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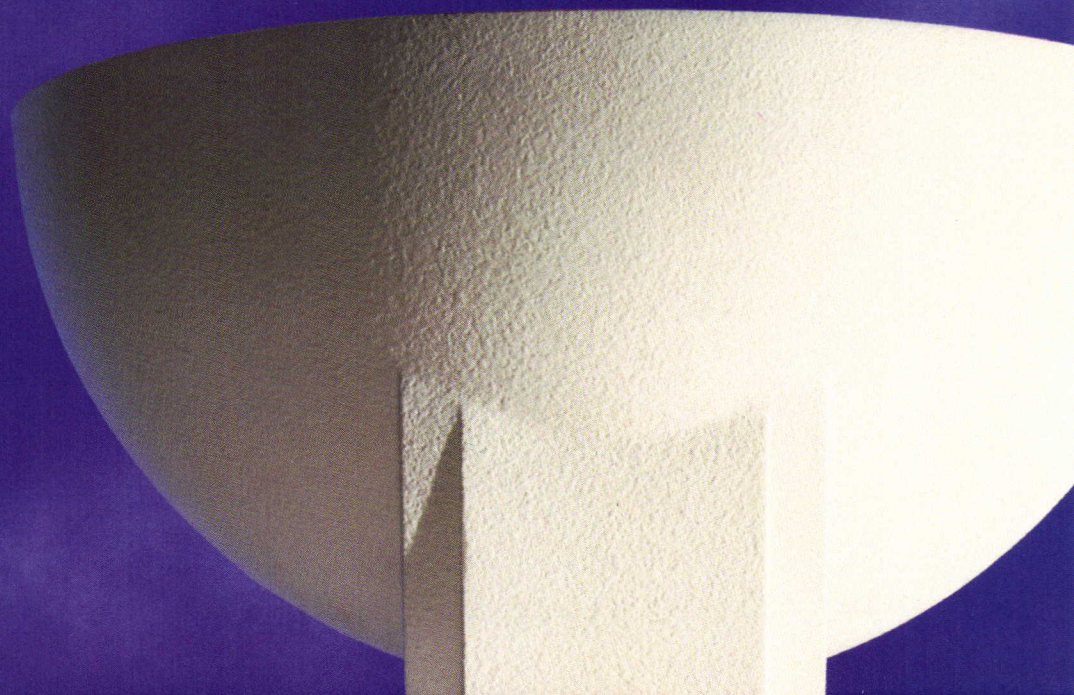
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Why can't Los Angeles build Frank Gehry's soaring design for the Walt Disney Concert Hall? Since 1994, seven years after Lillian Disney donated \$50 million for the building, the project has been mired in cost overruns, production problems, and political squabbles, as detailed in our report beginning on page 39. Leadership and funding for the project have been more forthcoming recently, but doubts still linger over whether Gehry's limestone curves will ever be erected. Indeed, Los Angeles County imposed a series of deadlines, beginning this July, demanding that the \$150 million necessary to finish the concert hall be raised by December 1998.

Build

Disney Hall

Frank Gehry's design is the linchpin of LA's new cultural district—if only the funds can be found.

Pushed aside in all the local bickering is the civic and cultural importance of this concert hall to Los Angeles. Gehry's 2,380-seat, fir-lined shell not only will benefit the world-renowned Los Angeles Philharmonic, but the revitalization of downtown LA. Sited at the corner of Grand Avenue and First Street, next to the Dorothy Chandler Pavilion, the hall is a vital link in a newly emerging cultural district. Gehry's hall adjoins the Museum of Contemporary Art (MoCA), designed by Arata Isozaki; the Colburn School of Music, designed by Hardy Holzman Pfeiffer Associates, and now under construction; and the proposed Roman Catholic Cathedral of Our Lady of the Angels, designed by Rafael Moneo.

This cultural district is planned to anchor downtown's north end and will be complemented by an entertainment complex to the south, where NBBJ and A.C.

Martin have designed a new basketball and hockey arena next to the LA Convention Center. A 65-block business improvement district is also in the works to spruce up the streets and attract new tenants to downtown LA's surfeit of office space.

The Disney Concert Hall is the most visible and prestigious of these new buildings. Its expressive collage by Los Angeles's premier architect symbolizes the city's artistic maturity. "Los Angeles has not been known for great architecture," concedes arts patron Eli Broad, who has anted up support for the beleaguered hall. "But if the concert hall goes forward, we will have buildings by three Pritzker Prize-winning

architects within two blocks of each other."

In recent months, Broad, Mayor Richard Riordan, MoCA Director Richard Koshalek, local philanthropists, and architects have realized the precariousness of the situation and are now galvanizing efforts to save the project. They are finally demonstrating the leadership necessary to realize Gehry's dream. But where are the Hollywood giants in this campaign? Los Angeles is rich in music and movie fortunes, yet none of the major entertainment moguls has come forward to back the concert hall.

Also troubling is the Music Center's inability to manage the complexity of Gehry's endeavor, suggesting that the U.S. construction industry isn't capable of building demanding architecture, particularly on fast-track schedules. In Europe, Gehry has had many successes: The Guggenheim Museum in Bilbao, with more complicated curves than Disney Hall, is now being erected with confidence and craft. Los Angeles could learn important lessons from this example.

With civic leaders now taking charge of the Disney Concert Hall, there is reason to hope that this great landmark will finally be realized. Gehry's design could change the face of the entire city. It should be built.

Deborah K. Dietsch

“

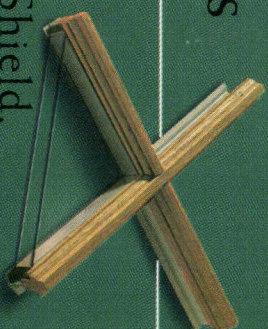
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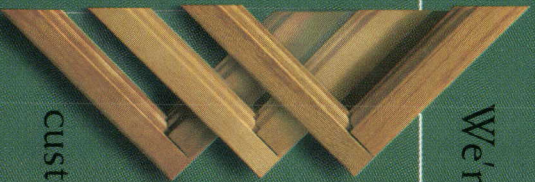
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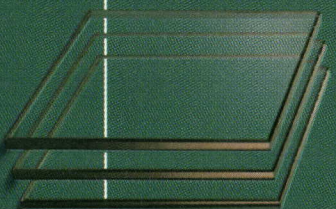
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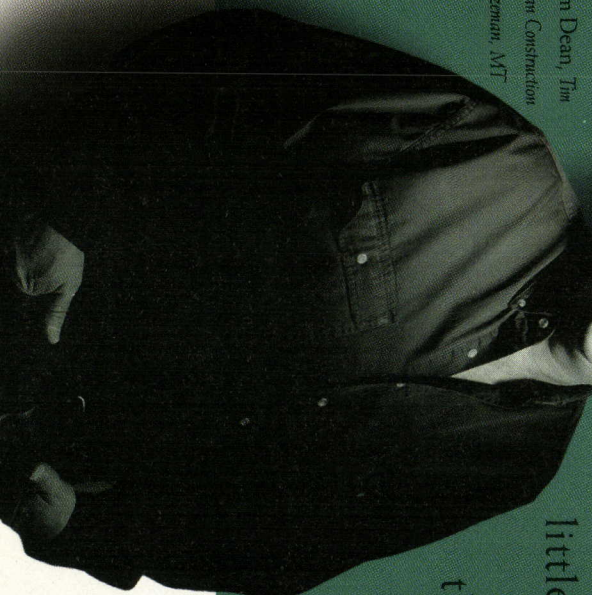
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Dean Construction
Bozeman, MT



Why I decided

Back to basics

I agree with you about the word "intervention" (*Architecture*, January 1997, page 160). It seems academia needs to mystify the profession with exclusive jargon. The damage to the profession is great. We must return to basic language and focus on the essence of architecture.

Claudio J. Noriega
Coconut Grove, Florida

Construction trends

It was good to see Bradford McKee's comprehensive overview of the construction economy (*Architecture*, January 1997, pages 120-122). Successful architecture firms develop their skills by understanding the economy that drives the demand for buildings.

Six sources quoted in the article presented forecasts at the first-ever North American Construction Forecast Conference, held last October in Washington, D.C., and sponsored by the Construction Market Data Group. This year's conference, to be held on October 22, 1997, is timed to coincide with the annual business planning and budgeting cycle.

Cal Oren
Construction Market Data Group
Greenbelt, Maryland

Thumbs down

I don't like many of the jury's choices for the P/A Awards (*Architecture*, January 1997, pages 60-103). Steven Holl's Knut Hamsun Museum (pages 72-73) looks like a John Hejduk house on a bad hair day, and his Museum of the City (pages 88-89) is more than "similar" to Alvaro Siza's museum in Santiago de Compostela, Spain. It trivializes—popularizes, if you prefer—Siza's experiments with light.

The jurors' comments are simply not sophisticated, insightful, or interesting enough to constitute the level of criticism expected of a major international awards jury. The range of critical vocabulary is minute: projects are called "simple but complex," or they combine "simplicity and complexity," usually with "real rigor" or "great rigor" and are thus "serious and rigorous." Your jury should scrap this professional jargon and just say, "five thumbs up" or "cool."

David Theodore
Montreal, Quebec

I'll tell you why Thom Mayne always wins the P/A Awards in one sentence: The juries are biased. I could select 10 equally illustrious juries under whose judgment Mayne would not win. The valuable contributions of architects like Paul Rudolph, Charles Moore, and Michael Graves have been discarded by a turn of fashion. Remember, these architects always used to win, too.

Neil Takemoto
San Francisco, California

Nice change

Congratulations on a very successful redesign. It was nice to see Thom Mayne get exposure. I cannot remember the last time I saw a face on a cover of an architectural magazine. Keep up the excellent work.

Joseph Boggs
Boggs & Partners Architects
Annapolis, Maryland

The February issue leaped out of my mail and skimmed across my desk under its own power. I caught it as it ricocheted off my computer—and it tingled with life as I read it. Nice job. Nice change.

Richard Fitzgerald
Boston Society of Architects
Boston, Massachusetts

I really enjoyed the February issue. It was very refreshing to see Fred and Ginger on the front with the clear parallel to Gehry's towers. The connection between architecture and popular culture makes architecture seem more a part of everyday life and not just some isolated esoteric mission.

Denis Glen Kuhn
Ehrenkrantz & Eckstut Architects
New York City

I want to commend you on your magazine's new format. The cover graphics are stunning and lure one to look inside. The contrast between the black and white pages and the colored accents are very effective. I am proud to show your new magazine to my clients and friends.

David D. Salmela
Salmela Architect
Duluth, Minnesota

Your new image is very promising. In addition to design issues, you pay special attention to actual projects and their construction details.

Valer Mocak
Fremont, California

Looking back

An amplification is in order to clarify the way in which Aaron Betsky quoted me in his "Minimalism: Design's Disappearing Act" (*Architecture*, February 1997, pages 48-51). When I stated that "we'll look back at [Peter Eisenman's Wexner Center and Aronoff Center] in embarrassment, or as representing a time that is over," I did not intend to suggest that those buildings were in any way an embarrassment. Quite the contrary: I am a longstanding admirer of Eisenman's mastery in actualizing complex, theoretical constructs into buildings.

Nonetheless, we will indeed look back at such buildings in embarrassment if we don't devote as much energy to the poignant human issues of the day as we devote to our continuing obsession with the more abstruse aspects of architecture-as-art. That the best minds of the moment (I count Eisenman among them) disregard—or at least hold in low esteem—architectural translations of populist needs is a discredit to a discipline that is innately moral and ethical.

Stanley Tigerman
Tigerman McCurry Architects
Chicago, Illinois

Stadium game

I enjoyed your editorial on the "Subsidy Game for Stadiums" (*Architecture*, February 1997, page 11). The cost of these federal subsidies far outweigh their benefits to society. We should set aside funds to bring technology-based programs to our inner cities instead. Keep up the education and maybe Senator Moynihan's STADIA bill will be passed.

Michael L. Ricketts
Tompkins Builders
Washington, D.C.

Correction

Clare Cooper Marcus, cowinner of the research award for "Gardens in Healthcare Facilities" (*Architecture*, January 1997, page 111), is professor emerita at the University of California, Berkeley.

Architecture welcomes our readers' opinions. Mail (1130 Connecticut Ave., N.W., Suite 625, Washington, D.C. 20036), fax (202-828-0825), or e-mail (info@architecturemag.com) your letters to the editor.

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New York	through May 2	Virtual Color: Light, Hue, and Form Integrated at the New York School of Interior Design	(212) 472-1500
	through September 21	Masterworks: Italian Design, 1960-1994 at the Bard Graduate Center for Studies in the Decorative Arts	(212) 501-3000
	April 16-January 11	A Dream Well Planned: The Empire State Building at the Museum of the City of New York	(212) 534-1672
San Francisco	through July 8	Centering the Civic: The 1996 San Francisco Prize at the Museum of Modern Art	(415) 357-4000



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Miami	April 14-16	Promit 97 Expo Conference for Natural and Man-Made Disasters	(800) 897-7100
New York	April 28-May 1 May 17-20	Lightfair International International Contemporary Furniture Fair	(404) 220-3000 (800) 272-7469
Orlando	June 26-29	Construction Specifications Institute Convention	(800) 689-2900
Philadelphia	June 16-19 June 16-19	A/E/C Systems Construction Technology '97, sponsored by Architecture and Interiors magazines	(800) 451-1196 (800) 451-1196

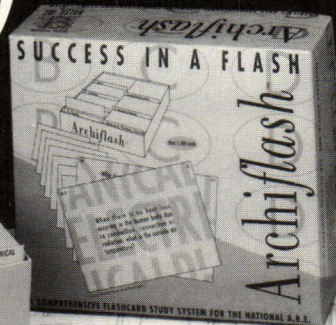


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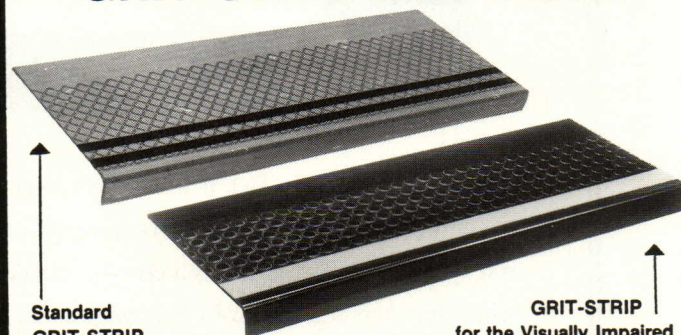
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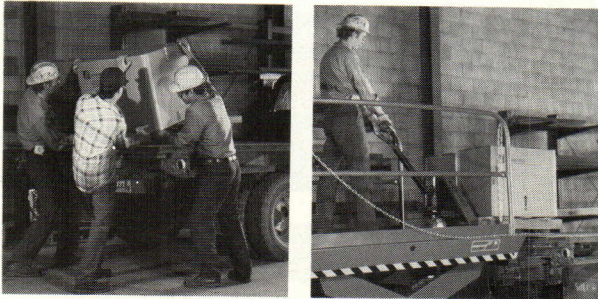
competitions

competition	deadline	contact
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American Society of Landscape Architects annual awards	May 9	(202) 686-2752
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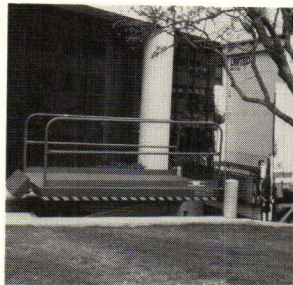
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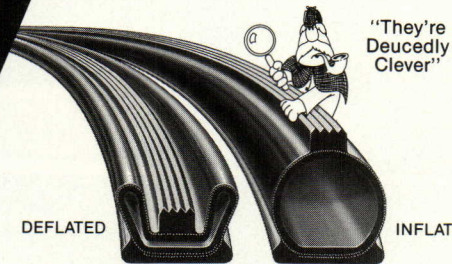
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Nike on Newbury

The first new building to be constructed on Boston's historic Newbury Street in 20 years opens this month, designed by Childs Bertman Tseckares. The building's first three floors are devoted to Niketown, a megastore that opens in July with interiors by BOORA Architects. Offices for building owner Sawyer Enterprises occupy the top floor of the 45,000-square-foot, sandstone-clad corner building.



MICHAEL MARSLAND

Divine Intervention

A group of 40 Yale University students and alumni filed a lawsuit against the university last December to stop a major renovation of the Sterling Divinity Quadrangle. The 1932 Neo-Georgian complex, designed by architect Delano & Aldrich in the spirit of Thomas Jefferson's University of Virginia quadrangle, houses the Yale Divinity School to the east of the main campus.

Preservationists claim Yale originally considered razing the entire complex. Last September, however, Yale commissioned R.M. Klimont and Frances Halsband Architects to prepare a revised scheme. The New York City architects propose demolishing original classrooms, a dining hall, and lounge adjacent to the quadrangle and extensively renovating the quadrangle proper. They have been

instructed by university officials not to release the design.

The Foundation for the Preservation of the Sterling Divinity Quadrangle has been formed to oppose all but complete preservation, despite Yale's scaled-back proposal. Several noted preservationists and architects, such as Robert Stern, Vincent Scully, and National Trust for Historic Preservation President Richard Moe, have also spoken out against the plans. "It is significant that the university has agreed to save most of the buildings in the complex," Stern says, "but new uses should be found for the rest, so they too can be preserved." The university has filed a motion to dismiss the lawsuit, which Yale Deputy General Counsel William Stempel claims has "no merit." *Ned Cramer*

Philip's Furniture



CHRISTIE'S NEW YORK

Christie's will auction furniture designed by Ludwig Mies van der Rohe and Lilly Reich for Philip Johnson on April 12 in New York City. The furniture was made for Johnson's Manhattan apartment, designed by Mies and Reich in 1930, two years before Johnson introduced Mies to America in his "International Style" exhibition at the Museum of Modern Art. The furniture comprises a tubular steel coffee table, chair, and stool; rosewood tea and dining tables; and a brass lamp designed in 1954 by Johnson and Richard Kelly for the Glass House in New Canaan, Connecticut. Johnson gave the pieces to his former employee, Robert Finkle, now a Vermont architect, in 1957. The furniture is expected to fetch prices ranging from \$4,000 to \$15,000.

Architect for Oklahoma City

Nearly two years after the Alfred P. Murrah Federal Building was bombed, the General Services Administration (GSA) has selected an architect to design a replacement complex on two blocks north of the original site. Chicago-based Ross Barney + Jankowski was chosen over shortlisted Dworsky Associates, Elliott + Associates, Kallmann McKinnell & Wood Architects, and Tigerman McCurry Architects. Principal Carol Ross Barney, who was informed of the GSA's decision in March, sees the 244,000-square-foot, \$22 million project as an "opportunity to reexamine the density of a central city, in an area that needs renewal."

Playa Vista Troubles

The touted but troubled Playa Vista development in Los Angeles faced another obstacle in March, when Chase Manhattan Bank began foreclosure proceedings against Maguire Thomas Partners, the site's developer. Maguire Thomas owes \$150 million on the property, and has made no payments for more than two years. Last year, environmentalists lost a court battle to block building on the site, which is one of Los Angeles's few remaining open wetlands.

The 1,087-acre mixed-use development, near LAX Airport, is planned by Duany Plater-Zyberk, Moore Ruble Yudell, Legorreta Architects, Olin Partnership, and Stefanos Polyzoides. It will comprise 13,000 residential units, 5 million square feet of commercial space, 500,000 square feet of retail, 600,000 square feet of civic and cultural space, and 3.2 million square feet devoted to entertainment and media. Playa Vista's largest occupant will be DreamWorks SKG, the entertainment company founded by Jeffrey Katzenberg, David Geffen, and Steven Spielberg.

According to Maguire Thomas Partner Douglas Gardner, the developer is "engaged in an ongoing discussion about the development's management structure" with potential investors Pacific Capital Group, Morgan Stanley & Company, and Goldman, Sachs & Company. "We are optimistic that financing will be resolved relatively quickly," Gardner maintains.

A spokesman for DreamWorks declined to comment on whether the current controversy would sway its decision to invest \$200 million in a Playa Vista filmmaking facility. DreamWorks's Glendale animation studio, designed by Steven Ehrlich, is now under construction, and the company's midtown Manhattan office will open next month, with interiors designed by Gensler.



LEE DUNNETTE

Anderson/Schwartz Architects' Manhattan terminal



Eisenman's Staten Island ferry terminal and museum

Staten Island Ferry Terminal Case

Just after the resignation of Venturi, Scott Brown and Associates (VSBA) as codesigner of the Whitehall Ferry Terminal at the southern tip of Manhattan, Staten Island borough officials unveiled a new terminal design by Eisenman Architects for their edge of the bay. The design, made public in February, is Peter Eisenman's first major commission in New York City. It will incorporate a 170,000-square-foot museum for the Staten Island Institute of Arts and Sciences. Eisenman says he is pleased with the "innovative linking of infrastructure and culture."

Last September, VSBA withdrew from the Manhattan terminal project—which it won with Anderson/Schwartz Architects in a 1992 competition—after enduring daunting budget reductions, design revisions, and political opposition. Staten Island Borough President Guy Molinari was the primary opponent of VSBA's proposal for an outsized clock, reportedly because Staten Island was excluded from discussions about the design. Anderson/Schwartz is completing the terminal with TAMS Consultants and former VSBA New York office director Ronald Evitts. Molinari claims he supports Eisenman's otherworldly scheme, but promises an extensive public review. While Molinari claims Venturi "insisted on having his way," the borough president is more optimistic about working with Eisenman, whom he calls "a consensus builder." Good luck, Peter.

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Skyscraper Museum Opens

The former banking hall of the 1926 Neo-Colonial high-rise at 44 Wall Street houses the first exhibition staged by the Skyscraper Museum—an institution newly formed by New York City architectural historian Carol Willis. Opened on March 25, "Downtown New York: The Architecture of Business/The Business of Buildings," addresses its immediate surroundings: Lower Manhattan's financial district. "Visitors can read a wall panel about a building, and literally look out the window at the building," explains Willis. Sixty-foot-long photomurals of Broadway show the west side of the street in 1996 (below), and the east side in 1909. Six galleries focus on skyscraper-related topics such as the real-estate market, the construction process, building codes, and zoning. *N.C.*

MICHAEL IAN SCHOPENN

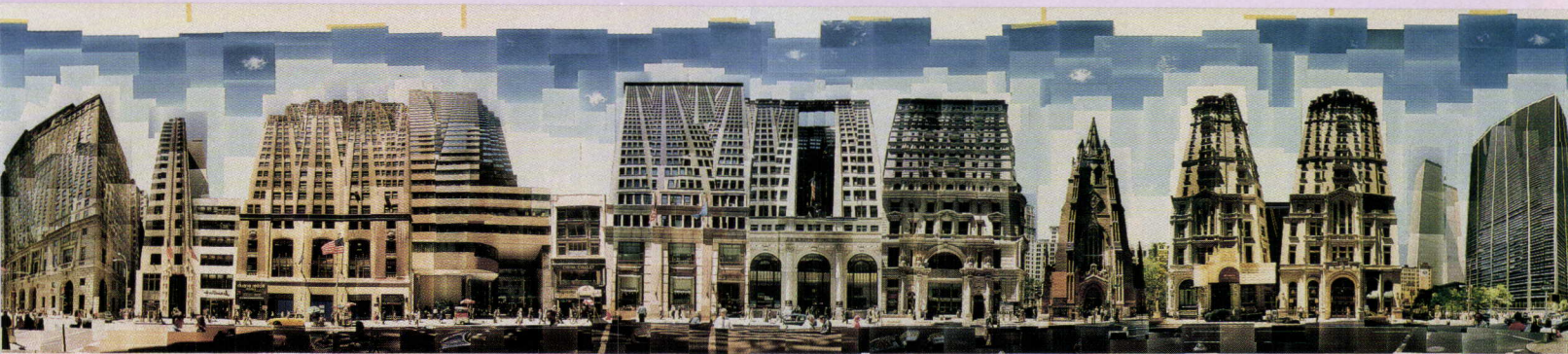


Seattle Museum Revamped

In early February, the Frye Art Museum in Seattle reopened its doors following an extensive renovation and expansion. The private museum, devoted to early-20th-century representative art owned by the late Charles and Emma Frye, occupied a spartan concrete warehouse on the edge of downtown for more than four decades.

Architects Olson/Sundberg teased an entirely new building out of the older structure, combining dignity with drama. They raised the ceilings, installed new wood floors, and brought more natural light into the galleries. A finely composed addition pushes the building out to the street edge. Its arcaded form contains a new entrance rotunda, a café, an education wing, and an intimate courtyard visible from the sidewalk. Intricate, precision-detailed metalwork highlights exterior windows and door openings.

The \$12 million project increases the size of the museum by 40 percent to a total of 42,000 square feet. The added space, which includes a 142-seat auditorium, enables the Frye to offer programs such as art classes, concerts, and lectures. The dramatic renovation, together with an aggressive new director and expanded staff, has transformed the Frye from a little-known gallery to a major cultural destination. Barely 50 people a day visited the museum in its previous incarnation; the number now exceeds 600. *Mark Hinshaw*

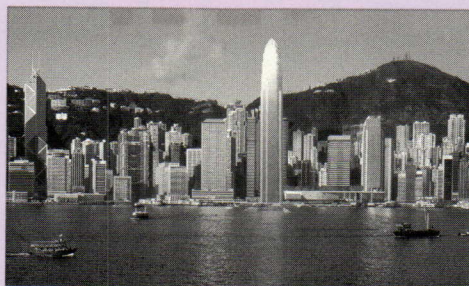


IN BRIEF

In March, the Southern California Institute of Architecture (SCI-Arc) announced a shortlist of contenders for its coveted directorship, to be vacated this summer by **Michael Rotondi**. The nominees are: **Neil Denari**, **Sheila Kennedy**, **Robert Mangurian** and **Mary-Ann Ray**, **Samuel Mockbee**, and **Lebbeus Woods**. SCI-Arc will announce its selection next month.

Morphosis received its first university commission in February, to design 450 units of graduate-student housing at the University of Toronto. At the University of Cincinnati, Chicago-based **VOA Associates** joins the ranks of design stars **Michael Graves**, **Machado and Silvetti**, and **Peter Eisenman** as the architect of a \$72 million campus

center. A \$25 million campus for Coconino Community College in Flagstaff is being designed by Phoenix-based **Jones Studio**. **William McDonough** is designing a 14,000-square-foot environmental studies center for Oberlin College. Brown University has selected **Ann Beha Associates** to consoli-

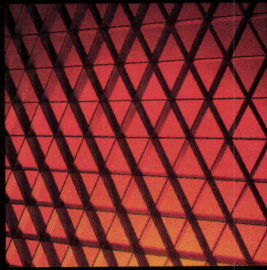
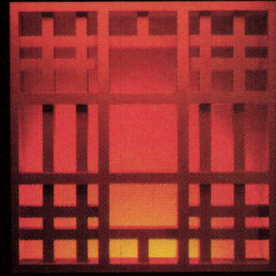
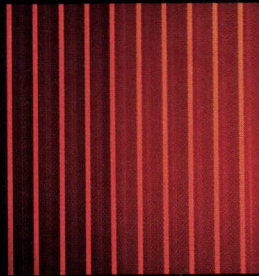
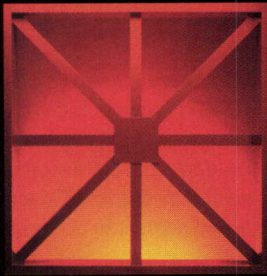


Pelli's Hong Kong towers

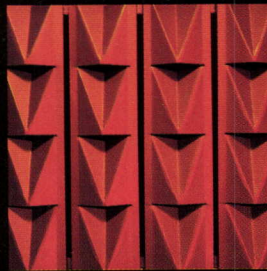
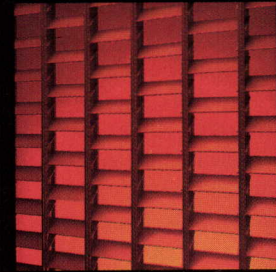
date several Providence landmarks into the 38,000-square-foot Haffenreffer Museum of Anthropology.

Hong Kong's imminent return to China hasn't slowed down development—**Cesar Pelli & Associates** has been selected to design a massive mixed-use harborside complex, with 1,300- and 700-foot-tall office towers.

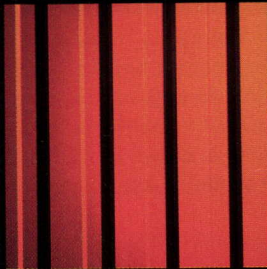
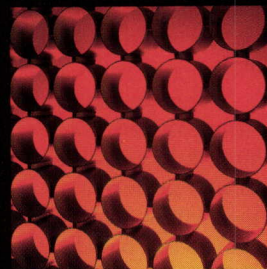
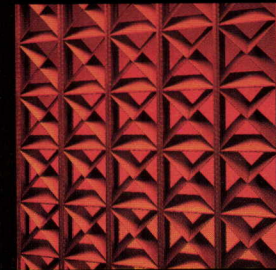
The only memorial on the site of Custer's Last Stand commemorates the U.S. 7th Cavalry. But last month, Philadelphia architects **Alison Towers** and **John Collins** won the Little Bighorn Battlefield National Monument competition to design a memorial to the Native Americans who fought in the conflict. A memorial of a different kind, the Basketball Hall of Fame in Springfield, Massachusetts, plans to expand with a design by **Gwathmey Siegel Associates**.



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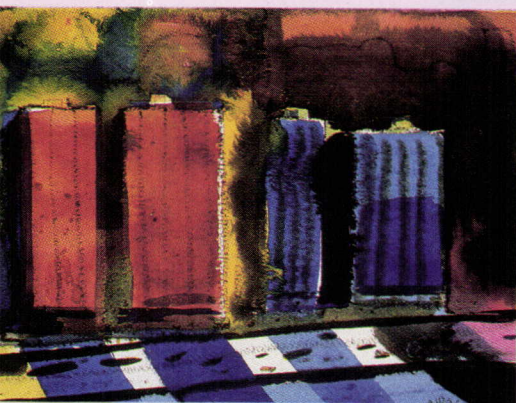


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Mies's Lake Shore Drive apartments (above) by Juan Navarro Baldeweg; "Greening of Chicago" (below) by James Wines of SITE

The Art Institute of Chicago, interested in how architects view America's first city of Modern architecture, commissioned a group of 30 well-known contemporary practitioners and theoreticians to present their "Views of Chicago." This eclectic exhibition of sketches, organized by Associate Curator of Architecture Martha Thorne, is on view through July 6. Invited participants include both locals and outsiders—Michael Graves, Mario Botta, Stanley Tigerman, and Thomas Beeby.

James Wines of SITE, a New Yorker, contributes the most compelling piece, an elaborately rendered watercolor of the Chicago River titled "The Greening of Chicago," that overtakes the city's best-known Modern landmarks with thick vegetation. Spaniard Juan Navarro Baldeweg convincingly abstracts Mies's famous Lake Shore Drive apartments as two pairs of pure colored form.

Chicago Views

Architects sketch many sides of the Windy City—and themselves.



Other out-of-towners unfortunately chose to record their impressions of the city from their hotel room windows. Houston-based Carlos Jimenez seems so uninspired by his view that half his effort is expended documenting the room's standard-issue hotel furniture. Eric Owen Moss is somewhat more fanciful, neatly sketching the electrical outlet beneath the window and a Loch Nesslike monster cruising the Chicago River, but his composition inexplicably focuses on a vacant downtown lot.

In contrast, Britain's Peter Cook weaves an enlightening tale of his visit to Chicago in storyboard form as seen from the seat of a taxicab, perceiving the 100-story, double-eared Hancock Center as an omnipresent cat between the towers' amorphous spaces. Richard Meier's ticket-stub collage shows that he visited such sites as the Shedd Aquarium, the Art Institute, and the symphony, but the entry is devoid of any architectural insights.

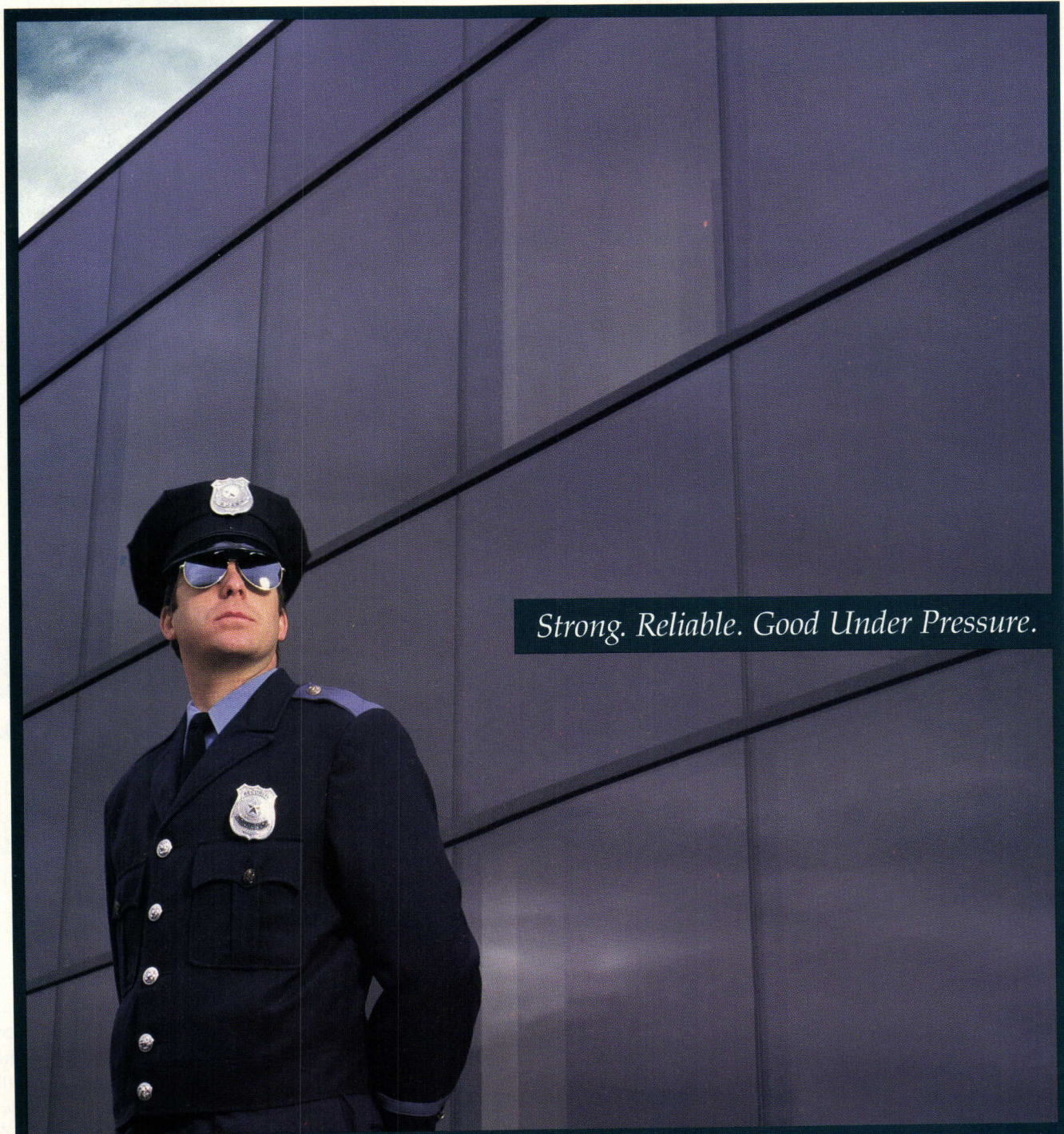
Among the Chicagoans, Carol Ross Barney's "Shorthand Chicago" lyrically captures the city's imposing physical presence on the prairie in a few swift strokes of marker and colored pencil. Ben Weese lampoons the bombastic front stairs at the new Museum of Contemporary Art with a cartoon version of the baby carriage scene in Sergey Eisenstein's *Potemkin*. Helmut Jahn states, "Never look backwards for inspiration," and then presents a self-absorbed suite of sketches of all his buildings in Chicago.

Some entries are far more thoughtful than others, but the images represent a promising collection that should be expanded in the coming years to yield a more complete picture of how architects view this multifaceted city. The show is presented concurrently with "Drawn From The Source: The Travel Sketches of Louis I. Kahn" and is intended as a complementary piece. But while Kahn clearly drew as a dedicated student of place, the architects of "Views" far too often chronicle Chicago in ways that are more about themselves than the city. *Edward Keegan*

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Gehry's sculptural design envelops an acoustically honed symphony hall.

mock-ups of the hall, on the museum's forecourt. One pavilion is a chamfered titanium box featuring a walk-up model of the concert



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WINDOWS
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hall's interior, which envelops 2,380 seats in a Douglas fir shell designed with Nagata Acoustics of Tokyo to be as finely attuned as a dog's ear. The larger pavilion's exterior gives a glimpse of the complex geometries of Gehry's computer-cut limestone panels, and inside, offers an illuminating look at the design process.

Across Grand Avenue, all that occupies the concert hall site today is a parking garage the Music Center completed last year to appease the county, which pressed the Disney hall's development team to get on with the project or give back the land by July 1, 1997. In 1995, détente was reached after the Music Center recruited Harry L. Hufford, associate director of Bear, Stearns & Company, to serve as the project's chief executive officer. Hufford, a self-described "low-key" yet "results-oriented" figure, moved among the faced-off factions like a secretary of state. He is a natural choice for the job, having served as the county's administrative officer and then as the Music Center's acting president and board member. "After recommending several other people," Hufford remarks humbly, "I wound up being drafted to put together a plan to build the concert hall."

Hufford helped win a lease extension from the county, based on two conditions: Music Center officials had to devise a fundraising strategy and finish the parking garage, both of which they accomplished by March 1996. Yet, as of last June, the concert hall still needed a powerful, charismatic patron. Some describe the situation as a leadership vacuum among the city's civic elite. "The old group—the Franklin Murphys, the Edward Carters, the Robert Andersons, and the Thornton Bradshaws—had disappeared," observes Richard Koshalek, the director of MoCA, who sat on the Disney Hall selection committee and mounted the Gehry exhibition. "And the new leadership hadn't shown up yet."

LA's next generation of civic movers are now coalescing around Broad and Riordan. Hufford knew that both men strongly supported the project, and last summer pegged them to approach a group of extra-rich donors for major gifts. By the fall, Broad agreed to play chief rainmaker, Hufford recalls, "for which we're very, very happy."

In his sunny, white oak-paneled aerie overlooking West LA, Broad explains that he and the mayor aim to raise \$100 million by June 30, another \$89 million by year's end, and \$142 million in 1998. There's still \$28.5 million left in the bank from Lillian Disney's original bequest, and her daughters Diane Disney Miller and the late Sharon Lund, to whom she turned over the project in 1992, have pledged another \$25 million. Various foundations have promised \$25 million since January. Riordan himself anted up \$5 million of his own cash, and, Broad assures, "I'm going to do at least that amount." The hall is now expected to cost a total of \$265 million, "If we raise the first \$100 million, we more or less have the money to build it," Broad maintains.

But as Broad and Riordan know, the Walt Disney Concert Hall is not an end in itself, but a vital piece of an area that could blossom into a large cultural district in downtown LA, which has the great buildings and open space, but few of the attractions that make a truly vibrant city.

This cultural district would anchor downtown's north end. On the south side, its complement would be a new entertainment complex along the Harbor Freeway, where architects NBBJ and A.C. Martin and Associates have designed a new sports arena.

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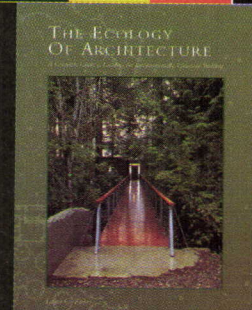
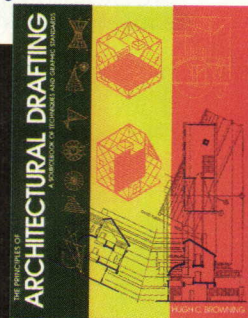
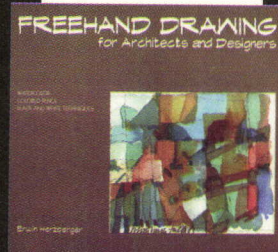
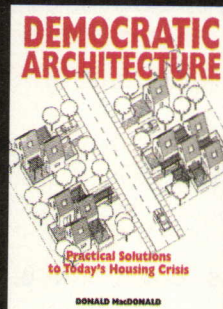
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"People relate to the arena as being like Madison Square Garden," contends Timothy H. Walker, partner of developer Maguire Thomas Partners, which has built several of downtown's best skyscrapers and is heading up the formation of a 65-block "business improvement district" for downtown to provide better security and housekeeping. "This is a clear signal that we want to do something positive down here," Walker asserts.

Downtown's boosters have a hard sell ahead, and the Disney Concert Hall has a major part to play in this revival, if it manages to shed its image as a precious institution for the very rich. To that end, a new hall for the philharmonic will free up the Chandler Pavilion 190 more nights a year, making way for more popular programming such as jazz, dance, and theater.

Comparisons between Disney Hall and Gehry's upcoming Guggenheim Museum in Bilbao, Spain, are inevitable—if they can build his work overseas, why not in his backyard? Various reasons are proffered: the seismic requirements in LA are greater; the acoustics more demanding; the cost estimates incoherent. None of which is particularly captivating to the architect, who confesses that by now, he has grown ambivalent about continuing the Disney project. "It's in the past; it would be like going backward," Gehry deadpans. On his 68th birthday in February, he sits in his skylit Santa Monica office, engrossed by a creative maelstrom swirling in studios on all sides of him—a jaunty trio of office buildings in Dusseldörf, a house that appears to be melting on a Colorado mountainside, and the great slash of the Guggenheim in Bilbao. "Everybody in this office has moved on to other

projects," Gehry says, gazing around him. "Including me."

Gehry's supporters are not so resigned, however. In February, 300 architects took out a full-page advertisement in the *Los Angeles Times* to support the fundraising effort. Certain remarks by Gehry suggest he hasn't really given up either. When asked whether LA's entertainment moguls will eventually fork over their millions to help build the concert

hall, Gehry replies that he has a lot of friends in show business who like his work very much, and they will help out before it's too late. But, as many players note with varying discretion, many of the titans of Hollywood and Burbank are, like Gehry, Jewish, and haven't been warmly embraced in the past by downtown's WASPs and Catholics. On top of those misgivings, the project carries the Disney name, and Walt

Disney, purveyor of family entertainment, bashed Jews with the worst of them, as Gehry reminds. Yet, people for whom such divisions are painful ought to want to see them bridged, and the Walt Disney Concert Hall might help serve that purpose. Los Angeles seems committed to take the risk rather than let the building remain the figment of a few brilliant imaginations.
Bradford McKee

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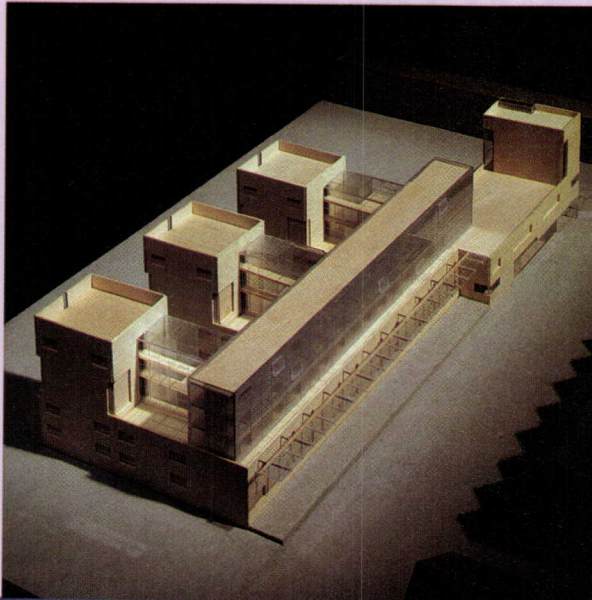
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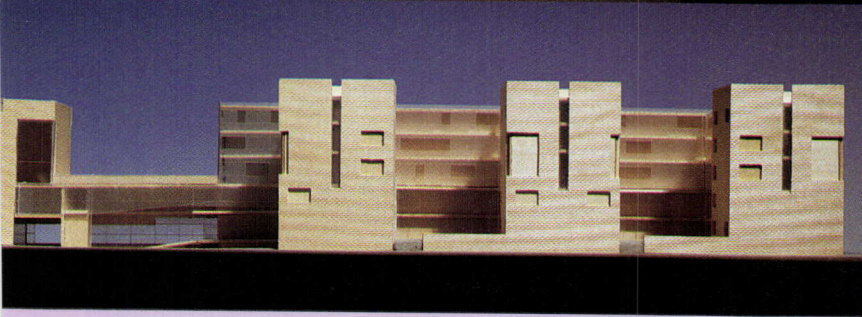
Stabile Hall, Pratt Institute Pasanella + Klein Stolzman + Berg Architects



In February, Brooklyn's Pratt Institute selected Pasanella + Klein Stolzman + Berg Architects, over Gwathmey Siegel & Associates, Hardy Holzman Pfeiffer Associates, and Polshek and Partners, to design a new dormitory. The five-story dormitory for 256 first-year students is the first new building to be constructed on the Pratt campus since 1986. It will form a new edge and focus for the forlorn eastern side of the campus, according to a master plan by Ehrenkrantz & Eckstut Architects.

Pratt asked each of the competing firms to present a design incorporating work space as well as sleeping quarters for the art and design students. Principal Wayne Berg proposed what he calls "homework spaces," communal, double-height studios located at the junctures of the dormitory's main block and each of its three wings. On the south end of the building, a five-story tower houses a gallery, computer room, and lounges to be shared with an existing dormitory next door.

Berg's scheme is also sensitive to siting and context: The lower two stories of the west facade, which face the center of the campus, are clad in brick and capped by an aluminum canopy to respect the domestic scale of faculty town houses across the street. The three upper floors are set back slightly, and sheathed in an aluminum-and-glass curtain wall, reflecting larger-scale buildings on and off campus. The dormitory is scheduled to break ground this July. *N.C.*

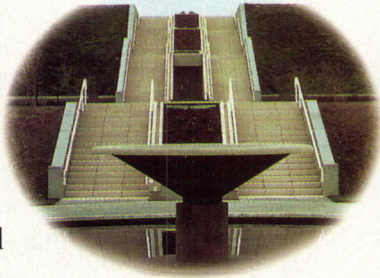


Dormitory rooms occupy main block and three wings. West facade (left) relates to low-scale faculty housing across street.

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Cy Twombly Gallery, Renzo Piano Building Workshop (1995)

Dominique de Menil is the moving force behind Houston's Rothko Chapel, Menil Collection Museum, and Cy Twombly Gallery, buildings that have earned high marks for enhancing art. The daughter of Conrad and Louise Schlumberger, de Menil was born in 1908 in Paris, where she studied mathematics and physics before marrying John de Menil, chairman of the board of oil services company Schlumberger and later the Menil Foundation. The couple left Nazi-occupied France in 1941 to settle in Houston, where

they raised five children. De Menil began collecting art after the war and has assembled more than 10,000 pieces. Besides her celebrated Cubist and Surrealist collection, she has gathered tribal art, antiquities, prints, and drawings. She has been active with the Menil Foundation since 1955. President Reagan awarded de Menil the United States Medal of the Arts in 1986. The French government has honored her with the Order of Arts and Letters (1982), the Legion of Honor (1992) and the Commander of Arts and Letters (1991). De Menil's latest project is the Byzantine Fresco Chapel Museum (pages 68-75), designed by her son, Francois.

Modern-Day

Arts patron Dominique de Menil reflects on the uplifting power of architecture.

Medici

How did you become interested in architecture?

We are all interested without knowing it. We feel happy in beautiful architecture. There are a few places in the world that give me that great emotion: certainly the Parthenon and Chartres Cathedral. People don't realize they are having trouble concentrating because of buildings. I've discovered that if unhappy people go to a place like Versailles, they feel something. It's not just the park; it's the beauty. Classical architecture can be soothing. I believe very much in the importance of architecture.

What are the qualities of a building that are uplifting?

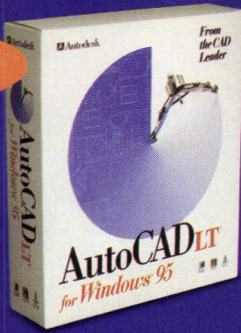
It's wrong to analyze it. You just have to submit and accept it. I don't know who said it, but submission to the subconscious is important.

You and your husband were on the board of the University of St. Thomas when Philip Johnson was commissioned to design the campus. Did you have a role in that selection?

The Basilian Fathers in Houston, who were running an excellent high school for boys, received federal money to start a university for soldiers returning from the war. For reasons unknown to me,



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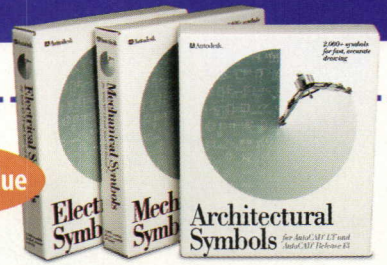
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HESTER & HARDWAY

Menil Collection, Renzo Piano Building Workshop (1987)

they acquired a piece of land in the area where they are now. They had heard that my husband offered to help build a little church on a country road where we used to go to church. We had asked Philip Johnson, who was building our house, to design it.

The project was abandoned, but having heard about it, the Basilian Fathers came to see us. We suggested three or four architects, including Philip Johnson. They met Philip, were charmed by him, and decided he would be their architect. Philip had admired Jefferson's design for the University of Virginia. Inspired by it, he planned a great lawn on two levels, with a chapel at one end and a library at the other.

How did the design of the Rothko Chapel evolve?

Aware of the problem of lighting Mark Rothko's paintings, Philip [Johnson] devised an upside-down concrete funnel, a zenith of light, that would bounce light down onto the paintings. It might have worked, but it would have dwarfed all the houses in the neighborhood. Rothko didn't like this design because he wanted something more like his studio.

He wanted a glass roof with a little parachute to diffuse light under the skylight at different times of the day. The architect deferred to the painter. Times were not for triumphalism. At this point, Howard Barnstone and Eugene Aubry, the locals on the project, took over and completed the chapel.

How did you come to commission Renzo Piano to design the Menil Collection Museum and later the Cy Twombly Gallery?

I had toured America, Italy, Switzerland, and Holland, and had not found an architect who would allot enough back-of-house space, which is as important as the front-of-house space for storing the collection not on display in a way easily accessible to scholars. Usually, a board chooses an architect and establishes the budget and program. The architect then builds a monument to himself and the staff squeezes into whatever remains. K.G. Pontus Hulten, the first director of the Pompidou Center, prevailed on me to contact Piano. "Tell him what you want. He is intelligent; he will understand," he said. At that time, I was mounting small shows at Rice

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University. We thus demanded a different distribution of space than usual. The ratio of space at the Menil is one-quarter exhibition space to three-quarters work space and storage.

What do you like about the quality of its space?

Very often, ceilings are too low in a museum. We agonized about the height at the Menil Collection, and built a mock-up of every unit to be sure we had the right height.

What I think is fabulous is what Piano calls the promenade, which we eventually shortened by 20 feet. I decided it was too long, both financially and physically: you would tire from the physical effort. And I love this long corridor inside that separates the public space from the work space.

Should a museum or gallery be a background building, or should it be designed specifically for certain works? How does the quality of light affect the experience?

A museum can be designed as background or it can be tailored to specific works. Both are possible—it depends on what one wants.

Natural light offers something that artificial light does not. If you have a bulb, the light will be static. With natural light, in 10 minutes or a passing cloud, it's going to be different. Natural light integrates time; I like that it's alive. In the Menil Collection, we needed some total darkness, but we admit outside light. I couldn't stand a museum cut off from the outside.

Which architects do you most admire?

Renzo Piano, Tadao Ando, Frank Gehry, and a few others.

Why did you commission your son rather than a more famous architect to design the chapel for the Byzantine frescoes?

I did not commission my son. He saw I was going to build an absurd replica of the original chapel and asked permission to work on a design, which took him almost two years. Its beauty comes from the harmony between concept and execution. I like the material he has chosen. The frosted glass, luminous and a bit immaterial, is a fabulous choice.

How does his chapel accommodate the art's spirituality?

It is a combination of a sanctuary and art and the beauty of the frescoes. It's so exceptional, with the dancing, if you want, of all the angels, and this great figure and face of Christ. It would not be as beautiful just placed in a museum. A religious work of art in a museum loses some magic.

I gave a 15th-century wooden Christ to the University of St. Thomas because I felt that the sculpture is better placed in their church, where it retains its authentic function. I think that's what happened here with the frescoes in the new chapel. We see them for their real purpose in a religious space. The chapel's black ceiling is very important because you feel the night above your head, pregnant with the dawn that is coming.

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The City of St. Louis wants to bring Pebble Beach to its impoverished North Side. City officials recently spent \$38,000 preparing plans for Gateway Village, a nine-hole golf course with luxury housing spread across 180 acres, including the former site of the notorious Pruitt-Igoe public housing complex. Local leaders want the U.S. Department of Housing and Urban Development (HUD) to chip in \$8 million in grants to help fund their plan, which is expected to cost \$127 million.

A golf course in the ghetto is a dumb idea. Start with the demographics: More than half of U.S. golfers earn at least \$40,000 a year, and 96 percent have high school diplomas. On these threadbare blocks of St. Louis's inner city, median annual household income in 1990 was \$6,900, and most adults hadn't finished high school. The North Side, like other inner cities, desperately needs basic services—stores, clinics, and transportation. A golf course won't help.

Urban Sand Trap

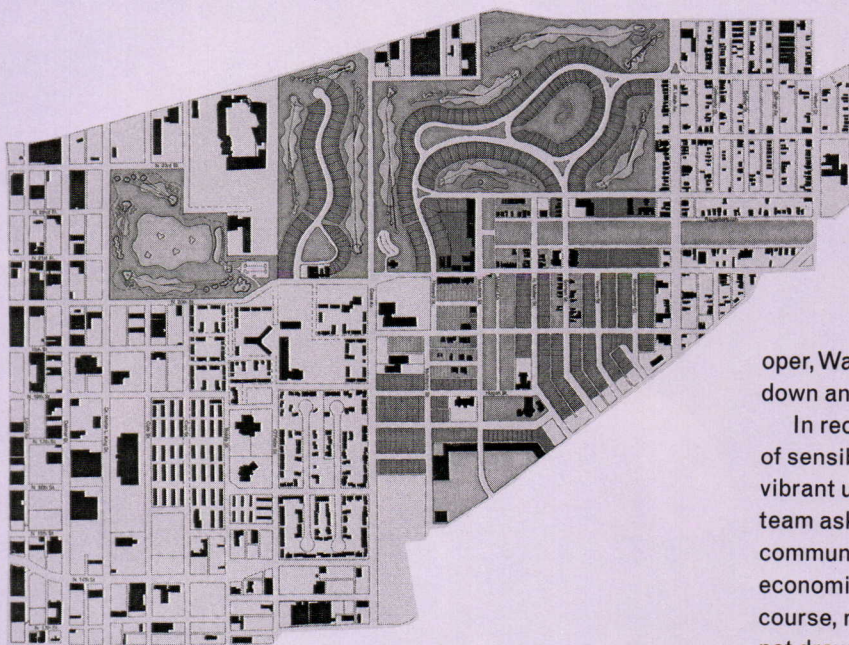
St. Louis tries to stem its decline with a golf course.

The city's stupidity carries over to the urban design for the site. To build this recreational oasis, the city plans to demolish 209 turn-of-the-century row houses and the few remaining businesses their inhabitants support. The city wants to replace these rough blocks with winding lanes lined by single-family lots and townhouses surrounding the links and small lagoons. By transplanting a slice of the suburbs into this forlorn neighborhood, officials believe they can reverse the decline of a city that has lost two-thirds of its people since the 1950s. (St. Louis, once the nation's 10th largest city, now has a population of 396,000 and ranks 34th.) Anxious to restore the city's tax base, civic leaders want to bring people back—as long as they're middle class.

But this plan, developed by golf-course architect Don Childs Associates of Sylvan Lake, Michigan, is bound to fail. Though the existing blocks are extensively ruined by abandonment, crime, and decay, it would be better to base future designs on the existing fabric of the community. Instead, the project's developer, Waycor Development Company of Detroit, wants to tear it all down and insert its own idea of a nice suburban neighborhood.

In recent decades, St. Louis officials have been radically short of sensible ideas for reviving the city's core, and what was once a vibrant urban center is quickly dying. Yet if a skilled urban design team asked North Side residents what they need most in their community, a golf course would rank last. As for making the plan economically viable, Don Childs, who hopes to design the golf course, maintains that the numbers would work. "Golf courses do not draw on an immediate neighborhood," Childs assures. It's hard to think of a better reason not to build this one. *Bradford McKee*

Site plan of Gateway Village



WITH VULCRAFT ON DECK, THIS



The Ballpark at Arlington, home of the Texas Rangers, built with Vulcraft composite deck.

archi

INTEGRITY



PAUL WARCHOL

Restoring fidelity to place and purpose, the projects in this month's issue share the common bond of integrity. New York architect Francois de Menil's museum for a pair of 13th-century Byzantine frescoes so sensitively recaptures their original chapel setting that the building has been consecrated as a place of worship by the Greek Orthodox church. With similar empathy, Renzo Piano reinterprets Constantin Brancusi's studio to immortalize the interplay between the sculptor's artworks and the environment in which they were created. Lee Mindel pays homage to the holistic ethos of Modern design in his Manhattan penthouse. And Rodolfo Machado and Jorge Silvetti explain how their respect for the particulars of place is translated into larger scale work, as in the renovation and expansion of the Getty Villa. Integrity is not always in the mind of every architect, however, as our in-depth report on stolen designs reveals. In this climate of competitive practice, more architects will be challenged to defend their professional ethics.





IN A NEW HOUSTON MUSEUM, FRANCOIS DE MENIL CRAFTS

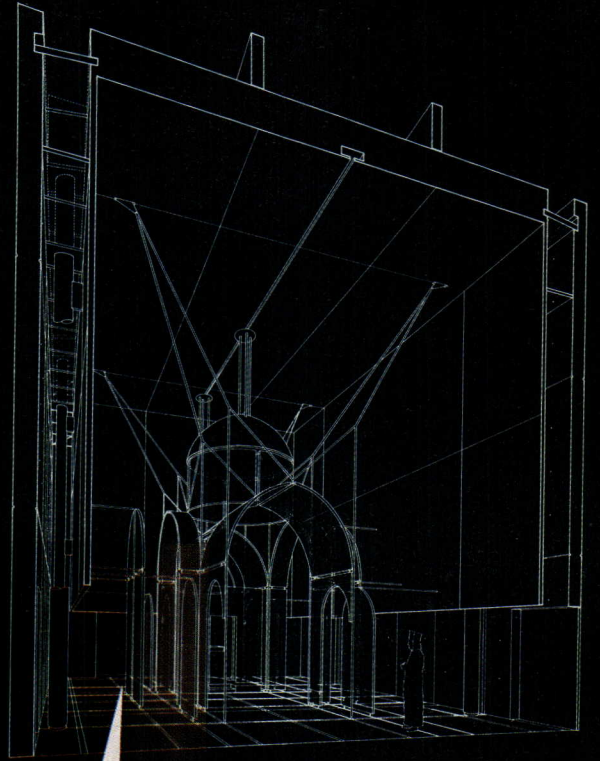
MODERN RELIQUARY

AN AUTHENTIC SETTING FOR TWO BYZANTINE FRESCOES





Structural trapeze supporting pipe frame by engineer Ove Arup & Partners visually disappears against black steel canopy over chapel.



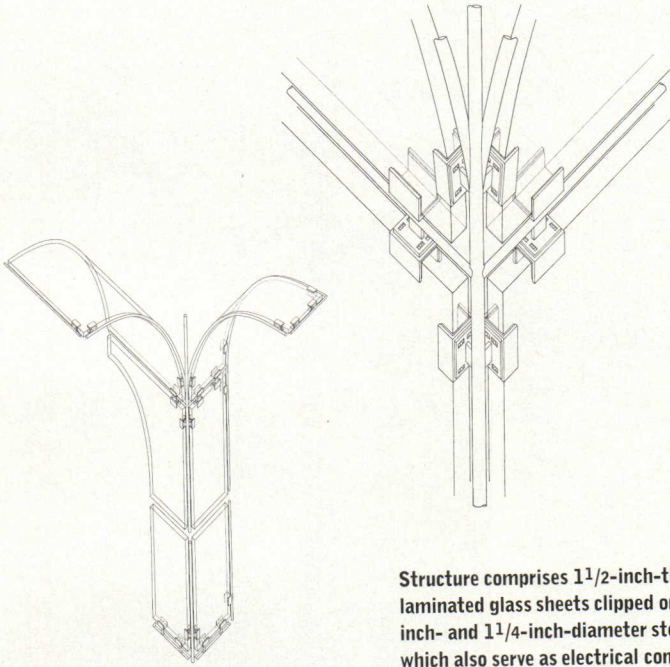
Narrow concrete antechamber (facing page) negotiates transition between entry corridor and chamber holding frosted-glass evocation of original chapel.

De Menil's luminous chapel sits under black steel-plate box within concrete volume of building. Steel pipes holding glass panes evoke line drawing of the Cypriot chapel in space.

BYZANTINE FRESCO CHAPEL MUSEUM, HOUSTON, TEXAS

ARCHITECT: Francois de Menil, Architect, New York City—Francois de Menil (principal-in-charge), John Blackmon (project architect), Matthew Pickner (schematic design project architect), Jan Greben (associate project architect), Javier Arizmendi, Jeffrey Bacon, John Bennett, Agatha Klepacka, James Moustafellos (project team) **ENGINEERS:** Ove Arup & Partners (structural, mechanical, electrical); Cobourn Linseisen & Ratcliff (civil) **CONSULTANTS:** Daniel Stewart (landscape); Fisher Marantz Renfro Stone (lighting); James Carpenter Design (glass); Robert Pringle (glass and metal finishing); Universal Survey (surveyors); Maxim Technologies (testing laboratory) **GENERAL CONTRACTOR:** W.S. Bellows Construction Corporation **COST:** Withheld at owner's request

PHOTOGRAPHER: Paul Warchol, except as noted



Structure comprises 1½-inch-thick laminated glass sheets clipped onto 7/8-inch- and 1¼-inch-diameter steel pipes, which also serve as electrical conduits.

figured to recall the original chapel on Cyprus. This ghostly structure glows with the halos of the holy figures; the light green of the water-white glass is just shades away on the color spectrum from the blue of the mural's heavenly vaults. Frescoes and chapel are radiant together.

The matte-black inner walls and ceiling of the surrounding box silhouette the luminous chapel, creating a form with a hypnotic presence. In this context of light and darkness, a bronze door to the altar appears as a void outlined by the background of luminous glass, itself silhouetted by the black steel wall beyond.

Although the almost windowless exterior may be overly austere, this closure of the primary volume allows the architect to control the interior masterfully. In this environment of utter stillness, focus is all: nothing can distract from the frescoes, and nothing from the ephemeral evocation of the original chapel. As de Menil notes, the murals are the reliquary within the glass construction, but this ephemeral chapel is itself a reliquary contained in the building's concrete envelope.

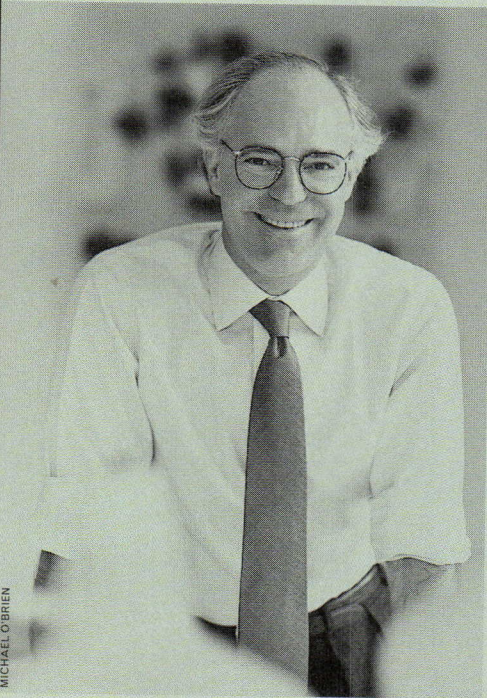
Usually, Byzantine chapels and churches were decorated top to bottom with murals. De Menil has simply extended the effect murals always had on church walls by dematerializing the rest of the chapel with darkness and light. He creates an interior with a double revelation—the murals themselves, and then the light that dematerializes and transcends matter, becoming an object itself. The chapel progresses from stone to concrete and climaxes in luminance. *Joseph Giovannini*



Working altar stands at head of chapel below restored frescoes.

Fifty-two-year-old Francois de Menil came to architecture with a sensibility already refined by other disciplines. The fourth of five children raised by parents who both actively collected art and pursued human rights causes, de Menil grew up in Houston, in a sprawling, one-story, Miesian house designed by Philip Johnson, and also in New York. After an undergraduate year at Columbia, he immersed himself in film—shooting, directing, and producing documentaries about artists Jean Tinguely, Niki de Saint Phalle, and Mark di Suvero. As a producer, he worked with Richard Pryor and Gene Wilder on *Stir Crazy* for Columbia Pictures.

In the early 1980s, de Menil founded FDM Productions, which not only produced four Broadway plays, but also hired Charles Gwathmey of Gwathmey Siegel & Associates to design its Fifth Avenue offices. Gwathmey then renovated de Menil's Houston house in 1980, and his Neutra-designed Los Angeles house in 1981, and in 1982 created a new house for de Menil in East Hampton. This building experience proved formative for de Menil, who enrolled in Cooper Union and earned his B. Arch. in 1987. Summers he apprenticed with Richard Meier, and after graduation, worked for Kohn Pedersen Fox Associates and Nagel & Lesser.



MICHAEL O'BRIEN

FRANCOIS DE MENIL PATRON TURNED ARCHITECT

In 1991, as soon as he passed his licensing exam, de Menil opened his own New York firm, completing several Manhattan residences, the New York offices of *Esquire* magazine, and shops for fine leather dealer Bottego Veneto in Boston, New York, and Japan.

The Byzantine Fresco Chapel Museum is his first completed freestanding building and his first institutional work. "I asked to look at this project and see if I could come up with a solution," says de Menil, whose client was first the Menil Foundation, superseded by the Byzantine Fresco Foundation, both headed by his mother, Dominique de Menil. "Once the design gained the approval of the board of directors, then it wasn't really a problem getting my mother's approval. With their response, she had faith in it." De Menil notes that he pushed for making a one-third scale mock-up of the chapel. "I was concerned about how light would be diffused through the glass, and the mock-up reinforced the concept and facilitated the process. It was easy to work with Dominique," he adds. "There are a lot of architects who say, 'Thank God for Mom.'"

De Menil designs more from a rarefied sensibility than a theoretical position. The stillness he creates with carefully controlled forms and a limited materials palette foregrounds the pieces he wants to feature—whether purses in a shop, furniture in a room, or art in a gallery. "We try to work with essences, and make the design as concise and compact as possible, unencumbered with the superfluous," the quiet, reflective architect explains. "An architecture of simplicity doesn't incorporate anything more than it needs. Light, shadow, and materials are the tools. A real space, as opposed to an assemblage of surfaces, has a presence of repose; it ends up being a refuge from the chaos that surrounds us."



GEORGES MEGUERTITCHIAN

Piano enclosed replica of Brancusi's studio in limestone pavilion at northwest corner of Pompidou Center (above). Stainless steel panels and north-facing sawtooth skylights distinguish roof as viewed from upper levels of Pompidou (left).

Shaded forecourt to east of studio (below) creates contemplative space that mediates between street and plaza.

BRANCUSI'S NEW STUDIO

Renzo Piano reinterprets the Romanian sculptor's atelier outside the Pompidou Center.

For Constantin Brancusi, the humble wooden shack that was his studio, together with his sculptures in various stages of completion and those still latent in uncarved blocks of wood and stone, all constituted a single significant whole. Pondering the interrelationships between these brought the sculptor insight and inspiration. To keep altering these relationships, so that he might always see them afresh, some of his sculptures revolved slowly on turntables.

When Brancusi bequeathed his works to the French state, he stipulated that they be displayed as he had arranged them in his original studio near Montparnasse. However, the studio was demolished shortly after the sculptor died in 1957; some two decades later, a rough replica was built in front of the northwest corner of the Pompidou Center, adjacent to the retaining wall that edges the plaza. Besides looking scruffy and forlorn, the humble, gray-painted shack provided neither the security nor the access to serve as a public gallery. Although open to the public two afternoons a week, this access was deliberately not publicized, and visitors were few.

As part of his renovation of the Pompidou Center, which will be partially closed for two years starting this September, architect Renzo Piano has rebuilt Brancusi's studio. Though the 4,500-square-foot building is a small commission, Piano identified with it strongly. The architect realized that he, like Brancusi, saw his designs, the studio spaces in which they are developed, and the models and photographs of his earlier works on display, as constantly cross-fertilizing parts of a single whole.

The new Brancusi studio occupies the same site as the replica. Piano's pavilion is set lower, between plaza and street level, and enfolded by an ambulatory whose



windowless wall dignifies this building as a special precinct. Piano's mini-museum is more solidly built than the earlier version, and meets modern curatorial standards, but the studio is the same shape and size as the original and is also brightly north-lit through shed roofs.

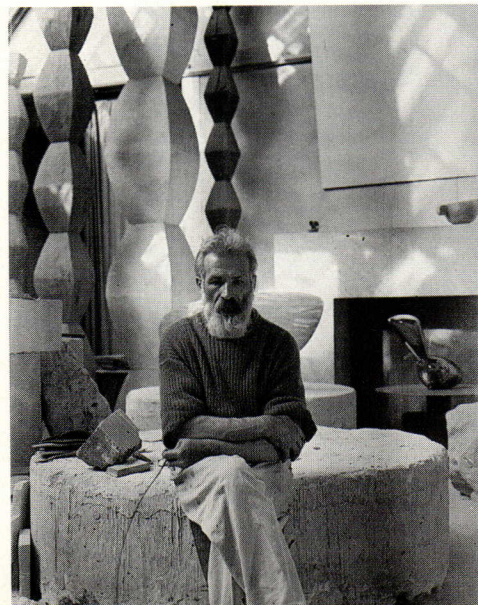
The public does not enter Brancusi's studio, but peers into it from the softly top-lit ambulatory, through glazed openings where the original windows and door were. At one corner, the ambulatory widens into another exhibition space; a shaded court adjacent to the stair to the new precinct lends tranquility to the ambulatory, separating it from the hurly-burly of its surroundings.

To protect the glass roof over the ambulatory and present a neat view to those looking down from the Pompidou Center, the roof is clad in perforated, matte-finished, stainless-steel panels. (Such panels have become a standard Piano solution, covering the Bercy 2 shopping center in Paris and Kansai International Airport in Osaka.) However, the translucent, milky glass of the shed clerestories remains unprotected so that the light in the studio approximates the levels in the original.

The hardness and precision of the new building's steel-paneled roof and stone-clad outer walls present a character very different from Brancusi's original flimsy timber shack. Inside this defensive, crisp carapace, the white-painted, exposed-wood frame (with plastered walls) of the new studio is more robust and neatly ordered than the original, but it asserts a quiet dignity that complements the sculptures beautifully. Piano's pavilion neither copies nor competes with the absent original, whose presence lingers hauntingly in Brancusi's famous photographs. *Peter Buchanan*



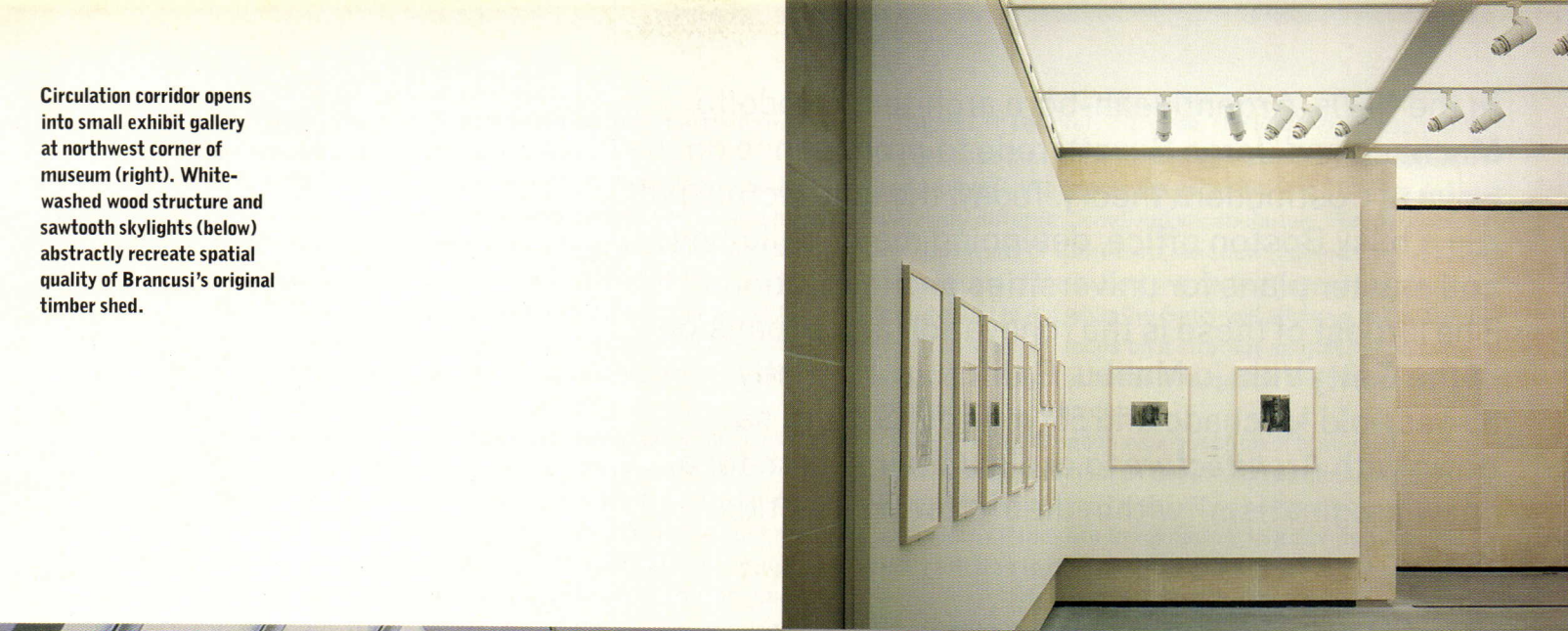
Visitors circulate through top-lit ambulatory wrapping glass-enclosed studio (above). Stretched fabric ceiling and north-facing skylights simulate diffused daylight in which Brancusi worked (below).



NATIONAL MUSEUM OF MODERN ART

BRANCUSI STUDIO, PARIS, FRANCE
CLIENT: Georges Pompidou Center, Paris **ARCHITECT:** Renzo Piano Building Workshop, Paris—Renzo Piano (principal), Ronnie Self (project chief), Ronan Phelan (site manager), Jean Luc Dupanloup, Alain Galissian (project team) **ASSOCIATE ARCHITECT:** Bernard Plattner **COLLABORATORS:** Camilla Aagaard, Zoraia Berrio, Cristiana Catiano, Patty Chappell, John Darling, Paul Satchell **ENGINEERS:** Study & Coordination Group Engineers (structural, electrical), INEX (mechanical) **CONSULTANTS:** ISIS (parking) **GENERAL CONTRACTOR:** Durand Structure **COST:** \$3 million **PHOTOGRAPHER:** Michel Denance/Archipress, except as noted

Circulation corridor opens into small exhibit gallery at northwest corner of museum (right). White-washed wood structure and sawtooth skylights (below) abstractly recreate spatial quality of Brancusi's original timber shed.



I think architects who do not share this concern for urban design are going to be left out in the future because projects are becoming larger, and the important projects engage a larger context. These days, more often than not, projects start with master planning, then you get jobs for architecture. We began our work in Princeton with a master plan, and now we're doing two buildings. The Getty started as a master plan.

How would you describe your approach to urban design?

MACHADO: At the structural level, I would say it is quite Classical—the order, the sequences. But again, our approach is one more example, at a different scale, of what we were saying before about manipulating languages. We could have, for instance, a site-planning study that is rooted in Classicism, but produces a very modern or contemporary environment.

We always try to produce order, even though this is a very unfashionable thing to say today. Cynics say, and for many it is difficult to resist being cynical, "There is chaos in the world; who cares?" We're exactly the opposite; we are very positive.

SILVETTI: We were talking the other day in California about the phenomenon of architecture that says the city is all about disorder and fragmentation, so you make your architecture disorderly and fragmented. I think this is ridiculous because when you look at the fragmented, disordered city, it is really made out of pure, perfect, finite, whole buildings that are square, round, and other regular shapes. Chaos cannot, and should not, be produced. It should result from natural forces.

How has building more projects changed your work?

SILVETTI: It changes the way we work in the office. I don't see a major change in the work itself or in our philosophy. We are now confronted with the realities of time, and how time affects the office, how little time we have to talk, and how, finally, one of us has to take care of the job. Until recently, we were doing everything together, all the time. And now, that's very difficult. We have to rely much more on our team leaders.

MACHADO: We've managed to maintaining the culture of our office. It is quite informal, and people are good at many things rather than being too specialized, and there is communication at all levels. We manage to keep our eye on every significant design decision that is made. I've seen enough disasters when firms grow.

So how do you work?

SILVETTI: Each one has a job that he follows, but we both try to be in touch with all the jobs.

Do you design together?

MACHADO: At the beginning, yes. And very much in solitude. Nobody else is around. We have back-to-back tables and we fight a lot.

SILVETTI: What happens is that there's a spark, and from that, the work begins. Suddenly, one of us comes

up with something convincing, and then the other jumps in, and we follow from that.

MACHADO: It's a very personal process.

SILVETTI: Our communication is very fast from all these years of elaborating things together. But not in all stages anymore. We rely more on the team leaders.

You were among the first to embrace the convergence of literary and architectural theory. Yet recently, your writing suggests that that particular theoretical debate has exhausted itself.

MACHADO: That always happens, particularly in the beginning, when one is trying to innovate. It was a useful model for certain things at certain times, and remains so.

SILVETTI: It is important to understand that at the time, we're talking about the 1960s, corporate architecture of the worst kind dominated America, as well as big disasters at the social level with housing and urban renewal. The literary model was a powerful tool to say, "Listen, architecture is part of culture, and if you don't understand culture..." It was a vehicle for critique, and it was devastating.

Why devastating?

SILVETTI: Because it turned things around. The whole history of theory really began at that moment, and I think it was very positive at the beginning. Then what happens is the inevitable moment of instrumentalization: is it syntactic or semantic, and how do we operate on it, which led to the demise of linguistics. It became very banal and a vulgarization of the critique. But that's almost always inevitable with any model of theory and philosophy. Look what happened with Deconstruction. At one moment, it's an interesting idea for demystifying some cultural constructs, and then immediately it becomes a style. The theoretical "construction" became the thing to be constructed—the literal translation. It got so stupid. The same thing happened with linguistics.

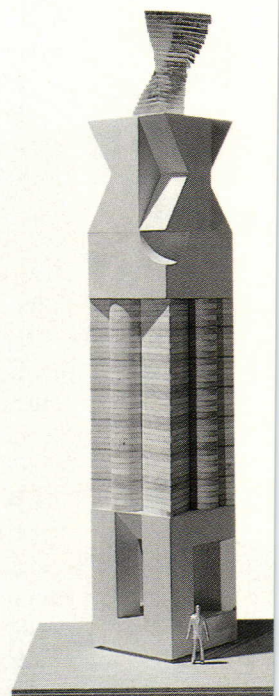
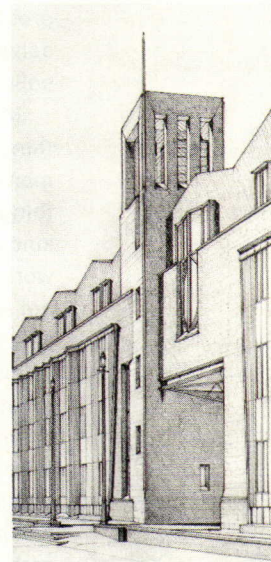
In your book, you wrote that theory is at a dead end. What do you think of architectural theory today?

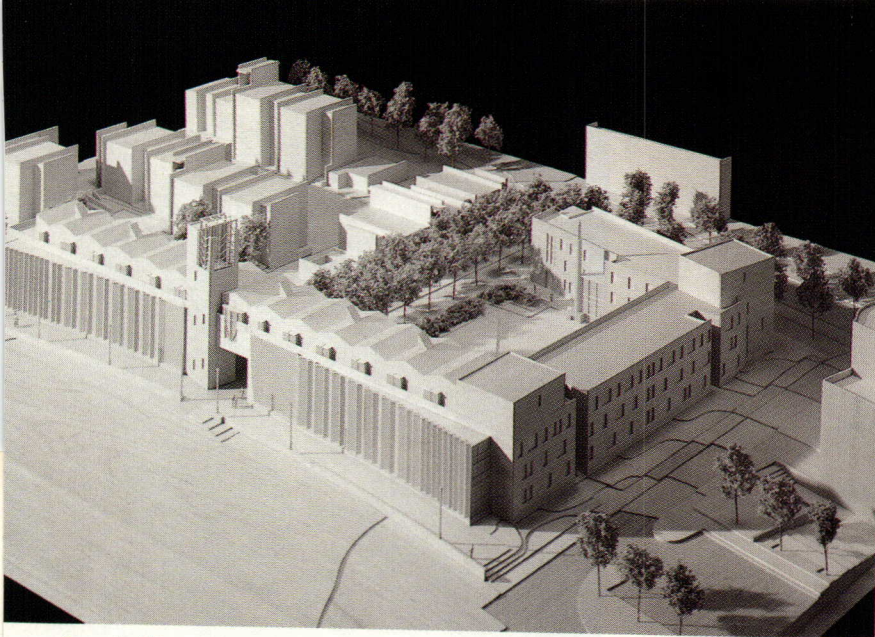
SILVETTI: I don't think that architectural theory is very well-focused. It has taken off on its own, like it's another practice. And I don't see it helping architecture. It doesn't help building.

MACHADO: It's a practice by itself with its own tenure systems and its own patrolled schools and decontrolled schools. I don't know where it's going to lead, but it's a mess.

SILVETTI: I think it has to be architecturally repositioned and reorganized somehow; theory has to be refounded in a way. But, you know, I'm not thinking about that too much these days. I'm running a practice and a school [Harvard's Graduate School of Design].

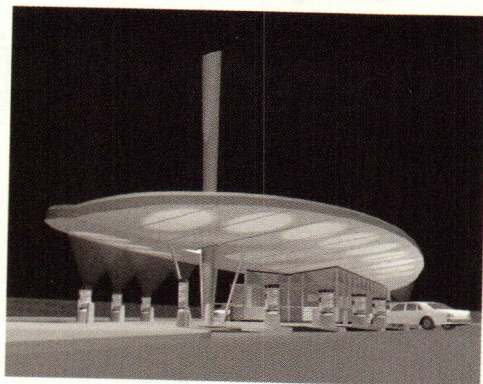
MACHADO: We're still interested in theory, but in our theories, rather than contemporary theory. We just want to make good buildings.



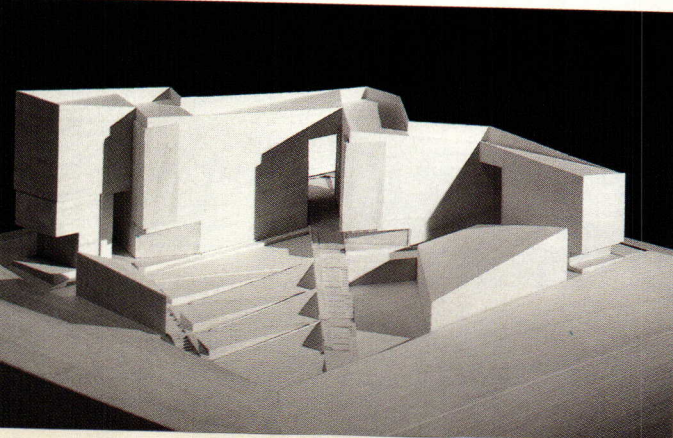


As part of the master plan they completed for Princeton University in 1996, Machado and Silveti designed a 267-bed dormitory to reinforce the existing campus. South facade's precast concrete paneling (facing page) forms a monumental backdrop to athletic fields. Construction begins in June.

Machado and Silveti teamed up with corporate identity consultant Lippincott and Margulies to design a fast-food prototype for a major restaurant chain and a string of Spanish gas stations. The architects are also designing Lippincott and Margulies's New York offices.



Two projects at the University of Cincinnati reflect the architects' urban design sensibility. The Sigma Sigma Commons tower (facing page) will anchor campus green when completed in 1998. Jefferson Residence Life Hall (below) combines dormitories, classrooms, dining hall, faculty apartments, and offices and will open in 1999.



ANTON GRASSL PHOTOS

What do you think of architecture's current direction?

SILVETTI: I don't think there is a direction.

MACHADO: It's hard to imagine the emergence of another religious moment where everybody would be doing things as some sort of salvation. No one is as naive as architects were at the beginning of the century. There is less consensus, many more voices. Architects are treated differently now—what is expected of us is different. The giants of Modernism acted in a more receptive society. Look at the competition for work now.

What contemporary architects do you find interesting?

MACHADO: Currently, I have no heroes. I am dazzled by some details, some moments. For instance, I have great respect for Rafael Moneo—sometimes he is spectacular—and other architects in Spain. They build so well, and their work seems to belong to that place. I also like Philippe Starck.

SILVETTI: I have been very impressed by the cemetery of Enrique Miralles—absolutely one of the best things I've seen in a long time. I like Will Bruder's Phoenix Public Library; it's pretty impressive. I've seen Frank Gehry's Guggenheim in Bilbao and think it's absolutely phenomenal, just breathtaking. I also liked Norman Foster's subway there.

You're choosing buildings rather than architects.

SILVETTI: It's always about the pieces of work. But I will say that I will always be interested in knowing what Moneo, Alvaro Siza, Rem Koolhaas, and, of course, Frank Gehry are going to do next. These people always think when they work. There's nothing worse than automatic architects, which many tend to become after a while. The market forces the dynamics of their offices. People like Michael Graves and Morphosis become self-abusing. It's sad because these people are very talented.

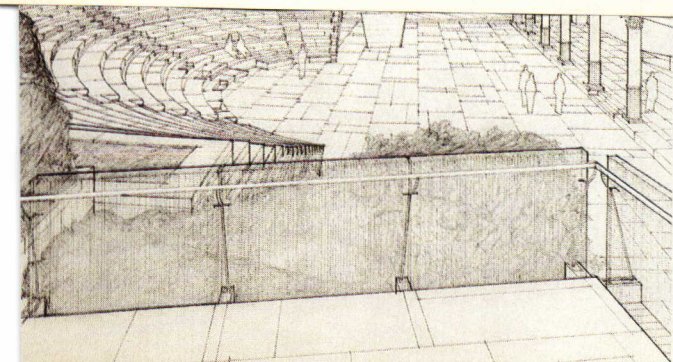
MACHADO: Architects often miss beauty, fantasy, and the dream condition in their work. With the English architects like Foster, I like the details immensely and how they fit into the frame, but I cannot buy the whole deal.

Most architects develop a certain design language and then work within it.

MACHADO: Certainly one tends to develop great affection for some features, for some ways of doing things. But we are more interested in developing a personal way of working that is deeper than just the expression of the language. What is constant is the way in which we face the problem, not the way in which the design is expressed.

SILVETTI: The idea of one vocabulary per architect becomes associated with a moralistic view that the language they are embracing is what is good for society, but the morality of a certain style we know doesn't work anymore. It's not true that the Modern style is good for ordinary people, and Classicism is only for rich people, and so on. These things are absolutely absurd. An architect has to ground his or her work, in history. There is no other way. History is the source of all knowledge, and the more one knows about it, the better.

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7 precast concrete column

8 concrete flooring with integrated stone chips

15 stone flooring

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Café seats 100 people on terrace overlooking outdoor theater (100 more inside). Underground auditorium is concealed by terraces (foreground in photo), and is entered under footbridge leading to Getty house.



Architects' designs are often stolen by clients and other architects. Why do so few designers protest?

Stop

It was a consulting engineer who first told architect Benjamin Schaffer that his client had stolen his design. Schaffer Associates Architects, a 10-person firm in New York City, was hired by NCWL Development Corporation in May 1990 to design an \$8 million industrial building in lower Manhattan for a fee of \$240,000. The client paid Schaffer for his work through construction documents in 1991, but the project languished for two years because NCWL didn't have the money to build. Then, "quite out of the blue" in late 1993, Schaffer recalls, the engineer phoned. "He said, 'Ben, are you aware that there's another architect on this project? He's made some minor revisions to your drawings.' "

The other architect, Anthony Morali of M/G Architects, had been hired in August 1993 by Nelson Yeung of NCWL. Yeung gave Morali a computer disk of Schaffer's drawings from which to work. Morali altered Schaffer's documents and filed them with the New York City building department that October; the new architect redesigned the ground floor and moved the air ducts, plus other minor changes, but the plans, sections, details, and notes were nearly the same as Schaffer's originals.

The developer didn't tell Schaffer he was off the job until the architect called to ask about M/G's role in the project. Schaffer protested, reminding the client that the drawings belonged to the architect, that they had been copied without his permission, and that he had not been paid for their use. In addition, the contract stated that if Schaffer were fired without cause, the developer would owe him a

Thief!

termination fee of 5 percent. Yeung directed Schaffer to his lawyer, who assured Schaffer that his client had paid the architect his full commission.

Schaffer filed suit against NCWL before the American Arbitration Association and won \$50,000 plus court costs in December 1995. The developer, whose countersuit was dismissed by the arbitrator, asked the state Supreme Court to reduce or withdraw the award and was rejected. Schaffer was ultimately forced to secure a sheriff's order to garnish Yeung's assets before Yeung finally handed over the award. "In the end I got my money and proved my point," Schaffer asserts. "Architects must understand they're entitled to a certain level of client respect."

In search of a cheaper architect

Not all architects are so victorious—or so bold. Architects' designs are stolen all the time, and most do nothing about it. Design rip-offs usually follow what one Florida federal judge calls a "pungently familiar" pattern: Typically, clients hire one architect to work through schematics or design development, then pass that architect's drawings on to a second, presumably cheaper, firm to execute construction documents and see the project to completion. According to Schaffer, Yeung's new architect told him he could shave \$1 million off the project's cost. In most cases, as in Schaffer's, the pilfering client violates the original architect's copyright protection of his or her drawings, and the bargain architect commits (usually knowingly) a breach of ethics.

"Boy, does that happen all the time," scoffs New York architect George Ranalli, who insists that his store designs have been "copied incessantly" and who swears that one well-known New York architect stole his design for an office interior. Ranalli, who won't name the offending architect for fear of "looking like a jerk in public," claims the plagiarized design is "just like my sheetrock work."

Such cases occur frequently, contend architects and attorneys, but the documented cases of hijacked design are few when compared with the numerous disputes that never get aired publicly because architects are wary of pressing charges. An architect could launch a second career in the time it takes to prosecute the malfeasant parties, and legal wrangling often generates bad publicity. Architects—notoriously naive about matters of business and law—fear that if their names are linked to litigation, they'll never work for decent clients again. For instance, one established, husband-and-wife team in New York learned that its house design for a wealthy couple in the Midwest was probably copied by another architect and is now being built. Yet the architects never confronted their client because of the risk of losing future work and referrals from the client, an influential businessman.

Abrupt firings

Most architects shudder at the cost of defending their professional dignity: Chasing thieves is expensive and time-consuming, and can drive designers to the brink of bankrupt-



HIGH

Lee Mindel's Manhattan penthouse showcases

A photograph of a modern living room. In the foreground, a round wooden coffee table with three legs holds a clear glass bowl. To the left, a white sofa is positioned near a large window. In the center, a fireplace is set within a large, minimalist white frame. To the right, an orange sofa is visible. The room features a dark wood floor, a white pillar on the left, and large windows offering a view of a city skyline. The lighting is bright, creating strong shadows on the floor.

the sensuous side of Modern design.



LEFT: Mindel's apartment is entered through a cylindrical gallery that leads to living and dining areas. Bench is designed by Antonio Gaudi. **BOTTOM:** Sweeping stainless steel staircase leads to rooftop pavilion. Treads and risers are formed from a 1/4-inch-thick sheet of stainless steel.

As the designer of buildings, interiors, furniture, even cruise ships, Lee Mindel believes an architect can be master of the environment. Mindel convincingly makes the case for total design in his own New York penthouse. Its crisp spaces are graced by the architect's own furniture and his extraordinary collection of pieces by mid-century Modernists equally obsessed with design's all-encompassing possibilities.





ABOVE: Living area stretches along south perimeter to fireplace framed in steel and structural glass. New double-glazed windows offer views to East and Hudson rivers. Wall shelf (left at rear) and circular table (center) are designed by Jean Prouvé. Black leather chairs are by Jules-Émile Leleu; coffee table by Paul Kjaerholm. **RIGHT:** Antonio Citterio sofa is flanked by Fritz Henningsen-designed wing chair, Prouvé console, and kite lamp by Pierre Guariche.



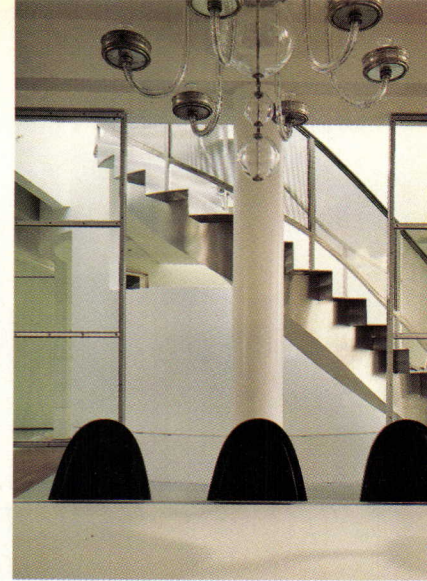


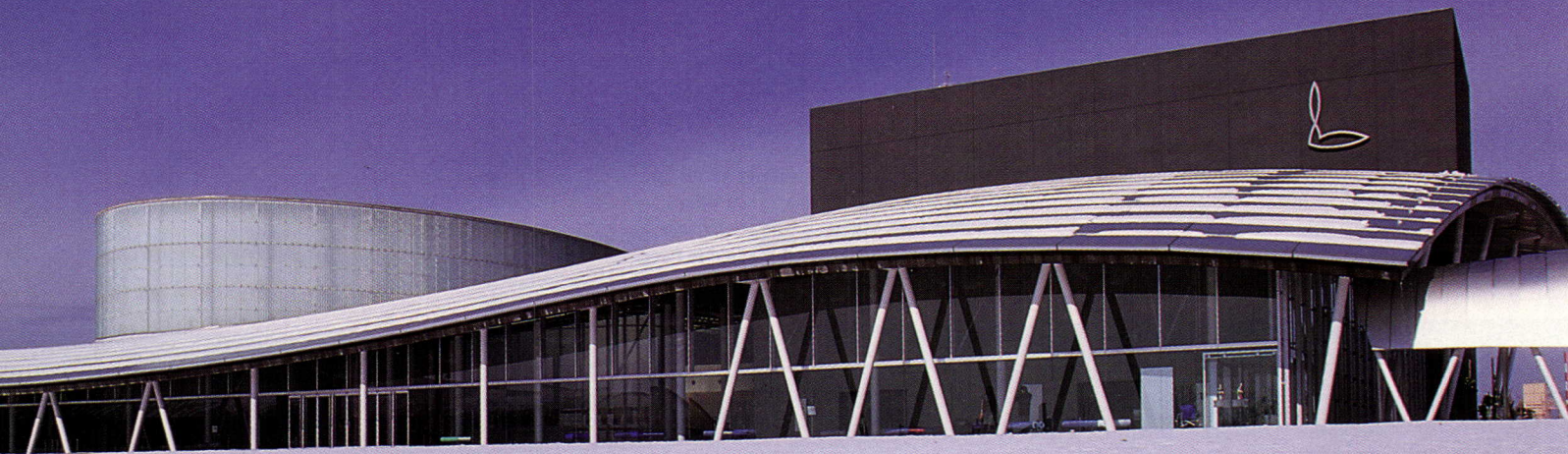
Mindel's apartment tops a former hat factory in Manhattan's Flatiron District. Exposed columns and beams, aluminum-framed glass panels, and metallic furniture details recall its industrial history. Tough elements are softened by contrasts in materials and textures, and sinuous lines, including a curvaceous, stainless steel staircase swirling up to a rooftop pavilion and garden.



LEFT: Underside of concrete and metal stair is finished in plaster. **ABOVE:** Dining room is screened from stair and cylindrical gallery by aluminum-framed glazed panels. Flooring around staircase and in gallery is concrete mixed with quartz aggregate. Oak floors in dining and living areas are inset with cherry strips to reflect ceiling beams.

RIGHT: Dining room table is designed by Mindel and partner Peter Shelton; chairs by Josef Hoffmann. Glass chandelier, created by Syrie Maughn in the 1930s for Venini, was originally commissioned for Lord Mountbatten's London house. **BELOW:** Hans Wegner's ox chairs flank seating area next to dining table. Sliding basswood doors conceal bar and storage. Rubberized canvas mat by V'soske defines seating area.





NATURAL

A theater complex by Toyo Ito echoes the landscape of Japan's snow country.

Lyric Hall's south elevation (top) reveals curved, corrugated glass-enclosed concert hall and concrete fly tower of proscenium theater that project above aluminum roof. Narrow reglets in roof run perpendicular to slope to hold snow. Walkway (right) connects Lyric Hall to new art museum. Ventilation shaft visually anchors Ito's horizontal complex.



Loggia is pierced with hole (right) to admit daylight. Splayed columns (bottom left) offer lateral stability. While much of roof slab is beam-free, steel pipe beams (bottom right) support arching forms of taxi stand at hall's eastern end.

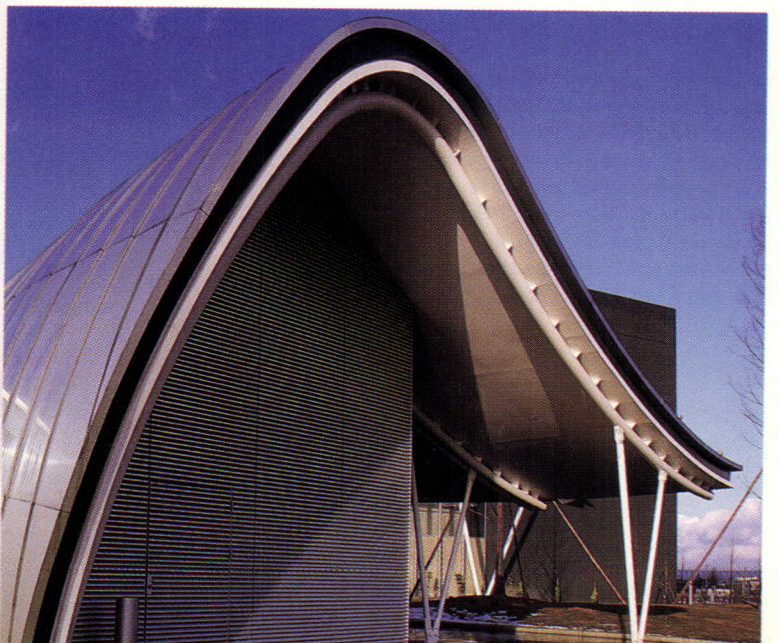
Toyo Ito's experiments with light and transparency have earned the 55-year-old Japanese architect an international reputation, evidenced by his inclusion in the Museum of Modern Art's 1995 "Light Construction" show (*Architecture*, November 1995, pages 24-25). Ito's most recent building, Lyric Hall in Nagaoka, furthers the architect's tradition of ephemerality with spatial fluidity.

Lyric Hall goes beyond simple formal strategies; Ito describes the rural performing arts center as a landscape. He calls its softly undulated aluminum-clad roof "hills" and the loosely organized steel columns of the interior, reminiscent of Alvar Aalto's spaces, a "forest."

Although metaphors of nature repeatedly surface in Ito's work, they are particularly apt in Nagaoka, a city of about 150,000 framed by mountain ranges in western Japan's Niigata



PERFORMER





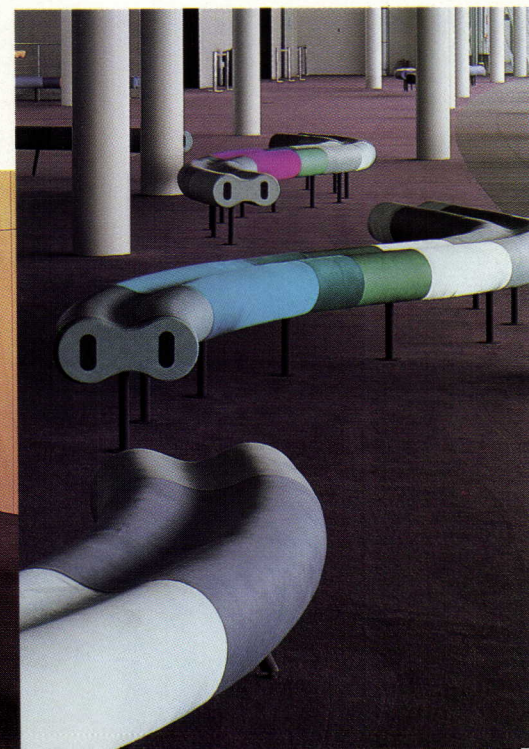
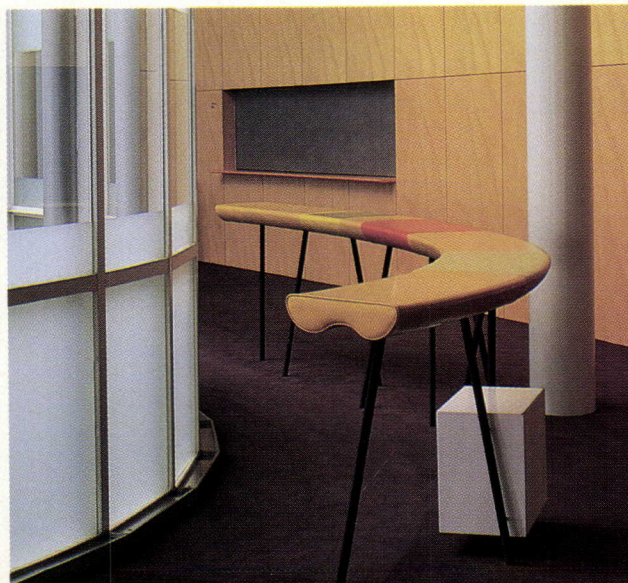
Prefecture. The site of Lyric Hall is no more than a flat, undistinguished plain reclaimed from the nearby Shinano River, but this agricultural region is one still closely connected to nature. Ito enriches the immediate locale by tying his building clearly to the land beyond.

The region is called *yukiguni* or “snow country”—accumulations of up to 4 feet of snow are common. The rolling form of Lyric Hall’s roof holds, rather than sheds, the snow: the aluminum roofing features narrow channels intended to act as concrete keys, wedging the snow in place. The channels run along the slope of the roof, rather than downward, and heavy cleats marshal themselves at the roof’s edges. In this way, Ito ensures that the building is covered in soft blankets of whiteness six months of the year.

Punching up through the flowing plane of the roof are an elliptical cylinder and a tall box. These minimalist pieces hint at the performance hall’s overall organization. The black box is the fly tower of an inky, 450-seat proscenium theater, while the glowing cylinder, wrapped with a wall of corrugated glass, holds a luminous, 700-seat concert hall.

The theaters are located to the east of a long, open space that wraps around to the south

Second-floor lobby (top) flows around volumes of concert hall and theater at western end of building. Steel stair leads to lower-level lounge and rehearsal spaces. Klein/Dytham designed buffet table (right) and snakelike benches (far right), which are either movable or fixed, and can be connected by belts to partition lobby during simultaneous performances.



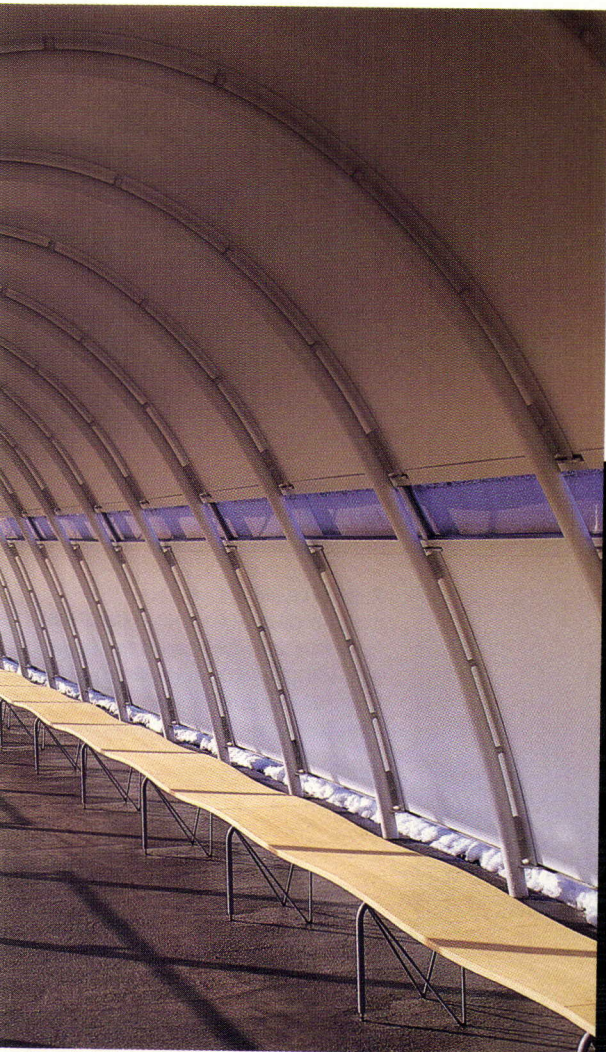
and becomes the lobby, separated from the greensward beyond by a mullion-free glass wall and a line of thin columns. To the west, the lobby meets a stair which connects to rehearsal studios below. Above, the lobby terminates in an information lounge, housing an array of computers and magazines devoted to the performing arts.

From this airy lobby, which is almost constantly in use, covered walkways lead to two other recently completed facilities—a more formal hall to the west and a new art museum to the east. Ito absorbs the covered walkways into his lobby, drawing people into the building rather than simply having them pass under the front loggia.

The fluid, open-plan lobby is enticing; few can pass through without stopping. Yet even when there is no one around, the lobby feels full of life, thanks to the snaking forms of furniture designed by two of Ito's protégés, Astrid Klein and Mark Dytham of the young Tokyo-based architecture firm Klein/Dytham. From the earliest stages, the client wanted to create a community-friendly cultural facility, justifying the building's \$23 million price, which required national and local government support.

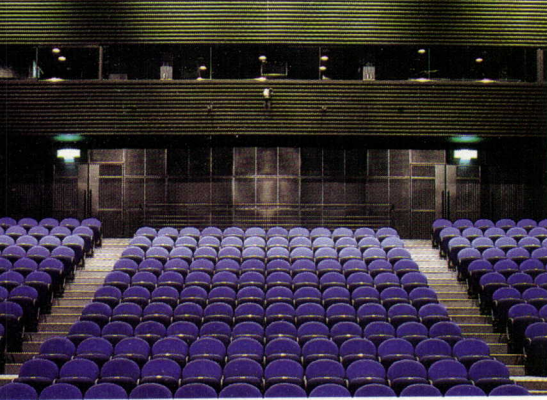


Curved glass wall framing boomerang-shaped terrace (above) animates first-floor lounge. Tiny lozenge-shaped, first-floor courtyard between concert hall and theater (below) soars through second-floor lobby to roof, flooding both levels with daylight.



Covered walkway to west of stepped terrace (above) connects Lyric Hall to new conference and meeting center on south-west side of site. Slotted windows emit afternoon light while shielding pedestrians from cold winds. Ito designed wavy plywood benches.





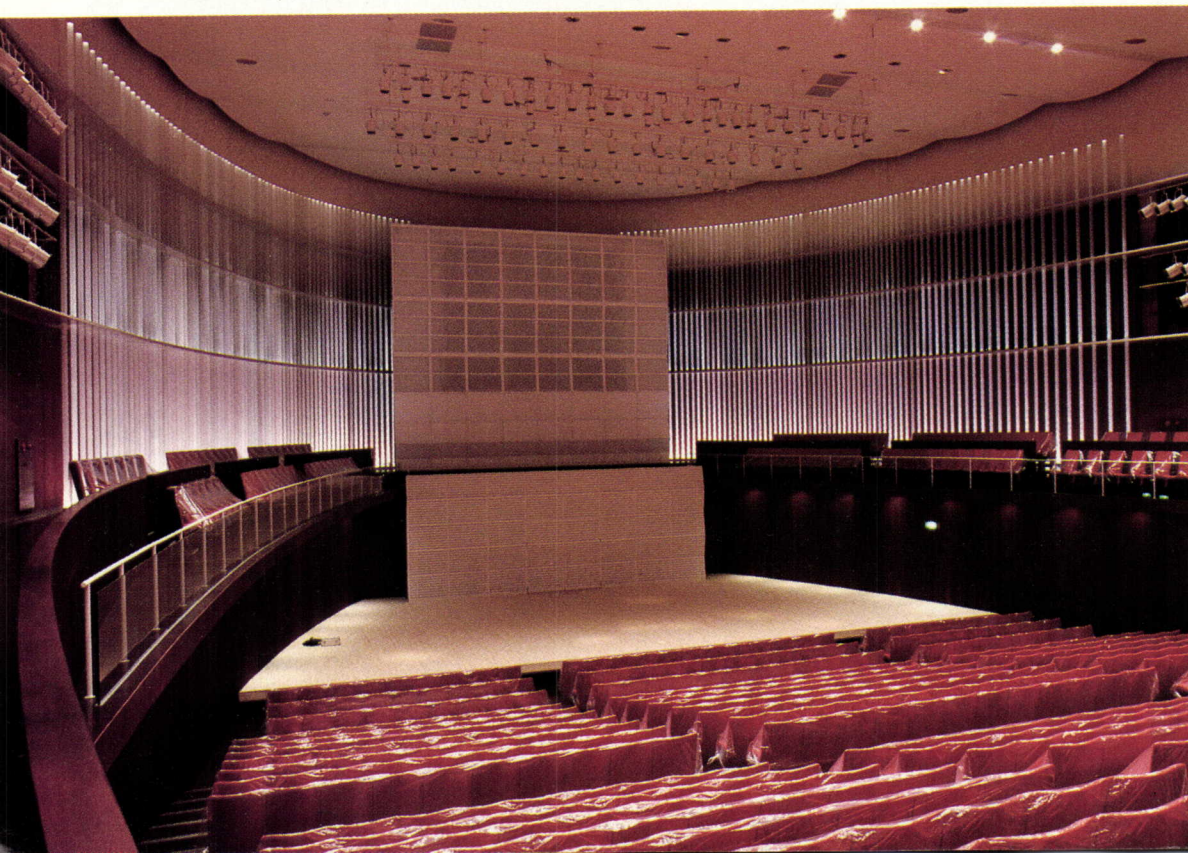
Proscenium theater steps down from second-floor entrance on south to stage at first floor. Rear wall is clad in acrylic wall panels and steel mesh backed by acoustical insulation.

In addition to the two large theaters, Lyric Hall includes 10 public rehearsal rooms of varying sizes, ranging from a traditional room with tatami-mat floors to the two-story volume of the largest studio, which doubles as a small performance space.

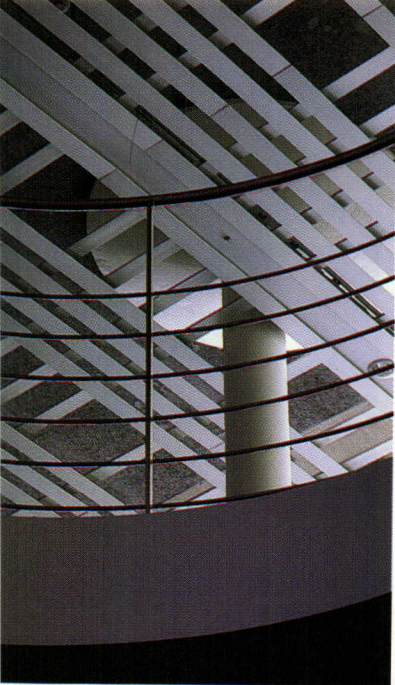
Ito took advantage of the advanced security and equipment requirements of the halls to design Lyric Hall as an intelligent building, where magnetized cards are issued to visitors as a way to make the rehearsal rooms more accessible. These cards automatically open a set of doors and turn on the heat and lights to a selected space. As yet, the management has not implemented the system completely because the area is so isolated.

Ito set the stage for dramatic vignettes as people travel through Lyric Hall: during the day, a shaft of sun may fall like a spotlight through a hole in the loggia, shining on a couple as they stroll by; at night, one might spy a single person, walking among the winding benches and the forest of columns, with a blanket of snow floating overhead. *Dana Buntrock*

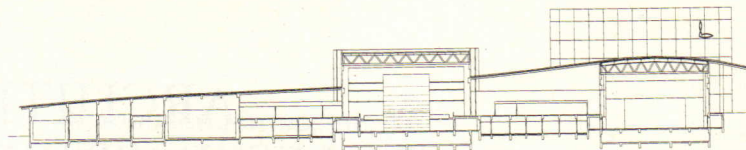
Dana Buntrock is assistant professor of architecture at the University of Illinois in Chicago.



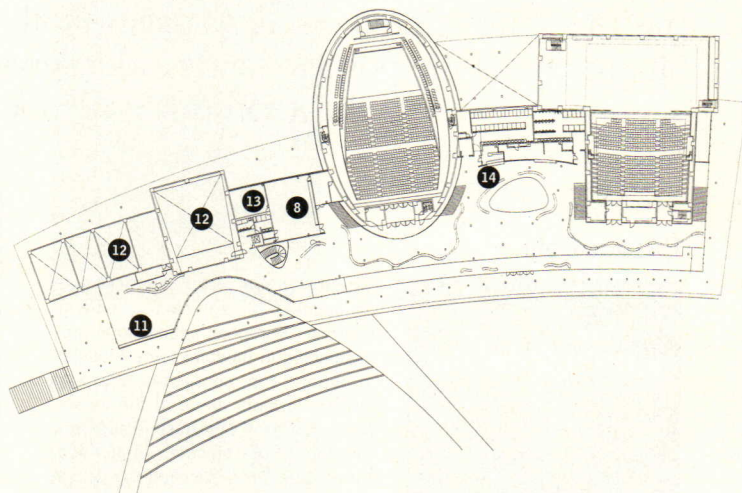
Rippling ceiling and walls acoustically modulate elliptical concert hall (left). Rods in plywood wall panels repeat rhythm of light tubes that wrap stage. Glowing two-inch-diameter acrylic tubes encircling stage (above) are lit by halogen lamps.



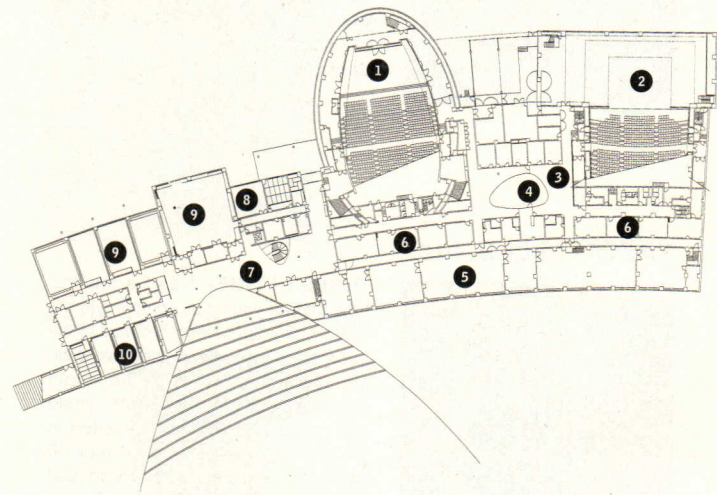
Mushroom-capped steel columns penetrate irregular ceiling lattice of aluminum strips (above), quieting reverberation and reflecting light deep into lobby. Steel stair (below) connects second-floor lobby and first-floor lounge.



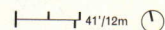
East-west section



Second-floor plan



First-floor plan



- | | | |
|----------------|--------------------|-----------------------|
| ① concert hall | ⑥ dressing room | ⑪ information lounge |
| ② theater | ⑦ lounge | ⑫ open to below |
| ③ green room | ⑧ office | ⑬ director's room |
| ④ courtyard | ⑨ rehearsal studio | ⑭ buffet and coatroom |
| ⑤ mechanical | ⑩ studio | |

LYRIC HALL, NAGAOKA, JAPAN

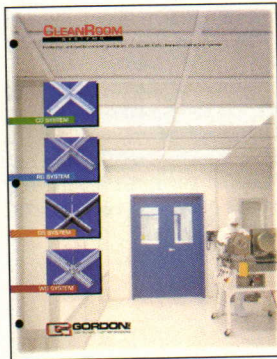
CLIENT: City of Nagaoka **ARCHITECT:** Toyo Ito + Associates, Tokyo—Toyo Ito (principal), Tatsuo Kuwabara (project architect), Atsushi Ito, Shin'ichi Takeuchi, Yoshiaki Tezuka, Ken Tominaga, Teruo Yasuda (project team) **LANDSCAPE ARCHITECT:** Motoko Ishikawa + Tokyo Landscape Architects **ENGINEERS:** KSP-Hanawa Structural Engineers (structural); Uichi Inoue Laboratory (mechanical); Setsubi Keikaku Engineering Company (electrical) **CONSULTANTS:** Nagata Acoustics (acoustics); Shozo Motosugi (theater planning); Tesuya Oguri (stage planning); Motoi Hattori (stage lighting); Klein/Dytham Architects (furniture); Kijuro Yahagi (signage); Koizumi Sangyo Corporation (lighting) **GENERAL CONTRACTORS:** Kosugi Corporation, Obayashi Corporation. **COST:** \$23 million **PHOTOGRAPHER:** Dana Buntrock, except as noted

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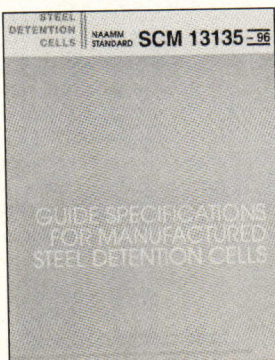
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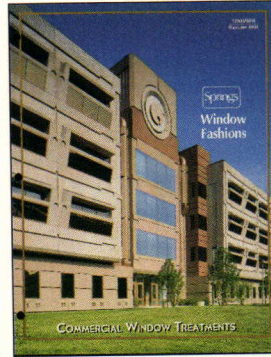
Guide Specifications for Manufactured Steel Detention Cells—NAAMM Standard SCM 13135-96, "Guide Specifications for Manufactured Steel Detention Cells," is published by the Steel Cell Manufacturers Division of NAAMM. This new publication includes information on engineering and design, workmanship and structural components related to manufactured steel cells. Delivery and installation is covered as is the division of responsibility for these phases of a project. NAAMM headquarters, 312/332-0405 or Fax, 312/332-0706. **Circle 83.**

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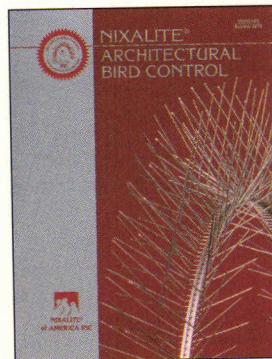
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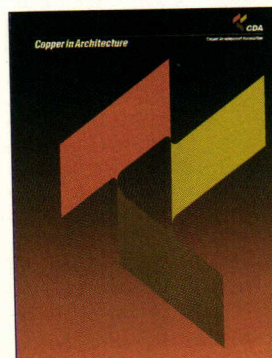
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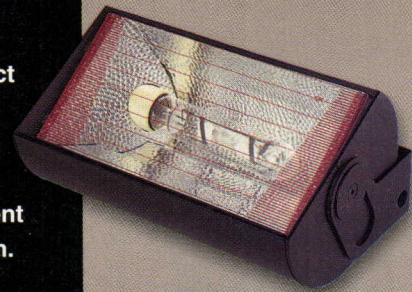
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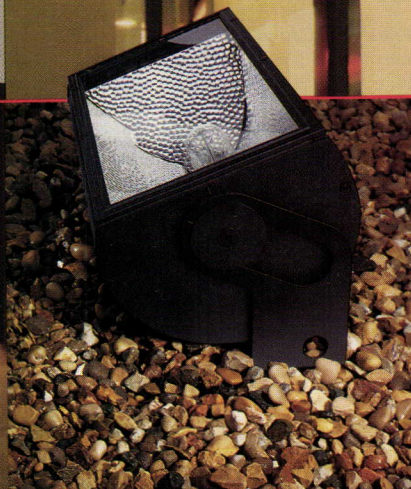
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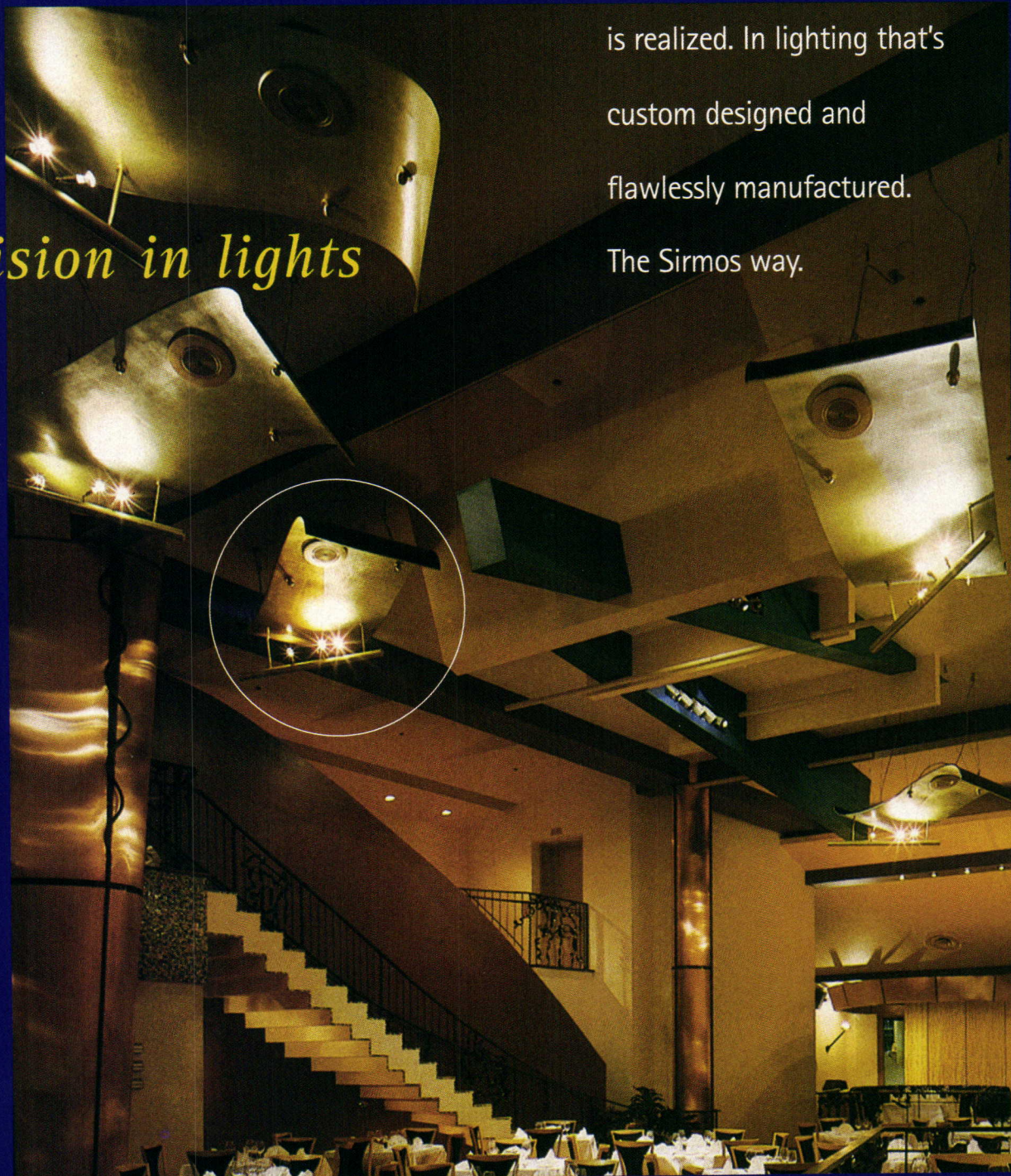
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Lighting Considered

Experts discuss the issues

Introduction

While the Information Age has benefited us all by providing easier and more direct access to a much larger bank of good information, there are areas of design practice that remain at best oblique and at worst mystifying to many. One of these areas is lighting, a sector that, due to the rapid pace of technological development, is fraught with a broad range of codes and products that are continually being altered and updated.

The discipline of lighting design has matured considerably in the past two decades, and it is frequently the case that professional lighting designers are now hired onto larger projects to impart their bank of wisdom and design intelligence. Yet lighting designers are still often handicapped from offering the full benefit of their expertise due to a design climate that brings them in too late on a job, offers them limited owner contact and team communication, and truncates their ability to specify appropriate equipment due to the increasingly widespread practice of equipment packaging.

Interiors and Architecture invited a panel of eight lighting professionals from around the country to participate in a roundtable discussion in order to dissect some of these topics and to identify several other core lighting-related issues. Our panel of experts was composed of Hayden McKay, of Hayden McKay Lighting Design, New York; Lesley Wheel, of Wheel Gersztuff Selles, Culver City, California; Mitchell B. Kohn, of Mitchell B. Kohn Lighting Design, Highland Park, Illinois; Bill Schwinghammer, of Johnson Schwinghammer Lighting Consultants, Inc., New York; George Sexton, of George Sexton Associates, Washington, DC; Jules Horton, of Horton Lees Lighting Design, New York; Helen Diemer, of the Lighting Practice, Philadelphia; and Russell Leslie, of the Lighting Research Center at Rensselaer Institute, Troy, New York. What follows is a recap of some of the provocative issues that were raised. —*Bonnie Schwartz*

Topics

I. Measuring the Success of a Lighting Design

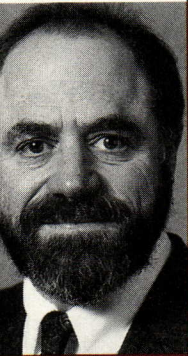
II. Energy Efficiency and Environmental Stewardship

III. The Dilemma of Lighting Packages and Substitutions

IV. What's New in Lighting Technology: Fiber Optics

Lighting Considered

Experts discuss the issues



Russell Leslie teaches lighting in the School of Architecture at Rensselaer Polytechnic Institute, where he initiated the development of the Lighting Research Center (LRC), the world's largest interdisciplinary center for lighting research and education. As LRC's associate director, he is involved with design, research and education in topics ranging from energy efficiency to human responses to light. He has been involved with artificial lighting and daylighting for the past 18 years.

I. Measuring the Success of a Lighting Design

Given that lighting can be so intangible an element in a space, measuring the success of a lighting design seems nearly impossible. One can measure the performance of a chair, the capacity of a filing cabinet, the amount of light admitted by glazings, but a purely quantitative analysis of lighting output imparts little information, since so much depends on the quality of light in a space and how it does or does not serve its users. Which begs the questions: What is good lighting design? How can it be measured? And how can we declare a design "poor" if we do not know the process through which it was arrived? One thing is certain: Consuming more electricity doesn't necessarily result in better lighting, just as the specification of a lighting system that merely consumes energy efficiently does not necessarily translate to good design.

Still, measurable results are essential to communicating the value of good lighting to building owners. "New methods

"Performance contracting can be a value-added service of lighting designers, assuring the owner that the whole system works and will continue to work," says Russell Leslie.

that simply measure lighting benefits such as occupant satisfaction, sales volume, a sense of security, comfort, and other values could be of great use," maintains lighting researcher Russell Leslie. "Performance contracting can be a value-added service of lighting designers, assuring the owner that the whole system works and will continue to work."

Until such evaluations are enfolded into the standard range of services, however, lighting designers will continue to have to justify their work (and fees!) on the basis of their design aesthetics, problem-solving skills, and ability to come up with performance-oriented, energy-efficient designs—all three of which, in the end, should convince building owners and their contractors of a lighting designer's value.

II. Energy Efficiency and Environmental Stewardship

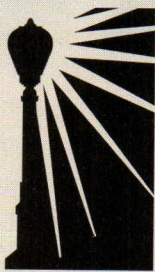
Energy efficiency has been the main stimulus of change in the lighting industry in recent years; yet for so noble a pursuit, much bad lighting has been done in its name. Still, 50 percent of the lamps now available weren't on the market just five years ago, offering lighting designers more tools to choose from than ever before. "When I started in this business there were four lamps I used," remembers Lesley Wheel. "Now there are literally hundreds."

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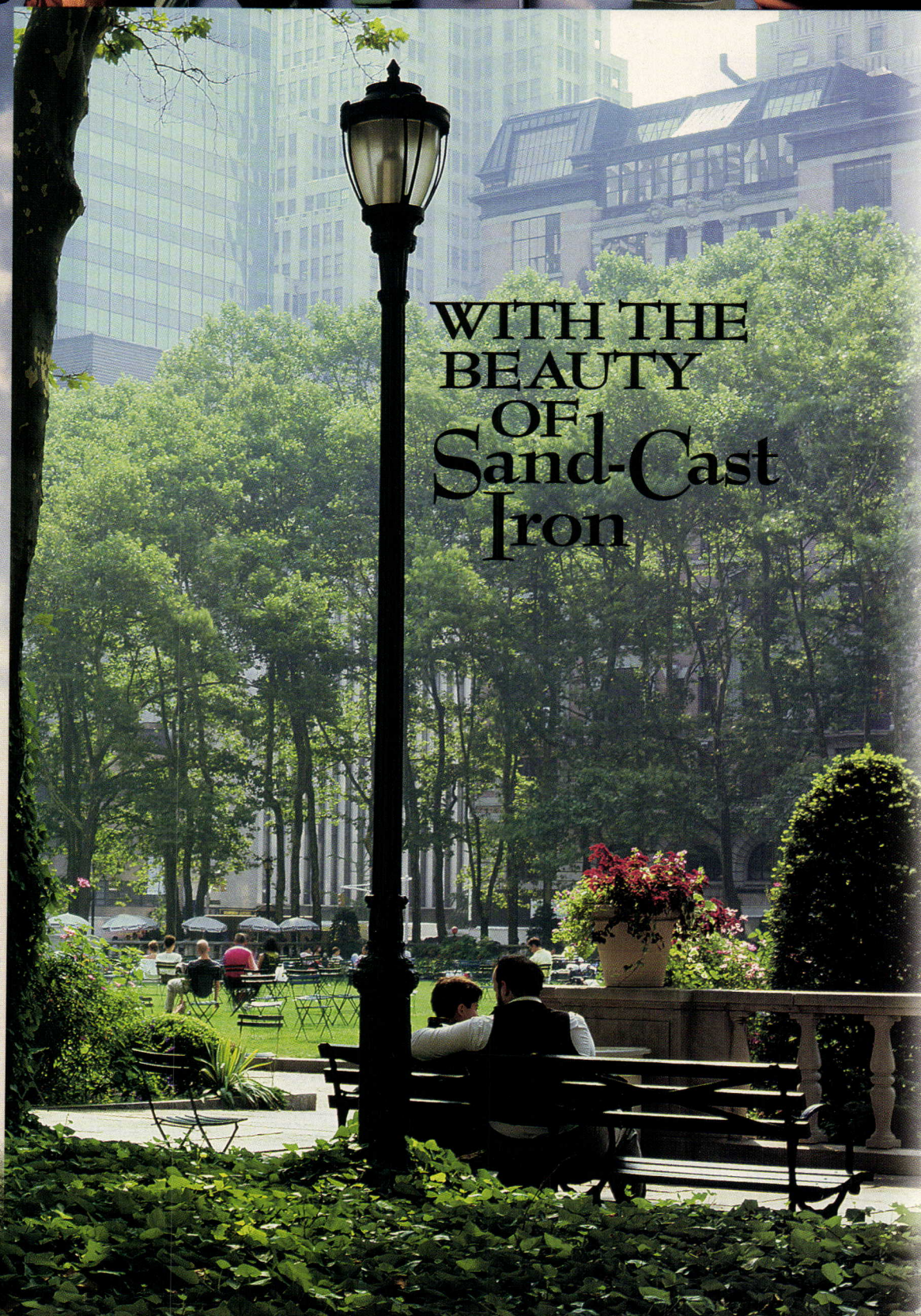
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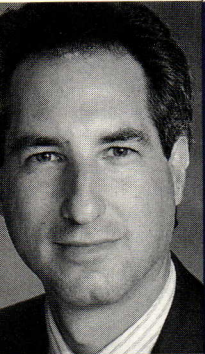
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Iron

Lighting Considered

Experts discuss the issues



Mitchell B. Kohn, president of Mitchell B. Kohn Lighting Design in Highland Park, Illinois, 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 corporate member and 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. He started his own lighting consulting practice 15 years ago, after working for Lightolier and Herman Miller, Inc.

Utility deregulation has played a large role in promoting energy efficiency, and fixture manufacturers have been working long hours to come out with products that make use of the latest lamps in the most efficient manner. "It will very soon be routine to use the most energy-efficient sources to light all of our spaces," predicts Russell Leslie. "Metal halides, for example, have a controllable beam, offer a big punch, are highly efficient, and are now being packaged in smaller wattages, so they can be used with more versatility. Even reflector lamps are being made from these sources."

"I think it's exciting to try to do good lighting design without being wasteful and irresponsible," says Hayden McKay, who originally opposed energy usage codes but now finds herself in full support of them and, indeed, has played a key role in their development. "I've pretty much come full circle in the last 20 years. Initially I worked on energy codes so they wouldn't get worse; I kept saying that education was all we needed to instill a sense of responsibility, and that the energy code was an inappropriate way of dealing with the problem.

If we save a nickel in energy but waste a dollar in productivity and good design, what good have we really done?" asks Mitchell Kohn.

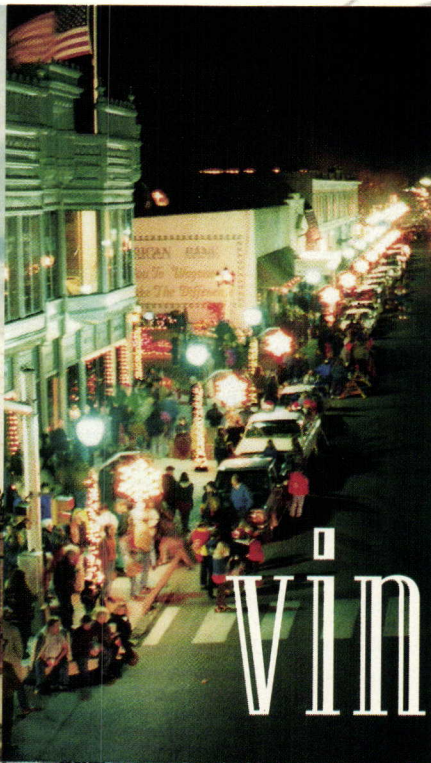
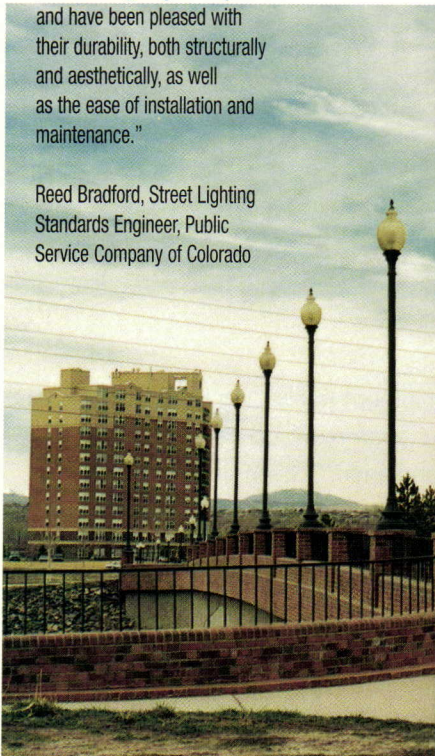
But I've seen so many people who don't care how much energy they use to get the result they want that I've come to realize that the codes are necessary, and that education doesn't always have the effect you hope it will. So now we're using the code in order to do the responsible job that we would have done normally, but the code ensures that those who wouldn't be so responsible can't be irresponsible."

But Mitchell Kohn laments the fact that so much bad lighting has been done in the name of preserving energy, and points to such technologically useless devices as compact fluorescent adapters and cheap retrofit linear fluorescent reflectors—both of which do nothing to consider the essential element of optics in lighting—as cases in point. "There should be a law against compact fluorescent adapters," Kohn says. "Did anybody ever design an incandescent fixture that works equally well with compact fluorescents? It's absurd. I've walked into \$300 a night hotels and seen compact fluorescent lamps sticking out of the lobby downlights. I'm not going to pay \$300 a night for that! If we save a nickel in energy but waste a dollar in productivity and good design, what good have we really done?" he asks.

In the end, as Lesley Wheel reminds us, there are no bad sources, simply bad applications for sources.

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Reed Bradford, Street Lighting Standards Engineer, Public Service Company of Colorado



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Lighting Considered

Experts discuss the issues



Lesley Wheel is one of the pioneers of architectural lighting design, and was probably the first professional woman in the field. In 1961, she co-founded the firm Wheel-Garon, Inc., which evolved into today's Wheel Gersztuff Selles Inc. Working out of her Culver City, CA, office, Wheel is known for her skill in creating warmth and intimacy through lighting, and has a flair for drama and richness in detail. She is a fellow, founding member, and past president of the International Association of Lighting Designers and the founder and guiding spirit of the Nuckolls Fund for Lighting Education.

III. The Dilemma of Lighting Packages and Substitutions

Designing lighted environments and identifying and specifying the appropriate equipment is only a small part of the lighting designer's job: Defending their designs and ensuring that the equipment they specify actually gets installed on a project takes up at least as much time, and often more. One of the realities of working in the lighting industry is symbolized by the tiny phrase "or equal," which allows equipment distributors, once a spec has gone out to bid, to substitute specified equipment with offerings from other manufacturers if the piece of equipment is considered "equal" in terms of its aesthetic and performance characteristics. But rarely are two pieces of equipment indeed "equal," and if a lighting designer researches and specifies a certain piece of lighting equipment it is usually for a reason that cannot easily be "equalized" without deliberation and experience.

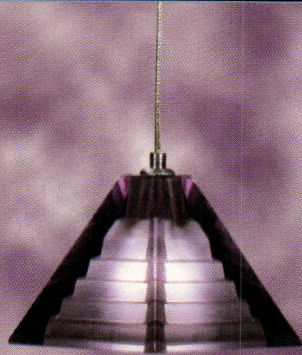
*Comments Lesley Wheel,
"We're probably spending 10
percent of our time designing
and 90 percent pushing for our
work to be realized in the
way that we intended."*

Equipment packaging is a related and perhaps even more contentious bane of lighting designers. Given that major lighting distributors are loyal to several specific lighting manufacturers, substitutions are rampant in the practice of packaging, and opportunities for lighting designers to break up packages are limited. Some lighting designers even feel that attempting to break up packages can be compromising to their careers. "Try to break a package on a New York job and you're going to get trashed by the construction manager and the construction company immediately," cautions Bill Schwinghammer. "They'll even go to the point of making you look incompetent."

But, as Lesley Wheel points out, once a spec is packaged with substituted equipment, "all of those nuances you've designed into a job go out the window." One solution, counsels Hayden McKay, is to anticipate the package during the design process, "so that you know where to draw your battle lines. If there's something that absolutely cannot be substituted, write that into the spec. We've found that it pays to try to work with the package to the extent that it works with our concept. In this way, we'll typically get 99 percent of the parts we want, and we're able to limit the amount



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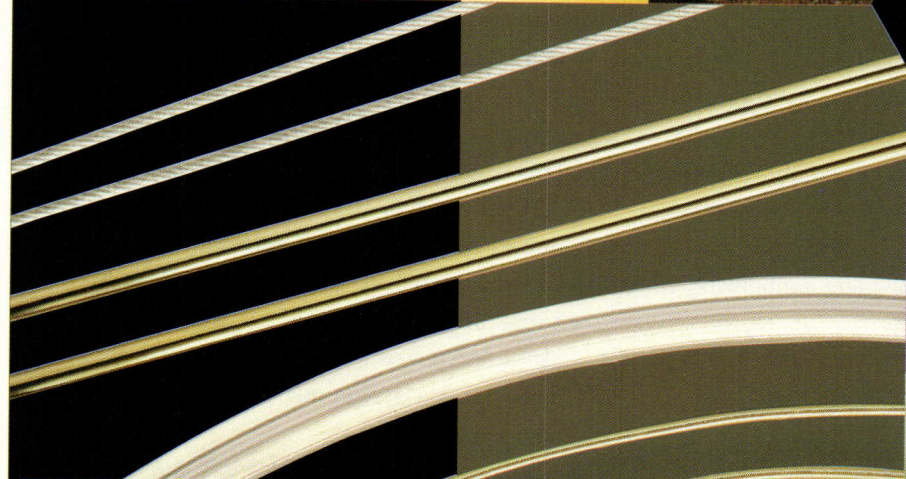


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Lighting Considered

Experts discuss the issues



Bill Schwinghammer is a partner in the firm Johnson Schwinghammer Lighting Consultants, Inc., New York. He and his partner, Clark Johnson, have worked together as lighting consultants for 10 years. Schwinghammer's broad international experience in architectural lighting includes interiors, exteriors, commercial buildings, retail work, hospitality design and residential projects. He has particular expertise in specialty retail stores and boutiques, including those of Giorgio Armani, Chanel, Calvin Klein, Jil Sander, Barneys New York, Valentino, Donna Karan, Bergdorf Goodman, Isaac Mizrahi, Joop, Salvatore Ferragamo and Ralph Lauren. His residential work has encompassed many Fifth Avenue and Park Avenue residences, including those of Bette Midler, Billy Joel, Mick Jagger and Richard Gere.

of substitution. If you design without any awareness of how the equipment is likely to be packaged, however, you run the risk of having everything substituted."

George Sexton offers a slightly different solution to the problem of packaging. He counsels designers to actually call up the reps in their areas and let them know that their equipment is being specified so that they can get in and fight for the business. "We find that this method saves us a lot of time, because when that first set of shop drawings comes in, 80 percent of it is right, and then we only have to spend time fighting for the other 20 percent."

And it is the time spent defending their designs and fighting for their work to be realized that is the most frustrating aspect of packaging and substitutions for designers. "We're working on such tight fee margins and schedules that the time we actually spend designing is shrinking while

the time we're spending fighting for our designs and attending to other administrative aspects is growing to the point of engulfing us," comments an exasperated Lesley Wheel. "We're probably spending 10 percent of our time designing and 90 percent pushing for our work to be realized in the way that we intended."

But, perhaps due to his Chicago-area location, where there are few other competing lighting designers, Mitchell Kohn finds that he rarely has to worry about packaging. "I write one-name specs," he says to a roomful of astonished colleagues. "When I write the spec, I call the manufacturers to get pricing, and so when the job goes out I know how the reps are going to price it and there are no surprises. This way we don't have to put out a competitive bid." While Kohn admits to having been involved in situations where the equipment he has specified has been substituted, his solution is to go to his client and ask why he is being paid a design fee when his design advice is so clearly being ignored.

Horton agrees that this is a good way to handle such situations, but is willing to go even a step further. He advises charging the building owner a separate and additional fee for implementing the design concept as specified. In this way, he explains, the owner becomes invested in seeing the concept fulfilled.

"Try to break an equipment package on a New York job and you're going to get trashed by the construction company immediately," cautions Bill Schwinghammer.

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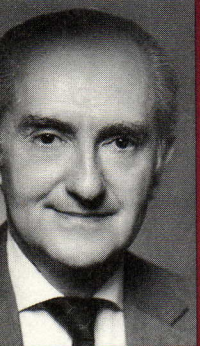


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Lighting Considered

Experts discuss the issues



Jules Horton has worked on all phases of building construction as a structural engineer, construction engineer, and lighting designer. He founded his own lighting practice in 1962, which became, two years later, Horton Lees Lighting Design Inc. of New York. From 1963 through 1967, he also served as the lighting consultant for the New York-based engineering firm Syska & Hennessy. Horton's experience spans a vast array of project types, from airports to zoos, and includes building exteriors, roadways and many varieties of interiors.

Horton advises charging the building owner a separate and additional fee for implementing the design concept as specified; in this way, the owner becomes invested in seeing the concept fulfilled.

IV. What's New in Lighting Technology: Fiber Optics

Many designers, architects, lighting designers, and lighting equipment suppliers look to the seductive swags of fiber optics as the next big leap in lighting equipment, yet few people seem to understand the technology's particular advantages and disadvantages. While fiber optics definitely seems to be catching the attention of the design community, many who have attempted to employ fiber optics have gotten "burnt" by its infancy as a viable lighting technology for more than specialty applications (in spite of the fact that the fibers themselves carry no electrical charge!).

Some designers who have taken the time to explore carefully the pros and cons of using fiber optics are enthralled, however, by its possibilities. George Sexton is one of these designers. Given that he spends much of his time thinking

about novel ways to display museum collections and other historic material without introducing potentially damaging heat, dust and ultraviolet and infrared spectrums of light, fiber optics is a technology tailor made to his concerns.

"Fiber optics create a lot of interest because they're long and flexible and they look different," he says. "While people often become interested out of their concern for energy efficiency, once they look at these flexible strands of fiber their minds just start thinking, 'Whoa, what I could do with this!'"

"I do believe there are a number of things to do with fiber optics," Sexton continues. "Using it merely as an energy-efficient light source will not solve most problems, and will in fact likely create some problems. But I find that it's a very good tool for museum case lighting, where the objects are small, the ambient light is low, and we need to control heat, UV, and access to the fixtures."

Like most burgeoning technologies, however, the buzz surrounding fiber optics makes it seem like a cure-all technology for a variety of applications, rather than the specialty application that it is. "Fiber optics has been the hot topic for the last 12 to 18 months, and I think it's totally unjustified," remarks Mitchell Kohn. "All of my clients seem interested in using it, but I can't really

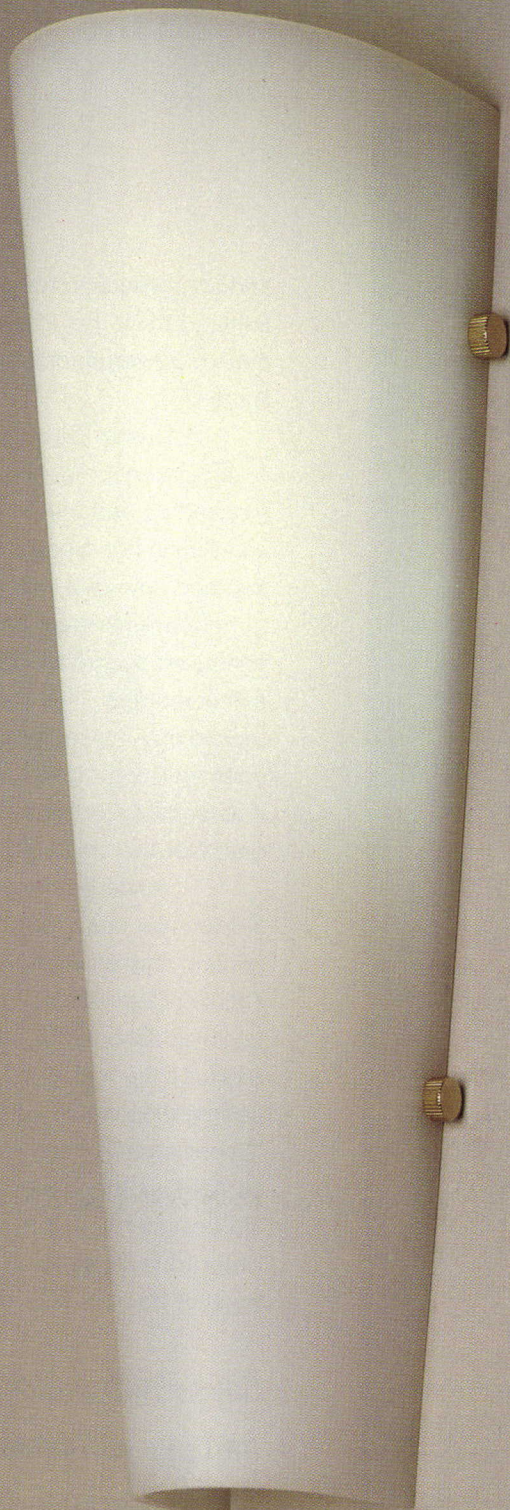
Says Mitchell Kohn, "All of my clients seem interested in using fiber optics, but I can't really find an application for which it seems well suited."



Helen Diemer is vice president of the Lighting Practice in Philadelphia. With more than 14 years' experience in lighting, she has designed and managed lighting projects for corporate offices and trading facilities, retail stores and malls, academic and healthcare facilities, airports, roadways, bridges, building facades and landscapes. She is a past president and member of the International Association of Lighting Designers, and a member of the Philadelphia Chapter of the Illuminating Engineering Society of North America.

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Lighting Considered

Experts discuss the issues



Hayden McKay has designed hundreds of lighting projects worldwide as a 20-year veteran of lighting practice, including major commercial, corporate and institutional facilities by leading architects and interior designers. Her expertise includes comprehensive applications of electric lighting and daylighting for diverse building types. She is a member of the American Institute of Architects and has been honored as a fellow of both the International Association of Lighting Designers and the Illuminating Engineering Society of North America. Based in New York, she has also been actively involved in design and energy committees of all three organizations, leading efforts in the development of standards for lighting design quality and energy conservation.

find an application for which it seems well suited. I think that in a year or two it will be quite a powerful tool, but right now it's very limited."

Due to Sexton's specific museum-oriented concerns, however, he has mocked up and tested many of the fibers and illuminator types available on the market, and emerged with his own set of data to help him navigate through the sometimes confusing and often inflated testimonials of manufacturers. "It's not a broad application technology," he admits, "but what it does it does well, especially for my purposes. I see it as another tool in the box, and a good one. Not the only one, but a good one."

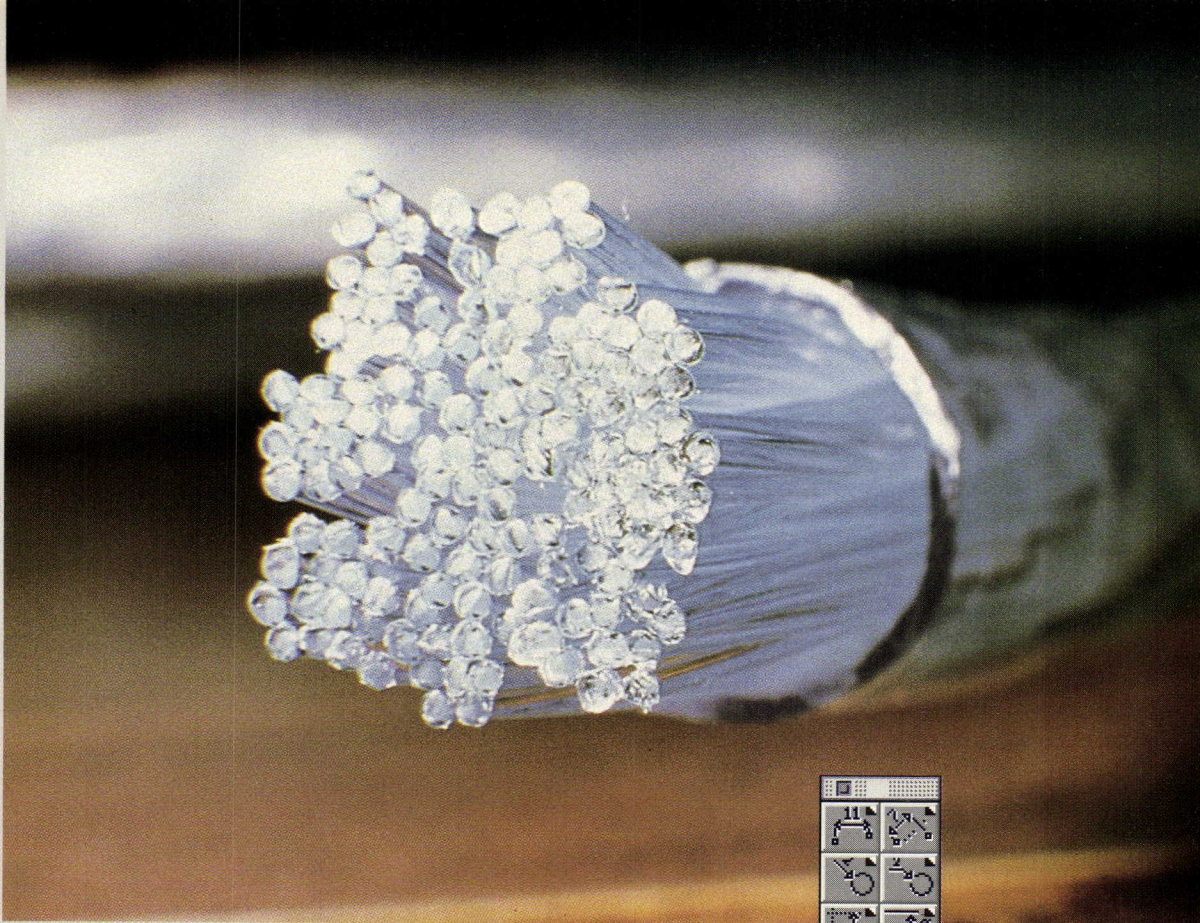
Aside from museum display cases, Sexton has employed fiber optics as the general ambient light source in the historic Tapping Reeve House and museum in Litchfield County, Connecticut, in order to replicate the feeling of candlelight in the low-ceilinged space. In addition to the historically consistent lighting effect he was able to achieve via the use of fiber optics, the lighting designer chose to use the technology in order to facilitate ease of maintenance, another boon of fiber optics. Because fiber-

Says Hayden McKay, "We've had our problems, and it's mostly because this technology is in its infancy and we can't depend on manufacturers much to help us out."

optic illuminators can be located practically anywhere, lamps can be changed more easily than in, say, ceiling or wall fixtures.

But, according to Hayden McKay, due to the fact that fiber optics still is a specialty application, technical support can be limited. "We've used fiber optics for water features, for example, where you can get some great effects. But our experience was that, at first, the manufacturer told us yes, yes, yes, they could do everything we wanted, and when we went back for help all of a sudden nobody could figure out how to do what we wanted. So we had to do our own tests in the bathtub to figure out whether or not the fiber would be flexible enough to create the wave pattern we wanted in the pool. And, of course, when we got to the pool installation, the temperature was such that the fibers stiffened up and didn't wave at all. So we've had our problems, and it's mostly because this technology is in its infancy and we can't depend on manufacturers much to help us out." McKay also points to limited warranties and inaccurate performance standards as other problems she has encountered when using fiber optics. Aside from museum display cases and some water features, other areas in which fiber optics makes sense are in refrigerated display cases. Since their use adds no heat at all to the cases, energy savings are doubled because the client does not have to pay for the extraction of heat released by even low heat-emitting sources such as fluorescents.—Bonnie Schwartz

Bonnie Schwartz is deputy editor of I.D. magazine.



European software, fiber-optic lighting, and the preservation of a Paris viaduct offer new technical strategies for American architects.

Technology and Practice

Preservation **From Railway to Greenway**

In Paris, French architect Patrick Berger transforms an abandoned railway viaduct into an arcade of stores and studios, crowned by a linear walkway and park.

Practice **Moonlighting's Dark Side**

Many architects take on side jobs to make a little extra money. But are they doing so at your firm's expense?

Computers **European Software**

Architects review two new European CAD programs that combine modeling, rendering, and documentation capabilities.

Technology **Shedding Light on Fiber Optics**

Architects are deploying the same glass-fiber filaments that revolutionized the telecommunications industry for lighting applications where traditional fixtures won't do. But costs are high and performance isn't perfect.

An abandoned railroad viaduct in southeast Paris gains new life with shops, studios, and a park.

By Sarah Amelar

For nearly three decades, an obsolete rail spur cut across Paris's Bastille neighborhood. Originally conceived in 1853 as part of Georges Eugène Haussmann's grand scheme for the French capital, this rail line once linked the Place de la Bastille with the Bois de Vincennes, a wooded park at the city's eastern edge, and the countryside beyond. In the late 19th century, open-topped train cars made this scenic journey, but by 1969, Metro service and new train routes had entirely replaced the line.

The terminus at Place de la Bastille was demolished in 1984, leaving the railway's brick-and-limestone viaduct, with its 1.4-kilometer stretch of elevated tracks, in derelict condition. As gentrification seeped into the surrounding neighborhood—sparked by the 1989 completion of Carl Ott's Bastille Opera House—the question arose: how should the city reuse this relic of antique infrastructure?

A park on the roof

Over the past two years, an inventive solution has taken form: The viaduct now carries a linear park on its roof, with artisans' shops and studios beneath most of its 60 vaults. But this transformation did not occur quickly. In the mid-1970s, the city planning department suggested razing the viaduct, but soon realized that such wholesale demolition would awkwardly expose the blind ends of buildings formerly abutting the tracks. Later, as historic structures gained public appreciation, the viaduct's preservation was favored, though not mandated by law. The railway finally sold the property to the city in 1986.

In 1987, the Paris Office for Urbanism, the city's urban design agency, devised a master plan that



Railroad viaduct supports verdant garden.

would brilliantly reuse much of the original railway—the viaduct, tunnel, embankments, and trenches—replacing the tracks with a garden promenade and acquiring small adjacent lots for pedestrian access. This plan, by Paris architect Philippe Mathieux and landscape architect Jacques Vergely, preserved a path already removed from vehicular traffic, effectively threading a ribbon of green through the urban fabric of the 12th arrondissement.

In conjunction with this new linear park, the city of Paris held a small invitational competition for the renovation of the viaduct, beneath its rooftop park. The commission went to Patrick Berger, an architect who has worked in historical contexts, often focusing on the relationship between architecture and landscape. His projects include a competition-winning design for a museum of the Middle Ages, to stand beside

Chartres Cathedral (a project stalled due to funding); the monumental greenhouses (1992) in Paris's André Citroën Park, and collaboration on the design of Citroën Park (1988-95).

The viaduct, with limestone vaults, piers, and cornice corbels, handsomely set against red brick-faced spandrels, was originally an open arcade. But gradually, a haphazard mix of workshops and other small businesses occupied and enclosed most of the 60 vaults. Five passageways remained open to permit streets to cross beneath the viaduct and give access to subterranean parking beneath the opera house.

With the stipulation that these openings remain, competition officials called for an esthetic reevaluation of the disorderly commercial spaces. This rundown jumble of auto repair, electronics, and other small shops was to become the Viaduct of the Arts—a place for bookbinders, cabinetmakers, luthiers, furniture designers, and other artisans practicing the traditional crafts of the neighborhood. Only one prerenovation tenant, a café, would remain.

Authenticity and respect

Just as the park's master plan deferred to the old route, with its complex grade changes, Berger approached the viaduct's original architecture with respect, taking the "expression of this beautiful tectonic shape, the great form of the vaults" as his guiding principle. He avoided what he calls the "two classic solutions" for new architecture in historic contexts: namely, the "falsely authentic," pseudo-historical approach, and the "oppositional" tactic that relies on dramatic contrast. Instead, Berger favored a simple architectural language—evoking the past abstractly, through the use of strictly authentic materials.



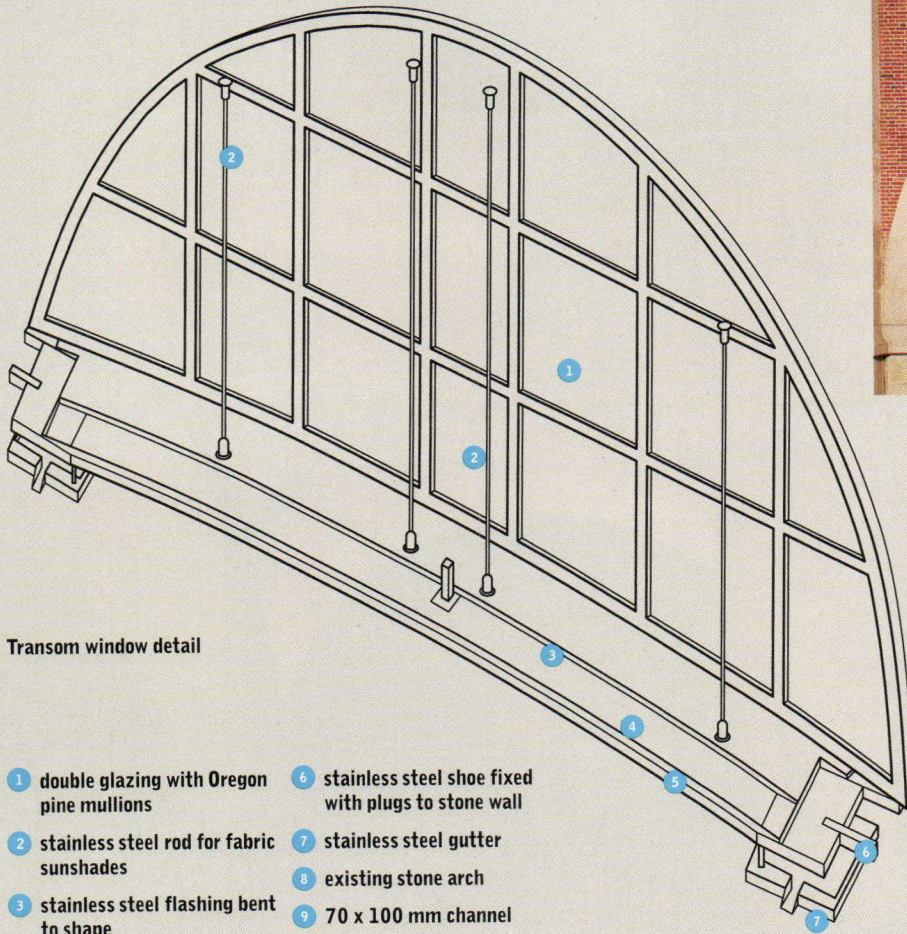
Vaulted storefronts are created with standardized transoms and side panels, but central panels and doorways are individualized to tenants' needs. Restored limestone piers, voussoirs, and cornice contrast with new brickwork.



View of south facade, facing Avenue Daumesnil, shows how viaduct's linear form echoes row of trees framing pedestrian way.

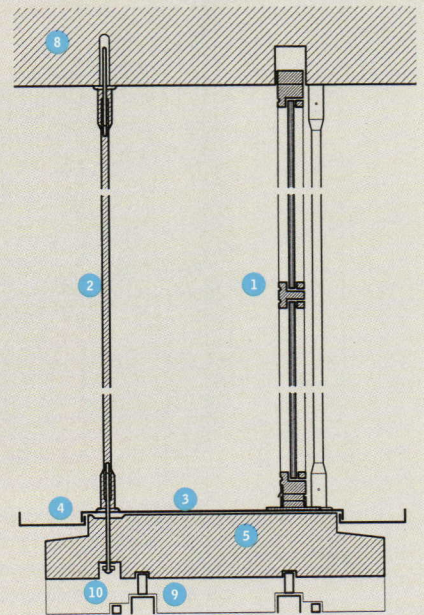


Following complex grading of original railroad tracks, portions of planted promenade hover above street while others dip below grade.



Transom window detail

- 1 double glazing with Oregon pine mullions
- 2 stainless steel rod for fabric sunshades
- 3 stainless steel flashing bent to shape
- 4 sheet-metal gutter
- 5 bowed Oregon pine beam supported by stainless steel shoes
- 6 stainless steel shoe fixed with plugs to stone wall
- 7 stainless steel gutter
- 8 existing stone arch
- 9 70 x 100 mm channel
- 10 40 x 40 mm stainless steel section for affixing signage



Section through transom

To bring out the building's original clean lines, Berger unified the storefronts visually, while allowing for differences and flexibility. The areas beneath the arches are almost entirely glazed, punctuated by modest mullions of oiled Oregon pine—a use of wood that recalls the windows of Parisian boutiques. The fixed side window panels on the entrance are standardized, but the 45 or so tenants can design their own central panels and doorways. With full glazing on both elevations, the enclosed vaults reclaim the transparency of the original open archways.

Berger's first impulse was to set the glass back as far as possible to accentuate the vaults with deep shadows, but local building code

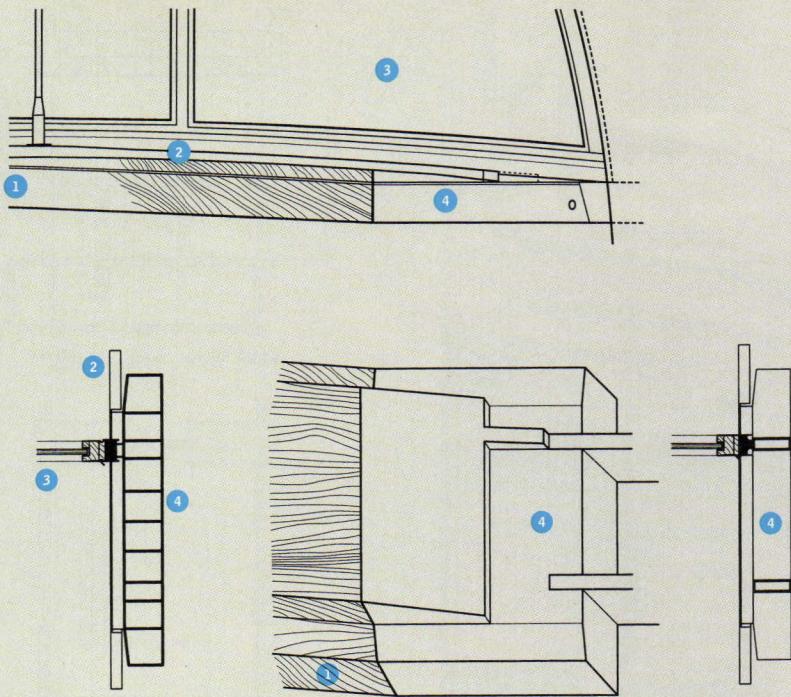
limited the setback depth. Ultimately, this obstacle led to an elegant solution. With the arched transom set nearly 2 feet behind the lower portion, the desired shadows are cast without decreasing rentable floor space. A bowed steel-and-timber member, suspended from stainless steel rods, mediates horizontally between the upper and lower window, expressing an optional interior mezzanine level, while also allowing for water run-off.

Berger reinforced the viaduct's structural stability with steel tie beams above the vaults. Placed to either side of the long axis, these members counter the tendency of the facades to lean outward from the roof. Otherwise, the viaduct, designed to withstand tremendous

weight, was deemed structurally fit to support the new roof garden.

Restored limestone, new brick

The limestone on the exterior and lining the vaults was intact beneath layers of paint and debris, but the facing bricks were eroded beyond repair and required total replacement. The new brickwork is modeled on the nearby 17th-century Place des Vosges, which 1858 texts cite as an inspiration for the viaduct. The replacement bricks were selected for rich color variation, ranging from terra-cotta orange to light burgundy, occasionally charred with a black tinge. Headers were also interspersed throughout, yielding subtle rhythmic variations.



Details of beam below transom

- 1 bowed Oregon pine beam
- 2 stainless steel flashing
- 3 double glazing
- 4 stainless steel shoe



Bowed beam of storefront expresses optional mezzanine level. Transom window, set nearly two feet behind lower storefront panels, casts deep shadows that accentuate vaults' mass without decreasing rentable floor space.

After exposing and restoring the limestone, Berger took measures to preserve its future integrity: Tenants, who rent their spaces from the East Paris Society of the Management of Mixed Economies, a semipublic development agency, must agree to guidelines that explicitly discourage the attachment of fixtures to the masonry. Within the vaults, the architect installed interior painted steel brackets to regulate the optional installation of mezzanines in these 7-meter-high spaces. (A basement level further increases the usable space for most of the vaults, which measure, on average, 75 meters square at street level, 60 meters square at the mezzanine, and 70 meters square in the basement.)

Tailor-made mechanics

In refurbishing the mechanical and plumbing systems, Berger successfully replaced a network that—like the existing facades—had been installed piecemeal with little concern for the vaults' esthetic purity. Much of the old setup was obsolete with an obtrusive presence on the front facade. In the new integrated system, a technical gallery, buried along the length of the rear facade, carries ventilation ducts, and potable water and waste lines. Threaded through the basement of each vault (where the electrical conduits also enter), these ducts and lines can be tailored to the specific needs of each tenant, much as the front doors and mezzanines permit variation.

Above the shops, the roofscape was designed by master planners Mathieux and Vergely. The pair restored existing drainage channels below the roof over which they applied layers of compacted mortar, reinforced concrete, and root-resistant sealing layers composed of cement mortar reinforced with wire fabric. They added concrete-slab paving for the central walkway, and vertical drainage mats and topsoil for the planting beds.

The resulting aerial garden, like the rest of the 4.5-kilometer promenade, integrates Mathieux's arbors and outdoor furniture with plants that grow wild in the forests near Paris. From this elevated woodland, views of the city are remarkably expansive.



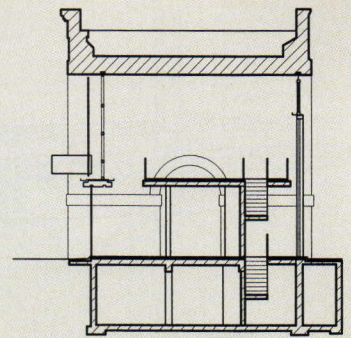
Glazing admits daylight to interiors of shops and studios, enclosed by restored limestone walls.

At a time when decaying infrastructure looms over many cityscapes, the Viaduct of the Arts and its promenade are inspiring. In rehabilitating forlorn districts—particularly those with commercial potential—many cities preserve historic architecture while ironically transforming, rather than preserving, surrounding neighborhoods. They often displace relatively poor businesses with upscale tenants catering to a more privileged clientele. As Berger acknowledges, this economic dilemma played a role in the viaduct's revitalization, but—with unusual success—this renewal also created a true public amenity: a park. Without nostalgia, the memory of the past is respected while the old rail structure has gained a new, greener life.

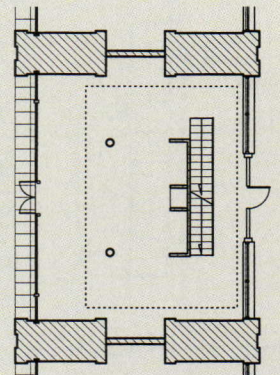
Sarah Amelar is an architect and writer based in New York City.

VIADUCT OF THE ARTS, PARIS, FRANCE

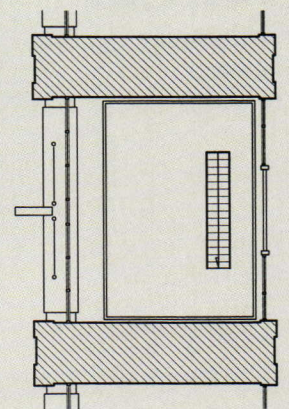
CLIENT: East Paris Society of the Management of Mixed Economies on behalf of the city of Paris **ARCHITECT:** Patrick Berger, Architect, Paris—Patrick Berger (principal), Janine Galiano (assistant architect) **ASSOCIATE ARCHITECTS:** Philippe Mathieux, Jacques Vergely **ENGINEERS:** Bureau of Technical Consultants (structural, mechanical) **CONSULTANTS:** Paris Urbanism Office (master plan); Quality Control Bureau (quality control) **GENERAL CONTRACTOR:** General Company of Building and Construction **COST:** \$16 million **PHOTOGRAPHER:** Michel Denancé/Archipress



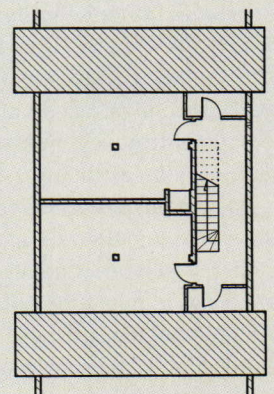
Vault section with mezzanine



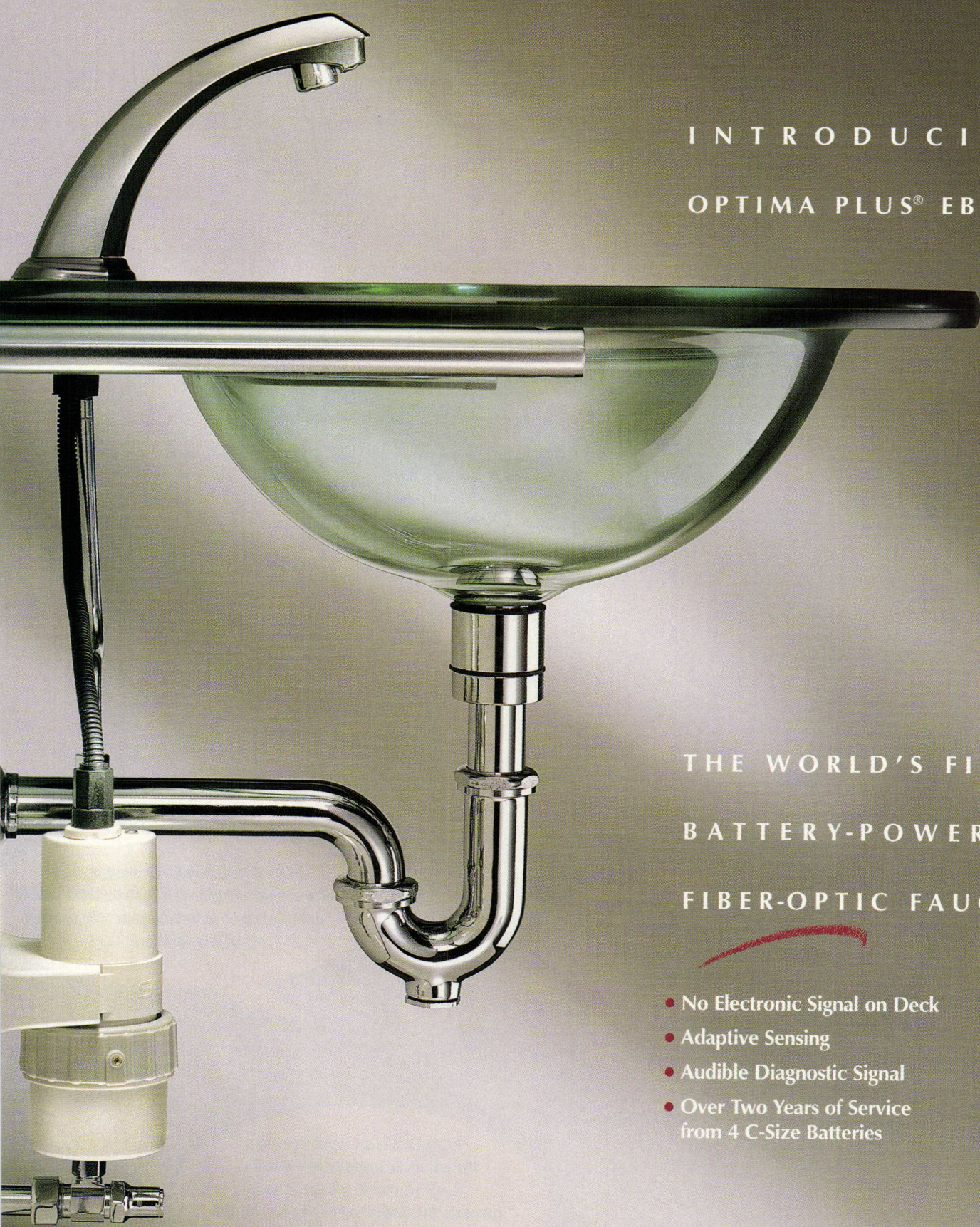
Optional mezzanine plan



First-floor plan



Basement plan



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Practice Moonlighting's Dark Side

In many firms, staff architects execute their own projects on company time. Should principals tolerate competitors in their own offices?

By Barry B. LePatner

Generations of architects have accepted moonlighting as a fact of their professional lives. The reasons are simple: Working on projects outside the office supplements the meager wages paid by most firms. Moonlighting also allows novices to gain design experience that would otherwise take years to attain.

But although most freelance projects are typically limited in scope and duration, design services performed outside the supervision of the office create moral, ethical, and legal dilemmas for principals and employees alike.

From a business as well as a legal perspective, moonlighting should be banned from every office. Firms that sanction "shadow" practices risk exposing the firm's liability insurance and personal assets to major claims by parties who aren't even actual clients. If a firm cannot pay employees fair wages for their undivided loyalty, its principals hardly deserve respect for their business savvy. Nor can principals afford to ignore the ethical dilemma posed by the use of their offices, equipment, and the inference of their firm's imprimatur when the moonlighter's client stops by the office after hours.

Liability pitfalls

Principals who tolerate moonlighting are, first of all, allowing employees to compete against them for work. Moonlighting should be distinguished from an employee helping a family member design an addition to a house or a conversion of a garage into a bedroom. When the freelance project involves work of the same scope or magnitude as that which the moonlighter's firm pursues, the employee's practice is not only in direct competition with the employer, but ethically dubious.

To compound the problem, firms can be held liable for problems that

Moonlighting: Myths vs. Reality

MYTH: There is not enough work at the office.

REALITY: The firm should not employ any more architects than it needs to work on projects on a full-time basis.

MYTH: The work at the office doesn't pay enough.

REALITY: The longstanding practice of design firms paying minimal wages should not be used as an excuse to create another set of wrongful practices.

MYTH: Moonlighting leads to new projects.

REALITY: If an employee has the ability to bring in new clients, the firm should recognize and promote the individual or risk having the employee leave the firm with the new clients.

occur with an employee's outside projects. If an employee's moonlighting projects are similar to work he or she performs for the firm, employers may be liable for problems—whether or not they know the work is under way. The work may be construed by the client—and the client's attorneys—as having the firm's approval, thus exposing the firm to liability by association for any of the moonlighting employee's negligent acts. Because these unauthorized projects cannot be monitored, they cry out for company policies banning the practice entirely.

Worse yet, moonlighting employees often use firm resources such as CAD equipment, postage, and stationery, as well as advice from office peers. A firm's tacit approval of the use of such resources suggests that the firm benefits from—and condones—the activity. With annual liability claims running as high as 30

claims per 100 architects, principals should think twice before allowing any employee to use supplies and equipment.

Many states now have laws that prevent an employer from dictating what employees can do during off-hours. However, these laws do not exempt employees from following their professional code of ethics. Employees considering outside projects should comply with local laws and company rules to prevent conflicts of interest. They should also be aware that their employer will be liable for moonlighting work that feeds off the firm.

But even if architects take into account these risks and liabilities, the practice of moonlighting is likely to continue. Firms should therefore be careful to establish comprehensive formal guidelines as part of the company policy familiar to every employee.

Setting policies

Proactive policies regarding moonlighting shield firms from responsibility for the acts of their employees. Establishing billable office accounts for employees to pay for photocopies and postage, for example, holds moonlighters more accountable for their time while using company equipment. Practices should also prepare employment contracts that hold the firm harmless from claims against moonlighters.

In addition, firms should recognize moonlighting as a marketing opportunity for the firm. Allowing the moonlighter to speak for and represent the firm may lead to new work.

With the trend toward more flexible hours and telecommuting, the time spent moonlighting will become more difficult to discern, creating an even more complex scenario. Nevertheless, raising these issues

MYTH: An employee brings the experience gained while moonlighting to bear on the work in the office.

REALITY: Moonlighting strips away the resourcefulness and efficacy of professional development.

MYTH: Moonlighting enhances a designer's reputation.

REALITY: Moonlighters are often overextended and too tired to focus on the firm's work.

MYTH: Clients save money and streamline costs.

REALITY: Moonlighters may be illegally avoiding taxes and Social Security payments, practices that can backfire on employers if knowledge of these actions is imputed to the firm.

among all staff will help lay the groundwork to establishing flexible moonlighting policies, offering opportunities for employees to build knowledge, experience, and independent decision-making skills. Such policies also raise the incentive for employees to seek a long-term future with their firms while protecting those firms from liability that moonlighting can create.

Pro bono positives

Not all moonlighting exposes a firm to liability. There are numerous outlets to fulfill an architect's old-fashioned sense of professional responsibility. Serving the public through political activity, community action groups, local professional chapters, churches, synagogues, or pro bono work are all opportunities for design professionals to gain hands-on design and construction experience and acquire new management skills.

For example, one eager young professional in the office of a promi-

nent New York architecture firm had to decide between notifying her supervisors of a possible pro bono project for the firm, or taking on the project herself without her employers' knowledge. She initially chose to keep quiet. As the scope of the project grew, and its nature became more visible, the employee decided to tell the principals and seek approval for her moonlighting work. To her surprise, the firm not only granted approval but also allowed her to use its equipment, supplies, and computer time—on the condition that the work would be done after office hours, and no version of the firm's name would appear on the finished product.

The principals concluded that the opportunity could help develop their young staff and draw on mentorship of the more seasoned professionals. They invited the employee to form a team and treat the project in such a way as to maximize the learning potential of this project. Mentors coached the younger staff and assigned them more senior roles than they otherwise would have performed during the day. The project, a Habitat for Humanity house, was the first such project in West Harlem. In this instance, moonlighting not only benefitted the firm's interns, but it also gave the principals a chance to establish a positive working relationship with their employees.

Barry B. LePatner is the founding partner of Barry B. LePatner & Associates, a New York law firm specializing in design, construction, and real estate law. Timothy F. Hegarty, an associate with the firm, and Roy R. Pachecano, the firm's design consultant, contributed to this article.

Firms That Allow Moonlighting...

- 1** should establish billable office accounts to enable moonlighting employees to pay for photocopies, postage, reproductions, etc.
- 2** should prepare employment contracts that indemnify and hold the firm harmless from any claims arising from the moonlighting work.
- 3** should turn the employee's contacts with moonlighting clients into a marketing opportunity for the firm by allowing the moonlighter to speak for and represent the firm—and by compensating individuals if they bring new work into the office.

Computers **European Software**

New CAD programs created in Germany and France fight U.S. market obstacles with superior modeling.

By Ann C. Sullivan

All-inclusive CAD packages are typical of European design software. Programs such as ArchiCAD from Hungarian software developer Graphisoft bundle modeling, drafting, and rendering functions in a single package. By contrast, the most popular American programs, such as Autodesk's AutoCAD and Bentley Systems's MicroStation, supply a powerful drafting engine but rely on add-ons to bolster rendering and modeling capabilities.

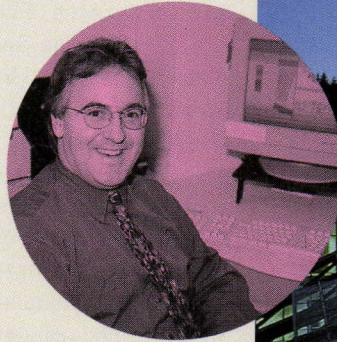
The simplicity of a single program as opposed to a suite of applications appeals to many architects. Also attractive is the modeling sequence adopted by these all-in-one programs: Generally, such software begins with the construction of a three-dimensional model, from which two-dimensional drawings such as plans and sections are extracted. Perspectives are generated by spinning the model and capturing a "snapshot" of the volume. European manufacturers tout this process as more logical and more intuitive for architects—it allows them to conceptualize in three dimensions first and produce two-dimensional documentation later.

Today, the single-package, single-building-model market includes new releases of two European contenders: Allplan, from the German software developer Nemetschek Systems, and Architron, originally conceived in France, marketed and now codeveloped by BAGH Technologies of Montreal.

Released last spring, Allplan FT is the 12th version of Nemetschek Systems's flagship product. It is the most popular CAD software in Germany and the second favorite in Europe. With a North American headquarters in Mill Valley, California, Nemetschek Systems is courting an American audience by way of Microsoft's Windows 95 and Windows NT platforms.

Architron, too, targets the Windows platform, as well as IRIX and Macintosh operating systems. A familiar face in the CAD world, Architron first surfaced in the U.S. in 1988. It was one of the most advanced drafting and modeling programs for the Macintosh, but it failed to keep up with CAD's rapid evolution. With last year's release of Architron VI, BAGH Technologies is trying to regain lost market share with a completely revamped application.

Both companies must overcome their late entry into the American market. But with sophisticated tools and user-friendly structures, their programs have the means to challenge the competition.



Gensler Senior Associate Bruce Palmer reviews Nemetschek Systems' Allplan FT.

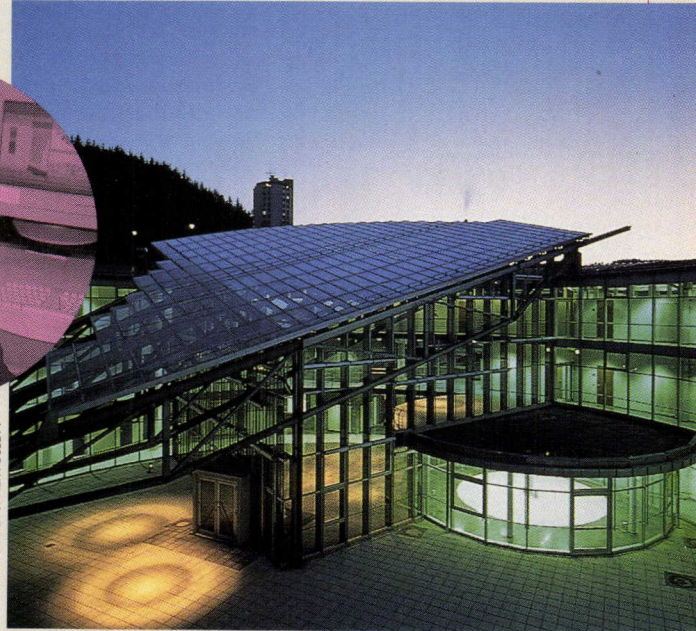
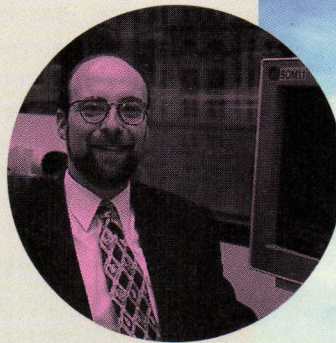


PHOTO: CHRISTOPHER FOLLETT



SOM CAD Manager Richard A. Christin evaluates BAGH Technologies' Architron VI.



RENDERING: VIEWS INCORPORATED PHOTO: PETER MORELWICZ

Allplan FT Nemetschek Systems

Allplan FT's "wall" toolbars (top and bottom) include icons to create elements such as columns and windows; to extract and apply information such as elevation specifications and area calculations; and to perform general commands such as edit, copy, and rotate.

By Bruce Palmer

Nemetschek Systems calls its newest CAD release "Allplan FT" to symbolize the "Future Technology" introduced by the German company. This is an apt label for the Windows version of the powerful building-design software that has been popular in Europe for years: Many of its latest features are new not only to Allplan, but to CAD technology.

Released last spring, Allplan FT successfully combines an intuitive interface and raw power. But questions remain over whether this European program can compete in the cutthroat North American market, given its late introduction.

Functionality and performance are not the only factors to consider when choosing a CAD package. Equally important is compatibility with other software in the office, such as word-processing and spreadsheet applications, and the predominant CAD programs, namely AutoCAD and MicroStation. Unfortunately, this area is where Nemetschek faces a formidable challenge if it intends to garner a large market share.

Ease of use

One of Allplan FT's most innovative enhancements is its user interface. The program's context-sensitive menus comprise the most intuitive interface any CAD software developer has created. Select a wall, and Allplan's menus change instantly to provide the commands relevant to wall placement, manipulation, and property assignment. Want to draw a new circle? Select an existing circle, and the command is called up automatically with matching settings.

Allplan embraces a concept best described as the "building model" approach: A building is first composed in three-dimensional space. Working drawings needed for construction are then derived from the 3-D model. This approach promises to revolutionize the construction industry. Nemetschek and other European software houses pioneered this concept, and Autodesk, Bentley, and other American CAD standard bearers are rapidly developing upgrades or add-ons with similar features. In the future, projects will be completely and precisely modeled, from foundations to furniture, long before a brick is ever laid.

Today, however, the building-model approach is appropriate only for relatively small projects. The discipline required to maintain an accurate model is considerable and the difficulty increases with the complexity and size of the project. The CAD model no longer serves as a purely visual representation of the building. It informs how the building will be built, a repository of data that will enable construction. The margin for error is small, and the need for efficient communication among the entire design team great. It is inherently more difficult to maintain the requisite level of precision with a large team.

Sketching and modeling

While Allplan's single-model technology may not yet be in sync with the way architects work, it does facilitate the generation of three-dimensional renderings and animations. With traditional CAD software, the creation of the 3-D model is the

Allplan FT's master toolbars (left) control line types; accessories such as grid settings; variables such as save and print settings; number of viewports; and scale and selection of drawing views.



most arduous step in producing a rendering. With Allplan, the model is already built. Viewing the design in three dimensions is always an option, and a quick rendering is just a mouse click away.

Nemetschek has capitalized on this fact and packs an impressive number of 3-D capabilities into Allplan FT. True solid modeling within the CAD environment is the most powerful feature. Because so much of the design process is sculptural in nature, limiting architects to orthogonal tools constrains them. With Allplan, the designer can manipulate masses, an approach stemming from Nemetschek's ideas about the logic of building.

Allplan's advanced freehand sketching tools demonstrate Nemetschek's commitment to accommodate schematic design. Bubble diagrams, blocking plans, and concept sketches can be quickly created and manipulated. When an image approximating a square, line, ellipse, or circle is sketched on the screen, Allplan replaces the sketch with a precise element. Simple manipulations such as move, copy, and delete can be summoned by scrawling a shorthandlike symbol with a mouse. This enables a designer to sketch as quickly on the screen as on the proverbial cocktail napkin, but with results ready for further development into the CAD model.

With these and other innovative features, Nemetschek has clearly positioned Allplan FT to compete with the CAD heavyweights. What is less clear is how well Allplan will fit into the American architecture office. Although much has been made of the fact that Allplan FT now runs on Windows 95 and Windows NT, it does not include many of the

features that made Windows so popular, and lacks that familiar Windows look and feel. While the interface has much merit, it will be unfamiliar, although not terribly difficult to learn, to all but UNIX veterans. It's different, and that can be a deterrent when selecting a program that must communicate with other office software.

Missing translation

To gain widespread support, Allplan FT must also be able to easily write and translate the DWG and DGN file formats used by Autodesk and Bentley. With the lion's share of architects using AutoCAD or MicroStation, this compatibility is essential. Nemetschek, however, misses that mark. Although CAD translation utilities are included with the program, they are a legacy of Allplan's past and are far more difficult to use than they should be. Irrelevant commands are still included, despite the fact that they aren't necessary with Windows. Menu-driven translation utilities must be a top priority for future revisions.

Allplan FT is exceptionally powerful and intuitive CAD software. It brings to the table many enhancements that distance it from the competition in many areas. Unfortunately, its foundation as a UNIX-based, stand-alone CAD program is still evident in Nemetschek's approach and implementation. The direction of other CAD vendors is toward increased compatibility and open systems. This is essential if the building industry is to continue evolving toward the common goal of the building-model approach and object-oriented CAD software.

Bruce Palmer is the director of technology for Gensler's New York office.



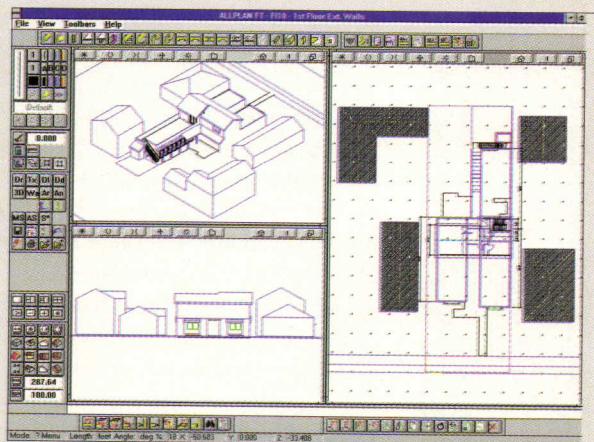
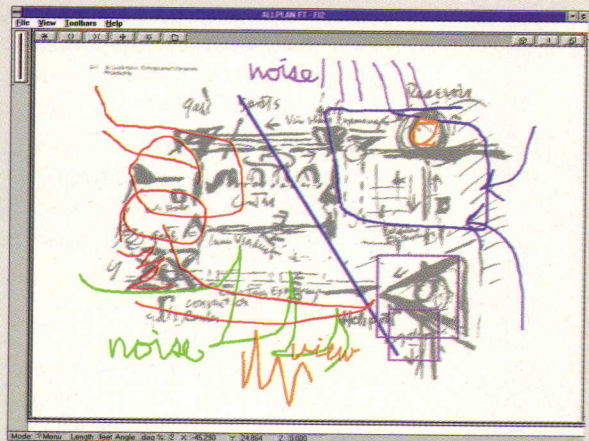
UNDER THE HOOD

SYSTEM REQUIREMENTS

- Intel Pentium PC
- Windows 95 or Windows NT (3.51 or higher)
- 32MB RAM minimum; 64MB recommended
- 500MB hard disk; 1.0GB recommended
- CD-ROM drive, minimum double speed
- Graphic card with 2MB RAM; 4MB recommended
- Three-button mouse

COMPATIBILITY

- Supports DXF and DWG bidirectional formats
- Can export data to Excel spreadsheets



Program allows multiple view ports to be displayed at once (above). Edits can be made in two- and three-dimensional modes. Sketch interface (top) in Allplan FT encourages conceptual design. Elements drawn freehand are automatically translated into regular shapes.

Architron VI BAGH Technologies

By Richard A. Christin, Jr.

A simple method of evaluating software is to compare it to the competition. Is it just like brand X, but less expensive? Similar to brand X, but with more features? Or completely different from brand X?

Architron VI from BAGH Technologies, a Canadian company, clearly falls into this last category, which is evident from the moment you open the software package and start to read the manuals. Released last spring, Architron VI provides a unified software platform from conceptual designs to construction documents. Unlike traditional drafting methods whereby two-dimensional drawings are extruded into three-dimensions, Architron's modeling tools first construct a three-dimensional model that serves as a reference for drafting plans, sections, elevations, axonometrics, and renderings. Previously available only for the Macintosh, version VI is now available on Macintosh, Windows, and IRIX platforms.

Layout and tools

To integrate all these features into one program, BAGH Technologies redesigned the conventional tools and methods of other CAD packages. As a result, familiarity with other design software will not help architects learn Architron's basic drafting and modeling commands. A series of well-written tutorials will help to bring the architect up to speed with the basic tools and methods required to create an integrated database of drawings.

Architron's default-screen layout features typical pull-down menus and icons. However, Architron's icons conceal sophisticated secondary functions. Some icons expand

upon use to reveal related commands. Clicking on an arrow in the upper right-hand corner of the icons opens pop-up dialog boxes that contain relevant default values, which can be modified as needed. Icons can also be regrouped to suit a user's preferences. The primary drawing area displays up to four separate drawing windows at once.

Architron's tools, beginning with the drawing cursor, are designed to work in an integrated three-dimensional environment. The cursor resembles the familiar crosshair, but responds to objects it passes over and displays information such as "snap-to" points. The cursor anticipates how a user may want to add elements. For example, if a user draws a line without selecting snap points, the cursor automatically generates a perpendicular line, which can be moved and stretched dynamically, along the nearest existing line. Dimensioning tools are also dynamic, allowing one to place and drag dimension strings in real time.

Modeling tools range from standard graphic primitives such as cones, boxes, cylinders, and extrusions to more advanced Boolean functions such as the union and subtraction of intersecting solids, and spline-modeling capabilities. While three-dimensional, spline-based models appear sparse compared to traditional polygon-faced models, they allow for faster redraws. As of this release, animation is not supported. However, two rotation tools enable users to spin a model around to study it from any view. Architron's Histories tool allows one to recall and view the evolution of a solid model as Boolean additions and subtractions were made.

These modeling tools, along with

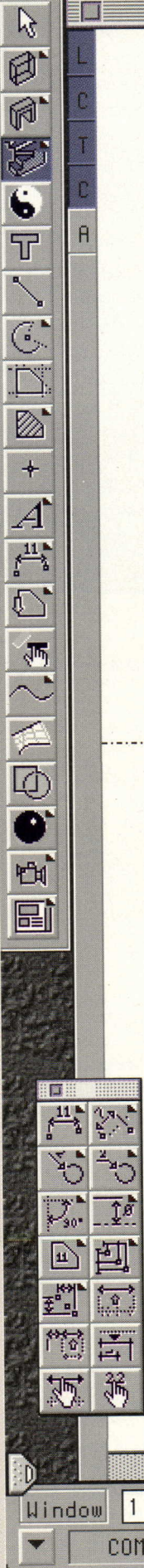
the graphic interface, are some of the program's strongest features. Missing from its solid modeling tools, however, is the ability to dynamically place and size cones, cubes, and cylinders. Although shapes can be sized before placement through a dialog box, spontaneity is lost.

Architron's basic set of rendering tools include hidden line, two sets of solid shading (phong, gouraud), ray-traced shadows, and reflections. Texture mapping is limited to procedural, or mathematically generated, textures and simple bitmap texture-wrapping of objects. Selection and manipulation of textures is easily achieved through graphic dialog boxes, but applying them to objects in a model is a little cumbersome.

Accurate shadow casting studies can be modeled by entering time, date, latitude, and longitude of the project site. These rendering tools are helpful for producing on-the-fly design-development visualizations, but come up short in producing cutting-edge photorealistic renderings, due to the lack of advanced texture mapping and lighting features found in such stand-alone rendering packages as Kinetix's 3D Studio Max.

Multiple images can be combined at different scales on one sheet with sheet-layout tools, similar in concept to AutoCAD's Paper Space. These images can be plans, sections, elevations, orthographic, and perspective views. These two-dimensional drawings are defined by cutting planes through a model or by assigning external views of the model; dimensioning and text can then be added along these reference planes. Any changes made to the main model can be updated on the sheet to be plotted with a single "recalculate" command.

Architron's tutorials and symbol libraries help architects learn the program basics, but they do not ade-



Window 1

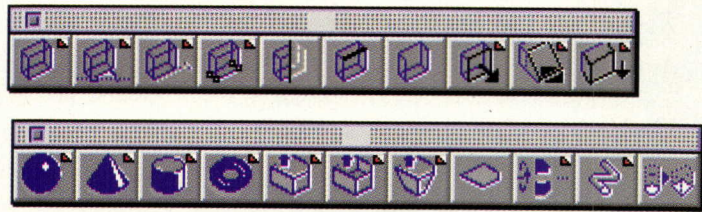
Plane 1

Layer 1

Type 0

COMPOSITE STAIR

Click Access Point Exterior Down



Tools expanded from the main palette (facing page), such as block tools (top) and complex solid tools (above), can be placed anywhere on screen.

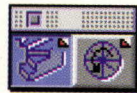
quately address how to use this software for more than a residential or small commercial design project. Third-party enhancement software is not yet available, as it is for more established CAD programs.

AutoCAD tie-ins

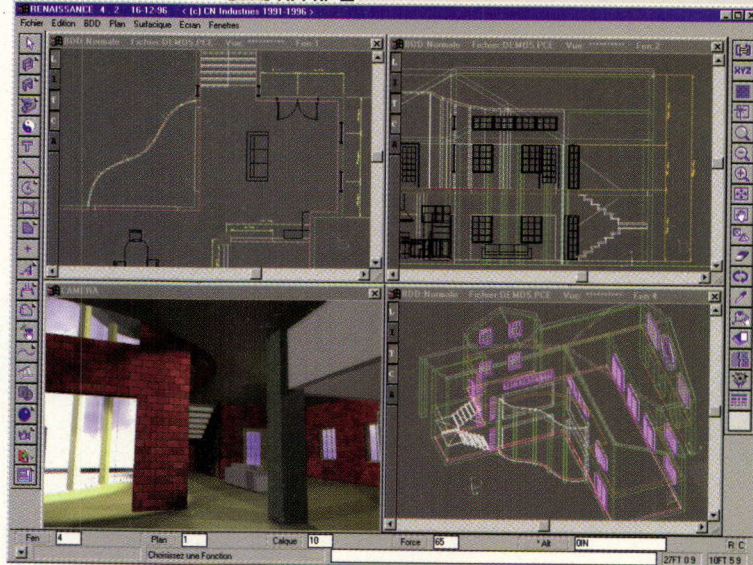
Architron's ability to read and write AutoCAD Release 12 and 13 DWG or DXF formats is a crucial feature when dealing with clients, consultants, or your own in-house staff who may use different CAD or rendering programs. Opening up an AutoCAD drawing—accomplished by using the pull-down menus—is fast and all graphic data seems to import well. Text fonts are substituted automatically if not found. The only drawback is that the layer names from the AutoCAD drawing are given numeric designations. Exporting a drawing or model is also a single-step function accomplished with pull-down menus.

Architron presents some very advanced modeling capabilities which, when learned properly, can be used effectively on projects that require spatial thinking and presentation. The quality of its interface and many of its included tools is as good as some of the best modeling or CAD packages. Architron's integration of modeling, visualization, and drafting is an advantage not often found in a single CAD package.

Richard A. Christin, Jr., is CAD manager of the Washington, D.C., office of Skidmore, Owings & Merrill.



Stair tools (above) allow for complex runs and spiral constructions.



Architron VI supports multiple view windows (above). Each window has independent viewing controls, and edits can be made in plan, section, or isometric drawings.

UNDER THE HOOD

SYSTEM REQUIREMENTS

MAC OS

- PowerMac series
- Mac OS 7.5 or higher
- 40 MB RAM recommended
- 40 MB hard disk space minimum
- CD-ROM drive for installation

WINDOWS

- 486/Pentium-based PC
- Windows 95 or Windows NT
- 40 MB RAM recommended
- 40 MB hard disk space minimum
- Windows 95/Windows NT-supported video display (VGA or better)
- CD-ROM drive for installation

IRIX

- SGI Indy, Indigo2 or Indigo line
- IRIX 5.1 or higher
- 40 MB RAM recommended
- 40 MB hard disk space minimum
- CD-ROM drive for installation

COMPATIBILITY

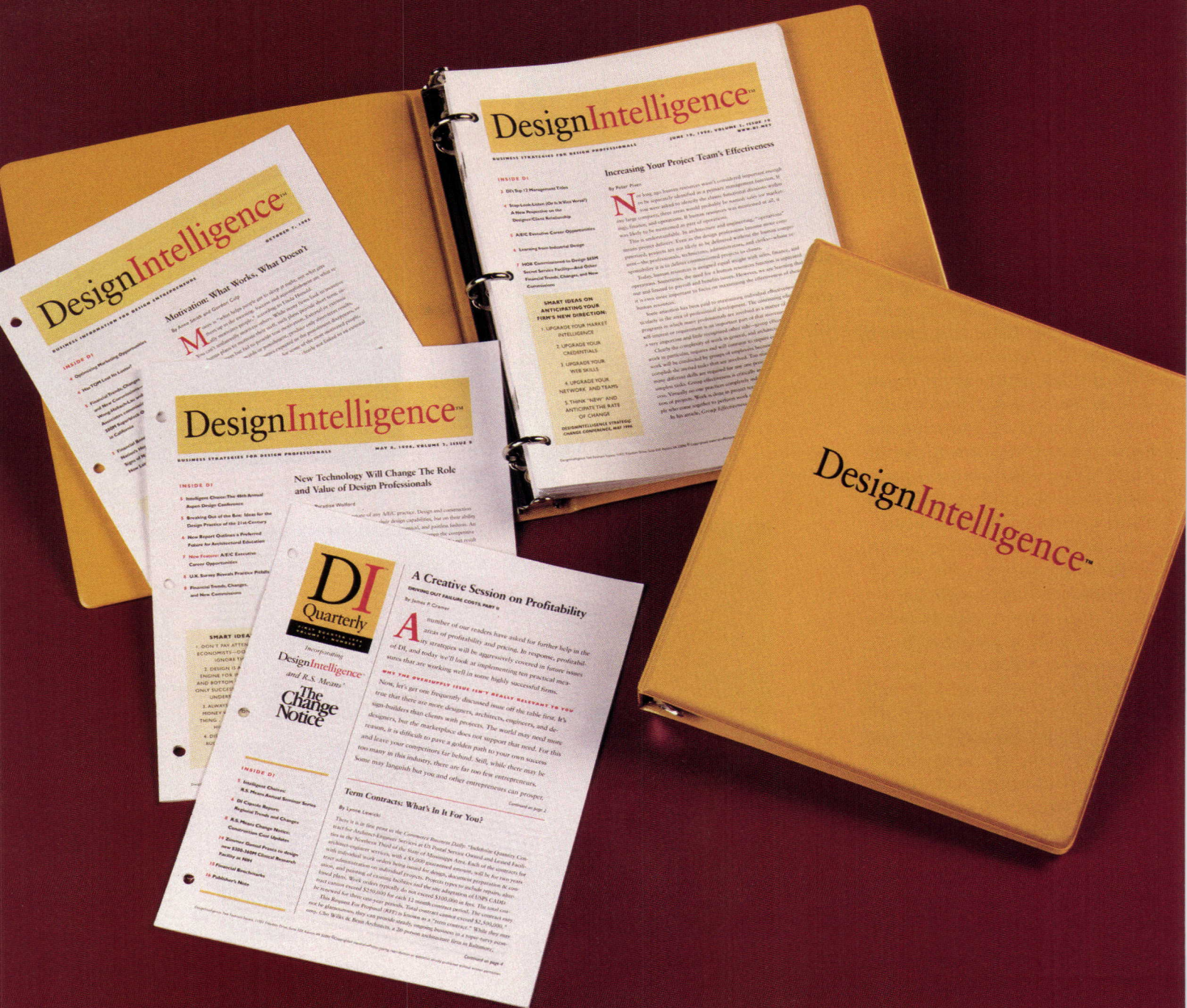
- Can read Architron 5.8 and earlier file formats
- Can read and write DXF and DWG file formats
- Renderings can be saved in TIFF or TARGA formats

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Increasing Your Project Team's Effectiveness

By Peter Pizer

No long ago, business executives weren't considered important enough to be regularly identified as a project management function. It's now a well-recognized and essential role in many large companies, their success would probably be reduced significantly without it. This is not surprising, as the design profession has long been a team effort. It's not surprising, either, that the design profession has long been a team effort. It's not surprising, either, that the design profession has long been a team effort.

SMART IDEAS ON ANTICIPATING YOUR FIRM'S NEW DIRECTION

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- 5. THINK "NEW" AND ANTICIPATE THE RATE OF CHANGE

business executives have been paid to anticipate market changes. The same attention has been paid to preparing individual effectiveness in the area of professional development. The same attention has been paid to preparing individual effectiveness in the area of professional development. The same attention has been paid to preparing individual effectiveness in the area of professional development.

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Motivation: What Works, What Doesn't

By Anne Smith and Gordon Corp

Motivation is a complex topic that has long been a subject of study for psychologists and business leaders alike. It's a topic that has long been a subject of study for psychologists and business leaders alike. It's a topic that has long been a subject of study for psychologists and business leaders alike.

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New Technology Will Change The Role and Value of Design Professionals

By James P. Craver

New technology will change the role and value of design professionals. It will change the way we work, the way we think, and the way we live. It will change the way we work, the way we think, and the way we live.

DI Quarterly

Incorporating DesignIntelligence™ and R.S. Means™
The Change Notice

A Creative Session on Profitability

BY JAMES P. CRAVER

A number of our readers have asked for further help in the areas of profitability and pricing. In response, profitability strategies will be aggressively covered in future issues of DI, and today we'll look at implementing ten practical measures that are working well in some highly successful firms.

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Now, let's get one frequently discussed issue off the table first. It's true that there are more designers, architects, engineers, and designers, but the marketplace does not support that need. It's difficult to pay a golden path to your own success and leave your competitors far behind. Still, while there may be too many in this industry, there are far too few entrepreneurs. Some may languish but you and other entrepreneurs can prosper.

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By Lynn Lovick

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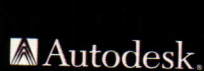
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Light-transmitting fibers create flexible illumination systems, but architects should be wary of their pitfalls.

By Raul A. Barreneche

Microscopes have them. So do telephone lines and electronic billboards. They're bundles of tiny glass fibers wrapped in PVC tubing called fiber-optic cables. For the past decade, lighting manufacturers have tapped fiber-optic technology to create luminous plastic strips for decorative applications. Now, they are promoting new downlights and spotlights with fiber optics as alternatives to standard fixtures.

"There's a lot of buzz about fiber optics," concedes New York-based lighting designer Bill Schwinghammer. "But architects should know they have to be right for the application—and there aren't that many

Fiber optics give fluid form to sea anemone-inspired lighting in Fantasea Reef restaurant in Atlantic City, by Daroff Design.

good applications for them." Washington, D.C., lighting designer George Sexton agrees: "I think fiber optics are another arrow in the design quiver, not the end-all lighting solution some people think they are."

Since fiber optics were first developed in the late 1970s, they have become the workhorse of the telecommunications industry: fiber-optic cables carry more signals faster and more clearly than traditional coaxial wires. In the 1980s, the medical field capitalized on fiber optics' ability to transmit visual images by incorporating them into powerful microscopes and high-tech endoscopes to peer unobtrusively into patients' bodies with squeamishly sharp resolution.

In the mid-1980s, lighting manufacturers unveiled commercial lighting systems that capitalized on fiber-optic cables' ability to transmit light. By forcing light from a standard lamp through fiber-optic cables, manufacturers created flexible, illuminated tubes that could be bent into any profile—sturdier, weatherproof versions of old-fashioned neon tubes. The 40-foot-tall soda bottle on the Coca-Cola billboard in New York's Times Square is one of the best-known examples of the splashy illumination effects possible with

this new kind of lighting. The bulk of these so-called side-light systems have remained limited to decorative applications, as substitutes for neon tubes in signage, strip lighting, and landscape fixtures.

The lighting industry has begun tapping fiber-optic technology to develop point-source illumination systems. By affixing a glass lens or other fixture to one end of a fiber-optic light cable, manufacturers can capture and focus light as with a traditional lamp. Lighting designers and architects are using these bright mini-spots to create chandeliers and patterned grids of downlights.

The newest fiber-optic products on the market include lines of landscape bollard fixtures and indoor ceiling downlights (facing page, bottom left). These products demonstrate the industry's move away from purely decorative installations toward fiber-optic lighting systems that compete with standard illumination.

How fiber optics work

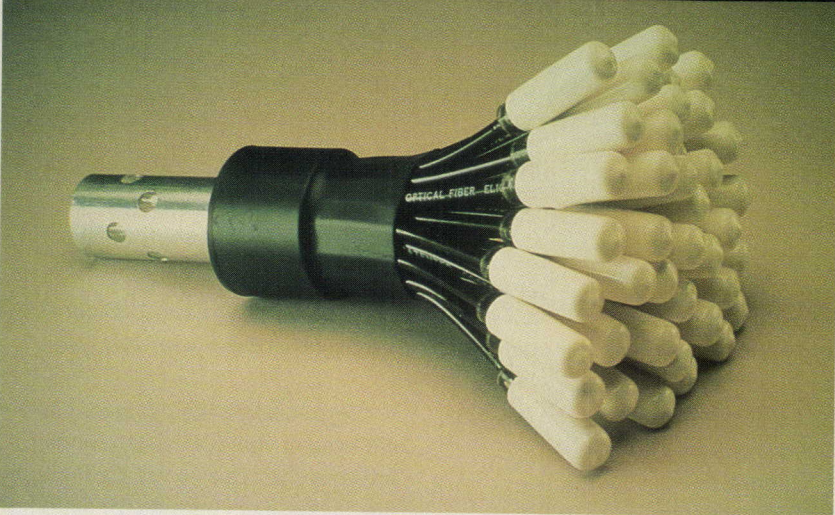
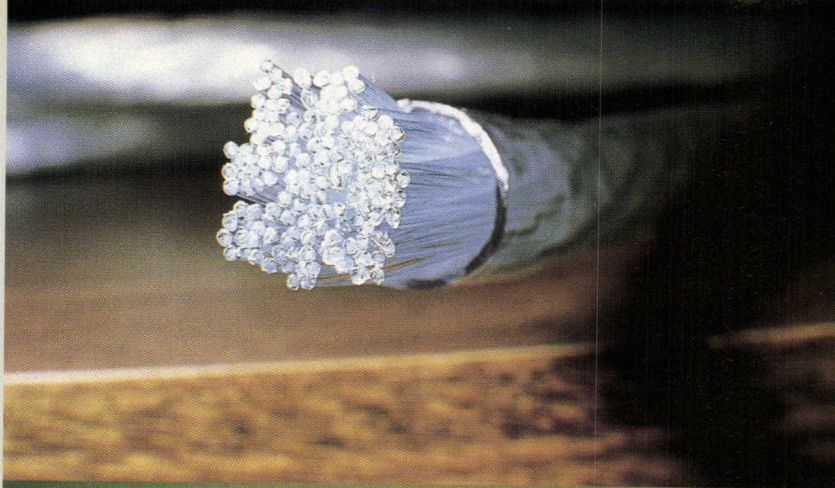
The technology behind fiber-optic lighting is simple. An incandescent, halogen, or metal-halide lamp is mounted in a metal box, called an illuminator, with a fiber-optic cable attached to one end. The flexible cable is composed of a bundle of up to 100,000 glass fibers, each about the diameter of a human hair, encased in a protective PVC tube.

The cables can be assembled from a single fiber bundle, or from clusters of smaller bundles grouped together.

Earlier this year, Fiberstars, the country's largest manufacturer of fiber-optic lighting, unveiled a new cable in its lighting products. This tubing, BritePak II, features clusters of glass-fiber cables that are mechanically twisted over one another and extruded from PVC

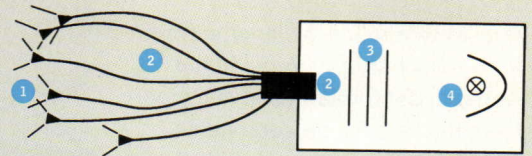


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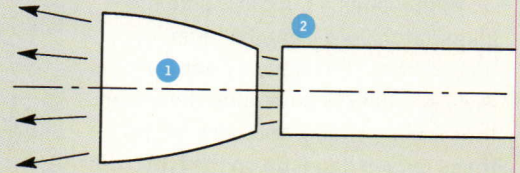


Bundles of tiny glass fibers encased in PVC tubing (top) are the backbone of fiber-optic lighting systems. Single lamp can illuminate multiple fixtures, which are connected to source by fiber-optic cables (photograph,

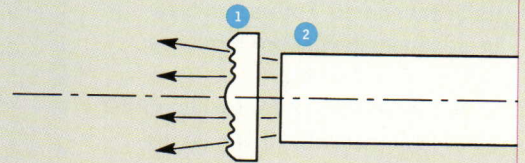
above, and diagram, top right). New fiber-optic lighting products emulate traditional downlights (below). Diagrams (below right) of different lamps show how lenses focus light onto ends of cables.



Multiple-light system

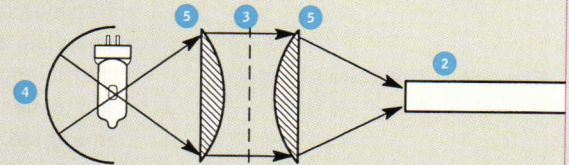
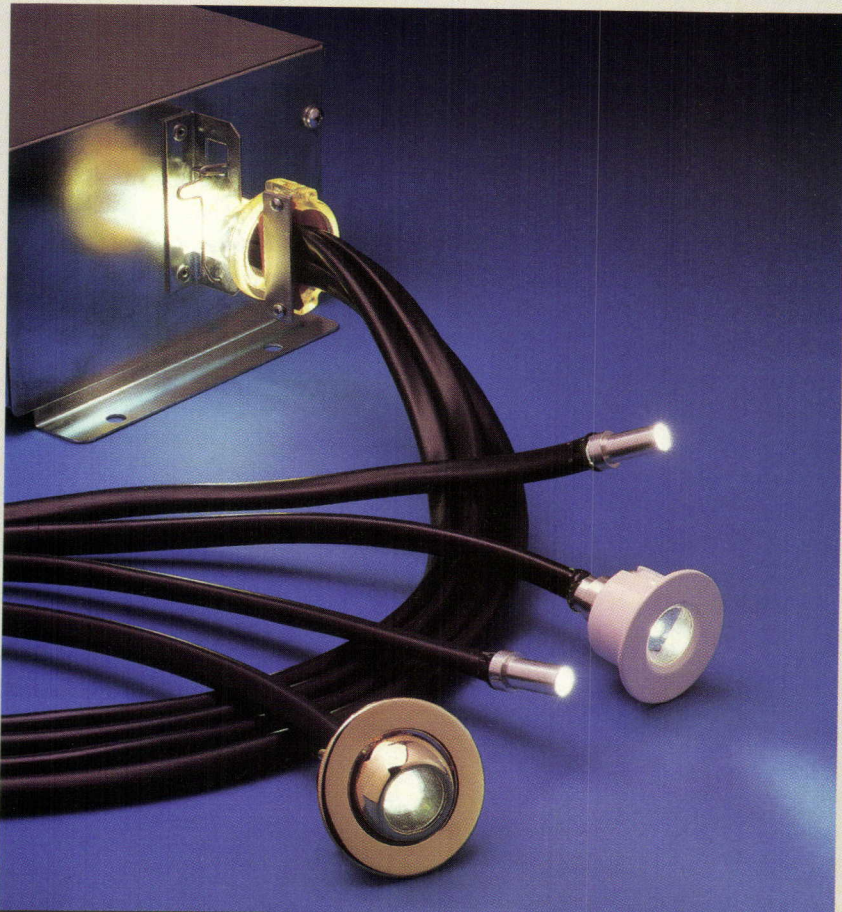


Cable with glass or plastic fixture

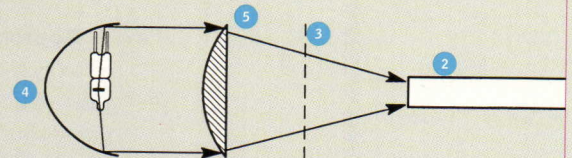


Cable with fresnel lens fixture

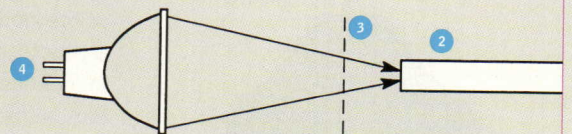
- 1 output fixture
- 2 fiber-optic cable
- 3 filter
- 4 source lamp/reflector
- 5 lens



Metal halide lamp



Halogen capsule lamp



Dichroic tungsten halogen lamp

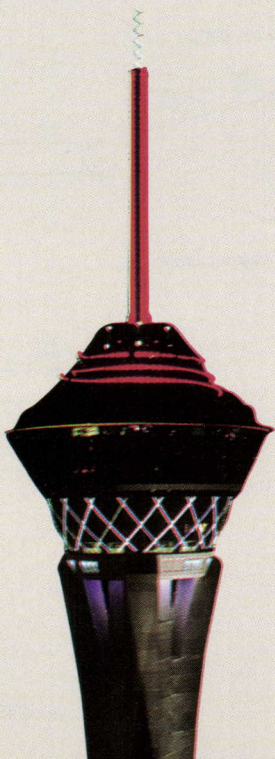
sleeves that range in diameter from 1/4 to 5/8 inches. According to the Fremont, California-based manufacturer, the twisting process yields more luminous and evenly distributed light than untwisted strands of glass fibers do.

With lenses mounted inside the illuminator, light from the lamp is focused onto the exposed ends of the glass fibers comprising the cable; the number, shape, and position of these lenses depends on the type of lamp installed and the angle of its beam spread. Filters can also be added inside the box to create colored illumination.

In a side-light system, a clear PVC sleeve encloses the fibers, so the entire length of tubing emits light like a traditional neon-filled glass tube. In a point-source system, the fiber cable is wrapped in opaque PVC sheathing, and the light transmitted from the source is directed through the glass fibers to a lens attached at the opposite end of the cable. Multiple fiber-optic cables can illuminate many fixtures from a single source.

Before rushing to spec these systems, architects need to weigh their advantages and disadvantages for a given application. Principal Jules

Fiber-optic fixtures illuminate top of Stratosphere Tower in Las Vegas.



Stanley Saitowitz inserted fiber optics beneath glass strips in his benches for San Francisco's Embarcadero Ribbon.

Horton of Horton Lees Lighting Design in New York City suggests a cautious approach: "Clients are always asking for fiber-optic lighting. It's a great product, but you have to be very judicious about where to use it." Despite its overall flexibility and output of heat- and radiation-free illumination, some designers complain about fiber-optic lighting's inefficiency and poor color rendition, not to mention its high cost. To the untrained architect, installing the wrong system could prove to be a very expensive mistake.

Appropriate applications

Why would an architect choose fiber-optic lighting over traditional point-source illumination? One key benefit is that the glass fibers conduct no heat or electrical current, good news for museum conservators concerned with illuminating fragile artifacts, and for architects who need to meet code-mandated clearances around fixtures.

Glass fibers don't transmit ultraviolet or infrared light waves—another reason fiber-optic lighting has proven popular in museum installations, such as the Islamic art display cases in the Denon wing of the Louvre (facing page).

Sexton, a lighting designer specializing in museum installations, has specified fiber-optic spotlights in display cases at both the Philadelphia Museum of Art and the Library of Congress for their ability to illuminate artifacts safely.

Another significant advantage of side-light and point-source fiber-optic systems is their flexibility: The light source can be placed up to 100 feet from the output point, allowing architects to install them in hard-to-reach locations such as in tall ceilings or plenums that are too shallow for traditional fixtures.

Principal Jeffrey Ryan of Houston-based Jackson & Ryan Architects renovated many of the exhibit galleries at the Philadelphia Museum of Art, and specified fiber-optic lighting in several display cases. "Fiber optics were ideal for areas where it was hard to wire and in period rooms where we had to be careful of historic finishes," Ryan relates.

Since a single lamp can illuminate multiple fixtures, replacing a few bulbs restores light to a whole chandelier or an entire ceiling full of downlights. And because the source lamp is located away from the output point, bulbs can be changed without ladders or scaffolding.



Fiber-optic lighting in display cases at Louvre safely illuminates Islamic artifacts.

High costs, low luminosity

"The potential of fiber-optic lighting is tremendous," asserts Naomi Miller of the Lighting Research Center at Rensselaer Polytechnic Institute (RPI) in Troy, New York. "But they're expensive and very inefficient." Her colleague at RPI, researcher Nadarajah Narendran, agrees. "The biggest reasons why fiber optics haven't infiltrated the general lighting market yet are their high cost, their inefficiency, and the color of their light output."

Narendran estimates that current fiber-optic systems lose 50 to 70 percent of the initial luminosity emitted by the source lamp in transmission. "You lose most of the light getting it from the lamp into the glass fibers," explains Narendran. Remote Source Lighting International, a California-based manufacturer, disputes this figure. The company claims that systems fitted with their illuminators can capture 98 percent of the source light's output. "Illuminators are definitely becoming more efficient," Los Angeles-based lighting designer Lesley Wheel attests.

The color of fiber-optic illumination is often inconsistent and unpredictable, according to researcher Narendran. The composition of the

fibers tends to attenuate certain wavelengths of the spectrum, typically rendering white light with a green or blue tint. The length of the particular cables can also affect the ultimate color of the light produced. "It's very difficult to know what you're going to get out of these systems," explains Miller. "You have to create mock-ups with the exact fibers, fixtures, and lengths that you will use to accurately simulate the final result." The newest products on the market, however, feature glass-fiber cables that minimize color rendering and distortion problems.

Another deterrent to fiber-optic lighting is its extremely high cost, a fact that both Miller and Narendran attribute partially to a lack of industry guidelines and standards that would facilitate the engineering of such systems. Currently, it's impossible to purchase lamp sources and cables from different manufacturers because the lamps are customized for specific types of fibers. "We're looking toward developing standards and making our products compatible with metric systems," reports Fred McLendon, vice president of operations at Lumenyte International in Costa Mesa, California.

New developments

Glass fibers have proven to be better transmitters than plastic fibers, although plastic is cheaper. The lighting world, however, may soon benefit from the telecommunications industry's research into developing new plastic cables that are cheaper than glass but higher in quality than existing plastic fibers.

Most lighting manufacturers are collaborating with suppliers to develop new lamps tailored specifically for fiber-optic systems. These sources transmit light through fiber-optic cables more cheaply and efficiently than general-purpose lamps.

Fiber optics may never replace established methods of lighting. But as the industry works toward improving their performance, they promise to become a more affordable and efficient lighting alternative.

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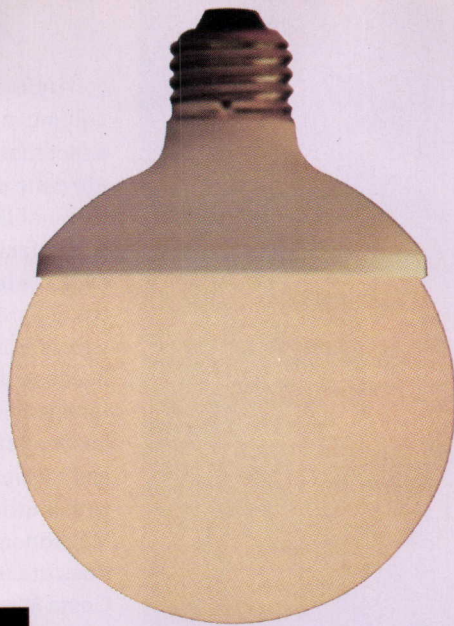
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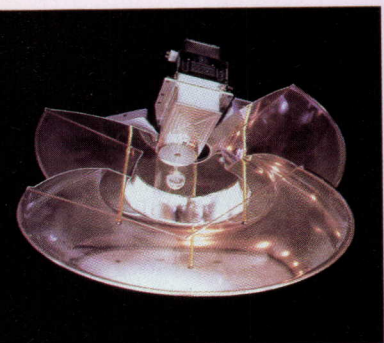


Spherical Lamp

A 16-watt, pink-colored lamp (left) is the latest addition to Panasonic Lighting's Low Profile Collection of Electric Light Capsules. The spherical bulb measures 5 1/8 inches in length and has a purported life of 10,000 hours. The Low Profile Collection also includes 10-, 20-, 25-, and 28-watt models. Circle 293 on information card.

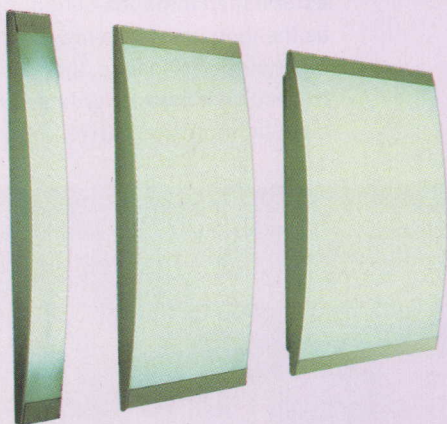
Sulfur Fixture

A new fixture from Cooper Lighting, developed in conjunction with the Lawrence Berkeley National Laboratory, is now available to accommodate the 1,000-watt Solar 1000 sulfur lamp (far left). The electrodeless lamp, invented by Fusion Lighting of Rockville, Maryland, and developed with the support of the Department of Energy, consumes 25 to 50 percent less energy than conventional incandescent bulbs and is expected to provide up to 10,000 hours of low-heat, low-ultraviolet light. The new fixture can be mounted on a wall, hung from the ceiling, or installed in a freestanding kiosk. Circle 295 on information card.



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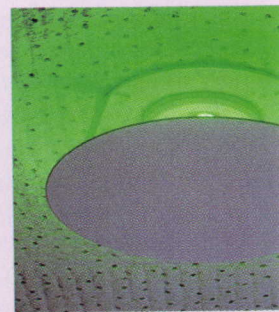


Curved Fixtures

The new Strip series of wall-mounted and overhead fluorescent fixtures (left) is designed by Dante Donegani for Luceplan. The 29-inch-long fixture is available in two-, four-, and six-lamp versions with aluminum housings measuring 7 1/4, 15, and 26 inches wide, respectively. The fixtures are available in polished aluminum, anthracite gray, and white finishes. Circle 292 on information card.

Fiber-Optic Downlight

A new ceiling- and wall-mounted fixture from Fiberstars utilizes fiber-optic lighting technology for commercial and residential decorative applications (right). The aluminum fixture measures 3 3/4 inches in diameter and 1 inch deep. An optional color wheel allows sequential backlight color changes. Circle 294 on information card.



Colored Light

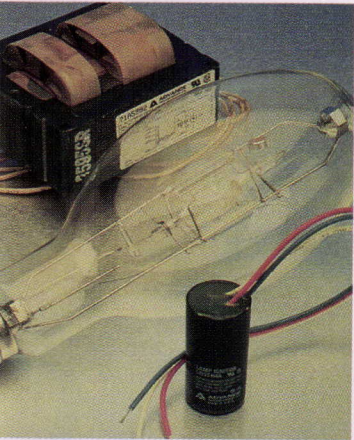
This month, Italian lighting manufacturer Artemide introduces its new Metamorfosi lighting system—lamps that emit 54 different hues of light by combining separate red, blue, green, and white beams. The system comprises 10 different fixtures by such designers as Aldo Rossi and Pierluigi Nicolin (left). Circle 291 on information card.



Lighting Resource

A new demonstration center (right) at Lightolier's Fall River, Massachusetts, headquarters and manufacturing plant offers a step-by-step introduction to lighting design. The 5,000-square-foot TechCenter, designed by Boston architect Robert Luchetti and lighting designer Markus Earley, contains educational displays on the history of lighting technology and the intrinsic properties of light, as well as retail, hospitality, and residential applications of Lightolier's fixtures.

Circle 296 on information card.



New Ballast

Uni-Form Pulse Start Series metal halide lamps from Venture Lighting (left) incorporate a new ballast system that purportedly improves lumen performance and lamp warm-up time. A new arc tube produces a lighting output superior to standard metal halide lamps. The lamp is available in wattages ranging from 50 to 400, with medium or mogul bases, and with standard or reduced jackets.

Circle 299 on information card.



Low-Mercury Fluorescents

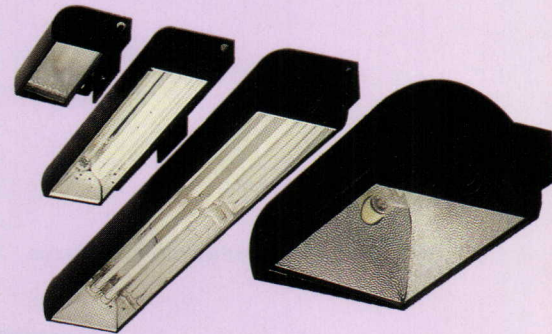
In February, Philips Lighting Company introduced its T-8 fluorescent lamps (right) to comply with the Environmental Protection Agency's Toxic Characteristic Leaching Procedure, a test that measures the capacity of substances to biodegrade. Unlike standard fluorescents, Philips's lamps are not classified as hazardous waste producers, due to their lower mercury content.

Circle 297 on information card.

Indoor-Outdoor Fixtures

The Echo Series of fixtures from SPI Lighting (right) is now available with an aluminum housing for outdoor applications, in addition to the original steel housing. The fixtures can be fitted with linear fluorescent, metal halide, and halogen lamps, with integral magnetic, remote magnetic, or electronic ballast. Fixtures can be mounted on ceilings, walls, or corners.

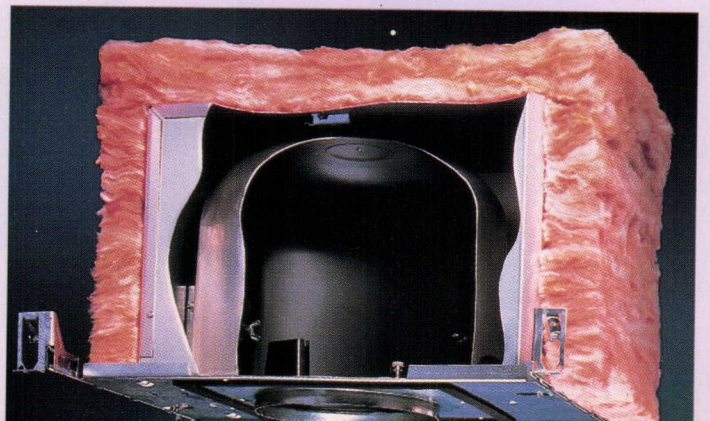
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Recessed Luminaires

Last month, Cooper Lighting introduced Iris Lighting Systems (right), a line of residential recessed lighting fixtures that can be fitted with different lamps. The system is available in five housing sizes—three different 3 1/2-inch apertures, and 5 1/4- and 6 3/4-inch apertures. Each housing can be fitted with downlight, adjustable accent, wall-washer, or lensed optical elements. Iris is IC-rated, so that it can be installed next to insulation.

Circle 300 on information card.



Moshe Safdie drives a 1968 Citroën convertible DS 21; Richard Meier tools around the Getty Center site in a black 1988 Jaguar XJ6. Andres Duany, designer of walkable suburbs, cruises Miami in a flashy red BMW.

Architects love cars. Some professionals use their wheels to flaunt their affluence, but cars fascinate architects for other reasons: "Architects like mechanical things, as well as good design," remarks Kansas City architect Steve Abend, who calls his racing-bred all-aluminum Acura NSX "so beautiful it belongs in the Museum of Modern Art." Mike Fickel of Shaughnessy Fickel and Scott Architects wants to mount an exhibition on architects' cars. Fickel drives a 1950 Mercury Club Coupe, the model James Dean drove in *Rebel without a Cause*. "It's like owning an Eames chair," he explains.

Testa Rosa at Pebble Beach, savoring its "dazzle and perfection." But it's not just the visual styling that smites him. "The sound of a Ferrari engine," Keating muses reverently, "is like music to the car aficionado."

Lori M. Krejci, principal of Avant Architects in Omaha, Nebraska, drives a Jeep Cherokee, but her town car is a 1971 Jaguar XKE. She identifies a secret desire: "If architects could design cars, you bet we would."

Some have. Le Corbusier designed a car in 1928 that resembled the later Volkswagen Beetle. Walter Gropius designed a sports car for Adler Autoworks in Frankfurt, inventing reclining seats. And Buckminster Fuller's 1934 Dymaxion, with rear-wheel steering, was easy to parallel park: just nose into the space and whip the rear to the curb.

Contemporary architects also design

Car Struck

For architects, cars mean more than transportation.

Paola Antonelli, MoMA's curator of design, insists her car be "fast and red," and admits to driving a tiny, powerful Autobianchi with an A112 Abarth engine in Italy ("I got rid of it when it got too dangerous"). Antonelli doesn't find architects more obsessed with cars than any other well-off professionals. Los Angeles architect Richard Keating of DMJM/Keating disagrees: Every year, he observes, the Pebble Beach car show—one of the biggest automotive events in the country—is "crawling with architects." Keating, who restored his 1934 MG PA Brooklands Racer, recalls admiring a Ferrari

cars. While Craig Hodgetts was still in high school, he won the General Motors-sponsored 1956 Fischer Body Craftsman's Guild styling contest, and designed cars for GM in Flint, Michigan. Hodgetts, who drives a 1977 Alfa Romeo with 160,000 miles on it, cites the poetry between a car's engineering and visual expression: "There is a harmony between brake drums, or headlights, or the steering mechanism, and their integration into an overall design concept." Every piece of an automobile is custom-designed for special assembly. "Among architects," explains Hodgetts, "there's a kind of envy that such a peak of excellence can be reached."

Reyner Banham once wrote that architects, masters of permanent, single forms, have no business designing small, obsolescent, mass-produced machines. But it is cars' mass production, and their constant restyling for improved efficiency, that compel architects. Le Corbusier envisioned houses that would be highly designed, mass-produced "machines for living in." Instead, cars have become the cherished, stylized machines integrating function and esthetics, available to almost everyone. That is what architecture still hopes to be. *Heidi Landecker*

Buckminster Fuller and his Dymaxion



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ARRIS computer image by A.J. Diamond, Donald Schmitt and Co., Architects and Planners
Modeled and rendered by David Hileman

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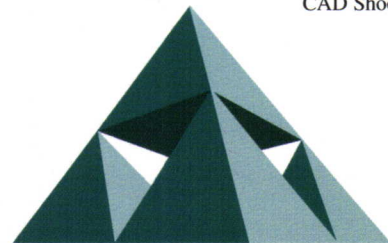
ARRIS voted:

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