the floor in the statehouse in Annapolis and, hinting that he might move the team out of town if he didn't get a new park, convinced the state to use lottery funds to pay the interest on the bonds. So for the first time in Maryland history, lottery income meant for a general fund was dedicated to a specific interest—a private-sector cash cow—at a time when the schools were failing and libraries were closing.

Sports have become an economic driving wheel. And even if most of the money ends up in the pockets of the team owners and the team athletes, no city father can be blamed for not wanting to be left out of the loop—for wanting to build. Because few new structures can change a city's literal and metaphoric image as dramatically as a sports stadium. No building is frequented by so many diverse members of a city's populace; the stadium is the modern town hall.

But cities would be foolish not to heed some disheartening events of the recent past, as in Miami, where a $53 million basketball arena was erected at public cost in the impoverished Overtown neighborhood in 1988 without a sufficient master plan. It will be abandoned two years from now because team officials, holding the town hostage, have decided that they want to play in a nicer area.

Cleveland—supposedly one of the success stories—reveals a sobering picture. In a city where 42 percent of the families live beneath the poverty line, taxpayers voted 51 to 49 percent in 1990—with white suburban votes tipping the scale—to help finance a new $344 million ballpark and arena complex for the Jacobs brothers, owners of the Indians.

When the project was finished, it had cost $460 million to build, three-quarters of which was funded by Ohio taxpayers, and the entire development—including an apartment building owned by the Jacobs brothers—was exempt from property tax. In the meantime, in its inaugural season as a baseball park, Jacobs Field's rise in costs to the fan was four times the increase in other baseball stadiums.

Like Camden Yards, Jacobs Field reclaimed a piece of urban Cleveland that had been abandoned, but its customers are nearly exclusively white and prosperous. The referendum was heavily opposed by black Cleveland voters, who were well mindful of Cleveland's deplorable school system: The state was ordered to take over Cleveland's schools in 1996. The budget for the city's entire school system that year was $500 million.

Nationwide studies by sports economists have failed to definitively show any increase in jobs when stadiums are built or any widespread positive economic impact at all. However, one tangible result of the Indians' abandonment of old Municipal Stadium was the flight of the Cleveland Browns football team to Baltimore, which built a football stadium for them next to Camden Yards, and Cleveland's subsequent decision to raise another $200 million for a football stadium by increasing cigarette and liquor taxes.

While the atmospheric if dilapidated Municipal Stadium provided a distinctive esthetic, Jacobs Field—designed by HOK—looks remarkably like Camden Yards, save the addition of a new revenue-dictated design: luxury boxes at field level. For the most part, a televised baseball game seen from "The Jake" looks like a game from Baltimore or from Coors Field in Denver—another HOK park.

All three subscribe to the old-is-good esthetic and are full of random design elements that don't knit in a cohesive way. All have helped squander an extraordinary opportunity to make the national landscape more exciting while enhancing the individuality of each city.

POTENTIAL TO BE HUGELY SIGNIFICANT ARE BEING BUILT IN CITY AFTER CITY.

All have chosen to forsake the chance to build a truly visionary park.

It is not too late for the sports-architecture community to seize the day and build buildings that make a difference, while stopping the hemorrhaging flow of public money often better spent elsewhere. But unless an innately conservative—and relentlessly profiteering—sporting community slows down and takes stock of its opportunity and the seriousness of the stakes, this golden era will be marked by chances squandered, landmarks destroyed, and ultimately, the transformation of big-time sports into just another homogenized piece of the sellable American landscape.

Peter Richmond, a special correspondent to GQ, *is the author of* Ballpark: Camden Yards and the Building of an American Dream *(Simon & Schuster, 1993).*

intimate place designed to bring the game of baseball back to its urban-esthetic roots, and put an emphatic end to three decades of featureless multiuse stadiums rising across the sports landscape like so many giant cereal bowls.

Camden Yards returned America's pastime to where it belonged: rubbing shoulders with a rugged cityscape. Designed by HOK Sport—with considerable help from Baltimore Orioles executives—the stadium was wrapped in a skin of rich red Maryland brick to mirror the massive turn-of-the-century railroad warehouse that stood beyond right field. The seats offered views of not only the game, but the skyline beyond center field. But amid the heady fanfare of brass bands and presidential handshakes, it was easy to overlook one troubling truth: The new era of stadium building had actually begun exactly one year earlier and a thousand miles to the west. To no fanfare at all, the Chicago White Sox's new Comiskey Park, also designed by HOK, had opened like a Pandora's Box on the south side of Chicago.

The new Comiskey was bland, ungainly, and maddeningly fan-unfriendly. And its construction meant the unnecessary sacrifice of an irreplaceable piece of the country's past—a fact hardly lost on the fans who attended Opening Day. For as they filed up the dizzyingly high pedestrian ramps of the new place, the corpse of the old Comiskey Park sat in full view next door, a lovely brick-and-steel bandbox built in 1910 and now being razed: bricks crumbling, pipes dangling out into mid-air, its steel frame visible like an exposed skeleton. It had been the oldest ballpark in the land, replaced by an unsightly stadium bloated by three tiers of revenue-generating luxury boxes. Unwanted and expensive, the White Sox built the new Comiskey with only the bottom line in mind.

Equally ominous was the fashion in which the team's owners had pushed the project through. Citing controversial studies of the old park's disrepair, they'd convinced the Illinois state legislature to raise the sales tax to help build the new place, along with direct subsidies from the state and the city. In fact, the money wasn't allocated until after the legislative session had ended, so the chamber's clock was turned back to midnight to make it all official—a curious thing, since in turning back the clock, the legislators and the team turned their back on Chicago's history.

We've reached a crossroads in sports architecture. Stadiums with the potential to be hugely significant (literally and figuratively) are being built in city after city. The question is whether we'll heed the lessons of the past five years and help spawn new stadiums that enrich the esthetic landscape while serving fan, city, and sport, or whether the current trend will continue, wherein we raid public coffers for private gain, while public, esthetic, and economic considerations go by the wayside.

The question is whether the future will see experimentation and vision combined with fiscal temperance and reasoned civic priorities—a future in which the design of important buildings will inform and dictate the culture—or a continuation of the modern trend of building in a headstrong rush, dictated only by corporate blackmail, resulting in unimaginative, derivative, and downright ugly designs.

The question is whether the poobahs of sport will have the sense to preserve Yankee Stadium or the gall to knock it down and build yet another faux-old park in downtown Manhattan, simultaneously rending the fabric of the Bronx and burdening the New York City taxpayer to satisfy a robber baron's whim.

The question is whether anyone will have the boldness of vision to finally experiment with the design of a building type meant, after all, for fun and games, or whether we'll continue to see such mundane efforts as Ellerbe Becket's Fleet Center in Boston (1995) and HOK Sport's United Center in Chicago (1994).

It's a heady notion for any architect: designing a sports palace in the new golden age. But the civic hurdles are considerable, especially when taxpayers are increasingly reluctant to shoulder the economic burden at both ends of the process: When Camden Yards opened, the Orioles' ticket-price hike was the largest in the major leagues. Even

WE'VE REACHED A CROSSROADS IN SPORTS ARCHITECTURE. STADIUMS WITH THE

New York Yankees owner George Steinbrenner takes seat next to New York City Mayor Rudolph Giuliani. *With so many stadiums being* built with public funds, team owners and politicians have more reason than ever to network.

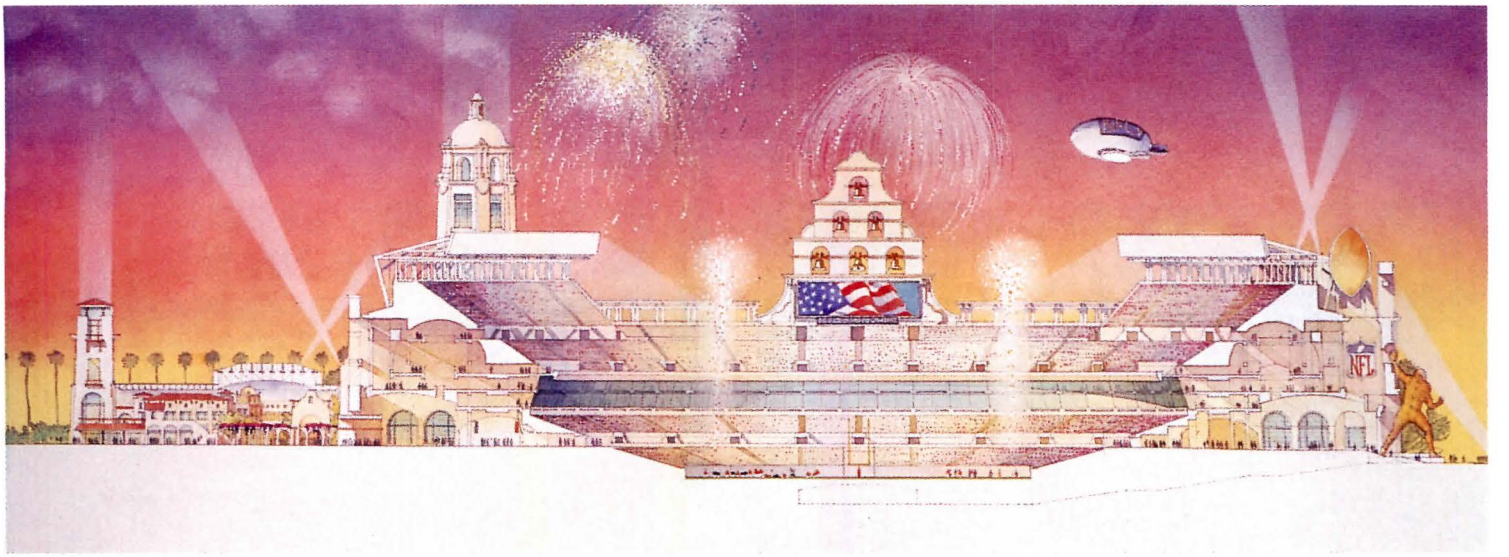
AND GETTING AWAY WITH IT

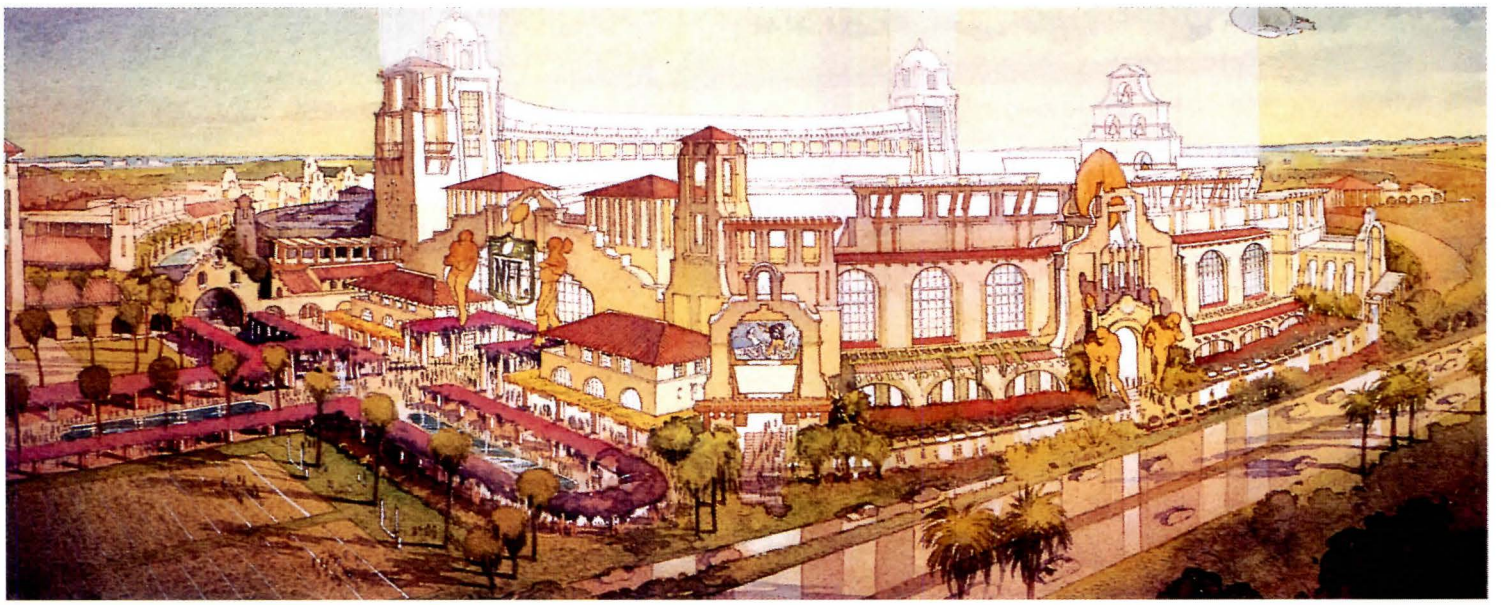
BY PETER RICHMOND

On a brilliant April afternoon in 1992, at an old industrial site in downtown Baltimore, Oriole Rick Sutcliffe threw the first pitch on Opening Day to a Cleveland Indian rookie named Kenny Lofton, and the course of baseball history changed forever. To pure baseball fans across the land, it was the most significant Opening Day pitch in five decades, for it raised the curtain on Oriole Park at Camden Yards, a sparkling,

PLAYING HARDBALL: HOW MAJOR-LEAGUE SPORTS TEAMS ARE RIPPING OFF AMERICAN CITIES

Photographs by Jim Dow during 1992 inaugural season at Baltimore's Oriole Park at Camden Yards





BLANDON BELVSKIN PHOTOS

DAVID ROCKWELL

THE HACIENDA

If legendary 1920s movie-palace mogul Sid Grauman (of Mann's Chinese Theater fame) were alive and building today, he'd want in on The Rockwell Group's exuberant proposal for The Hacienda in Los Angeles. This 1.2 million-square-foot entertainment and retail center and 77,000-seat National Football League stadium takes its design cues from Mission Colonial and Mission Revival architecture, incorporating red tile roofs, acres of stucco, and a Texas Alamo-style pediment housing bells that will ring for each home-team touchdown and victory. And with Hollywood stars from Brad Pitt to Barbra Streisand collecting Stickley furniture and Tiffany lamps, Mission-style furnishings are a sure selling point for the skybox suites. To attract corporations, the firm plans an adjacent business center.

While the pediment, several church steeplelike towers, and video and information boards will augment the complex's visibility from the nearby 405 freeway, Principal David Rockwell was also concerned with interrupting the massive scale of the stadium for pedestrians: Trellises and a large green for tailgate parties break up the large surrounding parking lots. The low-scale shopping center wraps the base of the stadium, where arcades and courtyards take advantage of the warm southern California climate. No construction schedule has been announced. *N.C.*

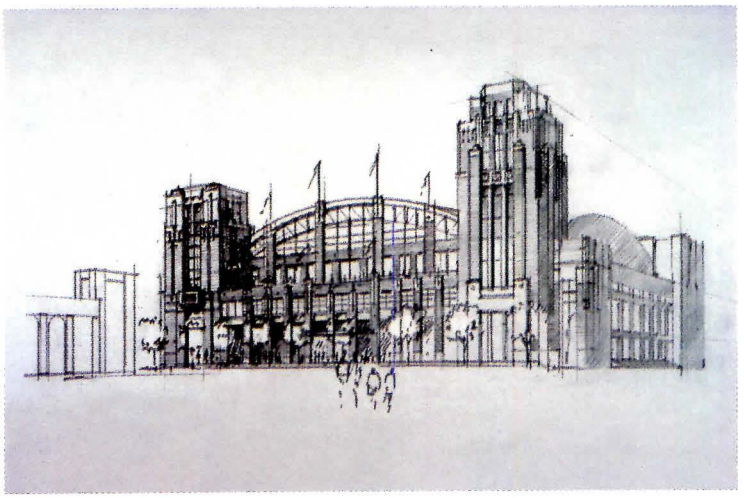
DAVID M. SCHWARZ

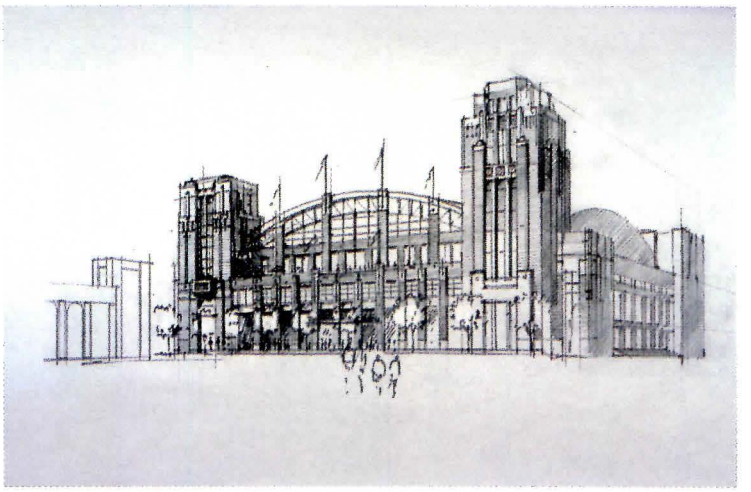
THE DALLAS ARENA

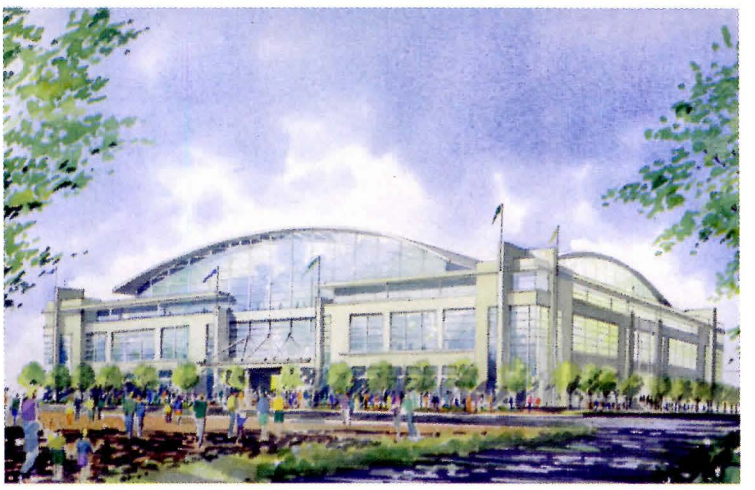
In May, Washington, D.C., architects David M. Schwarz Architectural Services bested high-profile firms Pei Cobb Freed & Partners, Kohn Pedersen Fox Associates, Ricardo Legorreta, and Murphy/Jahn in winning the commission to design a new arena for downtown Dallas. A Texas favorite, Principal David M. Schwarz has already completed numerous prominent projects in the area, including The Ballpark at Arlington (1991) for the American League's Rangers.

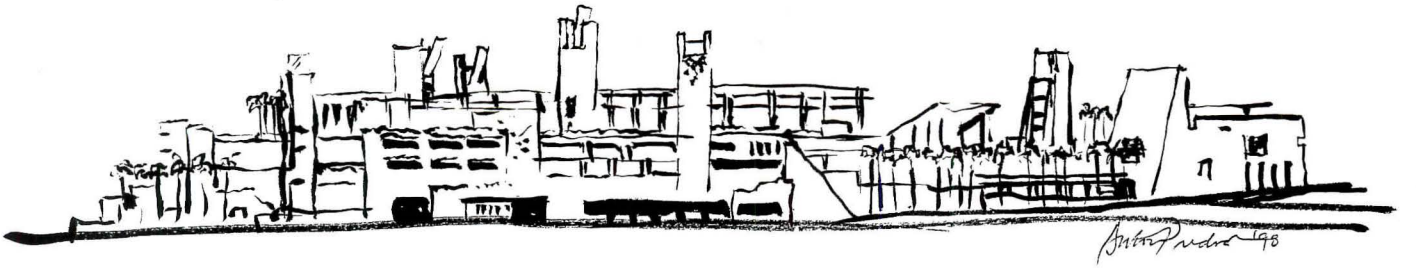
The invited competition's request for proposals called for general ideas rather than a firmed-up design: Accordingly, Schwarz prepared several schemes (examples below) with two roof profiles and different massing and detail treatments—ranging from a crisp Modern composition to an Art Deco pile.

Schwarz is currently working with HKS of Dallas to develop a final scheme for the 19,200-seat arena, which will host the Mavericks basketball team and the Stars hockey team, as well as circuses, ice shows, concerts, and rodeos. Boston-based Koetter, Kim & Associates is preparing a master plan for a surrounding 52-acre mixed-use development. The arena is scheduled to open in 2001. *N.C.*







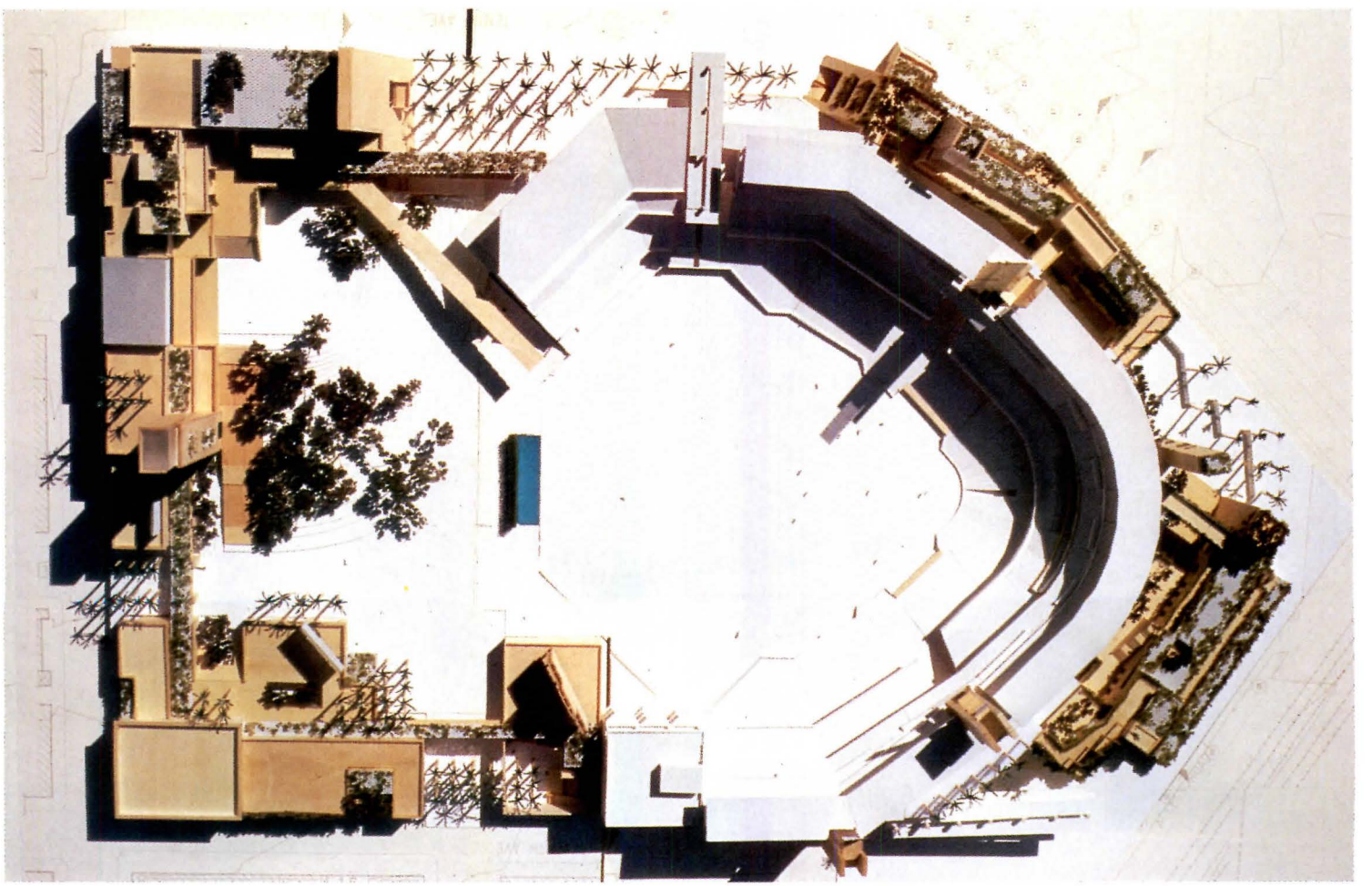


ANTOINE PREDOCK

A BALLPARK FOR SAN DIEGO

Antoine Predock puts the park back in "ballpark" with his design for a new home for the Padres in downtown San Diego by introducing terraces, gardens, and fountains throughout the 40,500-seat, open-air facility. While most stadium architects crowd offices, concessions, and lounges into the residual spaces beneath seats, Predock and associate architect HOK Sport leave the skeletal, white-painted steel structure of the seating free. Steel bridges connect to surrounding, free-standing blocks that house the ancillary functions and retail, and provide entrances to the ballpark. The landscaped terraces between the outer and inner structures serve as a concourse.

Predock punctuates the sandstoneclad outbuildings with punched openings, parapets, and trellises draped in bougainvillea and jasmine. A series of towers contains field lighting, luxury suites, and vertical circulation. A citywide referendum, scheduled to be held this month, will determine public funding for the $267.5 million ballpark. *N.C.*



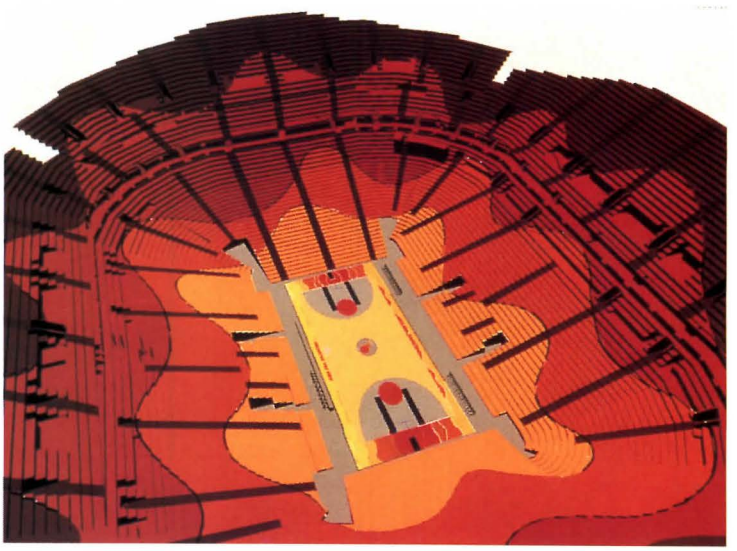
ARQUITECTONICA

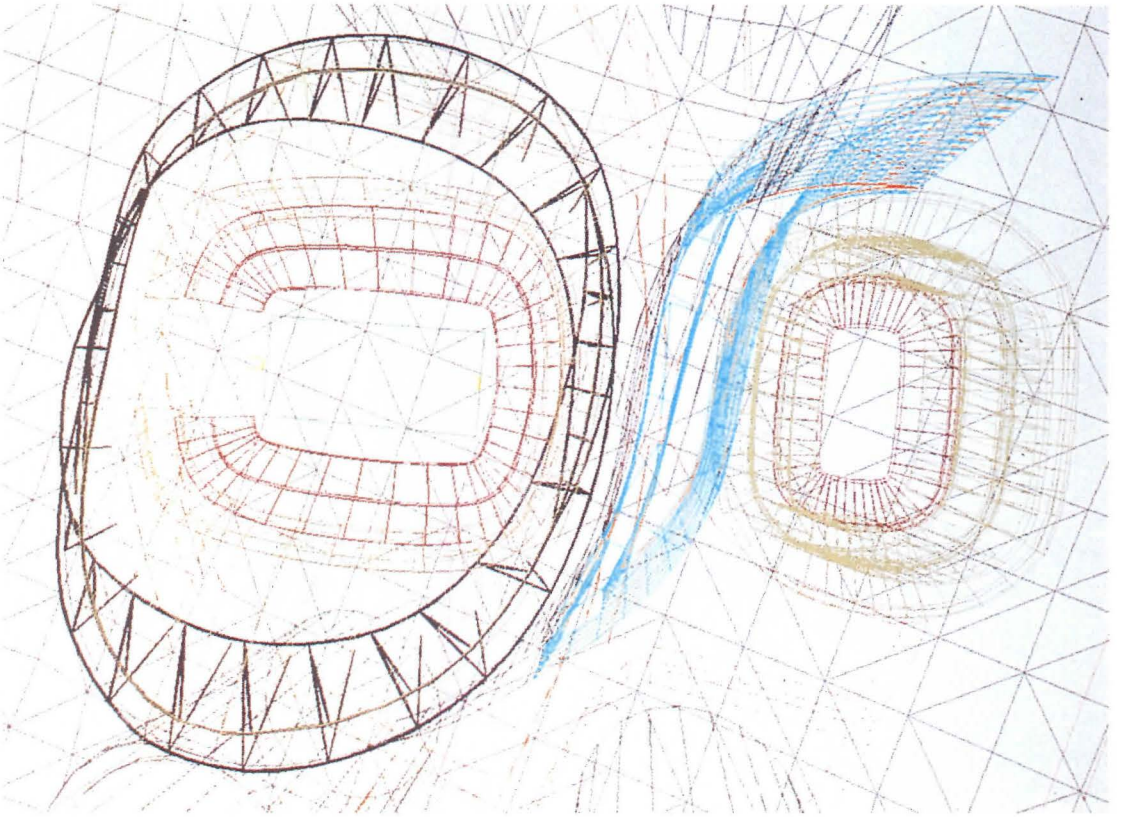
AMERICAN AIRLINES ARENA

Arquitectonica will transform Miami's waterfront once again, when the firm's $152 million American Airlines Arena opens on December 31, 1999. This giant concrete-and-glass ellipse is being built with associate architect Heinlein Schrock of Kansas City, Missouri, primarily to house 20,400 fans of the Miami Heat basketball team, but can be reconfigured for hockey games, concerts, and theater performances as well.

Two low-scaled pavilions occupy a plinth facing the water. One houses a restaurant; the other, a practice court whose glass facade offers passersby views of the team working out between games.

The forms and graphics of Arquitectonica's signature Tropical Modernism here reference context and program: A wavy canopy that connects the two pavilions and saillike steel forms that wrap segments of the arena evoke the water and boats of nearby Biscayne Bay. The remaining uncovered glass facades around the arena reveal stairs, ramps, and concourses. On the roof, a giant airplane silhouette and corporate logo signal the arena's principal corporate sponsor, American Airlines. On the interior, a flamelike pattern of colored seats (right) suggests the basketball team's name. *N.C.*





PETER EISENMAN

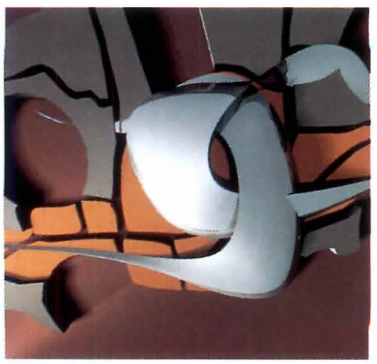
RIO SALADO CROSSING

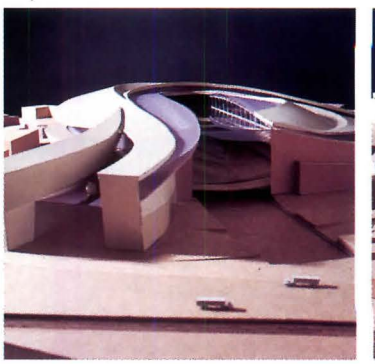
Peter Eisenman's largest commission to date, the $1.2 billion Rio Salado Crossing project combines a 1 million-square-foot convention center, two 1,250-room hotels, and a 63,000-seat National Football League stadium for the Arizona Cardinals in Mesa.

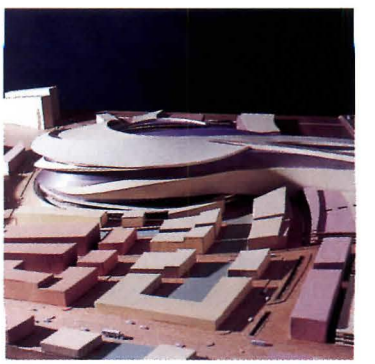
Preliminary studies (top and below left) demonstrate the project's fluid formal development. In the latest scheme (below center left, center right, and right), one hotel occupies the split wings to the northeast of the stadium bowl, and the other, a freestanding building to the southwest.

In line with Eisenman's current fascination with hybrid buildings (this issue, pages 87-93), the convention center on the southwest flank of the stadium shares with the stadium such spaces as concourses and concession stands. The north side of the stadium will be enclosed by a transparent, retractable wall, allowing views of the surrounding desert; the natural grass field rolls outside when games are not being held, leaving the floor of the stadium available for conferences. The transparent roof, too, is retractable.

The project currently awaits funding from a citywide referendum scheduled for May 1999. Eisenman Architects, partner firm HNTB, and construction manager Huber, Hunt & Nichols anticipate completion in 2001. *N.C.*







THREE PHOTOS FROM CENTER LEFT: DICK FRANK

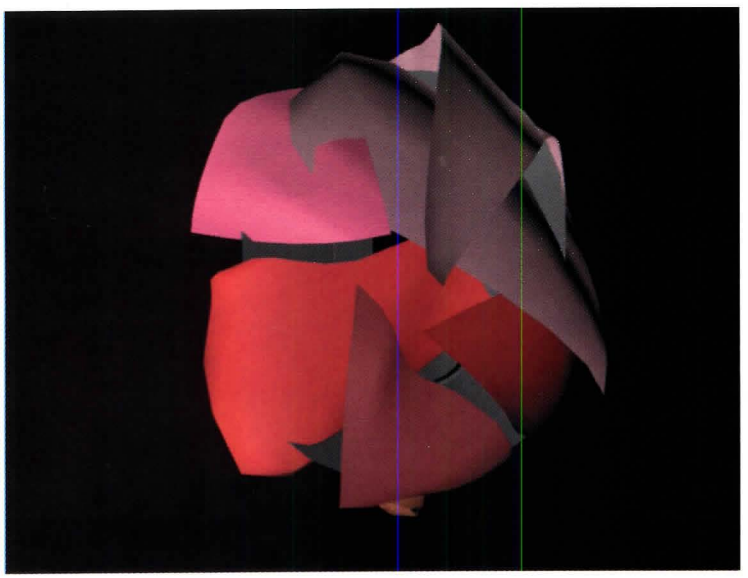
PETER EISENMAN

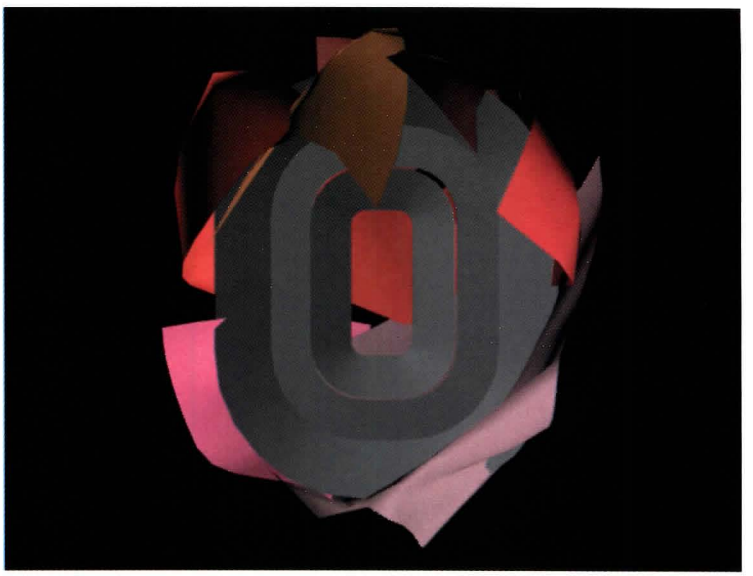
PROFESSIONAL HOCKEY ARENA PROPOSAL

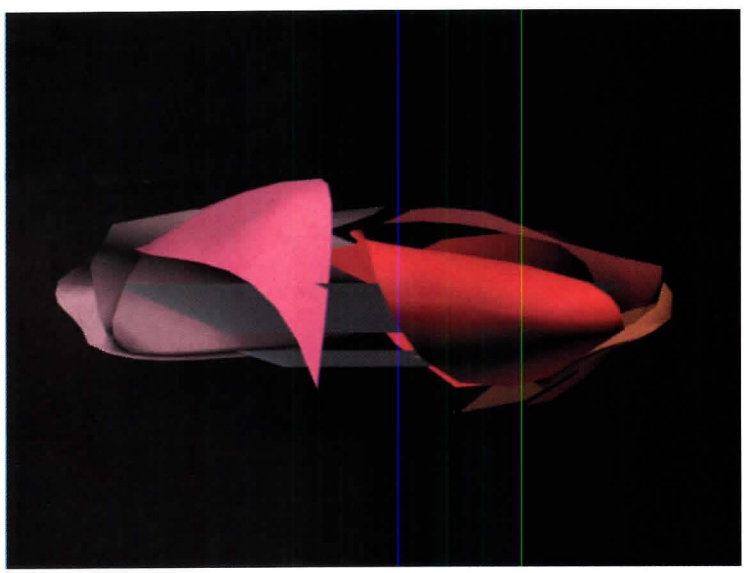
Because Peter Eisenman's proposal for a National Hockey League arena is in the earliest stages of development, study drawings (below) demonstrate the degree to which the architect is rethinking the enclosure of such sports facilities.

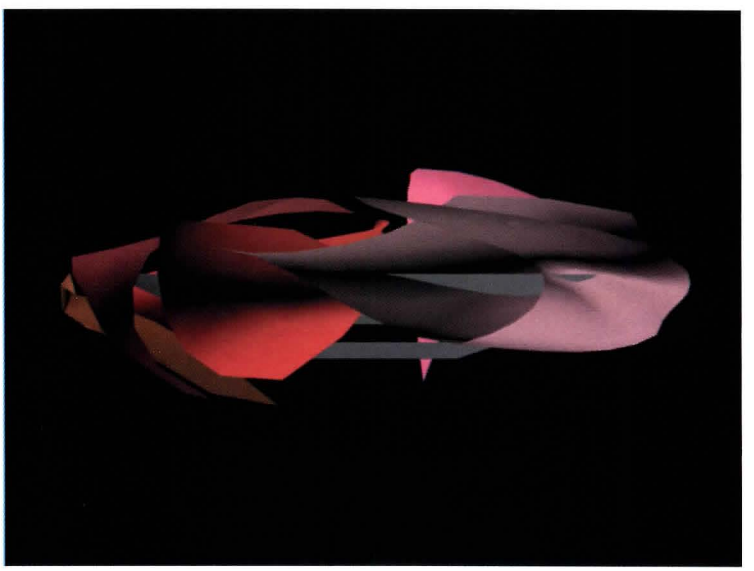
To realize the complex overlapping curved surfaces he has designed to envelop the seating bowl, Eisenman Architects is experimenting with British engineer Buro Happold on the use of a new resinlike cladding material—carbon wire-reinforced polymer (CRP)—that allows for fluid changes in color and opacity to affect lighting levels. A system of trusses would support the insulating, semirigid CRP cladding. More conventional cladding materials would interrupt the CRP shell, as indicated by surface breaks in the computer renderings (below).

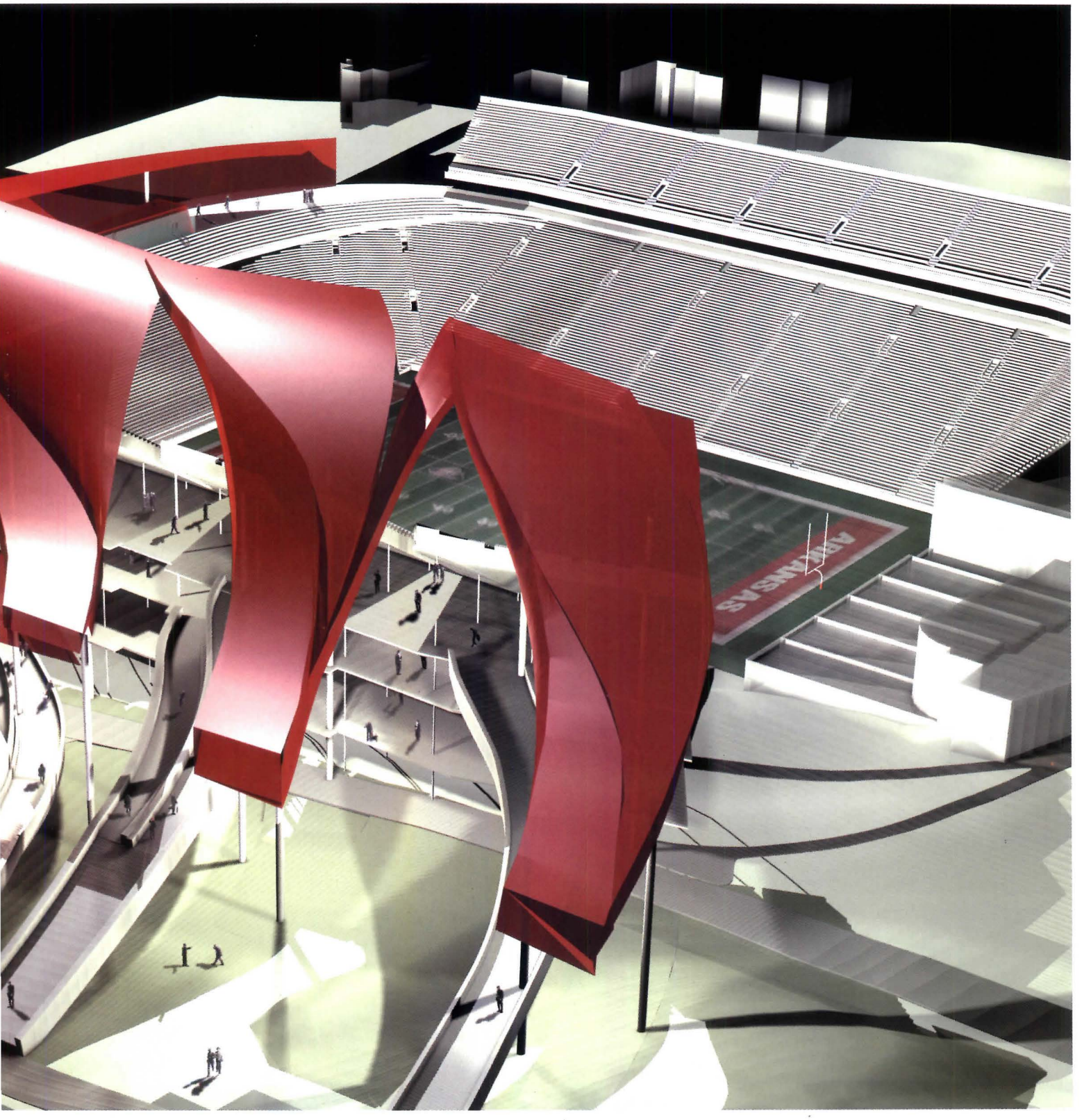
Eisenman Architects and design-build firm Huber, Hunt & Nichols have yet to determine the configuration of the seating bowl, vertical circulation, and concourse. They are also considering additional program such as entertainment, retail, or hotels. The hockey franchise for which the 19,000-seat arena is being designed is completing sensitive negotiations that will determine the project's future. The architect hopes to begin design development by next summer. *N.C.*









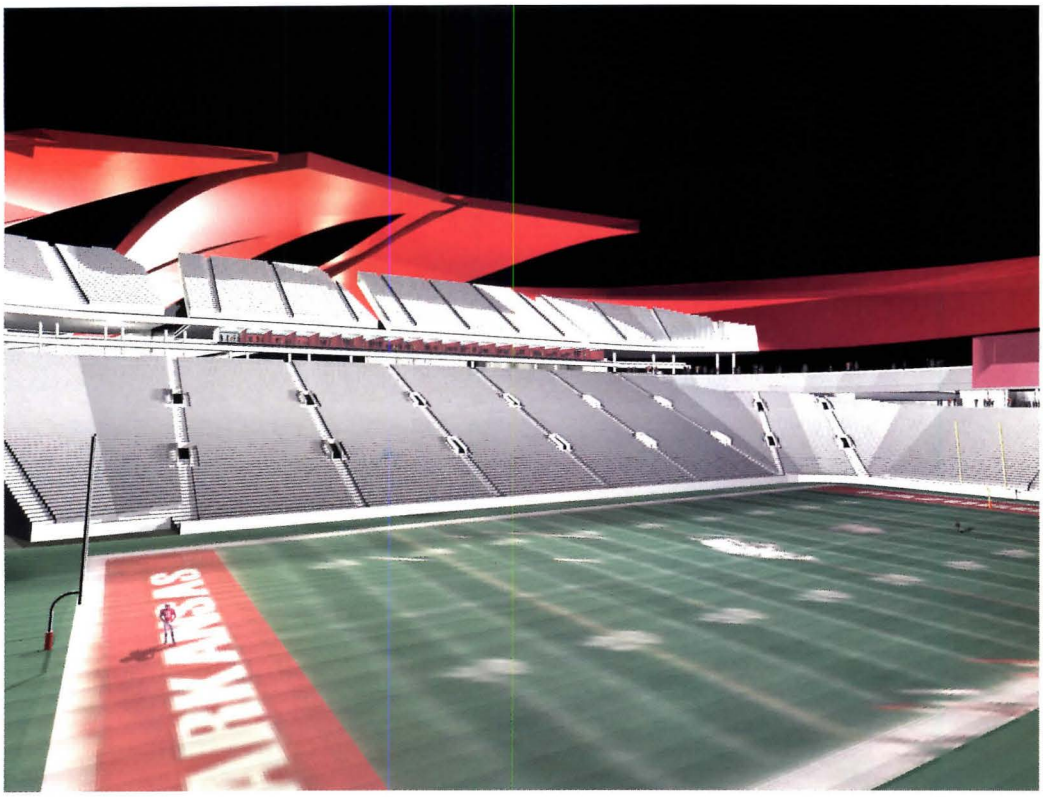


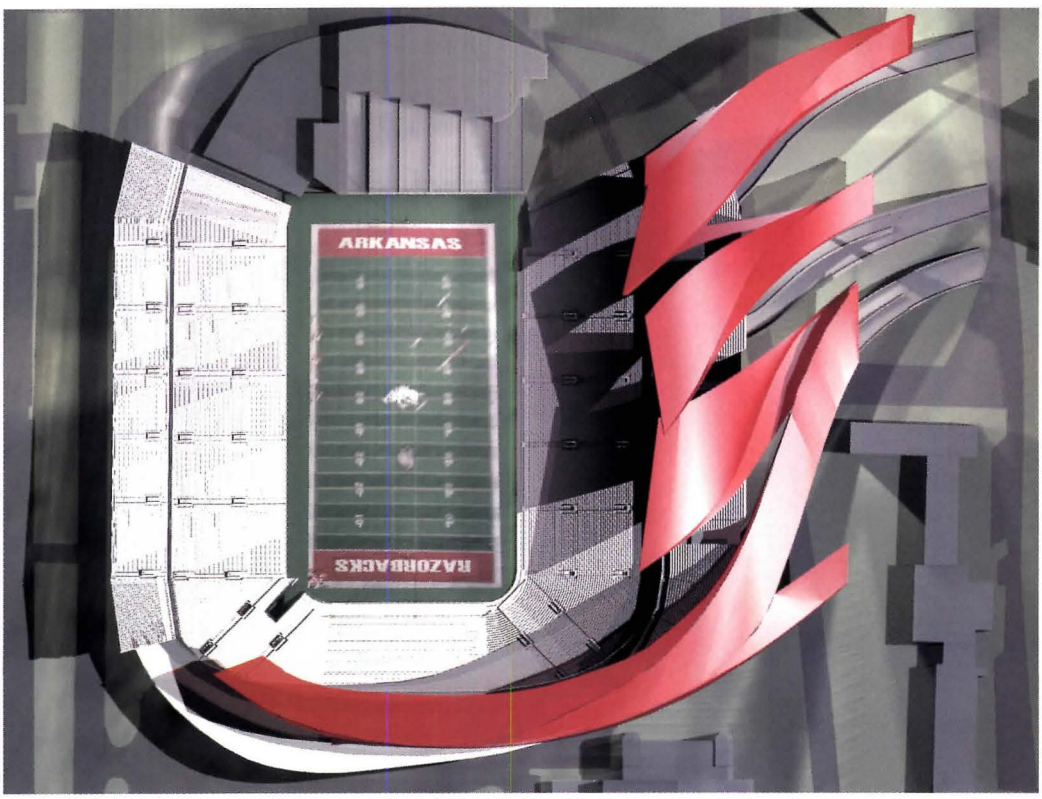
stadium at the University of Arkansas in Fayetteville.

Eisenman Architects is collaborating with sports facility expert HNTB and Arkansas firm Gaskin Hill Norcross on the addition of 19,000 seats to the stadium's east and south decks. A series of canopies over the east deck will shade the crowds and flutter, ribbonlike, toward a student center that sits on a hill overlooking the stadium. These canopies cover pedestrian ramps that will also give access to what Design Manager Richard Rosson calls "plug-ins"—apartment and classroom buildings scheduled for a later phase of construction.

According to Eisenman, the university's administration hopes to raise the school's athletic and educational profile. Therefore, the canopies also serve an additional, less immediately programmatic function: Their irregular form and scarlet-red hue provide an immediately recognizable icon for the school and its football team, particularly via televised games.

The $57 million expansion is slated to open in 2000. *Ned Cramer*





PETER EISENMAN

RAZORBACK STADIUM EXPANSION

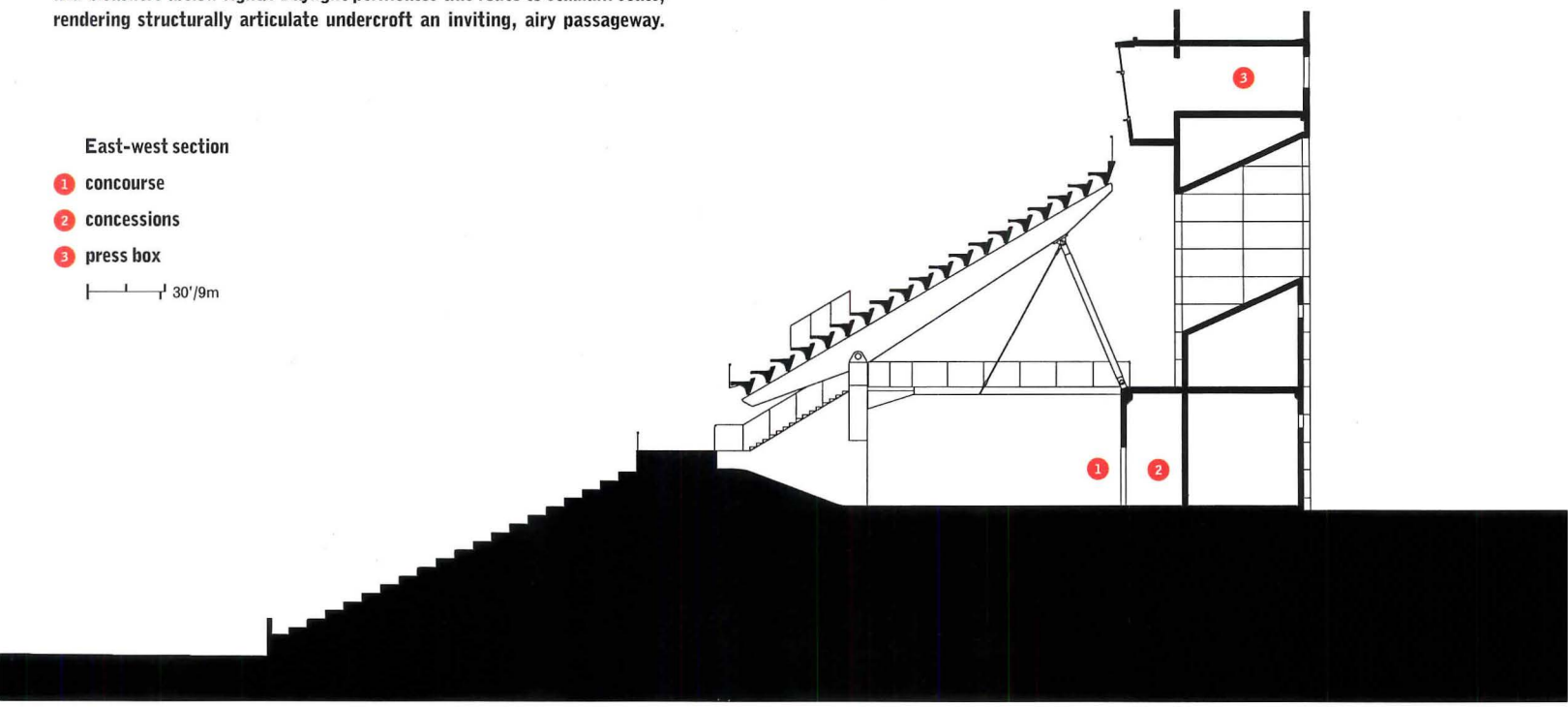
The overlapping grids of Peter Eisenman's early houses and the fractured geometries of his Aronoff Center of Design and Art (1996) at the University of Cincinnati have given way to the chaotic, flowing forms of computer-age design in his expansion of the 48,000-seat Razorback football

Entrances to lockers flank track-and-field bleachers (facing page). Incisions at both ends of stadium building wall align with ramps that lead to glazed top level and flat rooftop, accessible at game time. Concourse (below left) is modulated by bridges that link cast-in-place concrete piers of stadium building wall and bleachers (below right). Daylight permeates this route to stadium seats, rendering structurally articulate undercroft an inviting, airy passageway.

East-west section

1. concourse
2. concessions
3. press box

30'/9m



THE BUILDING WALL PROVIDES A SENSE OF DEFINITION AND ENCLOSURE THAT BLEACHERS ALONE WOULD NOT HAVE.

beams that are held up by V-shaped steel struts that attach to the perimeter building wall one floor above the concourse. This solution produces an inviting circulation route beneath the bleachers, whose risers have horizontal slits that throw patterns of light and shadow into the space. The concourse is most interesting at the bottom of the U, behind the end zone, where the rectilinear bleachers meet the curved wall. There, the concourse widens, the bridges that link the bleachers to the building wall disappear, and the steel supports incline at different angles, adding up to a vigorous, airy, tentlike space.

Annexed to the southern end of the stadium is a new track-and-field facility, whose bleachers feature cantilevered fabric and steel sunscreen. The track was once part of the stadium's program, but the architect and client worried it would distance fans from the field. The track outlines an ovoid front yard for the stadium.

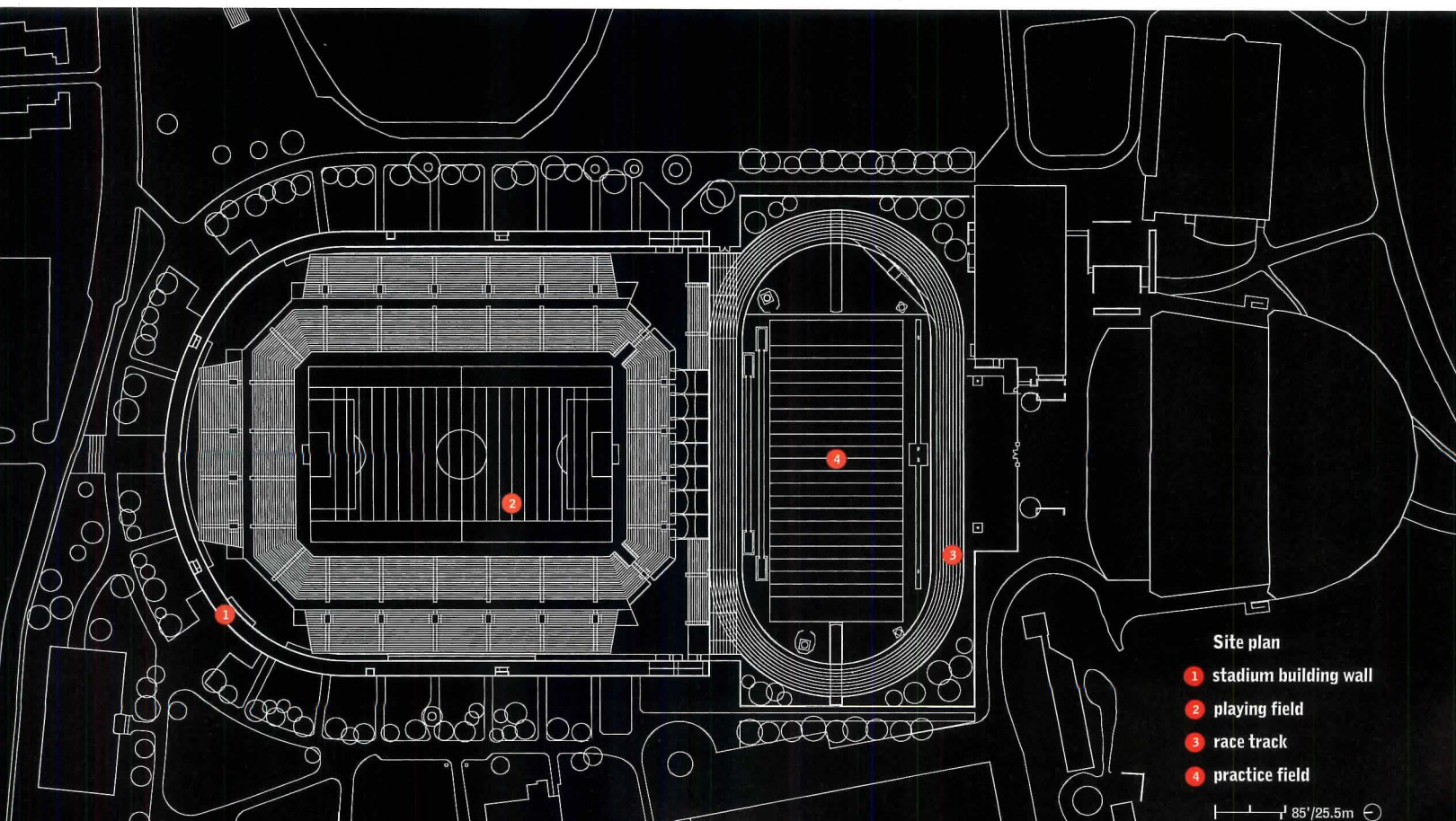
Princeton stadium promises to be a good place to watch football. The steep rake of the bleachers offers good sight lines, and the building wall provides a sense of definition and enclosure that bleachers alone would not have. The building at first suggests a massive wall, but openings for windows and ramps at the southern end reveal the true, hollow nature of the building wall, which is somewhat deflating if one had imagined it to be solid. While one can argue that such a revelation is a more honest Modernist approach, it makes the building wall seem like sleight of hand that has been revealed.

Still, in the structure of the bleachers, Viñoly has successfully imbued the building with a human scale and visual interest through closely studied structure rather than historical allusion, a laudable achievement in these days of the post-Camden Yards sports facility. But people see what they want to see: At least one alumnus, who identified Princeton with Collegiate Gothic, told Lin he thought the boxy light fixtures near the top of the building wall look like gargoyles.

Mark Alden Branch, a former senior editor of Progressive Architecture, *is coauthor of* Devil's Workshop: 25 Years of Jersey Devil Architecture *(Princeton Architectural Press, 1997).*

PRINCETON UNIVERSITY STADIUM, PRINCETON, NEW JERSEY
CLIENT: Princeton University **ARCHITECT:** Rafael Viñoly Architects, New York City—Rafael Viñoly (principal), Jay Bargmann (project director), Chan-Li Lin (project architect, manager), Thomas Baker (project manager), Iris Benado, Joseph Bruno, Simon Chang, Ryo Fukai, Walid Abu Ghazaleh, Ivar Gudmundsson, Jean Hahn, Aki Ishida, Yi-Pei Lin, Stephen McGregor, Jeff Miles, Takeshi Miyakawa, Cary Paik, Robert Vertes, William Vinyard, Hiroki Wakimura, Fred Wilmers (project team) **ENGINEERS:** Thornton-Tomasetti Engineers; Structural Design Group (structural); Flack + Kurtz, Consulting Engineers (mechanical, electrical); Van Note-Harvey Associates (civil) **CONSULTANTS:** Robert Schwartz & Associates (specifications); Wojciechowski Design (signage); The Sports Management Group; Cecil & Associates (sports facilities); International Sports Management (track); Turf Diagnostic & Design (turf); Jeffrey L. Bruce & Company (irrigation); Acentech (PA system); Reginald Hough (concrete); Arena Television Management Systems (broadcasting); Van Deusen & Associates (elevator) **GENERAL CONTRACTOR:** Turner Construction Company **COST:** $38 million **PHOTOGRAPHER:** Paul Warchol

THIS FALL, PRINCETON FOOTBALL, A PERENNIAL ATHLETIC ALSO-RAN, BECAME A CHAMPION OF THE CAMPUS'S NEWFOUND SENSE OF ARCHITECTURAL ADVENTURE.



Wide-angle view of stadium (above) shows enclosed playing field, dimensioned for football, soccer, and lacrosse. Cantilevered fabric and steel sunscreen over bleachers (at right) accommodates track-and-field fans. View from afar (below) reveals Rationalist allusions of Viñoly's precast building wall; ribbon windows at top, 70 feet above playing field, demarcate level of press box; other enclosed spaces on the top floor haven't yet been programmed.

CHUCK CHOI ESTO

RAFAEL VIÑOLY

PRINCETON STADIUM

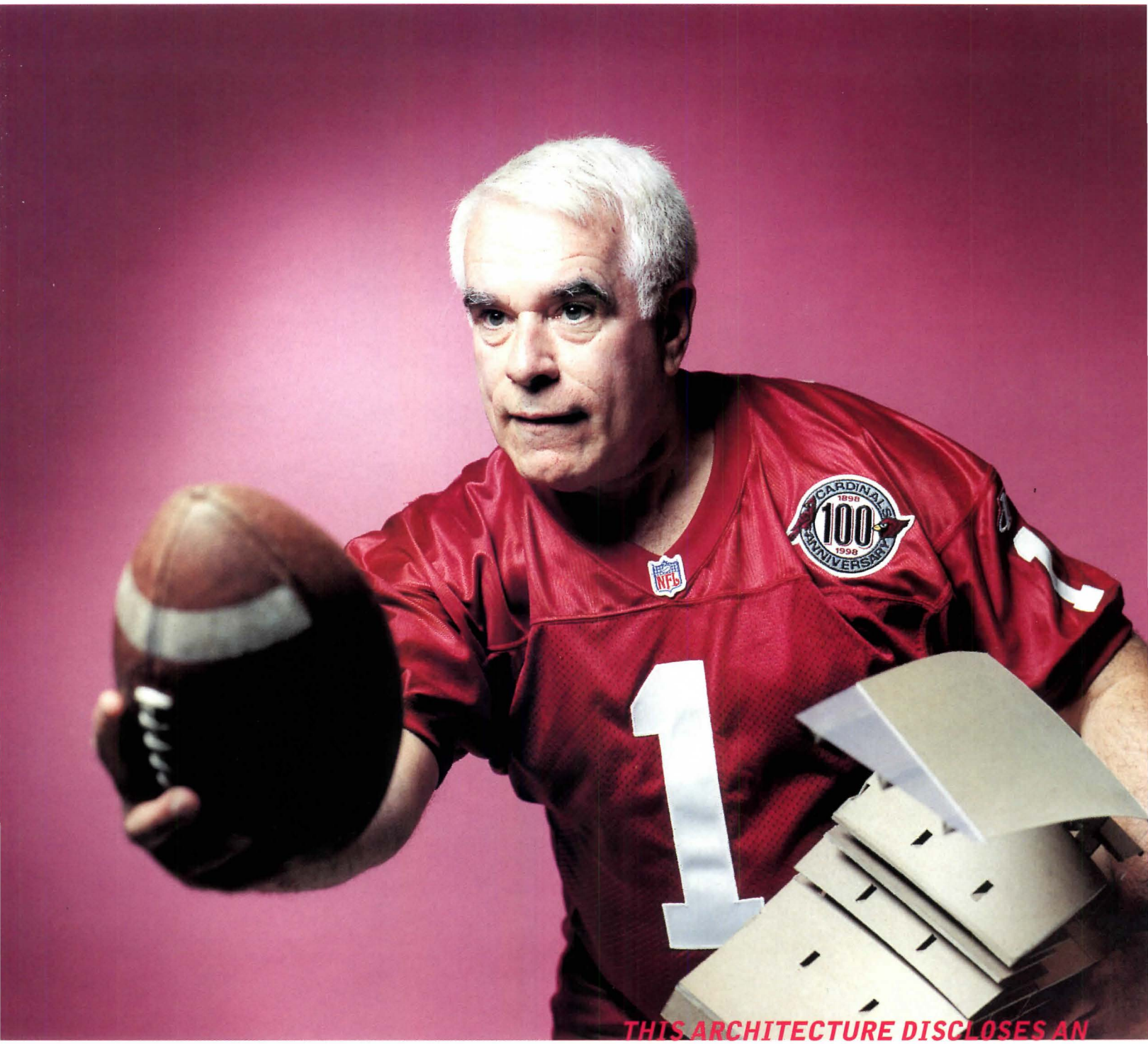
BY MARK ALDEN BRANCH

This fall, Princeton football, a perennial athletic also-ran, became a champion of the campus's newfound sense of architectural adventure. The team now plays in a new stadium designed by Rafael Viñoly Architects, an intriguing, if imperfect marriage of elegant Modernism and Princeton's need for what Project Architect Chan-Li Lin calls "a sense of permanence and presence."

That marriage is diagrammed in the two separate systems that define the 28,000-seat stadium: the precast concrete bleachers and the U-shaped "building wall" of precast panels that wraps them. At one point, the architect and client discussed shoring up the crumbling concrete walls of the facility's precursor, Palmer Stadium, and using it as a wrapper, but this proved impractical. Next came the notion of a "building wall"—an 18-foot-deep structure that houses ramps, rest rooms, concession stands, the press box, and a large volume of unprogrammed space. The building wall is constructed of precast concrete bearing panels with a beige aggregate, the best complement to the rich red and brown stones of nearby campus buildings that Viñoly's budget would allow.

To support the upper tier of bleachers (the lower tier is cast-in-place concrete on grade), Viñoly's team devised an unusual structural system that combines concrete and steel. The 60-foot-long sections of seating rest on precast

At the season opener, Princeton's football team—and its new stadium—drew more fans than anyone had seen on campus in decades. New stadium sits on site of university's much-loved, but obsolete Palmer stadium.



ANNE KATRINE SENSTAD

THIS ARCHITECTURE DISCLOSES AN ACUTE DESIRE FOR NEW KINDS OF EXPERIENCE THAT THE CLICK-AND-DRAG ENTERTAINMENT FORMULAS OF LARGE FIRMS CANNOT PROVIDE.

Peter Eisenman gets into the game, carrying study model of stadium for Arizona Cardinals.

ALL-STARS: TOP-SEEDED DESIGNERS INVADE THE TURF OF PRO STADIUM SPECIALISTS

BY K. MICHAEL HAYS

The field of stadium and arena design—once dominated by no-name corporate giants like HOK, HNTB, and NBBJ—is being invaded by progressive architects, and even those who fancy themselves attuned to the movements of design culture must take pause. The high-design stadiums featured in this issue signal architecture's entry into the contemporary culture of entertainment and communication, and with that, a breakdown of the once fiercely defended uniqueness of the architectural experience. For in this context, in which every crack of our everyday lives is filled with heretofore unimaginable visual stimuli, nothing can stand out. We have, instead, an endless series of objects and events, each different from the next, yet collectively indistinguishable in the flux. Feeling increasing pressure from other forms of contemporary image culture (like MTV, advertising, photography, and the Internet) that would displace architecture's traditional communicative and symbolic functions, architecture has reacted by trying to become just those things: entertainment media.

The slackening of specificity, however, has also produced a new kind of architectural object whose function and visage can drift and expand through culture in unprecedented ways, stretched out in a mixed-media experience. Stadium architecture (or rather, people's perceptions of it) is woven into the same fabric as team mascots, beer advertisements, skycams, and other televisual leisure. Yet, in all of this, the architecture still plays a crucial cultural role.

Most obviously, universities, municipalities, and athletic programs are commissioning signature architecture—a new form of what public relations firms call "branding"—to attract recognition, to single themselves out. There is no need for it to be profound or serious. The architecture signifies nothing in particular, only that significance is needed. But the commissions also disclose an acute desire for new typologies of experience that large firms' click-and-drag entertainment formulas cannot provide. That desire is partially fulfilled by highly inventive mutations of the traditional stadium section, such as the slots of light at Rafael Viñoly's Princeton Stadium (pages 118-123, this issue), and the viewing towers Antoine Predock designed for the San Diego Padres ballpark (page 129, this issue), as well as by programmatic conflation, such as Peter Eisenman's tissuelike ramps at the Razorbacks Stadium (pages 124-125, this issue) that connect to surrounding buildings.

Such elaborations of the stadium type disprove the claims that only the large, specialized firms that have previously dominated sports and entertainment facilities have the expertise to design these massive projects. HOK's Coors Field in Denver (1995), which mimics historic ballparks, or Ellerbe Beckett's CoreStates Center in Philadelphia (*Architecture*, December 1996, page 49), which doesn't attempt even to mimic, may have mortgaged design equity for a place in commercial culture alongside shopping malls, cineplexes, and theme parks, but they have not provided the structures of fantasy and enjoyment for which our society yearns.

It is less through space and function than through pure semblance that the projects presented here produce modulations of mood, atmosphere, and character within the generalized media experience. For example, Arquitectonica's project reproduces the "sense" of a Miami constructed in South Beach as a retroactive fulfillment of the look of the hit television show, *Miami Vice*, in which the firm's work famously appeared. A highly recognizable affectation, it seems thereby to be "contextual," but it is precedented only by a media experience. Eisenman's projects, on the other hand, seem altogether unprecedented; or better, they look just like digital media itself, invoking metaphorical associations with the latest high-tech gadgets, animated cartoons, and Web sites. These are not mere simulations of reality; these are constructions of a reality that didn't exist before the architecture that simulates it.

If we have lost the ability to perceive this architecture as specific or authentic in anything like the traditional sense, we have gained something, too. For the all-absorbing, blurring media processes cease to be merely an alienating and menacing side effect of our frenzied consumer culture, and are instead transferred to the potential of human energies and possibilities—an expansion of our ability to map the vast cultural forces in which any architecture must operate. Like the clap of pads and helmets heard in real time and space while watching an extreme, dematerialized magnification of the same action on the Jumbotron (along with smells of beer and mustard, and glimmers of advertisements), this architecture produces not so much a simple merger of different situations and dimensions as another perceptual space altogether—a suspension of everything that used to be thought of as real or simulated in a new, contemporary sensorium. Indeed, perhaps this transitional moment of the profession is itself a correlate of our society's effort to assimilate the unprecedented perceptual effects of new media technologies, and our discipline's effort to provide material support for doing so. We should have no illusions about what this architecture is, but we can applaud the heightened awareness that it brings.

K. Michael Hays is Professor of Architectural Theory at Harvard University.

TAKING THE FIELD

Babe Ruth's compact left-handed swing launched 714 home runs—and legions of fans—into the bleachers of stadiums across the country. Yankee Stadium became known as "the house that Ruth built," demonstrating a bond between fans, stadium, player, and team that is unimaginable today. Yet stadiums and arenas have perhaps never been as important, or as controversial, in the world of professional sports as they are now. Neotraditional facilities such as Baltimore's Oriole Park at Camden Yards or Cleveland's Jacobs Field, designed by architecture's corporate giants, have reconnected sports with its urban roots. But nostalgia cannot disguise the fact that sports is big business: Forsaking hometown loyalty, owners regularly threaten to uproot their teams in pursuit of the ready revenues of newer, taxpayer-subsidized, luxury box-filled stadiums. Increasingly, star architects are helping these owners distinguish their parks. Will high design change the game?

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10
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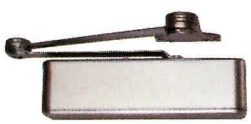

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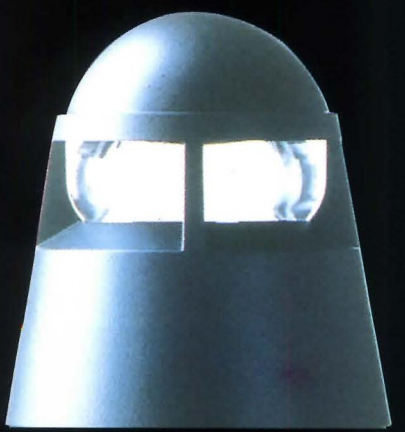

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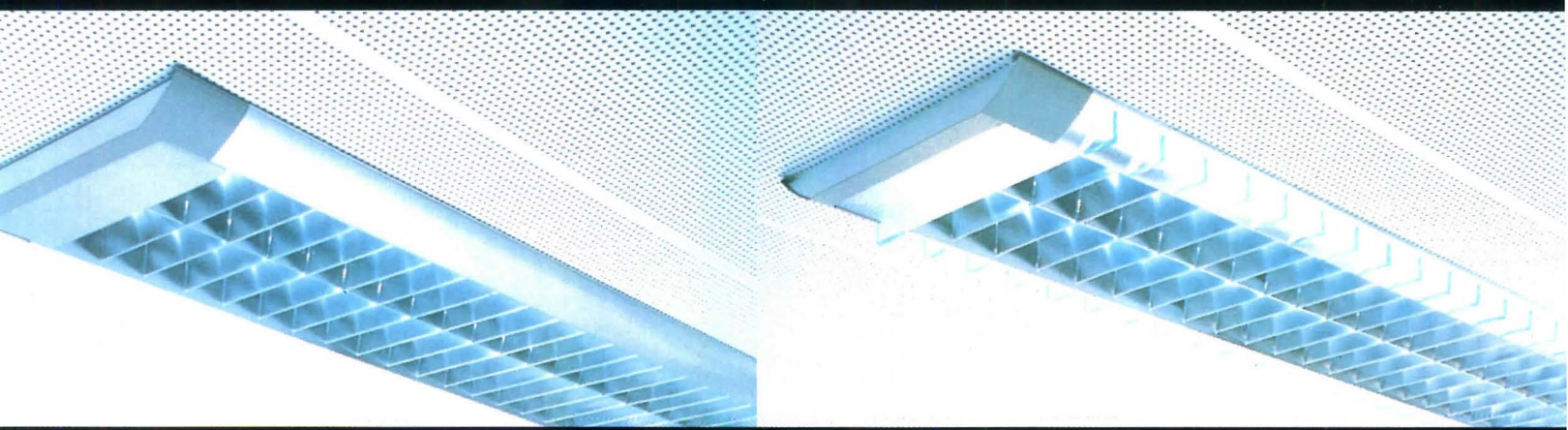
bright ideas

ASPECT BY DELRAY

Aspect is a compact fluorescent pendant that offers well-shielded downlighting with a pleasant glow for soft general lighting. Its outer shade is available in green or opal. Aspect is available in both wall- or ceiling-mounted versions. (CIRCLE NUMBER 64 ON INFORMATION CARD.)



IBER OPTICS BY LUCIFER LIGHTING

s fiber-optic applications increase, many systems vie for ompetitive advantage in the marketplace. Lucifer Lighting, long nown for their low-voltage, small-aperture luminaires, introduces new fiber-optic offering that boasts notable new features. ucifer's fiber-optic cable harness uses stranded glass fibers for ptimum transmission of light—and added flexibility. Standard tranded plastic and solid-core cables are also available.

Lucifer's most innovative new component is a device that erminates the fiber-optic cable in a fitting that mimics an IR16 lamp. The advantage of this is that all Lucifer's extensive ne of standard fixture MR16 lamp trims can now be used ith fiber optics. The manufacturer has also developed additional xtures specifically for landscape lighting, where a fiber-optic pplication offers substantially easier installation and maintenance han existing line-voltage or low-voltage alternatives.

CIRCLE NUMBER 68 ON INFORMATION CARD.)

LIBERTO BY ZUMTOBEL STAFF

In recent years, downlights have became more than just holes in the ceiling. Glass and decorative trims are increasingly popular with designers, who are integrating them into their lighting designs. Zumtobel has now adapted downlights to fluorescent troffers. Featuring the company's signature matte aluminum louvers and incorporating the new technology of T5 lamps, Liberto offers an alternative to conventional recessed troffers. Decorative trims create a semi-recessed appearance. Individual luminaires or continuous rows are available for open-plan or private office applications. Liberto's one-lamp fixtures are ultrathin, with a 4-inch aperture and a 6-inch overall width. In addition to their handsome esthetic, these high-performance luminaires provide precise optical control for glare-free illumination.

(CIRCLE NUMBER 66 ON INFORMATION CARD.)

product spotlight

EDITOR'S CHOICE

TWIN LIGHT BY WILA

The Twin Light Series 112 from Wila Lighting is a compact fluorescent downlight for 18-, 26-, or 32-watt compact fluorescent lamps. The fixtures offer the unusual combination of well-shielded downlighting from vertical lamps and a computer-designed inner-specular aluminum reflector, as well as a more diffuse light reflecting off a matte outer reflector. The outer reflector not only creates a soft glow, but also provides color accents when optional colored acrylic screens are used. Twin Light supplies energy-efficient low-brightness illumination and is coupled with a decorative ring so downlighting is not merely a dark hole in the ceiling. The fixtures are available in 9-inch or 10-inch apertures.

(CIRCLE NUMBER 70 ON *INFORMATION CARD.*)

lighting case study

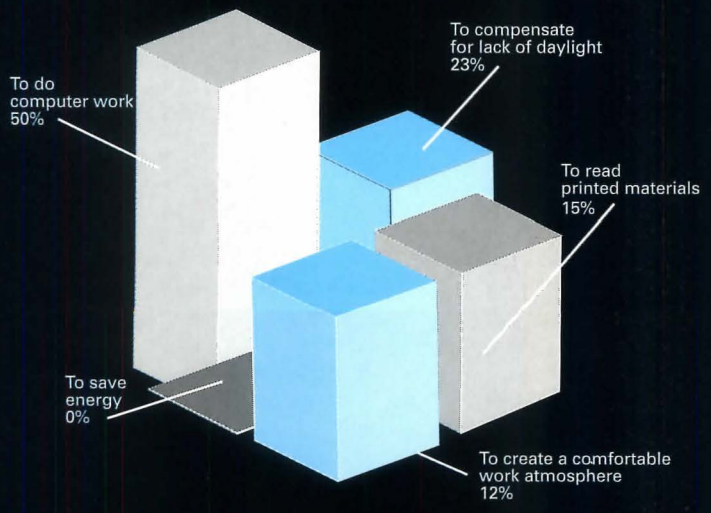
reduced energy use 13 percent in interior offices and 55 percent in perimeter offices. Photosensors did not provide energy savings because to reduce occupant complaints they were adjusted to minimize their dimming effect.

On the basis of these results, researchers expanded the study to include more offices and collected more data comparing performance over a three-month period. This larger study examined how 58 NCAR employees used manual switching, dimming, and window blinds in their private offices. The employees were divided into two experimental groups, each of which experienced four different two-week control periods. The research team also recorded observations about window blind adjustments and work tasks. At the end of the study, researchers surveyed workers about their lighting control preferences.

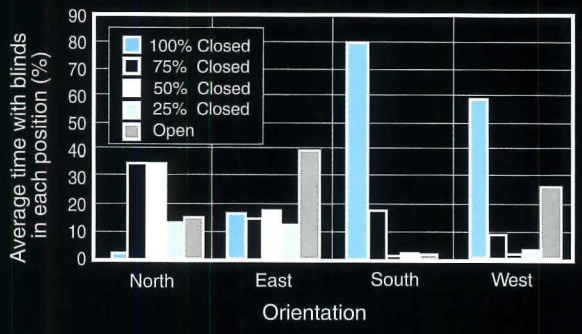
Results confirmed the findings of the pilot study: People will dim and turn off their lighting if controls are conveniently located and easy to use. Researchers also found that people prefer to have a dimmer at their desk and that they adjusted their lights only one-third as often when the desktop dimmer was removed. In addition, people like working in spaces with windows, but want the ability to control blinds to block direct sunlight. Daylight can be used to save energy; however, strategies that rely on daylight to save energy are likely to be most successful where people leave blinds open and allow light to enter, such as in north- and east-facing offices.

In the NCAR offices, this mix of lighting strategies reduced lighting energy use to 61 percent of normal useage. The combination of occupancy sensors and manual switching and dimming accounted for all but a few percent of these savings. Researchers also found that there was little untapped energy savings.

THREE-DIMENSIONAL GRAPH (BELOW) DEPICTS REASONS STUDY PARTICIPANTS GAVE FOR DIMMING OFFICE LIGHTS.



OFFICE OCCUPANTS USED WINDOW BLINDS TO REGULATE DAYLIGHT. BAR GRAPH (BELOW) SHOWS DAYLIGHT CONTROL BY OFFICE ORIENTATION.



Jerry Mix, president of the Watt Stopper, a study sponsor, explains the importance of personal control: "We know that occupancy sensors work. They are the most efficient energy-saving technology out there, but you want to give control over the space to the person using the space."

The study—which was cosponsored by LRC, Bonneville Power Administration, California Institute for Energy Efficiency, GE Lighting, Horton Controls, Motorola Lighting, NCAR, New York State Energy Research and Development Authority, Prescolite-Moldcast Lighting, the U.S. Environmental Protection Agency, and the Watt Stopper—concluded with questions to guide future research. These questions are as follows:

- What effect do seasonal variations have on the occupants' dimming and window blind behavior?
- What criteria are important in making photosensors more effective? Given those criteria, what energy savings are possible?
- What is the best technology for manual dimming from both an occupant and energy perspective?
- What is the relationship between self-selected levels of illumination and the visual task?
- What energy savings would be realized if motion sensors were disabled and the occupants knew it? Would occupants manually switch and dim more often?
- Would a dimming system that included preset levels affect dimming behavior?
- What is the statistical diversity of lighting load associated with various control strategies? What is the concurrence with other loads? What does this imply for load calculations in HVAC system design and for the controls' overall net cost and economics?

ADDITIONAL INFORMATION ON THE STUDY MAY BE FOUND IN LRC'S QUARTERLY PUBLICATION, LIGHTING FUTURES.

lighting case study

Do controls cut consumption?

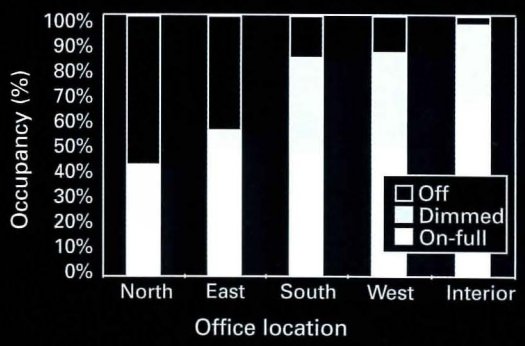
BY KEVIN HESLIN

THE LIGHTING RESEARCH CENTER TACKLES THE EFFECTS OF LIGHTING CONTROLS ON ENERGY CONSUMPTION IN A STUDY CONDUCTED AT THE NATIONAL CENTER FOR ATMOSPHERIC RESEARCH.

The Lighting Research Center (LRC) recently conducted several lighting control studies at the National Center for Atmospheric Research (NCAR) in Boulder, Colorado. The results of these studies are summarized in A FIELD STUDY OF LIGHTING CONTROLS. This report, along with previously published LRC specifier reports on occupancy sensors, photosensors, and dimming electronic ballasts dramatically increases the information available to specifiers about lighting controls and their energy-saving potential.

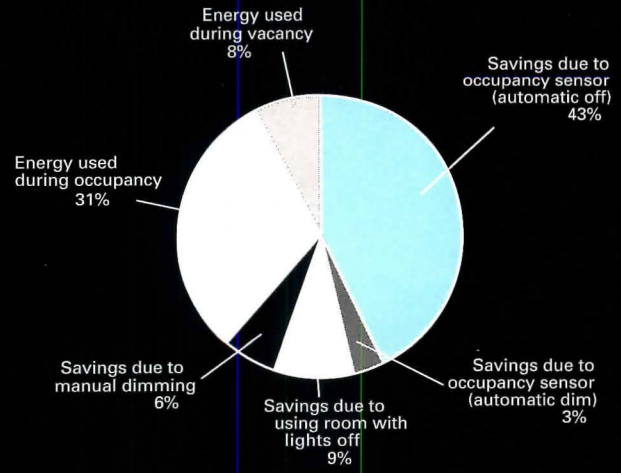
Before LRC released the NCAR study, the benefits of lighting controls had not been well-documented. Previous studies had shown the energy-saving potential of motion sensors, time clocks, and even manual switching, but few studies compared the incremental benefits of the various strategies. The NCAR study, however, provides specifiers with a basis for moving beyond static energy-saving technologies such as T8 lamp-electronic ballast systems. Dorene Maniccia, LRC's lighting applications manager, explains, "Controls became independent of the occupant on the theory that automatic systems guaranteed energy savings after the energy crisis in the 1970s. With a manual system, nobody knew if anyone used it, and you couldn't tell if you were saving energy." LRC's study questioned whether occupants will use manual control systems, whether these controls save energy in office applications, and whether occupants like having control over their lighting systems. The answer to all these questions was a resounding yes.

The building management system at NCAR offered opportunities for measuring and comparing the benefits of manual and automatic controls by documenting energy savings and occupant behavior and response. Wayne Morrow, NCAR controls system engineer, says, "Our director told us to create a practical, energy-efficient building with individual temperature and lighting controls for each perimeter office while, of course, being responsive to human needs and desires." Each office at NCAR wa equipped with a ceiling-mounted infrared motion sensor, a dimme switch at the door, and a portable desktop dimmer-switch to control two three-lamp (4100 K) T8 18-cell parabolic luminaires wi dimming electronic ballasts. For the study, each office was modified to include electrical current sensors. These sensors were connected to a building automation system, allowing researchers to measure electric power usage. These data, when combined wi occupancy data and occupant behavior data, allowed researchers record manual switching and dimming behavior.



BAR GRAPH (ABOVE) EXPLAINS LIGHTING PERFORMANCE AND DIMMING AS FUNCTION OF OFFICE LOCATION AND OCCUPANCY TESTS.

PIE CHART (BELOW) PRESENTS DISTRIBUTION OF ENERGY USAGE FOR TYPICAL OFFICE BUILDING IN 10-HOUR DAY.



The LRC and NCAR agreed to conduct joint research examinin the energy-saving performance of lighting controls in the occupied facility. The first of these projects was a three-day pilot study that tested 28 offices to detect significant effects of manual dimming. The study documented the impact of motion sensors, time clocks photosensor dimming, manual switching, and dimming on energy use, occupancy loading, wasted lighting energy, occupant attitude occupant tasks, and window blind usage. The study showed that people do use manual dimmers, that they use them more frequently when they are located on a desktop rather than by the door, and that manual dimming and motion sensors significantly reduce wasted lighting energy and enhance occupant satisfaction Adding manual controls to an office equipped with a motion sens

PHILIP GABRIEL, IALD
Gabriel/design (IALD President)
Ottawa, Ontario

WHAT IS DRIVING THE LIGHTING INDUSTRY TODAY?

Lighting today is viewed primarily as a part of a building's mechanical system. Consequently, too little value is placed on lighting design, and lighting is priced and evaluated as just another mechanical product. Lighting effectiveness is too often measured only in foot-candles and lighting efficiency in watts per square foot. These are metrics of quantity, not quality.

WHAT WILL DRIVE THE INDUSTRY IN THE YEAR 2020?

We need to view light not as hardware, but as a building material. One IALD Fellow often describes light as the building material of the next century. This broader understanding of light will develop as end-users' awareness of the value of good lighting increases. People will measure the quality of the lit environment in terms of emotional and psychological considerations and its ability to enhance architectural space. New light sources such as daylight, indirect lighting, and remote-source lighting will become more important. Energy criteria will be based on human factors such as productivity, comfort, and esthetics.

WHAT STEPS ARE NECESSARY FOR THIS VISION TO BECOME REALITY?

Public awareness and understanding of the nature of good lighting is the key to this vision. Professionals in the lighting industry must increase consumer demand for quality lighting by communicating the value of good lighting. Potential clients and users need to understand the role lighting plays in various settings so they can evaluate alternative lighting plans.

Professionals in the design community also need to be educated about the impact lighting has on all aspects of design and use. In addition, the industry needs to increase support for students and teachers of lighting design to ensure a talented design force for the future.

The lighting industry must make a concerted commitment to begin this education effort, especially through its professional associations and design publications. If these industry leaders begin this process, lighting will become a bigger proportion of building budgets; business in lighting will increase, freeing more funding for new awareness programs.

HAYDEN MCKAY, FIALD
Hayden McKay
Lighting Design
New York City

WHAT IS DRIVING THE LIGHTING INDUSTRY TODAY?

The changing workplace, improved VDT screens, changes in retailing, and the aging population are all factors affecting the direction of the lighting industry today. Energy efficiency is driving improvements in lamp technologies, and this in turn drives luminaire designs. Several factors work together to restrict innovation and value in lighting. One of those is an overemphasis on first cost rather than life-cycle cost. In addition, value engineering and the current packaging and distribution system frustrate the specification process. Current codes aren't enforced. Finally, fast-tracking reduces the time available for development of new solutions.

WHAT WILL DRIVE THE INDUSTRY IN THE YEAR 2020?

The lighting consumer (worker, shopper, student) is the person everyone will want to please in the future. We are increasingly beginning to measure the effects of quality lighting. This will allow all users to understand the value of good lighting—and articulate their needs. In addition, the user will be able to control his or her personal environment and amend it though the development of advanced lighting controls. To meet this new environment's demand for innovation, the purchasing process will be increasingly driven by the design process and will offer more protection of intellectual property.

WHAT STEPS ARE NECESSARY FOR THIS VISION TO BECOME REALITY?

Mainstreaming of the use of daylight will be a significant factor in the future. Daylight is not a threat to electric lighting manufacturers, but it is the driving force for quality on a project.

Education is a key factor. We need to teach designers to perform better, and consumers to demand high quality. We also must fund research to demonstrate the link between productivity and lighting, and quantify the benefits of quality lighting.

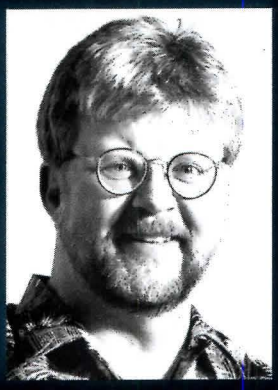
The industry must also improve systems that integrate daylight, luminaires, and controls—and integrate them into whole-building systems. Integration will provide smart controls of the ambient environment and allow the user to control his or her local environment.

Finally, the regulatory climate must switch from its singular focus on energy to a quality-based system. We should see "right to light" and daylighting codes for buildings. The government can stimulate change by providing strong incentives for better lighting.

IALD reflects...

THE FUTURE OF LIGHTING DESIGN

Lighting designers usually agree that the lighting industry neither promotes good lighting nor provides inspirational innovations. However, lighting designers do seem to be optimistic about the future; they just have varied opinions on how to get there. One recurring theme is the need for education of both design professionals and the public. But the public is perhaps too broad an audience to educate about the value of good lighting; developers, building owners, and end users are a better starting place. Designers and architects can inform them of the economic benefits of good design, which certainly includes lighting. Lighting seminars, continuing education courses, and educational opportunities available through professional organizations like the IALD or the IES and at such venues as NeoCon and Lightfair provide a great educational opportunity. Education is a critical element in developing a vision for the lighting industry for the year 2020. James Benya, Philip Gabriel, and Hayden McKay, professional members of the International Association of Lighting Designers, present their vision for the industry.



JAMES BENYA, IALD
Pacific Light Works
Portland, Oregon

WHAT IS DRIVING THE LIGHTING INDUSTRY TODAY?

The lighting industry is stagnant. We have capitulated to the design-build economy and have failed as an industry to be proactive in designing a better environment. Manufacturers view lighting as a commodity and, as a result, focus on the volume of sales and costs rather than on innovation. There is a realization, though, that we are on the edge of a necessary change. Our challenge is to shape that change.

WHAT WILL DRIVE THE INDUSTRY IN THE YEAR 2020?

The human element will be the critical focus of the future, especially in the form of an increased understanding of the role of light in our human existence. For example, we are just beginning to understand that daylight is critical for our well-being. In Europe, building codes and standards are already requiring daylight in the workspace.

I hope we will move away from thinking of lighting as "fixtures" and move to a "plug-and-play" environment in which the consumer can easily manipulate his or her lighting. This flexibility has revolutionized the computer industry; it could do the same for lighting.

WHAT STEPS ARE NECESSARY FOR THIS VISION TO BECOME REALITY?

A complex of changes must come together to make this vision possible. One is increased research. The lighting industry spends only 1 percent of its manufacturing budget on research, compared with 5 to 10 percent in the high-tech industry. We have few research centers in either the private or public sectors. One of the few initiatives the industry has undertaken is the "Light Right Consortium," a collaborative project led by Battelle that will quantify the economic benefits of high-quality lighting. We need to fund this and other projects like it.

We also need to promote professionalism and certification in the industry, improve and expand educational programs, and recruit new personnel. All these steps are critical to providing a talent pool to initiate improvements and respond to opportunities that arise. The vision for this new era must come from the leadership of the professional and technical associations in the lighting industry.

Local, state, and federal governments will all be critical partners in developing flexible codes and standards to allow this new lighting environment to emerge. This new regulatory direction could lead to a unified international code. The U.S. Department of Energy and the Environmental Protection Agency are already taking a proactive role in creating a new vision for lighting.

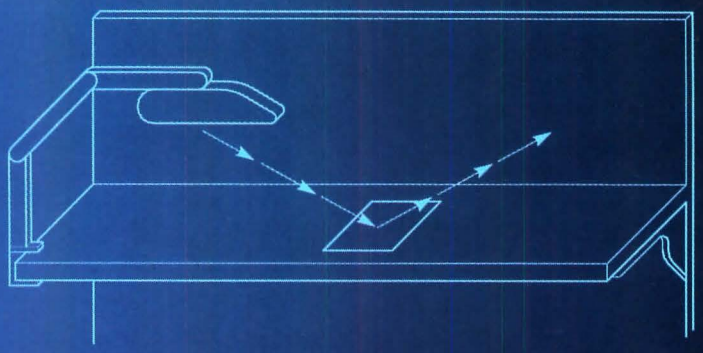


FIGURE 4: ASYMMETRIC TASK LIGHT.

combination, often called a diffuse batwing, provides better visual performance than what is achieved by the batwing lens itself. With a standard batwing task light, all the intensity of the fluorescent lamp passes through side angles of the lens in an area equal to the lamp's diameter (usually 1 inch). Because the lens appears clear at these angles, light passing through these side angles is very bright. A diffuser added to the batwing lens spreads the lamp's brightness and output over a larger surface area. As a result, the intensity at any single angle is reduced, and light flows more uniformly from the entire front-to-back width of the lens. This results in less glare at side angles than a batwing lens produces by itself.

The most recent development in linear, under-shelf task lights is to conceal the fluorescent lamp completely—a strategy that allows only reflected light to pass through a lens to the work surface. These indirect task lights create a softer, more diffuse light and minimize reflected glare, thus improving visual performance. Several lighting manufacturers offer this type of luminaire in different forms—concealing the lamp in the front or center of the fixture, but not allowing any direct light to reach the task surface. All the lamp's output first bounces off an internal reflector before passing through the lens (see Figure 3). These luminaires maximize task contrast at all viewing angles, creating the optimum combination of convenient mounting location, uniformity of light across the work surface, and little reflected glare at any viewing angle.

Task lights are usually purchased as part of a furniture system. However, furniture manufacturers are not the only resource for task lights. Several lighting companies offer task lights that can be easily mounted under shelves or storage cabinets. Task lights can—and should—be specified independently of the furniture system. Although specifying them separately may be more difficult, the result will be a better value task light. Most task lights sold today perform poorly, and price is not always an accurate measure of the quality of light a fixture produces.

FREESTANDING, ARTICULATING ARM, AND DESK LAMP OPTIONS

Although it is convenient to install task lighting under or on shelves, some workstation configurations do not position shelves above task areas. It is still possible to provide high-quality task lighting without shelves, however. Some linear task lights are made to be mounted directly onto workstation panels. If this is a convenient location, specifiers must keep optical performance in mind, as this mounting location is still within the offending zone.

Freestanding task lights can be one way to avoid the offending zone. While they have improved in recent years, most desk lamps still do not offer optical control to avoid reflected glare. Most fixtures in this category use either compact fluorescent or halogen light sources. Although halogen lamps are popular because they are small, emit good color, and possess dimming capabilities, they also produce harsh shadows, are relatively inefficient, and generate considerable heat. Compact fluorescent lamps have a longer life (10,000 hours), operate at much cooler temperatures, and, because of their size, produce a more diffuse light with softer shadows. Users must control the output angles of portable compact fluorescent lamps to avoid veiling reflections.

The best portable task lights are those providing asymmetric light distribution. These fixtures direct light forward from the fixture head rather than straight down (see Figure 4). These fixtures require correct placement (to the side of the task) so light can be precisely directed into the task area. When used properly, this approach eliminates veiling reflection.

Task lighting is too often neglected in today's offices. To solve this, this critical lighting component should be specified independent of the furniture. For optimal results and client satisfaction, lighting specifiers should inform clients of the benefits of proper task lighting in an office facility. This will result in better lighting decisions and task lighting, which in turn will reduce energy consumption and improve productivity.

For optimal results and client satisfaction, lighting specifiers should inform clients of the benefits of proper task lighting in an office facility.

Task Lighting

reflections are less obvious. As a result, minimizing these reflections is also less obvious.

The paper used in most offices is matte, as opposed to glossy. However, the detail of office tasks has a specular reflectivity, or glossiness. Light reflects off the detail at specific angles, as it would a mirror. Ink from printers, ballpoint pens, or graphite from pencils have a specular component. Therefore, when light strikes the task from an angle equal to the viewing angle, the detail reflects the brightness of the light source, making it appear less dark and creating less contrast.

The detail in most office tasks is small, making veiling reflections hard to detect. Research has shown that visual performance—the measurement of speed and accuracy of a visual task—is directly related to task contrast so reductions in task contrast can decrease visual performance. Over time, veiling reflections may result in eye strain and fatigue. These symptoms often set in without workers realizing what is causing them.

In most offices, task lighting is placed directly in the offending zone (it is often difficult to locate anywhere else). Task lights are most commonly used in open-plan furniture systems, mounted below shelves or storage cabinets. From here, linear fluorescent task lights will provide uniform illumination (quantity) over a large work area, and the fixture can be integrated into the furniture with minimal intrusion. But mounting task lights in this way means they must control the distribution and alter the angles of the light to minimize veiling reflections. Selecting the right task light requires more than addressing the luminaire's appearance, location, or physical integration. Choosing the right light also involves evaluating its optical system and potentia for providing a comfortable, glare-free work environment.

UNDER-SHELF TASK LIGHTS

A bare, unshielded fluorescent strip provides no optical control and is therefore not an acceptable task light, yet it is still very common. An ordinary diffusing material such as a milk-white diffuser or prismatic lens may soften a direct view of the lamp and spread its intensity more evenly, but it does little to minimize veiling reflections. By altering output angles, designers have developed several methods fo reducing veiling reflections.

One of the earliest developments in task lighting was the batwing lens. This clear, molded acrylic lens consists of a series of linear prisms aligned from front to back that minimize the amount of light passing directly through the lens at nadir (or 0 degrees). The batwing lens redirects light to provide maximum output to the sides, at a 25- to 35-degree angle (see Figure 2). This means light does not originate from directly in front of the viewer; therefore, little light reflects off the task into the viewer's eyes. Because the light illuminating the task comes from a side angle, it reflects to the side.

The limitation to the batwing lens is that it performs well only when the viewer looks straight ahead. When the viewing angle shifts to the side, the viewer will encounter reflected glare. This lens appears virtually clear at these side viewing angles, thus creating significant veiling reflections and reducing task visibility. Since most people do not always face straight ahead while working, a batwing lens does not always eliminate glare.

The next generation of task lights address this problem by adding a milk-white diffuser overlay to the batwing lens. This

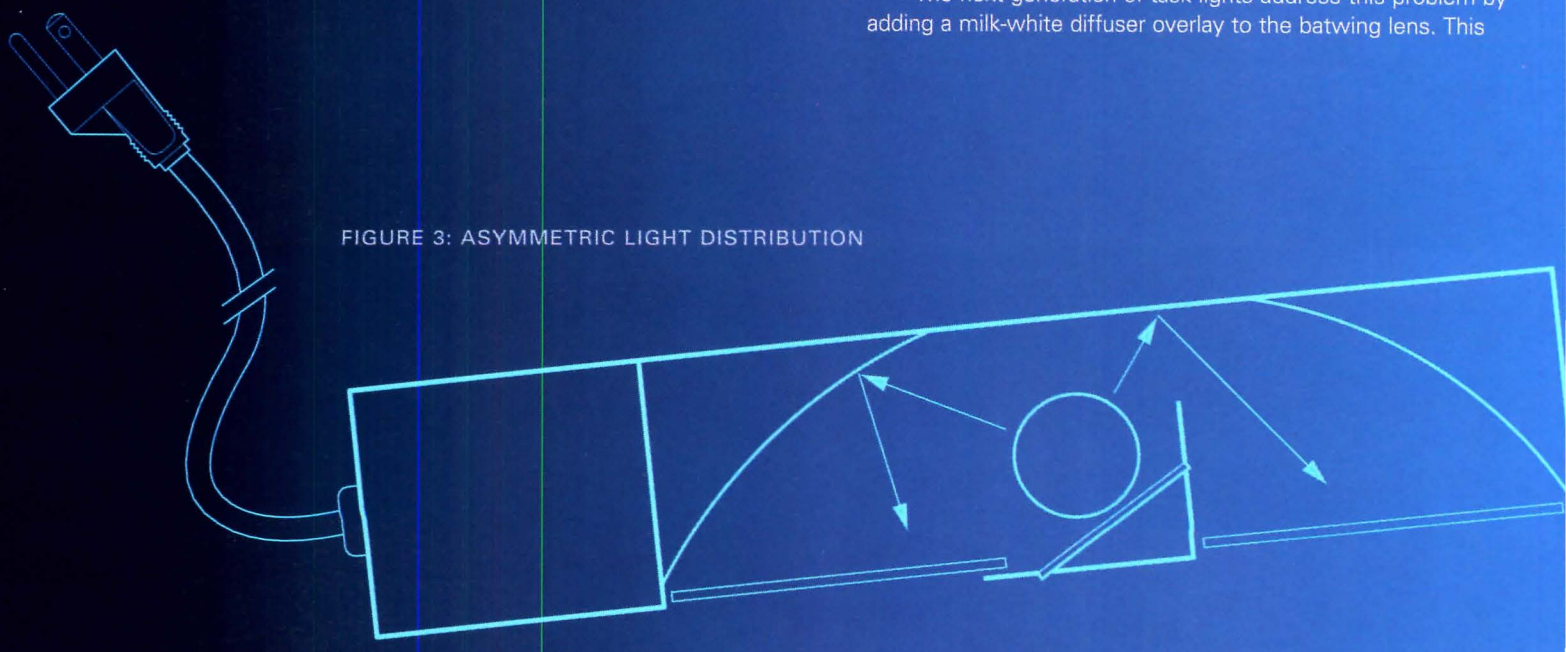


FIGURE 3: ASYMMETRIC LIGHT DISTRIBUTION

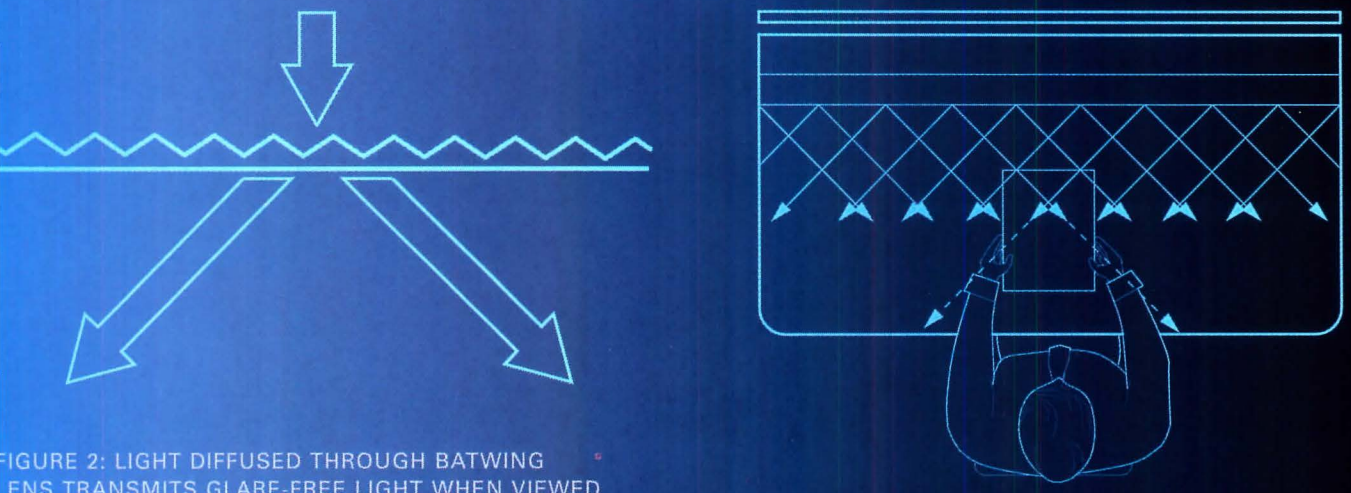


FIGURE 2: LIGHT DIFFUSED THROUGH BATWING LENS TRANSMITS GLARE-FREE LIGHT WHEN VIEWED FROM STRAIGHT AHEAD.

complement interior design, enhance architecture, and is more likely to reduce glare. But it should not be expected to provide task-level illumination. Specifiers must view task lighting independently to meet task requirements for good visibility.

QUALITY, NOT QUANTITY

All task lights provide sufficient illumination, and do so in an efficient manner because they are perched relatively close to the surface they are illuminating. Quite simply, closer is better. A 25-watt fluorescent task light located 15 inches from a work surface (e.g., under a shelf) can produce as much illuminance (foot-candles) as three 32-watt fluorescent lamps located 6 feet away in the ceiling. In other words, a lighting system utilizing task lighting to achieve the desired foot-candle level at the task location consumes less energy than equal lighting from overhead fixtures. Return-on-investment analysis of energy-saving hardware choices, such as ballasts and fixture efficiencies, are becoming common and can help save money. However, far more money can be saved by significantly reducing the intensity of the general lighting and then applying low-wattage task lights. The location of task lights alone will ensure sufficient quantity of light, but it is the quality of light that should drive the selection of task-lighting equipment.

Often, designers perceive quality of light as a subjective matter. But task lighting can be evaluated objectively, by assessing quality of light. Quality of light refers to the distribution of light and the angle at which it strikes a task in relation to one's viewing angle. One's ability to see a task depends on contrast, or the difference in brightness between detail (e.g., type on a page) and background (the paper itself). This contrast is created by light reflecting off the paper but not the ink.

Reflected glare (also known as veiling reflections) is the factor that most affects task contrast. Reflected glare refers to light that reflects off a glossy portion of a task. It is quite apparent, for example, when reading a glossy magazine. Light reflects equally off detail and background, with little contrast, thus obscuring visual information. This occurs when the angle at which light strikes the task is equal to one's viewing angle (see Figure 1). The location from which a light source causes veiling reflections is appropriately named the "offending zone."

Increasing the quantity of light increases reflected glare. To eliminate glare, the angle at which light is reflected must change. With a glossy magazine, a reader makes this change instinctively by modifying the viewing angle—tilting the magazine or moving the light source. With typical office tasks, however, veiling

Far more money can be saved by significantly reducing the intensity of general lighting and then applying low-wattage task lights.

Task Lighting

the key to a productive, efficient workplace

BY MITCHELL KOHN, IALD, FIES

Corporate demands for increased productivity and rising energy costs position task lighting as the last great unrealized opportunity for office environment designers. Task lighting's impact on visual performance is more direct than virtually any other workstation component. When properly applied, it can significantly reduce connected electrical loads, thus diminishing energy consumption.

Lighting techniques, standards, and equipment have changed dramatically in recent years, yet designers rarely seem to understand these developments or apply this ever-expanding research when they select products. Too often, task lights are an unknown commodity, purchased along with a furniture system ("buy a shelf, get a light") or are chosen strictly for their esthetic appeal. Performance data may be limited, therefore designers tend to pay little attention to their competence in appropriately illuminating the task. Yet understanding basic lighting principles, alternate approaches to meeting visibility requirements, and the trade-offs that accompany lighting decisions are essential to controlling costs (initial and life-cycle) and to maximizing employee performance.

HOW TO LIGHT AN OFFICE

Most offices now require two distinctive lighting systems. Although technically related, general lighting and task lighting should be considered independently. The American National Standards Institute (ANSI)-Illuminating Engineering Society (IES) Standard Practice for Office Lighting recommends that general illumination levels be kept low (25- to 50-foot-candles) and that task lighting be used to supplement this background illumination anywhere people perform paper-based visual tasks (see *Lighting Focus*, March 1998). This approach not only significantly reduces energy consumption (and cooling loads), but can also provide a visually interesting, comfortable, and glare-free environment.

Adhering to these recommendations and focusing on both elements of office lighting should inspire designers to consider each more thoroughly. Low-level general lighting can

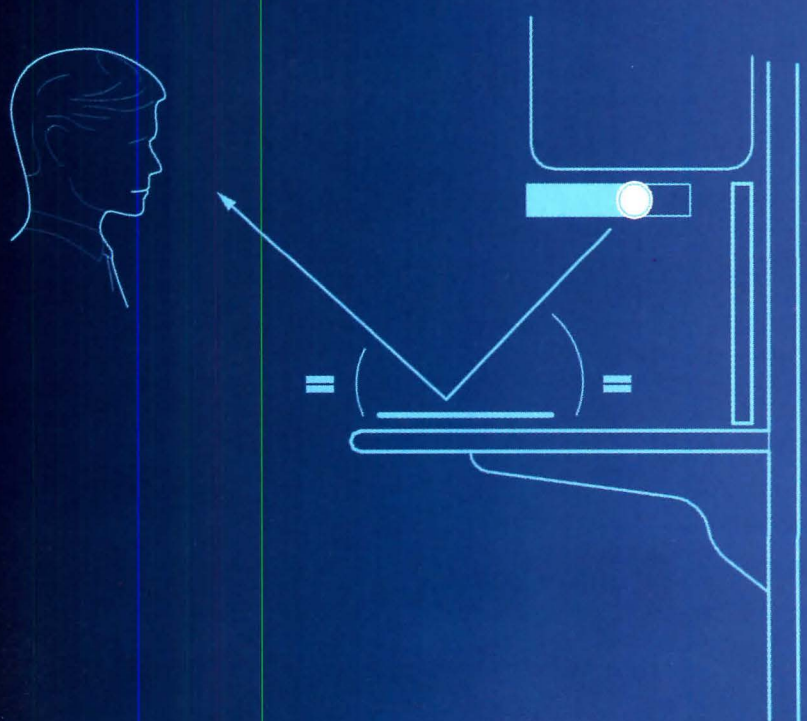


FIGURE 1: THE OFFENDING ZONE CAUSES REFLECTED GLARE.

plugged in

BY MITCHELL KOHN, IALD,FIES

My opinion of the lighting industry has never been very high. The industry is not all that innovative; decisions tend to be made on the basis of a product's initial costs, rather than its impact on people; and the design ramifications of lighting are greater than lighting specifiers typically realize. However, a recent positive event bodes well for the future.

The United States Department of Energy (DOE), Office of Building Technologies, held a forum, titled Vision 2020, in September. The forum brought together chief executives from lighting fixture, parts, and controls manufacturers, as well as lighting designers and representatives of the IES and IALD to discuss where the industry is headed, and how it will get there. That a government agency is attempting to work closely with an industry, for the benefit of all, is very significant.

The forum, held at Carnegie Mellon's "Intelligent Workplace," asked attendees relevant questions regarding the industry's history and current state; answers to these questions formed the basis for discussions of participants' views of the industry's future. The resultant collective vision included placing a greater importance on lighting as a key component in all buildings. In addition, all agreed that the future will include more energy-efficient lighting, in buildings that are more energy efficient.

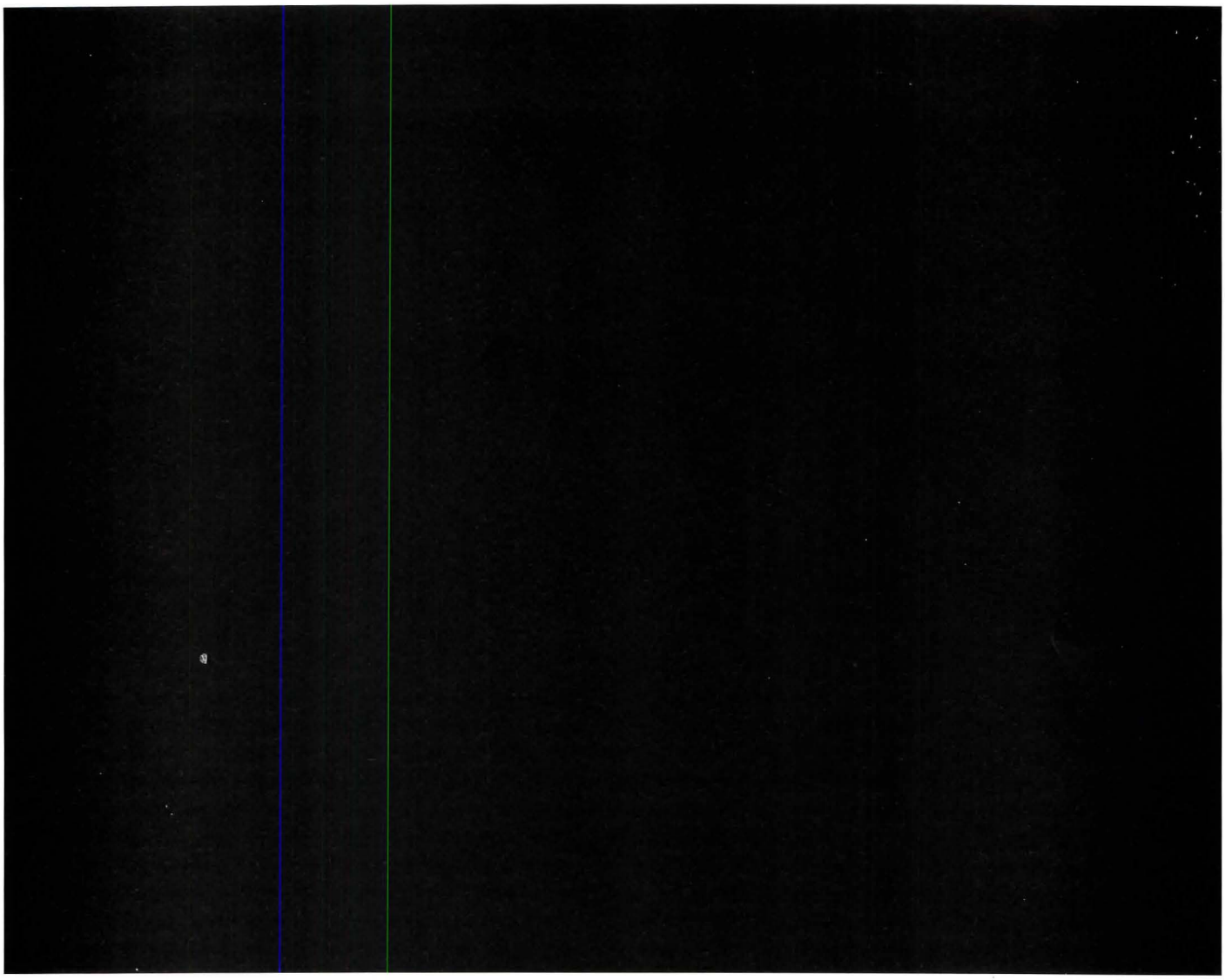
One of the forum's primary purposes was to begin to develop a "road map" to identify elements that are critical to the industry's achieving participants' vision for 2020. Attendees generally agreed on the following six objectives necessary for a brighter future:

- better education of the general public and the design professions on the impact of lighting on the built environment;
- research that leads to proof, in economic terms, of the benefits of good lighting;
- improvement in energy codes and standards—and their enforcement;
- better integration of both lighting-system components and of artificial and natural lighting within building systems and architecture;
- revision of the sales and distribution methods currently considered standard operating procedure within the lighting industry; and
- incentives for energy efficiency.

These are lofty visions that are certainly worthy of further consideration. As a next step, the DOE has set a meeting of an enlarged group that can acknowledge and validate these goals. This group will undertake the task of developing methods to implement and accomplish these goals: in other words, develop the road map.

Progress in the lighting industry can benefit not only a broad range of consumers, but also designers and architects. Although government involvement is often controversial, in this case, its assistance should benefit the lighting industry. Vision 2020's six goals for achieving a brighter future provides us with a way to contribute to advancing this industry, which can certainly use our help.

FOR MORE INFORMATION ABOUT VISION 2020, VISIT THEIR WEB SITE AT www.eren.doe.gov/buildings/



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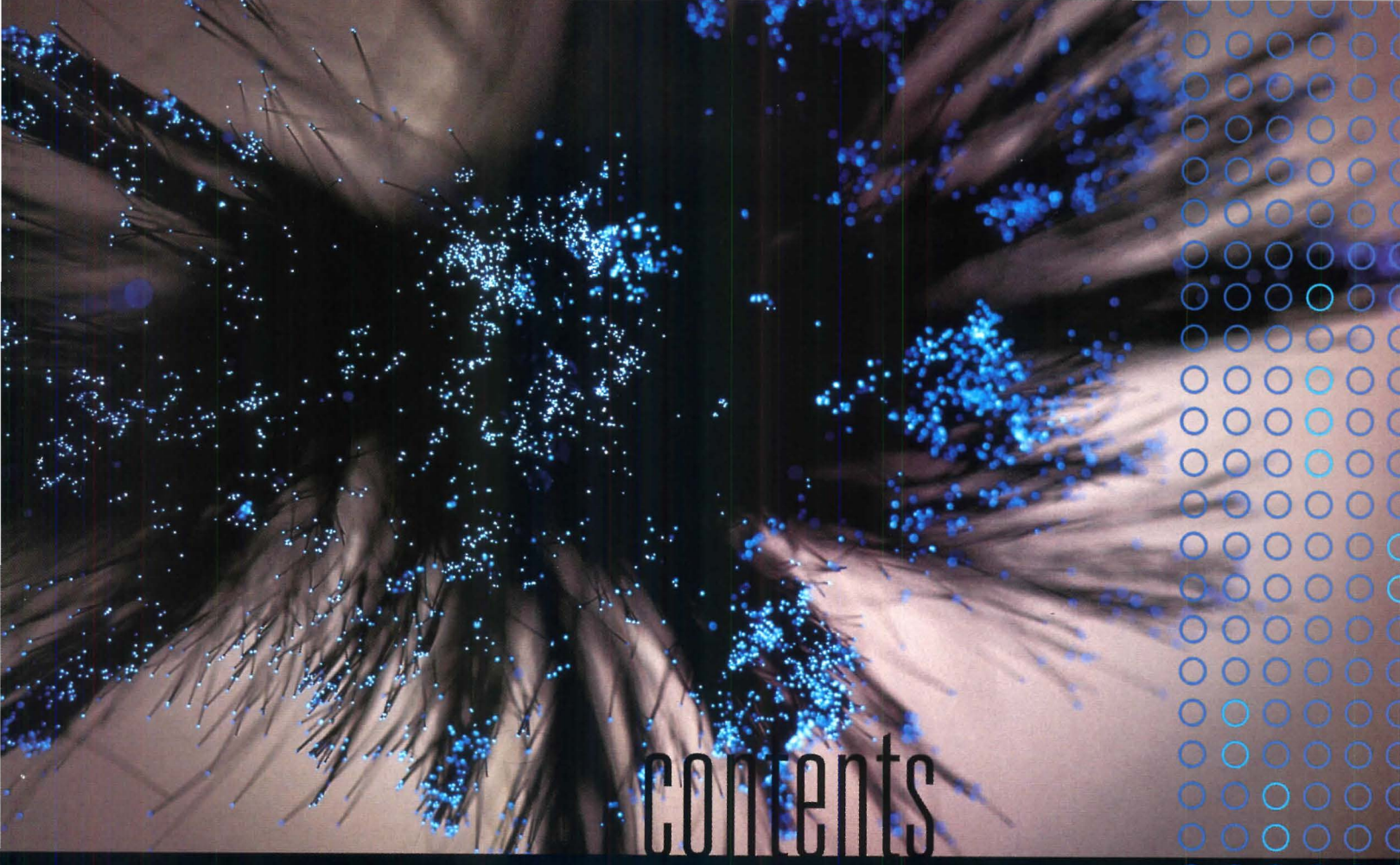

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LIGHTING SUPPLEMENT EDITOR
Mitchell Kohn, IALD, FIES

President of Mitchell B. Kohn Lighting Design in Highland Park, Illinois, Kohn specializes in interior illumination for commercial, institutional, and industrial environments and is a frequent lecturer on lighting at universities and professional organizations. He is a member of the Board of Directors of the International Association of Lighting Designers and a fellow of the Illuminating Engineering Society of North America, for which he serves as chairman of the Office Lighting Committee.

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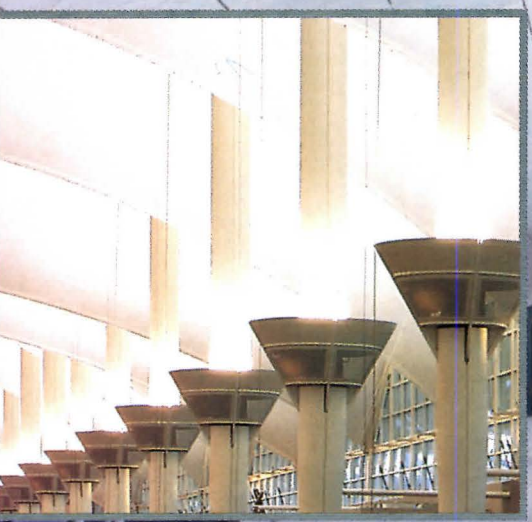

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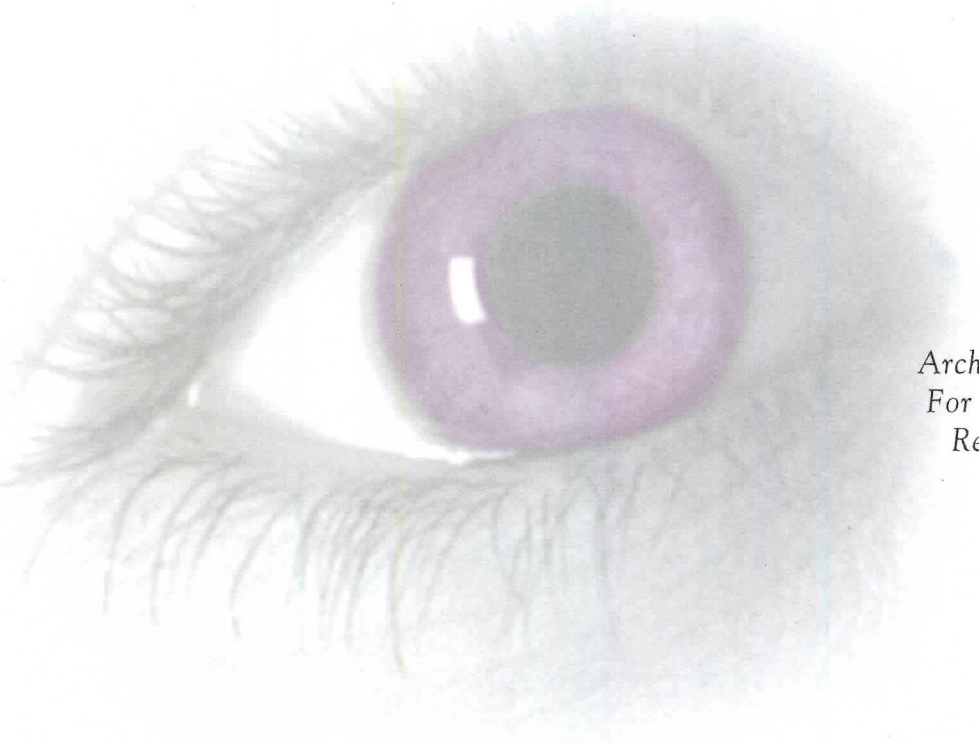

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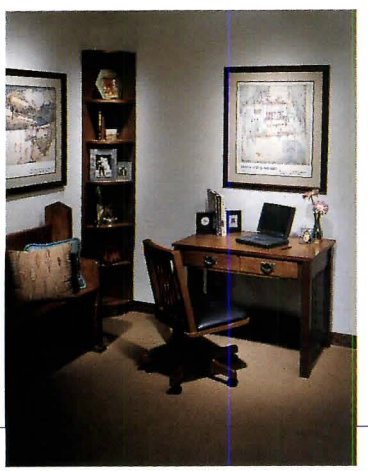

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Goodbye Columbus

A planned complex perpetuates the mediocrity on New York City's Columbus Circle.

Manhattan is about to have a building of singular klutziness imposed upon it. I am referring to the updated Columbus Circle complex—a political, financial, and architectural mishmash unlike almost anything we have had to confront since dysfunction became chic.

The complex, designed by Skidmore, Owings & Merrill (SOM), will be on the forlorn circle's west side, where Broadway intersects the southwest corner of Central Park. It is a sad counterpoint to the bustling Grand Army Plaza, where the Plaza Hotel faces the park's southeast corner. Columbus Circle is presently framed by a great wedge of the park's greenery, and a collection of buildings of dubious architectural distinction, some of which will be torn down and replaced by the new 2.1 million-square-foot complex. SOM won a competition that was supposed to generate an important new urban center on a neglected site—something on par with Paris's Place de la Concorde, or Venice's Piazza San Marco, or even Boston's Copley Square.

We shall see. The prospects are, as of now, hardly encouraging. The proposed complex will be dominated by two 750-foot towers not unlike the early 1930s Majestic and Century apartments on Central Park West, two sets of twins designed by Irwin Chanin and Jacques Delamarre. The designs were not very good then, and the copy proposed for Columbus Circle isn't much better. Moreover, why would anyone want to resuscitate the past to introduce the future—a new century and millennium?

Instead of forming a grand urban gesture at this potentially wonderful site, the developers and designers of the new Columbus Circle have assembled a boring junkpile of unrelated bumps and bulges that are then topped with more unrelated bumps and bulges of no discernible cohesion or quality. You get the sense that copying Chanin and Delamarre's Art Deco patterns exhausted the architects, so they left the perimeter of the circle to chance. Admittedly, the existing Columbus Circle is a major disaster: a collection of hideous boxes incoherently plonked down, side by side (more or less). And, admittedly, it will be difficult to transform this mess into anything even remotely civilized.

Instead, what we are about to see at Columbus Circle is more of the same, piled up in much the same manner by a similar collection of moneybags and politicians. The first results of the Columbus Circle competition were exhibited in 1997. Unhappily, the "jurors"—if that is the word I am groping for to describe this group, which included developers; the Metropolitan Transportation Authority, which owns the site; and Mayor Rudolph Giuliani, who basically had veto power over any proposal—had apparently never seen a good building before.

When the jury unveiled the winning proposal for the Columbus concoction in July, *The New York Times* hailed it as a "New Hope for Columbus Circle"—presumably as opposed to that "Old Hope" we have seen before. Still, I was delighted to hear that hope (new or old) still springs at *The Times*; I just wish, for the circle's sake, we could say the same about taste, or talent, or possibly art. No such luck: A couple of days later, *The Times* labeled all that hope an "Architect's Landfall at Columbus Circle." That was probably a misprint—I think they meant to say "Pratfall," or something like that. *Peter Blake*

Architect Peter Blake is the former editor of Architectural Forum *and the author of such books as* God's Own Junkyard *and* No Place Like Utopia.

SOM's jumbled mixed-use complex (above right) will replace boxy Coliseum (1956, above left) on west side of Columbus Circle.

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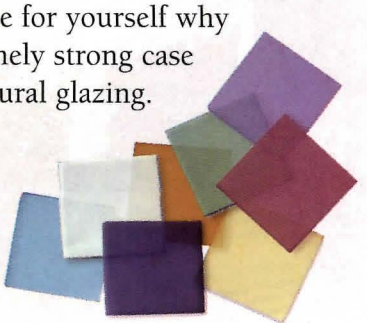

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can become completely disoriented spatially. What we wanted was something that seemed very quiet from the outside. On the street, you can see urban context, but you don't realize that the ground dips. Suddenly, you find yourself no longer able to see the street: The interior pillars are 12 feet high and 2 feet wide. The ground would be granite chips. You would have a sound—the echo of feet crunching around you like jackboots. The sound and tactility of the whole experience would be strange for a Japanese person who didn't know anything about the Holocaust or for a child 50 years from now.

You once said architecture is successful if it makes people uncomfortable. How do you feel about that now?
Some projects, like the Holocaust memorial, are going to make people feel uncomfortable. But I don't personally feel the need to make anybody uncomfortable anymore.

Why do you think you needed to make people feel uncomfortable before and now you don't?
You'll have to ask my shrink about that. I've been 20 years in analysis and I'm still on my way up. I am happily remarried; I have two new kids. Let me say something with a bit of hubris: I don't have to worry about history anymore. My place may not be set. If it were, I would stop. But history will have to deal with me. I've made my bet with the devil. People who are involved in this kind of work, who are signature architects, play roulette with the devil. I can relax because I've won my bet with the devil if the devil is the key to history. I'm not saying that people will say "good" or "bad," but it's a career that is full. I can't say how history will judge it.

If I hadn't done any buildings, I would still be ranting about theory. I feel very fortunate to have built and I've never really compromised in the kinds of buildings that I've built. I've written enough; I've made an institution. I'm very relaxed—not that I'm on cruise control, I'm still moving as hard and as fast—but I'm able to move better now because I'm relaxed. I'm not manipulating the world; I'm into what we are doing; I'm writing well, thinking well; I'm clearer, and therefore I think I'm an easier person to get along with.

Is this a Prozac moment or something deeper?
No, I'm not on Prozac. It's a deep realization. My analyst might be able to explain. I don't try to explain it; I just try to live it. I've tried to be in touch with myself in analytic work that says that instead of fighting yourself, let yourself become. Don't change; don't think that you are perfect; don't try to correct yourself. Accept your narcissism; accept your egocentricities; accept your presence. I mean, I am a presence, but when I walk into a room now, I don't need to dominate the conversation. I can sit on a jury for two hours and not say a word, just let them all talk. I find it hard to believe that I used to think that I needed to make people uncomfortable. I used to think that I had to control everything that went on, who was doing what, etc. I have no feeling about that anymore. I want to do my work. I love teaching. I still teach very hard. I learn from my teaching, but I have an enormous need to continue to grow. That's why we're doing the projects that we're doing. I'm doing a fabulous book called "The EisenManual." It's a beauty. When you see the book, it will blow you away. It's really different. It's a hypertext about how to "Peter Eisenman," how to understand Peter Eisenman.

to disembody and embody the history of architecture at the same time. I'm trying to embody it with new kinds of externality, to open up what I call its interiority to a whole new world.

Interiority produces things that have my hand, but not the hand as personal expression. I'm having to work against my hand, my eye, and the computer. I'm trying to tread the ground between the unknown and the known, which is architectural history.

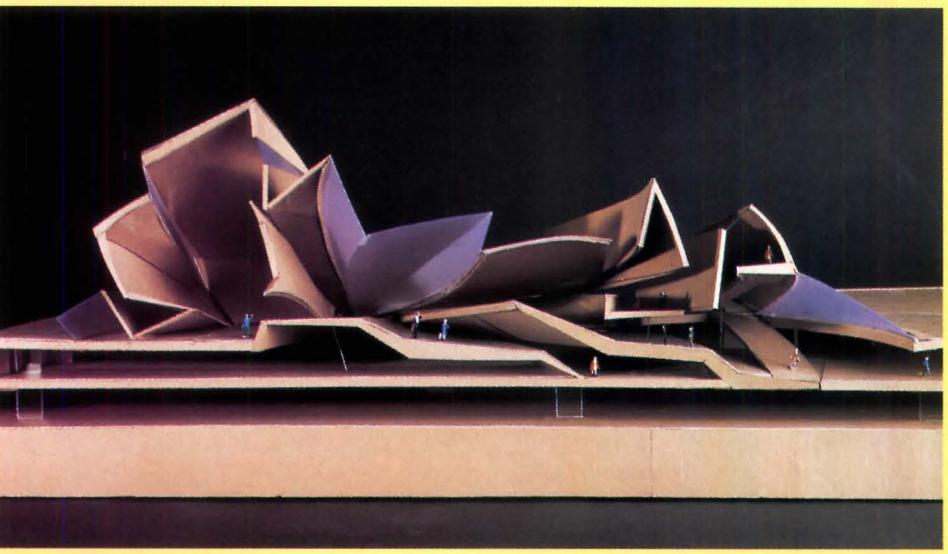
What do you think about Robert Stern becoming dean at Yale?

Stern is not an idealogue. He is going to save his career for history by producing a great school of architecture. He is not Vincent Scully, who rants and raves about Americana and the New Urbanism. Stern is going to open Yale up and blow everyone away. He is going to save it by bringing in the signatures. I bet you that Bob will have Frank [Gehry] there, [Jacques] Herzog, Richard Rogers, Renzo Piano. He'll have me there—no question—and I'll go. I am a teacher.

Let's talk about the Holocaust memorial in Berlin.

It was a daunting task. I have very rarely ever faced up to being Jewish and presented something to a client where I was being Jewish as part of the job-getting process. I'm an architect; I happen to be Jewish, and of course for this project, you cannot just happen to be Jewish. I wanted to make a distinction between the act of memory in the concentration camp and the act of memory in a memorial. The memory at the concentration camp uses known symbols to allow one to assimilate the tragedy: You go to the camp, you feel badly, etc. The memorial attempts to keep this memory as an open question in the present, to present a spatial experience different from anything in an urban situation. It is foreign and alien. It analogizes the rupture in German history to this alien rupture in the city of Berlin. It is a rigid grid—reason gone mad. It's warning against too much belief in reason and the system.

We wanted a surface like a field of wheat or corn that rolled and twisted with the wind. There are moments when you walk into a field of wheat and you're fine at the edge, but once you really get in, you



Eisenman's "hybrid" projects include this minor-league ballpark and science museum addition to St. George ferry terminal on Staten Island, New York.

architecture without some theoretical base. But it has lost its underlying ideology. It's no longer driven by the need to change people or society. One has to distinguish between theory and ideology. While the underpinnings of my work used to be ideological, I don't think that they need to be any longer. Yet they are not purely pragmatic. Pragmatics is a form of theory. I cannot have a theory that does not impinge on the history of architecture.

I have been trying to build into my later projects the question of uncertainty, of where or what defines what. Cincinnati [the University of Cincinnati's Aronoff Center of Design and Art] is a very good example. It's what I call interstitial space. There are two definitions of interstitial. If you take a balloon filled with air and you pop it, the air just escapes. There is inside, outside, and the balloon in between. Now let's fill the balloon with water. If you push on it with your hand, it takes on a different form. The hand presses in and the water presses out: The inside pressures the outside at the same time that the outside pressures the inside. Conceptually, this is what we're trying to do. It doesn't have to do with conceptualizing the metaphysical environment from the body and that which surrounds it. Instead, the body and its surroundings—the container and the contained—interact. Take the example of the sand in the hourglass. It's calibrated to contain the sand so that if you turn it upside down, the sand will define time because it's constrained by something outside of itself. This is the traditional architectural condition. But if you take the sand in your hand, unconstrained, and let it drop out, it will pile up. As it piles up, you cannot predict where that piling will suddenly shift because it won't be able to sustain itself and it will collapse. That's what I call an internal time. And it's a time that allows for unformed material to begin to take form. I work between the water in the balloon and the sand that is forming itself.

Now add program.

One of the constraints of architecture is how you deal with its metaphysics—time, space, presence, absence—which is what architecture is about. At the same time, architecture must satisfy function. But if it merely satisfies function, it's not going to do anything. It's easy to do a house because you can satisfy the function in any number of shapes and forms and still do other things, the same with a museum. But when you get to concert halls, football stadiums, and the like, you are dealing with a very defined program. These functional containers are givens. But they aren't the balloon. They're the water, the inside. We're going to create the balloon that takes pressure from a symmetrical stadium or concert hall, as well as from the context of the environment. We are trying to say, "How do you make something that acts as a football stadium or a concert hall, but doesn't symbolize its function?" That is, it doesn't look like a football stadium or a concert hall, but like something that has emerged, like the sand pile, of its own will, from the context.

Why do we want it to emerge of its own will?

We have the capacity on the computer to have data control how form changes—to produce flows, meshes, and other forms out of these processes. In my work, you begin to see more fluid forms. There are two caveats I want to make: First, all fluid form is not architecture; second, architecture has a history that is constantly evolving and improving upon what we do today. I've tried

are notoriously (and perhaps unfairly) known as much for their disregard of function as for their formal gymnastics. Nonetheless, the New York City-based architect's practice is growing rapidly: Recent projects include several stadiums and an arena, as well as the hotly controversial Holocaust memorial for Berlin. This extraordinary record has left Eisenman with more than a few detractors, and an equally significant camp of admirers. Whether he comes across as a self-promoter or merely a precocious self-starter, Eisenman asserts that he's finally satisfied with the mark he's made on architecture.

ARCHITECTURE: What's your favorite stadium?
PETER EISENMAN: I remember the old Polo Grounds [in Harlem, New York], the old Ebbetts Field [in Brooklyn, New York], and I hate these retro stadiums that try to re-create them. What's important is the sense of expectancy—of being able to look through the stadium from the outside, where you can see the steel structure and get glimpses of the field as you go up the ramps. It's very Piranesian. We've tried to provide that sense in our work. I think most of these new stadiums have lost that.

So you don't like Oriole Park?
I like the interior, but I don't like the pastiche on the outside. On the inside, the stadium is like Fenway Park or Wrigley Field. But on the outside, both Fenway and Wrigley are authentic pieces of their time. Stadiums today fall into three categories: retro, modern, and New Age. For me, New Age is authentic because we are in a new time. It may not be authentic 50 years from now, but it is authentic today. Authenticity and the signature deals with the specific and not the generic. People do not want generic products.

But what about The Gap?
You go to The Gap for underwear—for dumbness, not signature. Part of life is dumbness. I go to the Gap; this is a Gap shirt. So we do need the generic, but not for monuments.

So these football stadiums, because they are authentic, have become our new monuments?
Yes, but we're talking about hybrid monuments: Staten Island is a hybrid between a museum and a terminal. Arizona [Rio Salado Crossing, in Phoenix; this issue, page 127] is a hybrid between a stadium and a convention center, Arkansas [the expansion of the University of Arkansas Razorbacks Stadium in Fayetteville; this issue, pages 124-125] is both a stadium and a student center.

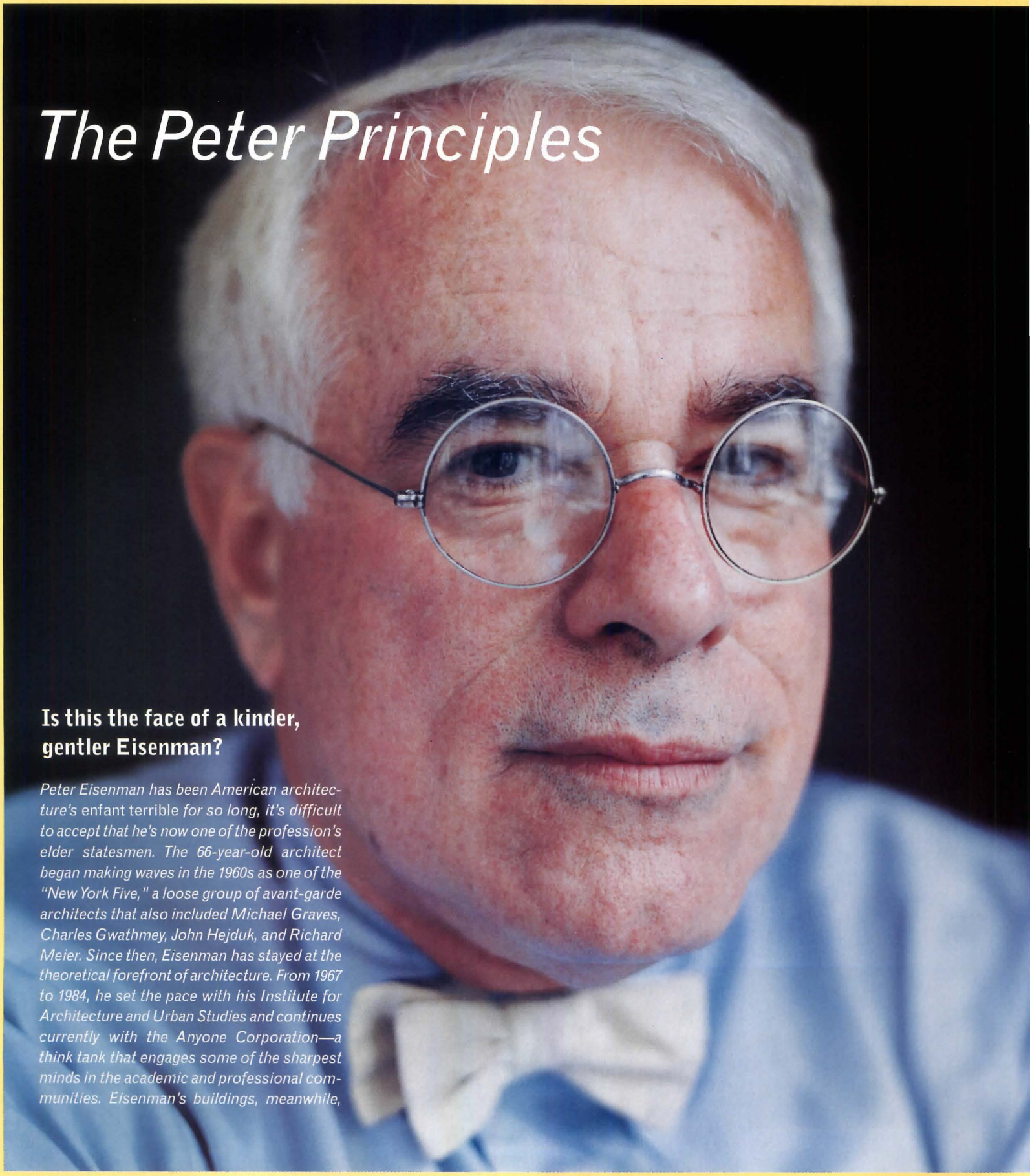
With all these stadium commissions, are you becoming a stadium architect?
No, no. We've also got a concert hall, a museum, and a hotel. We are not going to become stadium architects. Don't forget, I'm talking about hybrids: I'm working on a project now that has a student center, a record store, a cineplex, a train station, and a hockey rink, which is the economic generator that makes the other stuff possible.

What happened to theory?
Theory has been taken over by the academics.

Can you practice theory?
I don't think you can practice *signature*, authentic, or singular

German politicians and cultural leaders have risen in opposition to Eisenman's proposal for Holocaust memorial in Berlin, originally in collaboration with sculptor Richard Serra.

The Peter Principles



Is this the face of a kinder, gentler Eisenman?

Peter Eisenman has been American architecture's enfant terrible *for so long, it's difficult to accept that he's now one of the profession's elder statesmen. The 66-year-old architect began making waves in the 1960s as one of the "New York Five," a loose group of avant-garde architects that also included Michael Graves, Charles Gwathmey, John Hejduk, and Richard Meier. Since then, Eisenman has stayed at the theoretical forefront of architecture. From 1967 to 1984, he set the pace with his Institute for Architecture and Urban Studies and continues currently with the Anyone Corporation—a think tank that engages some of the sharpest minds in the academic and professional communities. Eisenman's buildings, meanwhile,*

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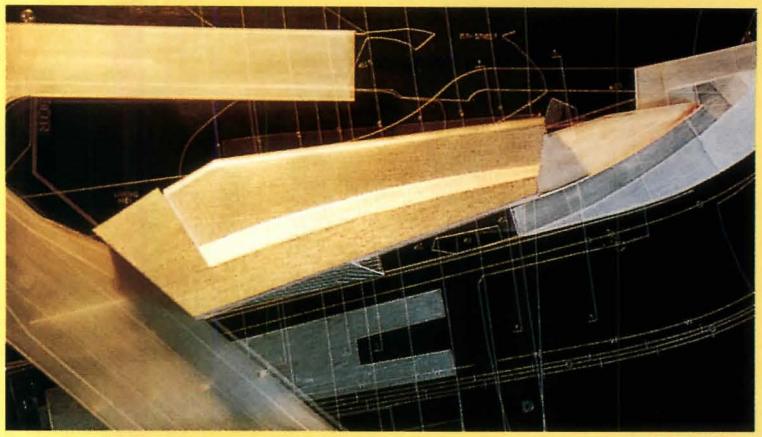
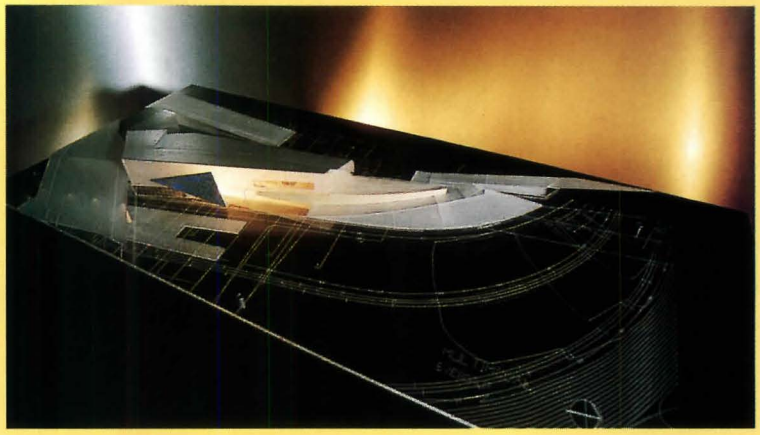
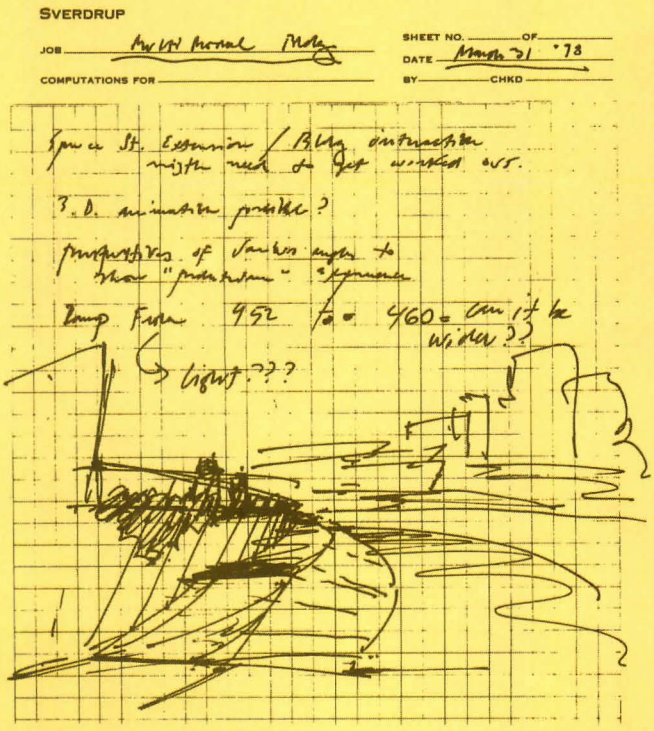
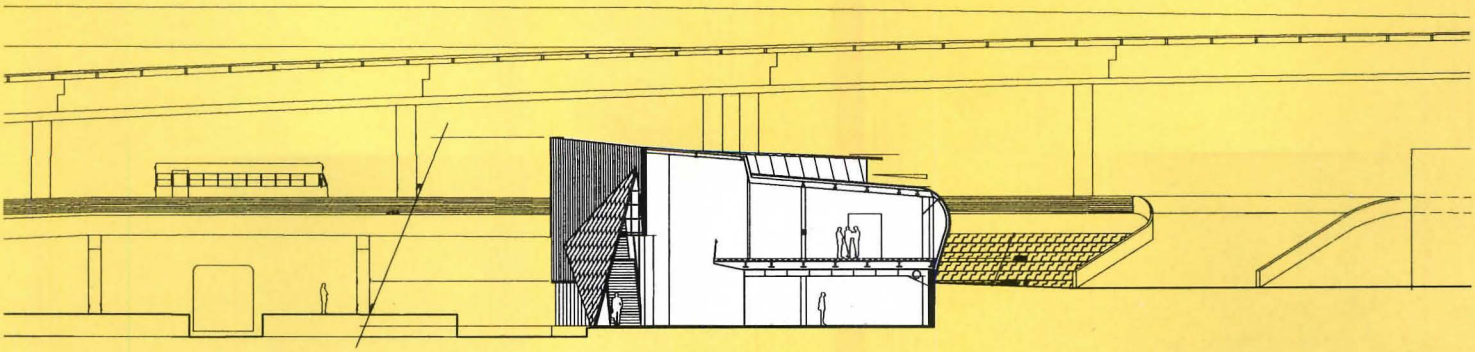
Sverdrup's multimodal transit center (facing page, at center), flanks Ellerbe Beckett's Kiel Center (1994, facing page, at right). Sketch (below) illustrates architect Adrian Luchini's interest in complexity of transportation infrastructure surrounding site.





Seen in plan, model (top) shows transit center connecting to local bus stop on overpass (at left). In view from west of model (above), glowing east facade flanks light rail line.





East-west section

Transportation Center
St. Louis, Missouri
Sverdrup

St. Louis is about to get its first truly progressive public building in decades—a multimodal transit center designed by the architect Adrian Luchini of the local giant firm Sverdrup. Three years ago, Sverdrup hired Luchini in an effort to up its design profile. This move, and the city government's subsequent commission for the transit center, are a welcome change for a conservative town, whose architects and clients seem driven unfortunately by expedience more than esthetics.

Such local indifference has frequently led to disaster, such as when the city upgraded the Works Progress Administration-era Kiel Center auditorium by incongruously grafting Ellerbe Beckett's watered-down-Decon arena (1994) onto the building's Classical lobby. Providing a lesson in when, and when not, to break open the formal box, Luchini's transit center will face the now monstrous Kiel Center from alongside the elevated east-west highway leading from downtown to outlying suburbs, amidst on-ramps, surface roads, and rail lines. The tangle of transportation infrastructure surrounding Luchini's site, unlike the original Kiel's imperious symmetry, lends itself to complex formal invention.

An arc of reflective, standing-seam metal, highly visible from the highway, forms the west face and roof of the 14,000-square-foot transit center, sheltering a restaurant on the upper level and retail below. Local light rail lines skirt the east face of the building, which is clad in glass up to 7 feet, and translucent polycarbonate panels above. A triangular projection on the east facade encloses a stair leading to a city bus station on an elevated roadway. A tubular causeway will connect to an Amtrak and Greyhound bus station, designed by another local firm, which will be located on the opposite, south side of the highway. Luchini hopes his building will open in 1999. *Ned Cramer*

Alex Krieger concluded his address with variety of city scenes (examples, left) ranging from a produce stand to a barren inner-city street, all presented with the following simple words: "This, too, is urbanism—and it all needs our help."

settlements. Minimizing redundancy is the first step towards sustainability and good urbanism.

Some nut on a recent *Nightline* review of New Urbanism argued that the movement must be the city's revenge on the suburb, in order to make the suburb as congested, polluted, and crime-ridden as the city. My own worry is the opposite. I do not want New Urbanism to be the suburbs' revenge upon the city, at a point when American cities are trying to make one of their halting comebacks.

Public opinion is changing, and the role of New Urbanism has been invaluable. There are, regularly, good stories about cities in the popular press. A recent *Boston Globe* article actually referred to the cachet of a city zip code. This is remarkable given several generations of the portrayal of the American city—and especially of the inner city—in terms of crisis, demise, pathology, blight, alienation, and ongoing disinvestment.

Despite this legacy, there appear to be a broad set of economic, social, and cultural forces now, again, aligned on behalf of urban life. These include: the exposure of the disadvantages of sprawl; the sheer boredom with suburbia expressed by the now-adult children of suburban-aspiring baby boomers; the saturation of some suburban markets and the uncovering of untapped markets (and disposable income) among urban dwellers, including those in disadvantaged neighborhoods; the reappearance of expressed ethnicity, for example, street life in some neighborhoods of LA; the changing nature of employment opportunities—in the areas of high technology, services and management, new media, biomedical research, international trade, hospitality, and entertainment—many of which are attracted to urban locations; the acknowledgment of more than one type of family structure, and different dwelling preferences across longer lives; a better-educated population seeking diversity and stimulation; the rise of an ethic of conservation; the search for community and place as a reaction to suburban alienation, as well as a new kind of isolation caused by the ubiquity of electronic communication.

Even if New Urbanism is responsible for these enlightenments, you may fail to see the full potential of this generational recalibration. This is my two (urban) ships passing in the night nightmare: the popularity of a new urbanism impeding the rebounding of some old urbanism—old not in appearance, but in location.

America, one hopes, may at the turn of this century be ready for a less singular model of the "good life," at least as that life is situated in settings advertised as desirable. Jump onto this larger bandwagon. But do not at this propitious moment constrict the possibilities of what constitutes urbanism. *Alex Krieger*

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good life, just at the moment when genuine alternatives may be promotable. This is what leaves you open to the criticism that the appeal of your towns is a yuppie flight phenomenon. For some it has always been easier to retreat than to repair.

Then there is the matter of the vaguely Orwellian New Urbanism New Speak, in which subdivisions become towns, lots with smaller backyards are an antidote to sprawl, owners of real estate metamorph into town fathers, homeowners associations supplant local governments, zoning is terrible but codes are good. And one encounters comments such as, "We New Urbanists are allergic to nostalgia," knowing full well that nostalgia is one of the most potent tools of the New Urbanism; referred to by you as a "weapon" of the New Urbanism on other occasions.

You have found a means of distilling the image of the American Dream from the consequences of the dream. Some of you practically blame the loss of community on flat roofs and horizontally-proportioned windows. The places you have designed may express repressed longings for town life, but in fact are sanitized versions that avoid the messier attributes of town life with which Americans seem disenchanted. You must rise beyond making new developments look like towns—separate the search for the image of community from the desire for community itself. If all of this sounds harsh and unfair, reflect back on your own claims. By claiming too much (far more than is fathomable), you draw criticism which then appears to you as hostile to your noble aims.

On the other hand, we owe you a great debt for catalyzing a public deliberation about the essentials of communal life, while exposing the soft underbelly of suburban complacency. You have been most persuasive in establishing that conventional suburban development can make it harder, not easier, to foster citizenship and community—a cherished American goal and oft-given reason for decamping from the city in the first place.

But here is the potential downside. Providing a slightly better alternative to suburbia, armed with urban pretensions and the rhetoric of pride-of-place civics, may not alone lead to a reduction in sprawl. Sprawl does not happen, like a flash flood, all at once. It accumulates subdivision by subdivision. Noble intentions notwithstanding, your developments contribute to the gathering storm.

The most difficult challenge facing American urbanism may not be coming up with a better way to subdivide land, but to rescue, reinvigorate, reform, resettle, learn once again to love places already made. This nation has generally taken the easier path vis-à-vis urbanization. It has since colonial times attempted to solve urban problems by starting over—a very un-urban response. I worry that New Urbanists fall victim to this dubious American tradition. In the eagerness to overcome the many shortcomings of American urbanization you sell a better idea, and thus contribute to a different consequence—creating duplicate

the few things still missing is some humility, or, barring that, a bit less hyperbole, and barring that, at least a sense of humor.

In reading the "Charter of the New Urbanism," I find little with which anyone could disagree. The self-defeating cycle of American urbanization (persistent disinvestment in older urban areas in combination with ever-expanding rings of new development) has long been condemned. Environmental degradation, wasteful consumption of resources, automobile dependency, economic and racial segregation, social alienation, redundancy, obsolescence, abandonment, homogeneity, and ugliness have been cited since the earliest consciousness of sprawl. Among your notable achievements is crafting a text that contains what many have advocated, and making those beliefs appear proprietary to the movement.

Even more impressive, and disturbing, is the New Urbanist take-over of the term "urbanism." My goal is not to argue against New Urbanism, since I have learned from Andres Duany that it means "the best of everything." My goal is to extract back some of the meanings of this glorious and complex condition called urbanism.

You—and we all—are for investing in central cities. You—and we all—are for limiting placeless sprawl. You—and we all—are for minimizing racial and economic segregation. You—and we all—are for avoiding environmental deterioration. Does anyone not want to avoid the erosion of society's built heritage?

Your broad aims are dead on. History, however, rarely evaluates a movement on the basis of its stated aims. The success of New Urbanism will eventually be measured by comparing its achievements against its claims. And this is where we are headed for disappointment. To date you have helped produce:

More subdivisions (albeit innovative ones) than towns; an increased reliance on private management of communities, not innovative forms of elected local governance; densities too low to support much mixed use, much less to support public transportation; relatively homogenous demographic enclaves, not rainbow coalitions; a new, attractive, and desirable form of planned unit development, not yet substantial infill, or even better, connections between new and existing development; marketing strategies better suited to real estate entrepreneurs than public officials; a new wave of form-follows-function determinism (oddly modern for such ardent critics of Modernism), implying that community can be assured through design; a perpetuation of the myth of the creation and sustainment of urban environments amidst pastoral settings; carefully edited, rose-colored evocations of small-town urbanism, from which a century ago many Americans fled not to the suburbs but to the city. Such evocations provide a new (if unintended) legitimization of low-density, peripherally-located, home-dominated development.

You are also perpetuating a rather middle-class notion of the

Planner Alex Krieger places some cautionary signposts on the road to New Urbanism.

Whose Urbanism?

In September, the leaders of the Congress for the New Urbanism invited a panel of key academicians to a closed debate. Having captured the public's imagination, made allies in the press, and (nearly) won over mainstream organizations such as the Urban Land Institute, and even the U.S. Department of Housing and Urban Development, the founders (as the original New Urbanists refer to each other) have turned their attention to the design academy. It appears that the students and faculty of schools of architecture have been slow to adopt the logic—or inevitability, as supporters imply—of New Urbanism. And so, led by the historian Colin Rowe, a group of educators—some disbelievers and others cautiously sympathetic—embarked to Seaside, Florida (above), to learn about and offer perspective on the New Urbanism movement. (A second, public debate will be held next March at Harvard University's Graduate School of Design.)

The founders are acutely aware of the reservations being raised about New Urbanism. As is the norm among those who believe that they have uncovered a truth and intend to get others to agree, a combination of hubris and insecurity emerged at the debate. One sensed internal struggle between resolute convictions and openness to options; between the use of traditional architectural imagery as polemical device, or viewing it as a necessary esthetic for evoking community; whether to achieve principles through influence or regulation; whether the encouragement of design excellence should be a priority. There are deeper rifts, for example, as to whether Portland, Oregon, and its growth boundary, or Orange County, California's maturing suburban lattice is the destiny of American urbanization.

New Urbanism supporters used considerable effort up front to blunt the expected critiques: that New Urbanism is, in application, a form of new suburbanism, that its primary appeal is through nostalgia, that it advances a rear-guard architectural esthetic, and that there is nothing new, or even urban, about it. Setting the stage for the criticisms was the author's address to the assembled founders and educators, an edited version of which follows. Architecture *has invited the New Urbanist patriarch Andres Duany to respond in our December issue.*

The New Urbanism movement is impressive, powerful, growing, and great, but perhaps not quite as great as you, its founders, claim it to be. Lighten up. Enough self-congratulatory testimonials. You are practically the establishment now. One of

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Getty complex's two great arms. As Irwin presents his scheme, a promenade of trees leading down to a sunken, underwater maze—or what the artist calls a "canyon"—Meier looks on skeptically. The architect claims that the garden is "an irresponsible act" because it ruins the site's best panorama. The artist responds to Meier and his colleagues with a tight smile and a single word: "bullshit."

Concert of Wills is not all strife, however. During a lyrical sequence in an Italian quarry, Meier delivers a soliloquy in which he tries to persuade himself that the split, wheat-colored travertine is very nearly white. "It's a warm tone, but it's a light tone," Meier muses. "It has a certain whiteness about it in the sunlight." Cleverly, the filmmakers alternate scenes of increasingly acrimonious meetings with footage of construction set to upbeat, almost heroic, music. As the Getty administrators and the architect fuss, construction of the complex itself chugs along.

The fact that the subject underwrote this documentary is easy to forget until we reach the happy ending. As the building nears completion, and Getty Trust employees move into their new offices, everyone suddenly gets lovey dovey. Even Stephen Rountree, vice president of the Getty Trust, and the administrator most willing to attack Meier on-camera, joins the chorus of praise. The film closes with a montage of dreamy architectural shots from dozens of carefully chosen angles, bathed in the most beautiful light southern California has to offer.

Apparently, the film's intended message is that conflict is an integral part of the creative process. Or, as former Getty Trust President Harold M. Williams says in the closing moments of the film, "I think we all feel the end result justified it all." And that's fine. But the viewer can glean a different idea from *Concert of Wills*: If the Getty administrators and the architect had expended less energy feuding over white walls, they might have formulated a much clearer architectural vision for the Getty Center complex as a whole. *Karrie Jacobs*

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