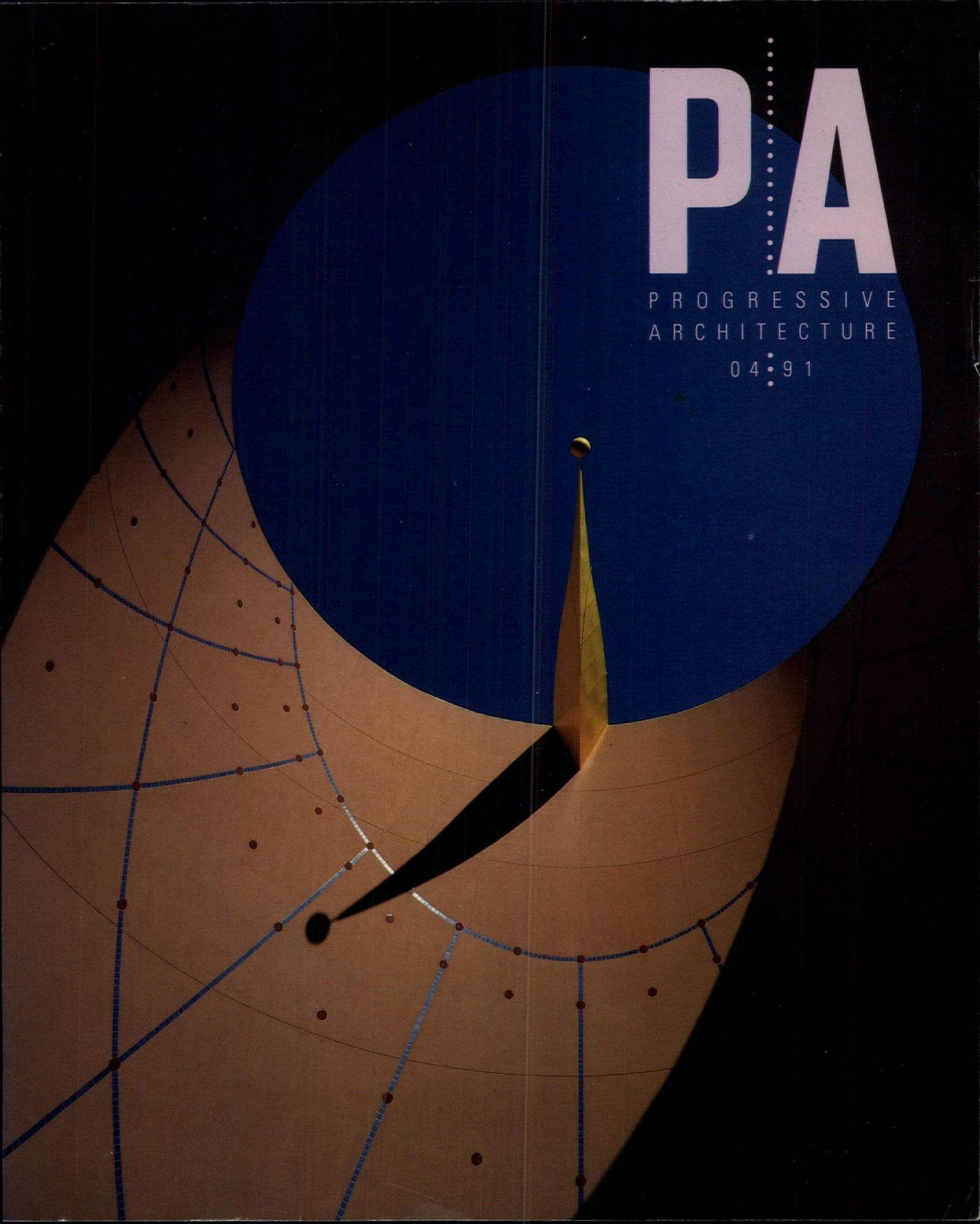

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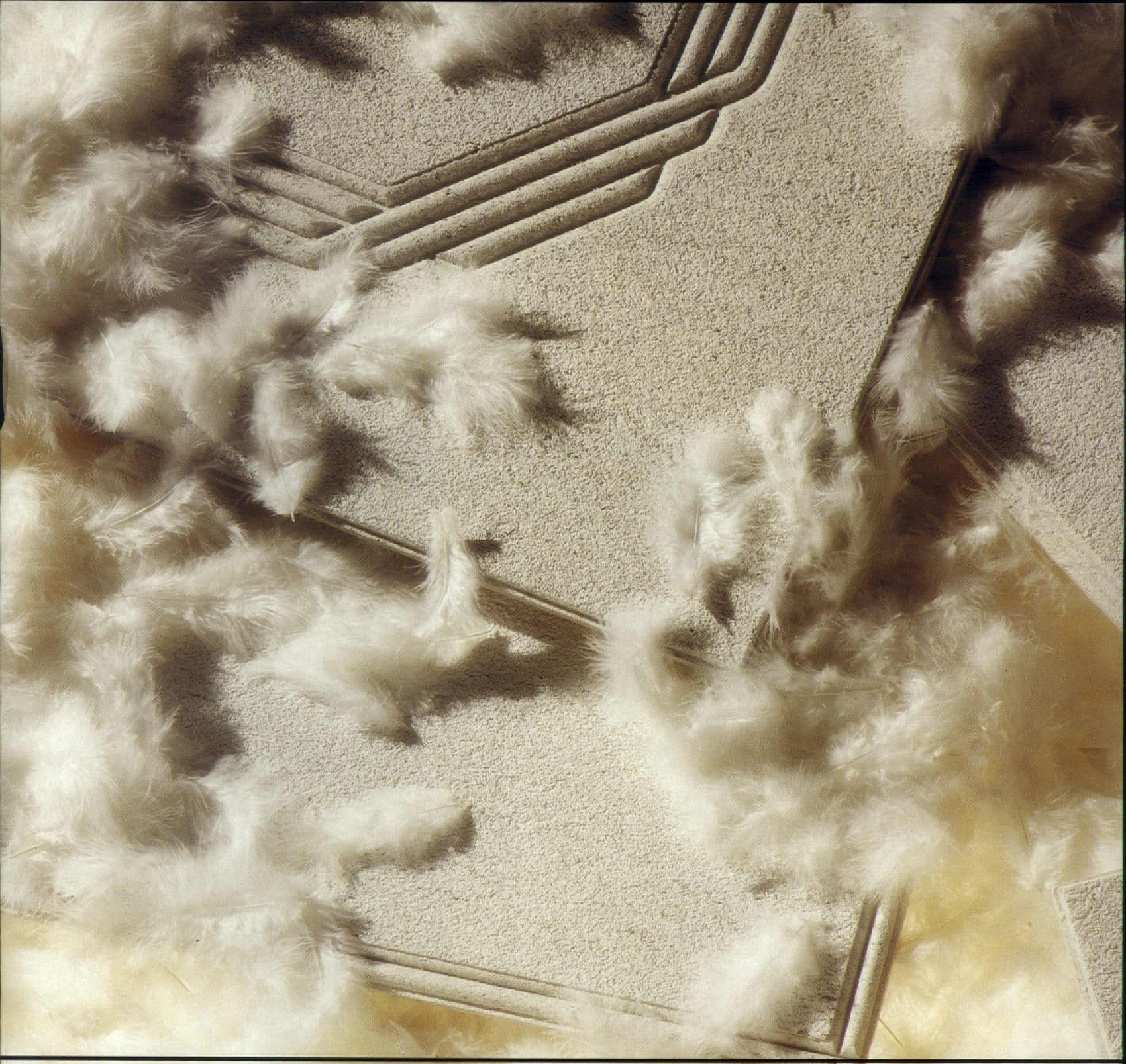

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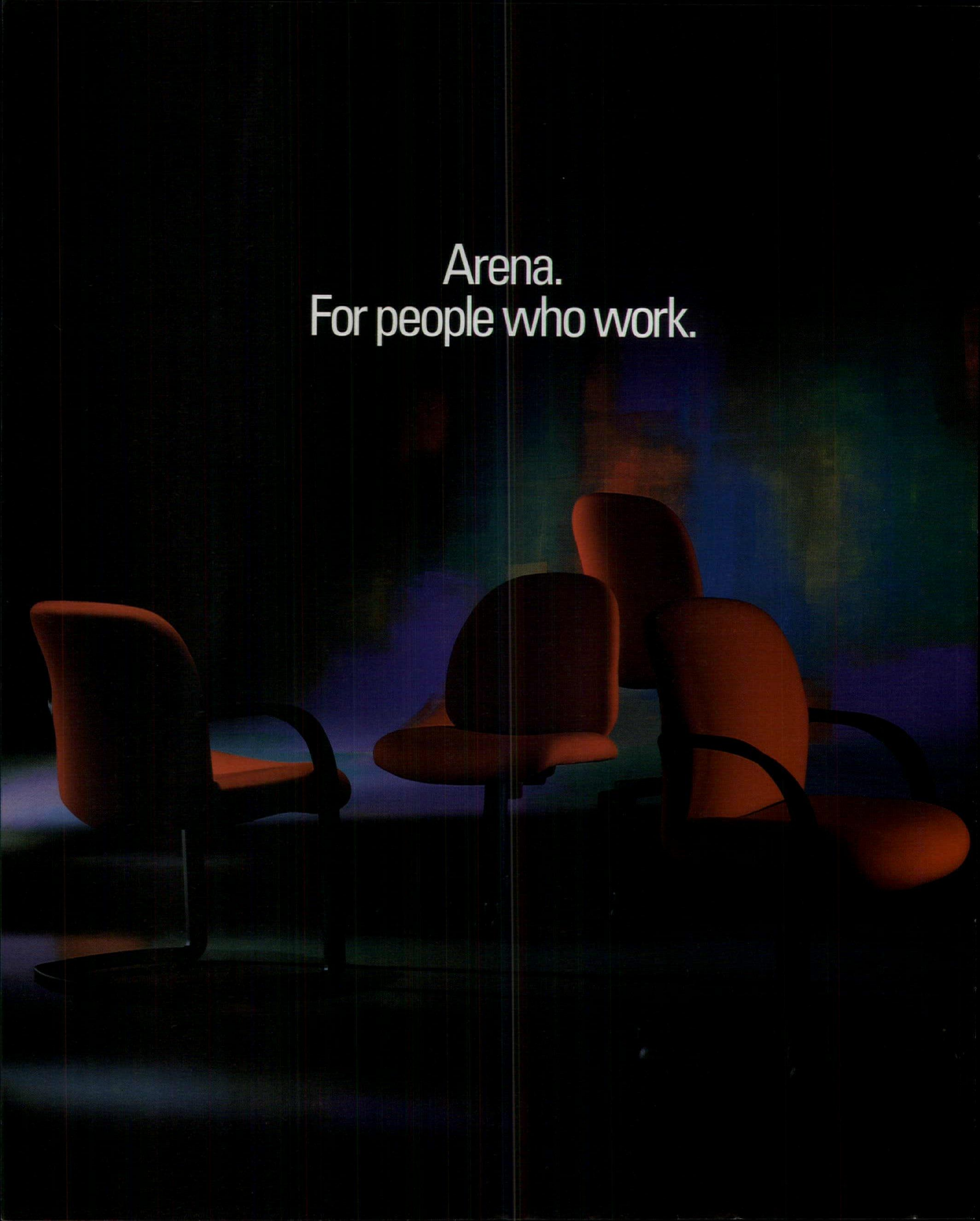
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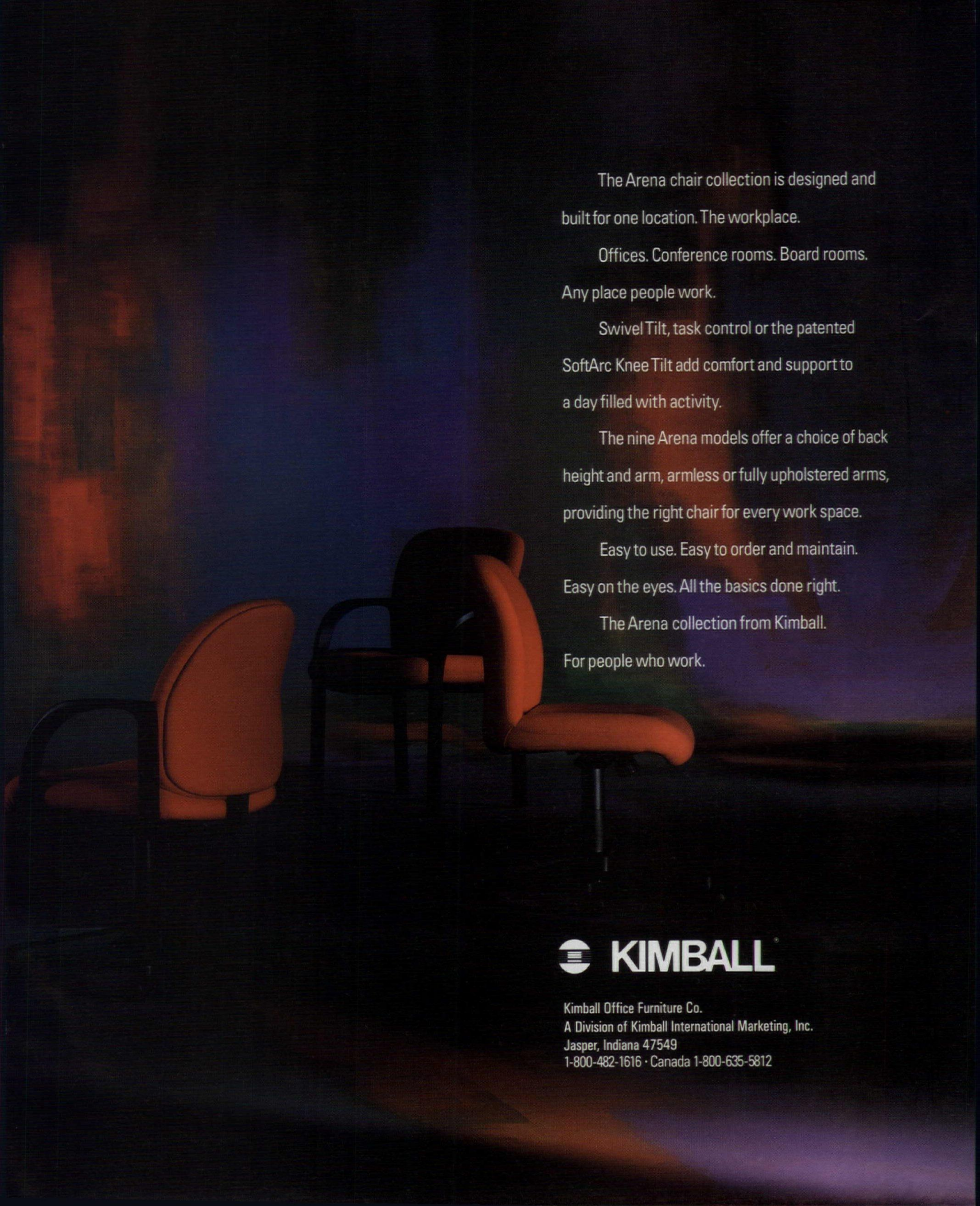

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Cover: *The giant sundial in the Team Disney Building at Disney World, by Arata Isozaki & Associates, p. 70. Photo by Yasuhiro Ishimoto.*

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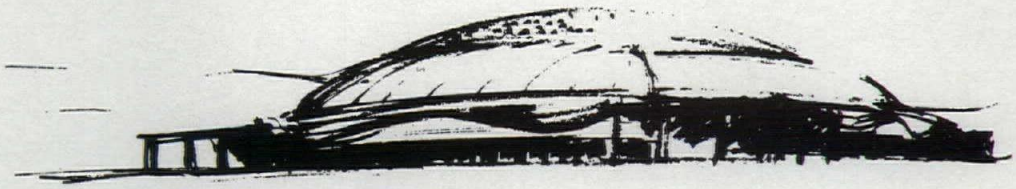

Sant Jordi Sports Hall, p. 78

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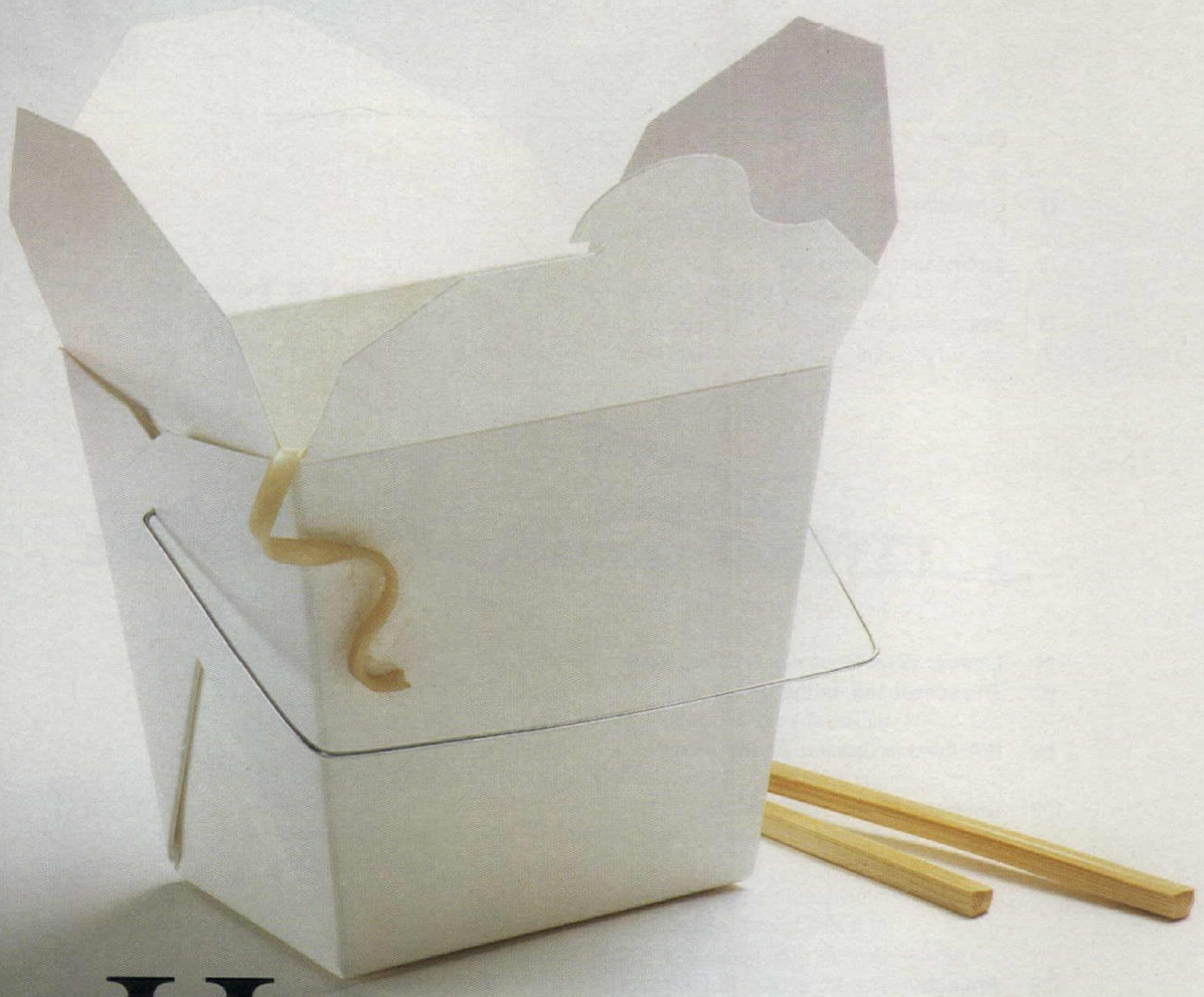

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Editorial
Disney's World and Yours

There is an element of make-believe in all architecture, and the fantasy environments of Disney World point up some of the issues involved in the real world.

The design of a building is necessarily an exercise in make-believe. Just to consider putting up a new building – or remodeling an old one – is an act of imagining. But even when constructed and occupied, a work of architecture embodies suppositions, aspirations, self-images, and other conceptual figments that exist only in the minds of designers and building users.

In this issue, we are featuring yet another building generated by Disney's remarkable program of architectural patronage, their new headquarters in Orlando by Arata Isozaki. But you don't have to be working for Disney to be dealing with fantasy: Consider the buildings examined in this issue. With subtle irony, the forecourt of the house by Peter Gluck (p. 100) suggests a 1920s country estate, lacking only a Packard roadster in its auto court; the house's sea-facing porches and promenades recall the decks of ocean liners. The top of Ron McCoy's beach house (p. 96) has the attributes of a luxury yacht – or maybe a galleon. In the house by Antoine Predock (p. 92), the forms are more abstract, but in the mind of the architect they deal with mythic essentials. The office building lobbies (p. 84) typically offer some take on the monumentality of a civic plaza, as the public prelude to a set of private precincts.

At Disney's properties, of course, the object is to immerse the tourist in fantasies. The decision of Disney World management to control vast tracts around their Orlando and Paris theme parks is usually explained as an economic one: to reap the income from overnight visitors (which the original Anaheim Disneyland had conceded to hordes of motel-keepers). In fact, however, the result has been more profound for the visitor, who can spend days in a totally Disney-controlled environment, insulated from the garish, incoherent world outside. Walt Disney himself is said to have asked which of these worlds is real. And after 24 hours on Disney property, one is not too sure.

As we know, it is not just Disney's theme parks that are "themed," but the hotels, as well, and even the buildings Disney builds for its own use alone. In the new headquarters by Isozaki (p. 70), the theme is *time*, as Thomas Fisher explains in his article.

This and other recent Disney buildings in Orlando point up the differences between make-believe and imitation. Main Street in the Magic Kingdom is an idealized imitation; the backlot streets in the Disney MGM theme park are imitations of imitations. But the fantasy elements of the Isozaki building are newly minted, imitating nothing previous.

The same differences can be seen in the hotels. The Grand Floridian, designed by Disney's "imagineers" imitates a turn-of-the-century Florida resort, and the just-completed Yacht Club and Beach Club hotels by Robert A.M. Stern imitate New England beachfront hotels of the same period. The Swan and Dolphin hotels (P/A, March, 1990, p. 76; Oct. 1990, p. 82) by Michael Graves, however, are new variations on popular ideas of grandeur and luxury; their rotundas and shifting axes owe something to Imperial Rome, but their ornamental elements are abstracted from common objects such as shells, flowers, and tied-back drapery.

One of the devices of fantasy environments is intensified color — a technique familiar from amusement parks and fairs, stage and movie sets, and Las Vegas casinos. To a limited degree, heightened color can be seen in the imitative places in Disney World – Main Street, the *rues* of Epcot's Paris, or the hotels with historical themes. Where color is freed of any direct reference to precedents, as in Graves's hotels or Isozaki's new headquarters, the opportunity for intensified experience is wide open. Both architects have responded brilliantly, with color palettes – very different ones – that contribute immensely to the exuberant, inventive feeling of their buildings.

In real-world buildings, of course, fantasy is rarely the main purpose. They have to accommodate everyday activities and coexist with the structures next door. But certain fictions are useful: A facility for abused women may be treated as if it were a miniature village, for instance, or a school may be focused on a space modeled after ancient ritual structures (to cite two examples from the January P/A Awards issue). Some measure of make-believe is needed, in the minds of architects and clients, to produce architecture where we would otherwise have mere building. ■

John Morris Dixon

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Views

A Killer for the Contractor

Walter Rosenfeld's advocacy of "Killer Clauses" in specifications (Feb. 1991, p. 47) prompts the reply, "Different strokes for different folks."

Finding and pricing everything shown in a set of documents is no small job for a contractor. Killer clauses require a contractor also to find and price things which are not shown or which are unclear. Clarifying documents for pricing is the architect's job, pure and simple. Killer clauses intend to shift that burden to the contractor, who is not trained to carry it. The contractor will respond by protecting himself in his bid or in his change claims. There is no free lunch.

As an owner-developer, we select contractors for their integrity and quality of work. We strive for bidding documents which precisely delimit the scope of work. This approach assures us of the lowest reponsible bids. It also positions us as a fair yet knowledgeable owner, which is helpful in negotiating the inevitable changes.

In this way of doing business, we believe the total project cost is minimized, and we know exactly what we are paying for. We also enjoy the mutual respect found in durable owner-contractor relationships.

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Minority Architects

Please accept my heartfelt thanks on behalf of the membership of the National Organization of Minority Architects for your article covering the events of our 20th Anniversary Annual Conference held this past October in Detroit, Michigan. As you witnessed, the economic stress and the public perception that we are somehow stepchild participants in this profession has had a marked impact on the probability for success among minority architects throughout the country, particularly those of African-American descent.

We appreciate your willingness both to attend the conference and to record its accomplishments for posterity (P/A, Dec. 1990, p. 17). More importantly, we appreciate the fact that *Progressive Architecture* was willing to acknowledge a share of the burden of informing the nation that there are qualified, competent, resourceful, talented, skillful, innovative, and creative minorities in the design profession.

The work (and, in fact, the very existence) of minority architects is not given adequate exposure in our professional publications. The community, the nation at large, would benefit greatly from the increased visibility of minority professionals in all fields.

Our profession rewards design excellence, and that excellence is usually promoted through our professional publications. In a time where our communities comprise a disproportionate number of those destroying their lives in the streets and prisons of this land, or risking their lives in defense of this nation on the sands of foreign soil, equal access to the resources that will result in a more proportionate share of economic and professional benefits is not a right or privilege, it's an essential responsibility.

Minority architects are not asking for unmerited favor, nor do we seek control of your editorial policies. Our work does not "lack the necessities", it is not substandard, nor uncreative; it needs no defense, no assigned quotas, no special consideration. We have produced equal quality, creativity and innovation to the built environment, usually with greater restrictions, limitations and constraints.

You are correct when you state that the gulf between racial groups seems to be widening. The gulf, however, is not in talent or ability; it is in perception and equality. I must mention here that minority architects should no more be judged by a desire to see the work of an architectural Spike Lee than the majority community is limited to the publication of the architectural equivalent of Francis Ford Coppola. If these were the criteria, our magazines would be empty. While both are equally available, they are equally limited in number.

We welcome continued dialogue with your magazine. I know that you felt the frustrations and anguish we all share over the direction of our great profession, regarding the participation of all cultures of our nation. Until we learn to respect and value the contributions of one another, we will always speak of ourselves in terms of potential rather than realized actuality.

Thank you for a well written and much needed record of our conference. I hope to see you and other representatives of our professional journals at the 21st annual conference.

Robert L. Easter, AIA
Secretary
National Organization of Minority Architects
Richmond, Virginia

Bronx Housing Particulars

Thank you (Thomas Fisher) for noticing the South Bronx housing competition (News Report, Feb. 1991, pp. 20–21). In a nation – and world – which always seem to find the money for wars it is criminal that communities and their architects have to go through enormous contortions to squeeze droplets of housing out of the system.

For the record, while Mr. Fisher correctly notes the political thrust of our entry, we did also propose an incremental design and construction process and the use of prefabricated infill components manufactured in the Bronx rather than in Pennsylvania, thereby addressing housing and employment needs simultaneously.

Stephen Tilly
Dobbs Ferry, New York

Honor Awards Credits

In P/A's list of AIA Honor Awards winners (Feb. 1991, p. 22), the Charleston Cottages in Charleston, South Carolina, should have been credited to Chris Schmitt & Associates, Inc. (Christopher A. Rose was project architect.) For the 60 Newbury Street building in Boston (P/A, Feb. 1989, p. 68), Schwartz Silver Architects should have been credited as associated architects, along with Frank O. Gehry Associates.

Calendar Correction

A listing for the "Architects Art" exhibition at the Gallery of Functional Art (Feb. 1991, p. 25) should have included Richard Warner as one of the participants.

Cincinnati Credits

The following additional people should have been credited for the P/A-Award-winning addition to the University of Cincinnati College of Design, Architecture, Art & Planning (Jan. 1991, p. 82): The State of Ohio Division of Public Works (Carole Olshavsky, Deputy Director); The Office of State Architect and Engineer, Ohio (Jack Frost, State Architect; Thomas Poulton, Assistant State Architect; W. Bruce Curtis, Project Administrator); John Nichols, silkscreen printer; Relja Penezic, project assistant.

Blatteau Photo

The photo of the new lobby of the Riggs Bank headquarters, by John Blatteau Architects (Feb. 1991, p. 83, photo 7) is by Richard Cheek.

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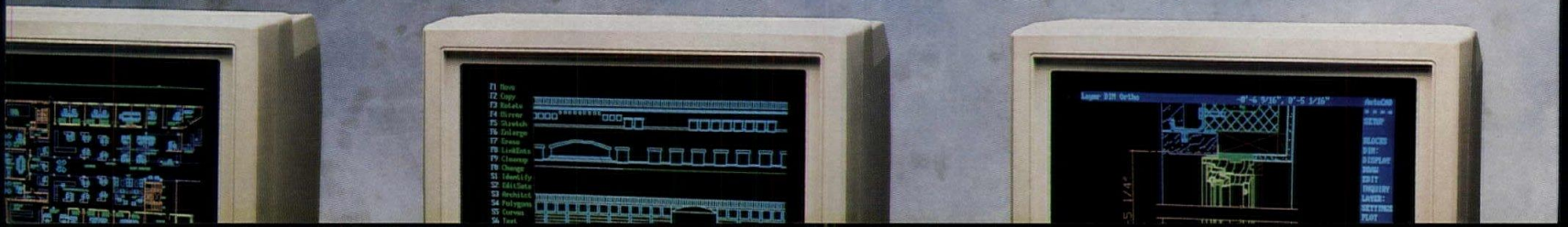

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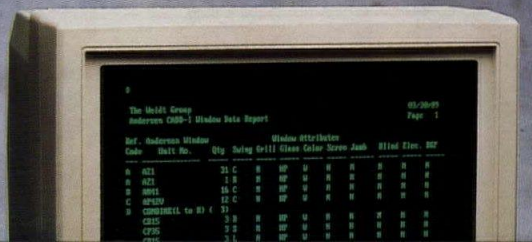

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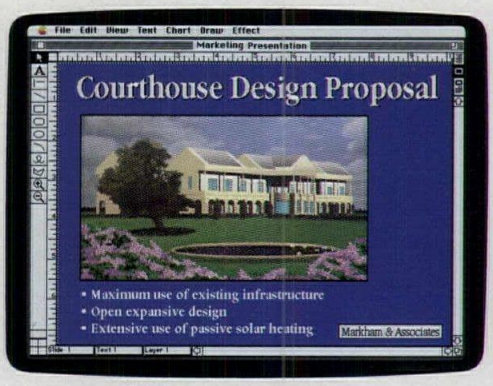

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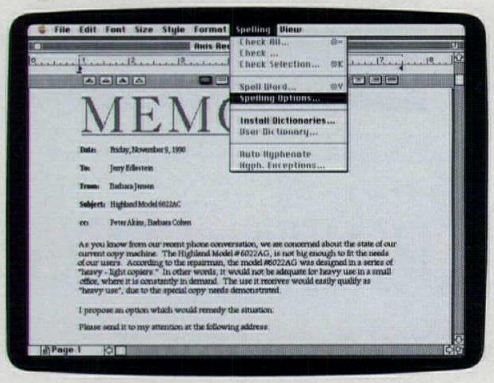

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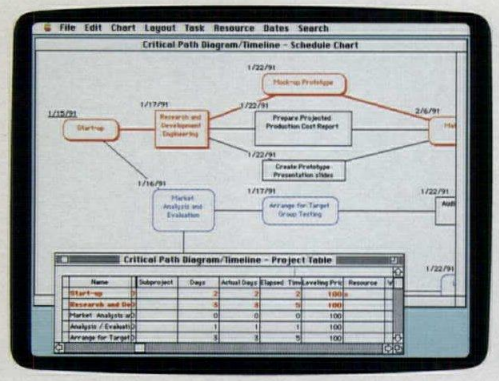

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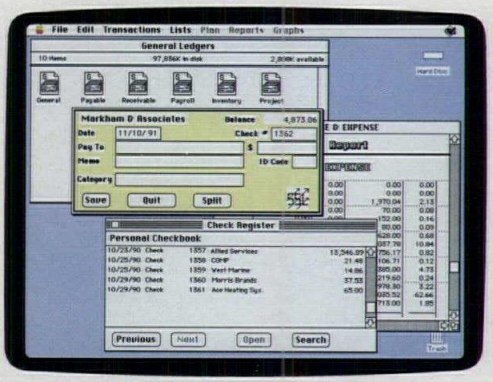

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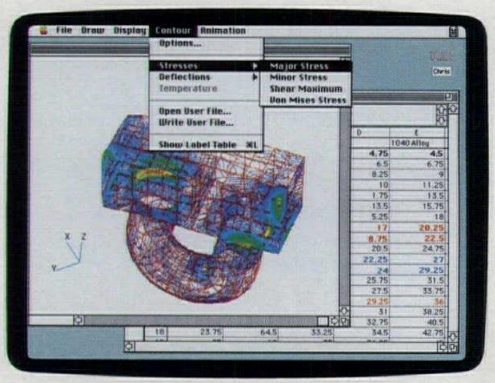

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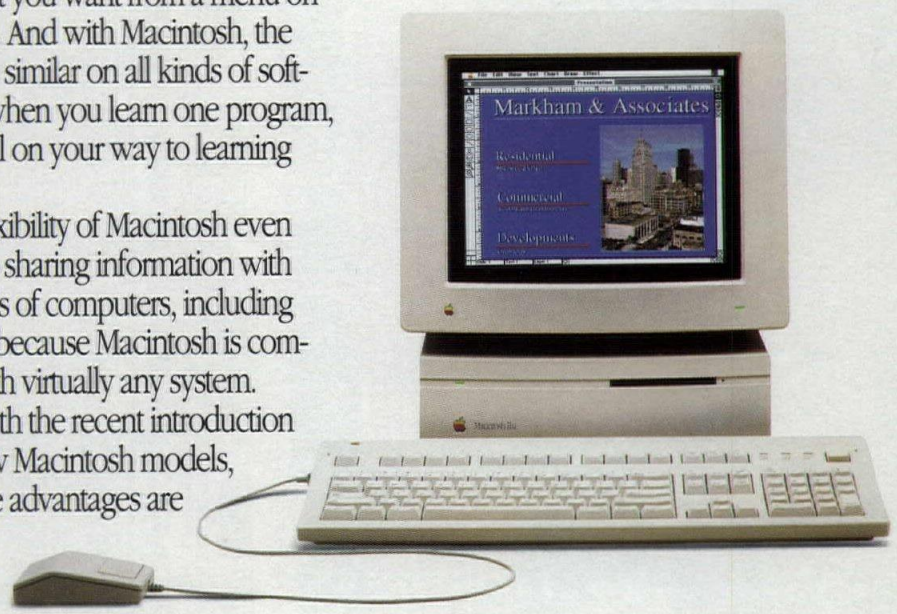

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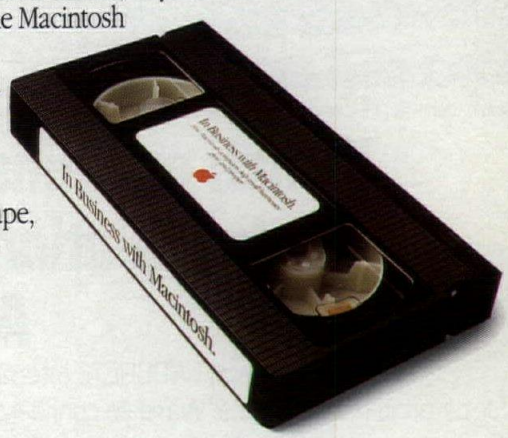

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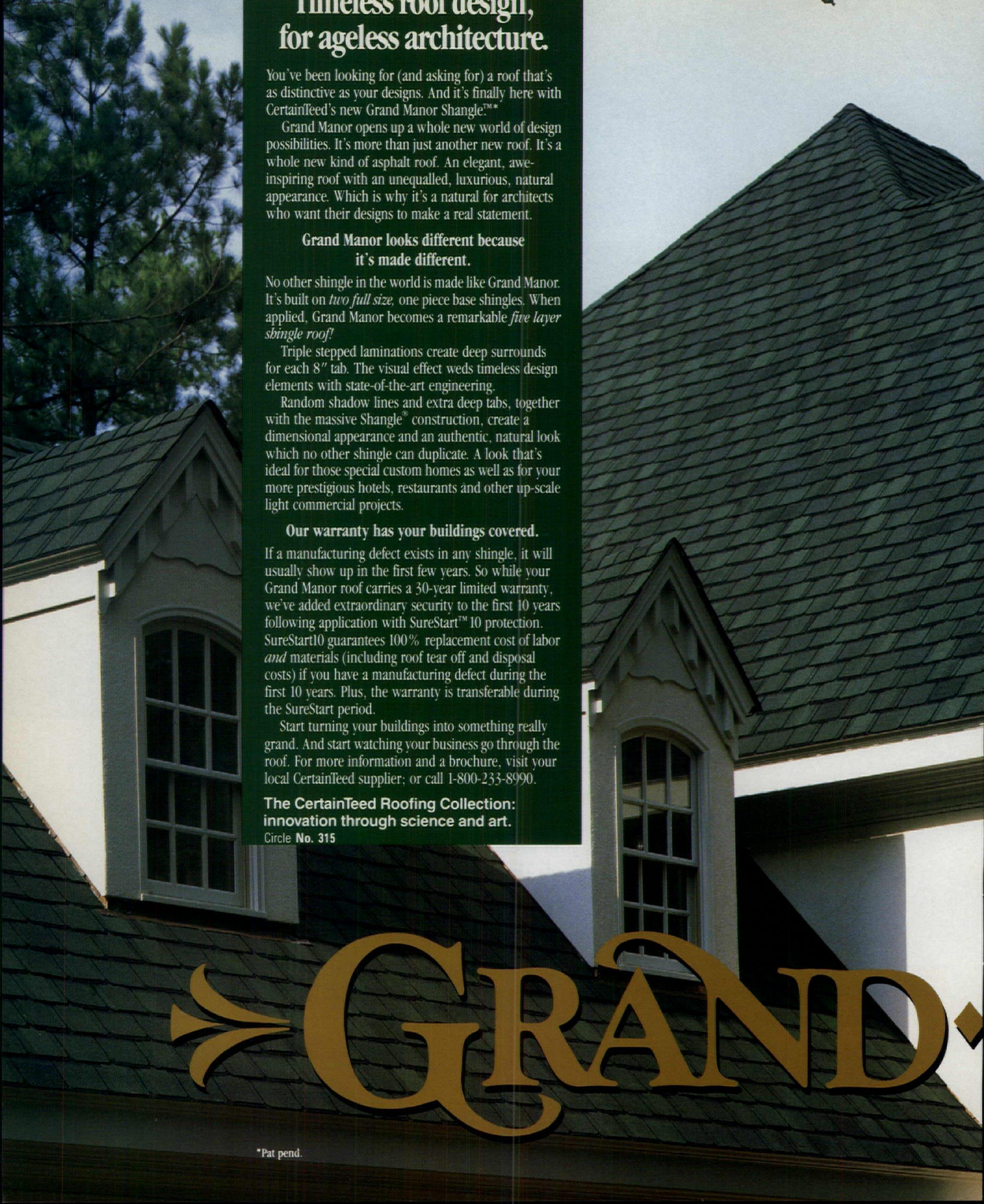

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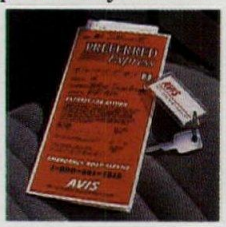

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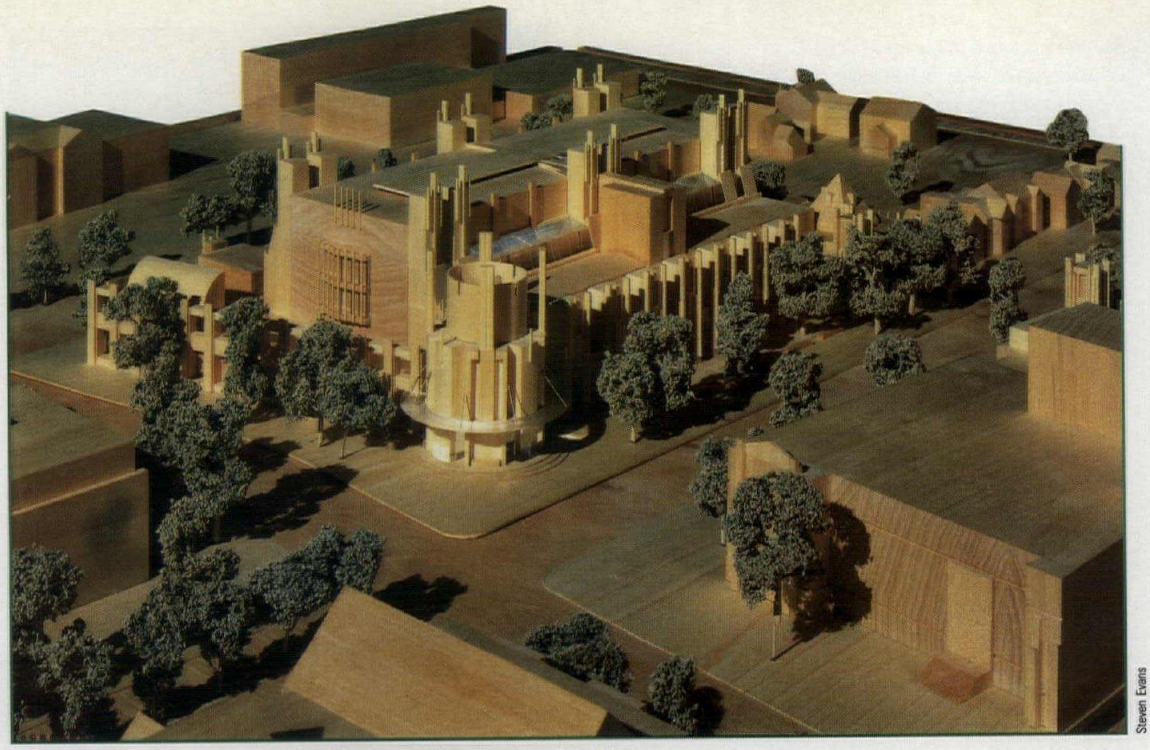


Steven Evans

Queen's University library by KPMB: a quadrangle turned inside out.

"Contempo-Gothic" for Canadian Library

The Toronto firm of Kuwabara Payne McKenna Blumberg had no sooner begun working drawings for Kitchener City Hall, a competition-winning design (P/A, May 1990, p. 24), when another provincial plum fell their way. In association with Moffat Kinoshita Associates, the firm was selected as architect for a $42-million library at Queen's University in Kingston, Ontario. The university, whose campus dates from the early 1920s, was looking for a building rooted in the past that would also accommodate future expansion.

The answer: Contempo-Gothic. KPMB principal Thomas Payne took inspiration from King's College Chapel at Cambridge University and from Sterling Memorial Library at Yale. He also took liberties. Turning the traditional collegiate quadrangle plan inside out, he placed the library collection – five levels including mechanical areas – at the center. Wrapping around the perimeter are reading areas, study pavilions, and gardens scaled to the immediate surroundings, a double row of low limestone buildings along a main thoroughfare. The entrance is a round tower topped by a glass drum, the one curved piece in the plan.

The overall silhouette makes deliberate reference to the Gothic cut of an existing library across the street. But Payne is adamant that craft and materials will prevent pastiche. Jolts of patinated copper, bronze, and aluminum will enliven gray stone. Cladding will be honed and split-faced stone panels with metal inserts. Ornament runs to metal and pre-cast finials and teak-clad mahogany window frames. The question remains: Once built, will Payne's essay in extroverted Gothic pass the reality test? **Adele Freedman** ■

The author, a frequent contributor to P/A, is design critic for The Globe and Mail *of Toronto.*

Second Accent on Architecture Gala in D.C.

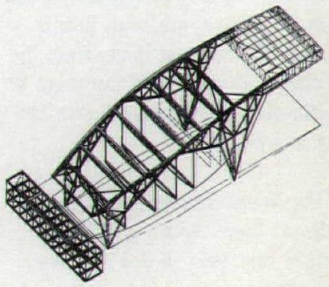
Considerably less pomp – under more sober circumstances – characterized AIA's second annual Accent on Architecture celebration, a three-day series of events in Washington, D.C., (February 5–7) intended by the AIA to focus public interest on the profession. While last year's celebration (P/A, April 1990, p. 29) included the likes of Prince Charles and a few Hollywood celebrities, this year's was most notable for the absence of French president François Mitterrand; Accent activities, including an exhibition and panel discussion on I.M. Pei's Grand Louvre, had been planned around Mitterrand, who opted not to come in consequence of the Gulf war.

In his stead, French *grands projets* official Emile Biasini accepted a citation for the Louvre project and gave one of the three speeches at the awards gala on February 6. Also addressing the black-tie gathering – at which the AIA's major awards were announced or presented – were Yale professor Vincent Scully, speaking on architecture's responsibility to the past, and former presidential press secretary James Brady, who thanked the AIA for its role in passing the Americans with Disabilities Act (P/A, Oct. 1990, p. 23) and encouraged greater attention to the needs of the disabled.

Also at the awards gala, Charles Moore received his AIA Gold Medal from Supreme Court Justice Anthony Kennedy. (President Bush had been invited to present the medal, but, like his French

(continued on next page)

In France, the merits of a national competition system come to light. Projects, page 109. (Below: structure for convention center, Toulouse, by François Deslaugiers.)



Leaving SOM but not retiring, Bruce Graham reflects on his Chicago years and his future in Florida. Perspectives, page 104.

Pencil Points

Chicago's Museum of Contemporary Art announced a shortlist of six non-Chicagoans for the design of a new museum building and sculpture garden. They are: Emilio Ambasz, New York; Tadao Ando, Osaka; Josef Paul Kleihues, Berlin; Fumihiko Maki, Tokyo; Morphosis, Santa Monica, California; and Christian de Portzamparc, Paris. A decision is expected in May.

The Mies van der Rohe Pavilion Award for European Architecture has been awarded to Stansted Airport in Essex, England by Foster Associates, London. The biennial prize, established in 1987, is bestowed upon projects designed by architects in the EEC countries to raise awareness of the "cultural significance of contemporary architecture... on the development of the European city."

Daniel Burnham's Reliance Building, an 1894 masterpiece of skyscraper design currently in a state of deterioration, will be restored if plans by the New York organization AFS Intercultural Programs to move into the building are finalized. Grants and low-interest loans from the city of Chicago and the state of Illinois would be available for the project.

The Watts Towers, built by Sabato "Sam" Rodia between 1921 and 1954 in Los Angeles, have been declared a national landmark. The nearly 100-foot-tall spires covered in concrete and broken glass, pottery shards, seashells, and pieces of iron, are being restored.

***Yale Journal of Architecture and Feminism* is a new publication "dedicated to the understanding of feminism in architectural scholarship, criticism, and practice." Architects, artists, and scholars from any field are invited to submit papers and visual material. Contact Yale Journal of Architecture and Feminism, Box 5892, New Haven, Connecticut 06520.**

Accent *(continued from previous page)*

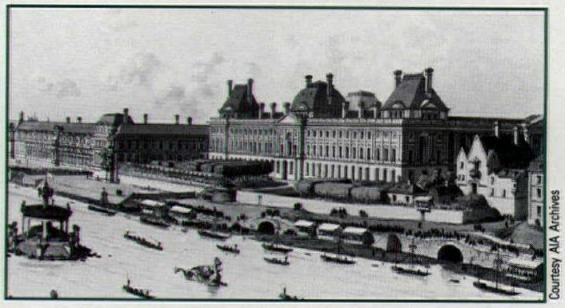
counterpart, was otherwise occupied.) Moore gave a brief address proposing, in lieu of a manifesto, a "Goldilocks" approach to design: "She could note that something was too hot or too large or too hard, and that something else was too cold or too small or too soft. Then she could discover a set of things in between that were just right." Moore also joined his former partners, Donlyn Lyndon, William Turnbull, and Richard Whitaker, in receiving the 25-Year Award for the condominium at Sea Ranch, California. The AIA Firm Award was presented to the Zimmer Gunsul Frasca Partnership, who, it was noted, deserve a great deal of credit for the livability of their home city of Portland, Oregon.

Two panel discussions co-sponsored by the Smithsonian Institution drew healthy professional and public crowds: The first, on February 5, included I.M. Pei and others associated with the Grand Louvre project; the second, on February 7, featured Moore, Robert A.M. Stern, Peter Eisenman, Michael Graves, and French architect Jean-Louis Cohen discussing the globalization of architectural practice. The panelists, who all have work abroad, agreed that such globalization was a good thing; Stern reminded the audience of Bernini's unbuilt proposals for the Louvre, which he said had great impact on French architecture.

Bernini's Louvre plans were among 150 items seen at the Octagon in the exhibition "The Grand Louvre: Entering a New Century." The curator for the exhibition (which runs through May 21) is Judith Schultz Nyquist, who mounted last year's Octagon show on Sir Christopher Wren and St. Paul's Cathedral. Through 800 years of built and unbuilt work on the Louvre, we can see the changing social, political, and aesthetic forces of France lavished on its most important landmark.

Walter Smalling

AIA Gold Medalists Fay Jones, Charles Moore, Joseph Esherick, and I.M. Pei at Accent gala.



Courtesy AIA Archives

"Louvre During the Reign of Louis XVI" in Octagon show.

This year's program was sponsored by Rhône-Poulenc, Inc., the French chemical concern whose silicone sealants were used on the Louvre pyramid, and by McGraw-Hill. The $30,000 raised at the gala was given to the Tropical Forest Foundation. **Mark Alden Branch** ■

After 150 Years, Houston Tries Zoning

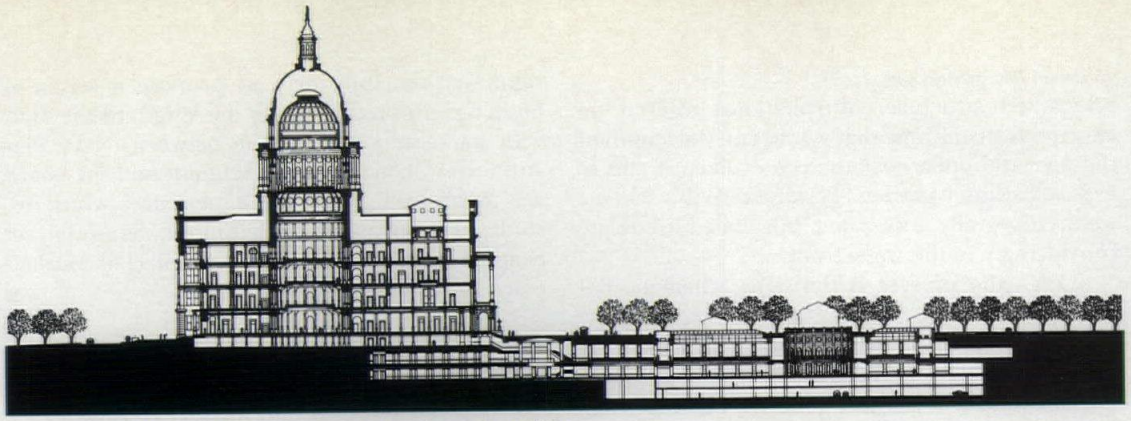
On January 9, the Houston City Council voted unanimously to institute citywide zoning. This represents a momentous psychological change in a city founded over 150 years ago by land speculators and dominated politically by kingmaker-developers, a perennial frontier town where uncontrolled growth was the norm until the mid-1980s.

What evolved in Houston was a collection of residential, commercial, and industrial areas with fraying boundaries. During the boom years of the 1970s and early 1980s, homeowners might awake to find themselves surrounded by body shops, junkyards, and nightclubs. During the crash of the mid-1980s, people all over the city also learned that houses maintained their value best in neighborhoods with the strongest controls.

Two factors lie behind the move to zoning. First, homeowners' associations, whose political power increased dramatically during the 1980s, began pushing for a change that would stabilize their neighborhoods. At the same time, developers stung by the market's unpredictability began to suggest that perhaps planning wasn't such a bad idea. Activists, including lawyer John Mixon and Houston City Councilman Jim Greenwood, began working with neighborhood groups to build support for zoning; by early 1990, public opinion polls showed a majority of Houstonians in support of the once-forbidden idea.

The problem is that an understaffed and inexperienced planning department must now overlay a zoning system on a 583-square-mile city with over 2 million inhabitants. The ordinance passed January 9 orders staffers to start from scratch and figure out how many people and how much money will be required to create a comprehensive plan for the city, and to begin preparing the plan and a set of zoning laws for city council approval in 1991.

Beyond that, Greenwood says, the focus must shift to coordinating growth in Houston and its five surrounding counties. "We have dozens of government agencies that never talk to each other. We have highway engineers who have more to say about Houston's growth than its elected government. We spend a billion dollars a year building speedways so people can get out of town because the city is so chaotic that people don't want to live in it. Planning and goal-setting can turn that around, if we take some of that money and turn it to education, public safety, and maintaining the streets we have." **Joel Warren Barna** ■



Section through Texas Capitol with addition by 3D/I at right.

Expansion, Restoration for Texas Capitol

Overcrowding, the threat of fire, and continuing exterior deterioration of Elijah Myers's 1888 Texas Capitol in Austin have led Texas legislators to press on with a plan to expand and restore the landmark building, despite a looming deficit that threatens state funding for highways, prisons, education, and health care.

Work has begun on a $58-million Capitol extension by 3D/International of Houston; it is the first phase of the $154-million overall plan unveiled by Capitol Architect Allen McCree in 1988.

3D/I's extension is a two-story office building under an access road and the lawns of nearby state office buildings on the Capitol's north side. It will center on a skylit north-south gallery and an open-air court, scaled and detailed to echo the Capitol's rotunda. The extension will include office suites for 99 state representatives and 10 state senators, committee staff suites and hearing rooms, and connections to the neighboring office buildings. Materials used in the Capitol – oak paneling, stone, terrazzo – will reappear throughout the extension, but in a modern-office idiom that architect Kirby Keahy of 3D/I calls "a contemporary adaptation that we feel pays homage to the original."

Work was also to have begun early this year on the restoration of the Capitol building itself, but when the contract for the work was sent out for bids in 1990, only one firm responded, with a bid well over the budget set by the Legislature. Carolyn Peterson of Ford, Powell & Carson of San Antonio, the architects heading the restoration effort, says that the bid package will be restructured to attract more bidders, in the hope that work can begin soon on the structure's deteriorating exterior. Restoration of the small General Land Office Building on the Capitol grounds began in 1989. **Joel Warren Barna** ■

Winner in Chicago Navy Pier Competition

Benjamin Thompson & Associates has emerged from a field of ten semi-finalists to win the competition to renovate Navy Pier in Chicago.

The pier, built in 1916, is roughly half a mile long, with handsome landmark structures at the extreme west and east ends. The sheds that lay between, used for storage when the pier was an active shipping facility, have been demolished to make way for the new construction.

The state and city authorities in charge of Navy Pier say they do not want another festival waterfront selling T-shirts, jellybeans, coffee mugs and Haagen Dazs. They intend to augment substantially the pier's recent role as home to several annual expositions. To accommodate expositions as well as the public, competitors were required to include a flexible exhibit hall, a winter garden, a museum, open space, room for retail shops and restaurants, and parking for 1800 cars.

Among the most promising schemes was the runner-up, designed by Booth/Hansen with RTKL Associates, who proposed a glass-and-steel shed in the manner of the Crystal Palace. The south elevation would be animated by pavilions and a celebratory entry to a winter garden. Lohan Associates employed a similar strategy with a bar-

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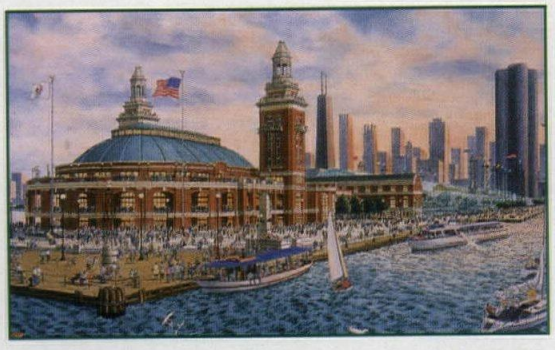

Navy Pier winner (top, BTA), and runner-up (above, Booth/Hansen).

Washington Report

Except during this city's earliest years, when the White House came by its color, Washington has mostly been spared the destruction, horror, and privations of war. Yet wartime has always left profound physical imprints here. Although the long-term effects on the city could be subtle, the Gulf war will probably be no exception.

The prospect of terrorist attack, which is perhaps an even greater danger in the wake of the cease-fire, is this war's most visible aspect thus far: The White House and the Pentagon are closed to public tours for the first time; Smithsonian museum attendance fell precipitously during the first two months of the year; visits to popular monuments and memorials were also way down, as estimates placed the falloff in city tourism at nearly 80 percent.

Beyond the tourist decline, which may be short-lived, there are other changes, sure signs of the recent war. Security precautions now in effect are without precedent, and some are certain to outlast the Gulf conflict.

Security has always been a factor here, and relatively unrestricted access to government buildings has evaporated gradually over the past 20 years. But even at that, circumstances today are palpably, even suddenly, different. Many non-government buildings (including the AIA headquarters) can now be entered only by appointment, upon verification of identity and a thorough search.

Automobile and pedestrian movements in the federal core are also restricted. Street parking has been eliminated near the State Department and the White House, and concrete vehicle barricades have sprung up everywhere. Uniformed guards wearing ballistic-resistant clothing and brandishing automatic weapons hold constant vigil outside some of the city's numerous foreign missions.

Greater concern over terrorism could prompt rapid approval of permanent street closings, access restrictions, and other security measures that have long been sought by authorities charged with protecting federal facilities. Jackson Place,

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Washington Report

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for example, to the west of Lafayette Park opposite the White House, has been closed to public traffic for all practical purposes. Permanent concrete bollards now block the street, to arrest vehicles that might attempt to gain speed for a breach of the North Gate to the White House.

Some advisors have urged further widening of the controlled perimeter around the President's house. In the wake of the rocket-mortar attack in London and amidst reports of terror squads being dispatched to the U.S., one easily envisions the possibility of closing Pennsylvania Avenue in front of number 1600. At the other end of the Avenue, plans to build a fence around the U.S. Capitol building, once deferred, are again receiving attention.

Such measures have been resisted in the past by officials and citizens who were reluctant to conclude that we really needed them. Now they are much more likely to be approved; the question will be how – not whether – they should be implemented. And, as one security specialist said, it is far easier to put security measures into place than to dismantle them.

Not all security steps are for the worse, at least from the standpoint of urban amenity. East Executive Drive, the visitors entrance to the White House, was closed to vehicles several years ago and has been a better place for people ever since.

But many of the measures now in place are grim and unsightly. They also signal a further and perhaps lasting closing of public institutions and buildings. Not too long ago, virtually anyone could enter the U.S. Capitol at will, if only to have lunch at one of the Congressional cafeterias. It was common to sit next to prominent elected officials there – a measure, perhaps, of an openness our public institutions once enjoyed.

Conditions are such today that visitors to Washington no longer remark on, let alone lament, the passing of such easy access to public institutions, people, and buildings; instead, they express wonder that it ever existed at all. **Thomas Vonier** ■

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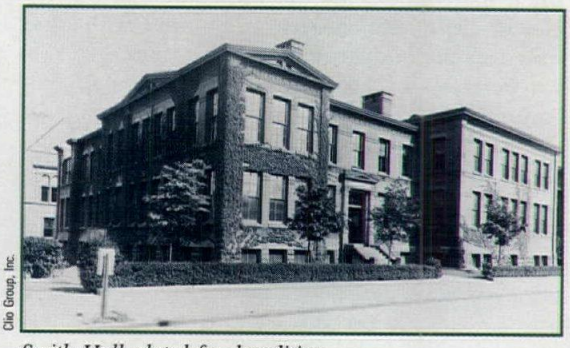
rel-vaulted structure. Murphy/Jahn offered an enormous steel frame that would run the length of the pier and open near the center like a trellis to expose a winter garden. Perkins & Will's scheme was sculpturally intriguing but failed to relate convincingly to the waterfront.

BTA, who presented the most schematic design, was the only firm to propose a series of buildings proceeding along the length of the pier, with parks and walkways in between. Navy Pier Authority Chairman John Schmidt said the board was impressed by BTA's experience, which includes Harborplace in Baltimore, South Street Seaport in New York, and Fanueil Hall Marketplace in Boston. **Cheryl Kent** ■

"Ugly and Ordinary" Penn Building at Issue

On football weekends, generations of University of Pennsylvania alumni have marched from College Green, around the Furness Library, down Smith Walk to Franklin Field for the big game. But if the university administration has its way, that walk will never be the same. In January, the Philadelphia Historical Commission voted 8–1 to grant the university a permit to demolish Smith Hall, the certified historic structure from which the Walk takes its name. The demolition is designed to make way for a $75-million Institute of Advanced Science and Technology.



Clio Group, Inc.

Smith Hall, slated for demolition.

Smith Hall, which its advocates claim was the first bacteriology laboratory in the United States when it was completed in 1892, is one of a small group of 19th-Century structures that gives this precinct of the campus a distinctive character. Currently it is the home of the Departments of Fine Arts and the History and Sociology of Science. And the faculties of both departments are objecting strenuously to the proposed demolition.

An ironic aspect of the controversy is the role of the architectural firm of Venturi, Scott Brown and Associates. Long noted for its support of historic preservation, the firm was already involved in the precinct as the architects for the recently completed restoration of Furness Library (P/A, next month) at the western terminus of Smith Walk. In this instance, Venturi, Scott Brown produced a feasibility study for the Smith Hall site in conjunction with preservation consultants The Clio Group; their main conclusion was that the demolition of Smith Hall was justified. The report has been the University administration's principal ammunition in its quest to raze Smith.

Denise Scott Brown explains, "The existing structure is a nice old building, but it is not great architecture. We think we can put back a building there and even distinctly improve things. . . Each decision requires an agonized appraisal; in this instance, the gain justifies the loss."

Not everyone agrees. Philadelphia architect John Blatteau, who provided written testimony to the Philadelphia Historical Commission against the demolition permit, contends, "The Smith building is the keystone of Smith Walk. It is impossible to maintain the historic character of Smith Walk and lose the Smith building."

Even most critics of the plan to demolish Smith generally admit that the building, designed by the Philadelphia firm of Collins & Autenreith, is individually unremarkable. But, like Blatteau, they quickly point to the essential role it plays in the composition of Smith Walk.

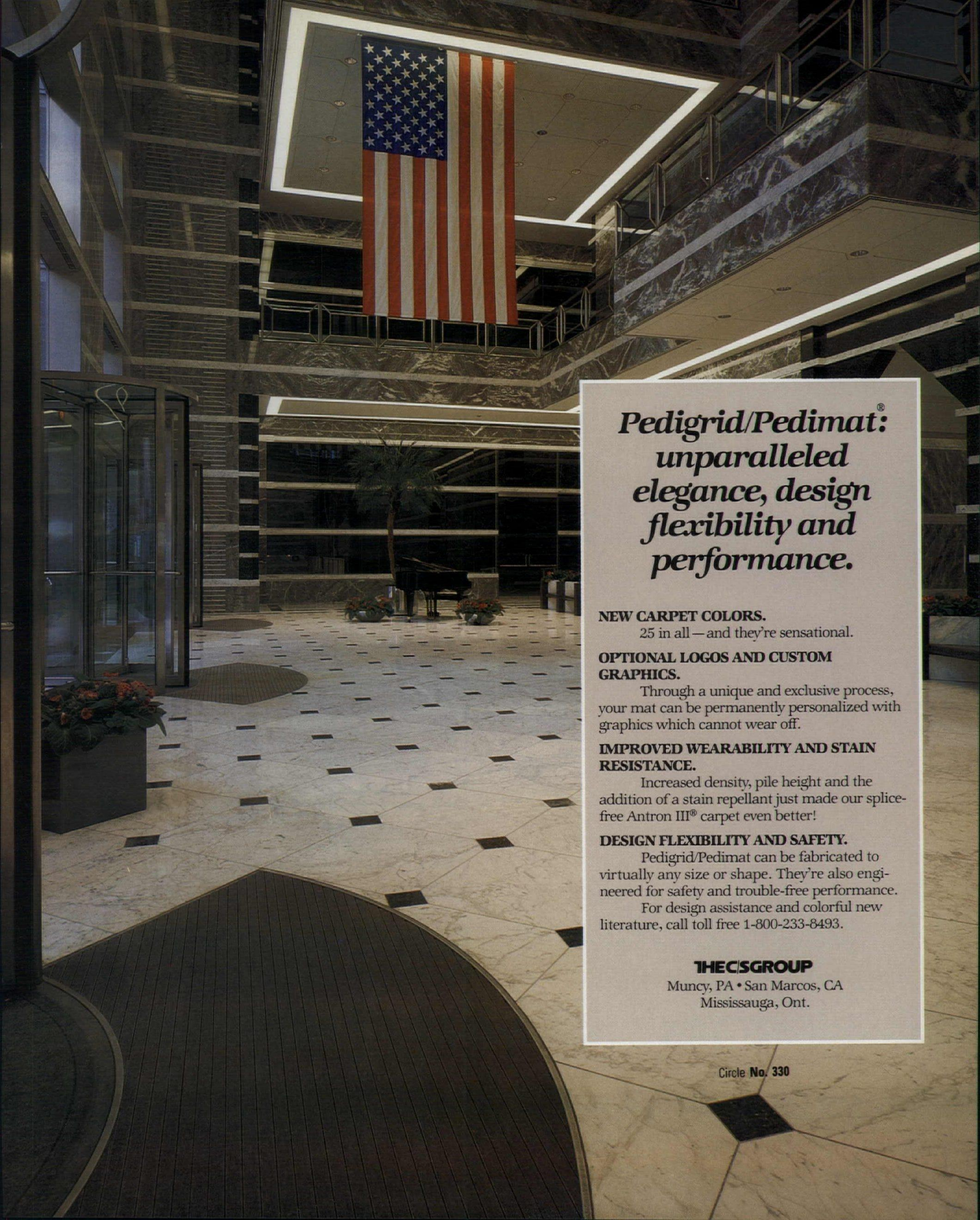
The new science building proposed by VSB as part of their study appears to crowd the visual axis of Smith Walk, deflecting pedestrians around the apse of the Furness building. Smith supporters are especially critical of this obstruction and what they say is the excess bulk of the proposed building along 34th street.

"To reorient Smith Walk is unfortunate," argues Blatteau. "I see great irony in Venturi's suggestion to demolish Smith Hall, an 'ugly and ordinary' building that only a few years ago they would have ardently defended. It is a perfect foil and backdrop to the literal monuments on campus, including Furness' 'duck' across the street." Robert Venturi counters, "We maintain our recommended scheme will enhance the architectural quality of the precinct. It will enrich the exterior spaces and architectural relationships along 34th Street and within the block. This visual richness will revel in the evolution and juxtaposition of architectural styles and compliment the buildings that exist along the west side of the street."

For now, the Historical Commission ruling is being appealed. But it seems likely that unless the University changes its mind, Smith Hall has heard its last hurrah. **Donald Prowler** ■

Venturi, Scott Brown & Associates

VSB's plan for Smith Walk. Smith Hall site is at left, Furness Library at center.



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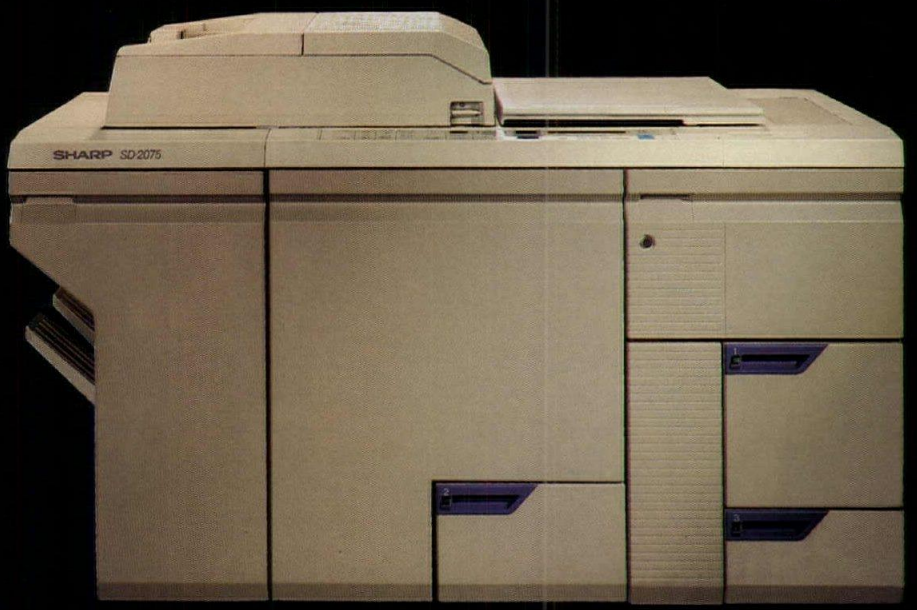

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Calendar

Exhibitions

Wendell Castle
Through April 28

New York. Wendell Castle's eclectic furniture design is generously represented in this 30-year survey. American Craft Museum.

Isozaki Retrospective
Through May 26

Los Angeles. The work of Japanese architect Arata Isozaki (p. 69) is celebrated in a 30-year retrospective. Museum of Contemporary Art.

Paul Nelson
Through May 26

Montreal. Though his name never attained household recognition American architect Paul Nelson's functionalist expressionism was an essential ingredient in the development of the Modern Movement. "The Filter of Reason: The Work of Paul Nelson" originated at Columbia University's Buell Hall (P/A, June 1989, p. 25). Canadian Centre for Architecture.

Design In Ohio
Through June 2

Akron. "Ohio Perspectives: Architectural, Graphic, and Industrial Design" is part of an ongoing series on Ohio art organized in an effort to promote the state's design talent. Akron Art Museum.

Myron Goldsmith
Through June 2

Montreal. Notes, sketchbooks, and study documents from his personal collection are used to connect the S.O.M. partner's exploration of scale and structure with his completed projects. The Solar Telescope at Kitt Peak in Arizona is among work included in "Myron Goldsmith: Poet of Structure." Canadian Centre for Architecture.

John Russell Pope
Through July 7

Washington, D.C. To help mark the 50th anniversary of the National Gallery of Art, a two-part exhibition of work by the museum's architect includes original drawings and archival material on the West Wing and an audiovisual program on Pope's career. National Gallery.

Mondo Materialis
April 26–September 2

Washington, D.C. Collage panels of materials for the future by an international *Who's Who* of architects and designers are supplemented with samples of innovative building products that are currently available. The show originated at the Murray Feldman Gallery at the Pacific Design Center, Los Angeles (P/A, May, 1990, p. 23). National Building Museum.

Competitions

Basement Design
Registration deadline May 17,
Submission deadline June 14

Tokyo. The Center for Better Living, a Japanese foundation established to promote quality building products for housing, has announced its 5th biennial BL International Industrial Design Competition. This year's theme is "Basement." Anyone may enter. Contact International Division, Center for Better Living, Shoei Building 7F, 1–6-19 Akasaka, Minato-ku, Tokyo 107, Japan tel. 03–3586-4901 or FAX 03–3582-2013.

Architecture in Perspective
Entry deadline June 7

Boston. The American Society of Architectural Perspectivists and Van Nostrand Reinhold have announced the fifth annual Hugh Ferriss Memorial Prize competition. Two categories may be entered: 1) formal presentation drawings and paintings and 2) sketches and conceptual work. Best-of-category and three jurors' awards will also be given. Some entries will be displayed at the Sixth Annual Exhibition of Architectural Delineation (fall 1991 in New

(continued on page 28)

Calendar *(continued from page 27)*

York). Contact ASAP, 320 Newbury Street, Boston 02115 (617) 846-4766 or Thomas Schaller (212) 362-5524.

Conferences

IBD Auction
April 25

New York. The New York Chapter of the Institute of Business Designers will hold its 13th Annual Auction at the IDCNY (Center One) in Long Island City, New York. Furniture, textiles, wallcoverings, and other products will be sold at auction to benefit the Hans Krieks Memorial Scholarship, DIFFA, FIDER, NCIDQ, IDLNY, and the New York Chapter of the IBD. Contact Bonnie Sorman, IBD, 127 East 59th Street, New York 10022 (212) 421-1950.

Building the City
April 26–27

Washington, D.C. The third annual "Building the City" conference, held at the Smithsonian in conjunction with the Institute's Resident Associate Program, commemorates the bicentennial of Pierre Charles L'Enfant's plan for Washington. Subtitled "Where Nature and the City Meet," the conference will examine several European and American cities sited along or around rivers. Contact Smithsonian R.A.P. (202) 357-3030, refer to Code No. 379–400.

A/E/C Show
May 6–10

Washington, D.C. A/E/C Systems® '91, CMC '91, Facilities® '91, REPROGRAPHICS/91, Intellimap '91, Surveyors Expo '91, CAS '91, Autodesk Expo '91, INTERconnection, and Ideal Scanner Solutions Expo '91 will all be held under the aegis of DesCon® '91, the International High Technology Design and Construction fair. Over 100 conference sessions and the 1500-booth trade show (May 8–10) will be held at the Washington Convention Center. Contact Sharon Price, A/E/C Systems '91, PO Box 310318, Newington, Connecticut 06131–0318 (800) 451-1196 (in Connecticut (203) 666-6097.)

AIA Convention
May 17–20

Washington, D.C. The 1991 AIA National Convention and Design Exposition, with the theme "Issues 1991," is scheduled to be opened by Senator Daniel Patrick Moynihan on Friday, May 17. Each day will have a "special focus" and a keynote speaker: Design Day with Robert Venturi; Community Day with Rod Hackney, Charles Correa, and Andres Duany; and Environmental Day with Amory Lovins. Over 40 one-hour consultation sessions, 4 specialty breakfasts, and 30 professional programs are planned. Contact AIA Convention Department (202) 626-7395.

International Furniture Fair
May 19–22

New York. The 3rd annual International Contemporary Furniture Fair, sponsored by *Metropolis* magazine and George Little Management and held at the Jacob K. Javits Convention Center, will be considerably larger than in previous years, with participation by a more heterogeneous mix of furniture makers from independent designers to contract manufacturers. Contact ICFF c/o Marianne McNamara, George Little Management, 2 Park Avenue, New York 10016 (212) 686-6070 or FAX (212) 685-6598.

Aspen Design Conference
June 16–21

Aspen, Colorado. This year's International Design Conference in Aspen, titled "Bare Bones," will not, according to IDCA President Milton Glaser, "be a week of agonizing. Rather, it is an inquiry into the directions, resources, and opportunites of the nineties, recognizing that design has always been a way of doing more with less." Contact Deborah Murphy, IDCA, PO Box 664, Aspen 81612 (303) 925-2257. ■

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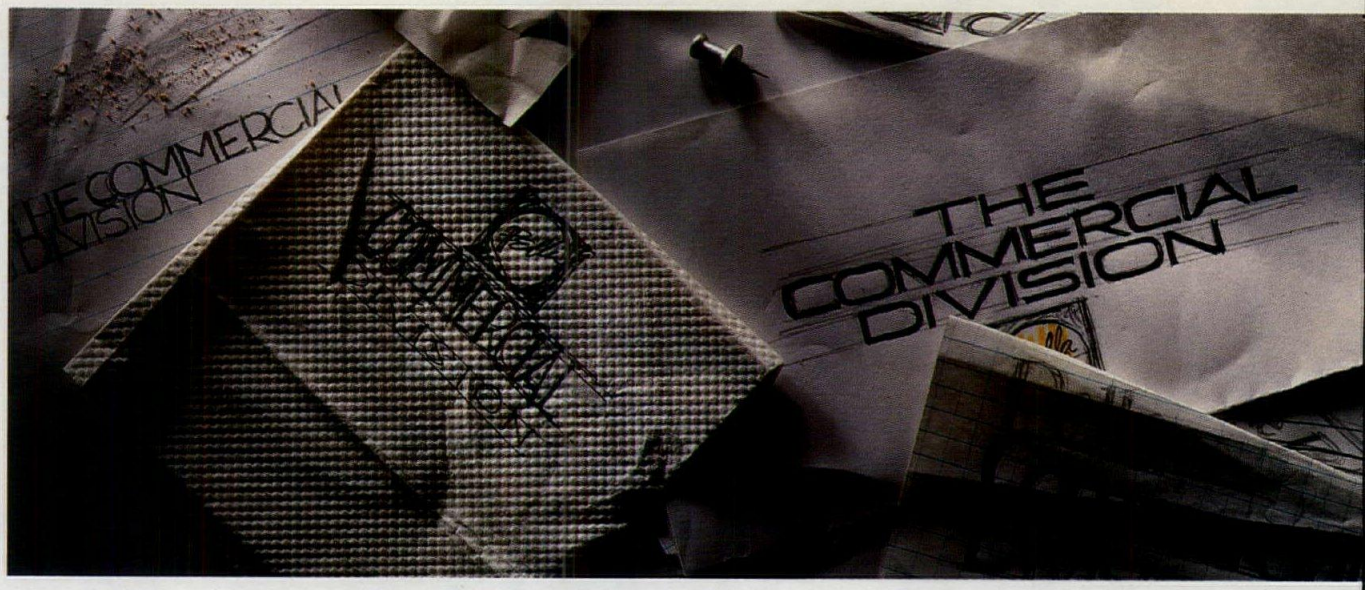

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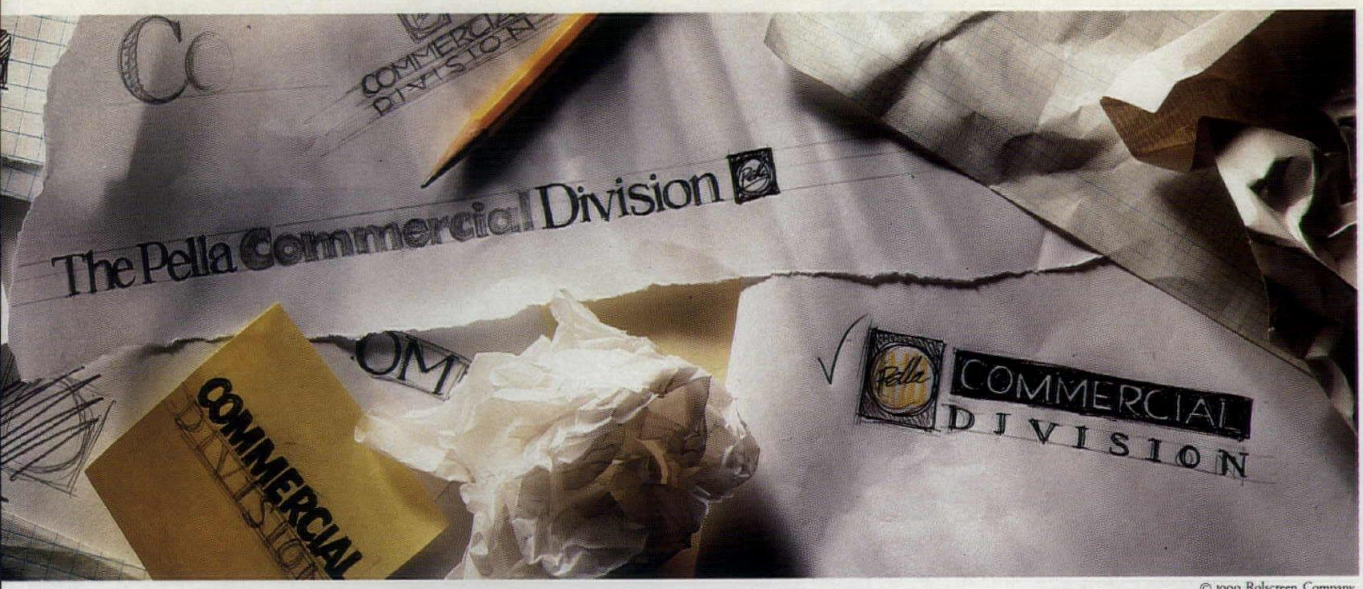

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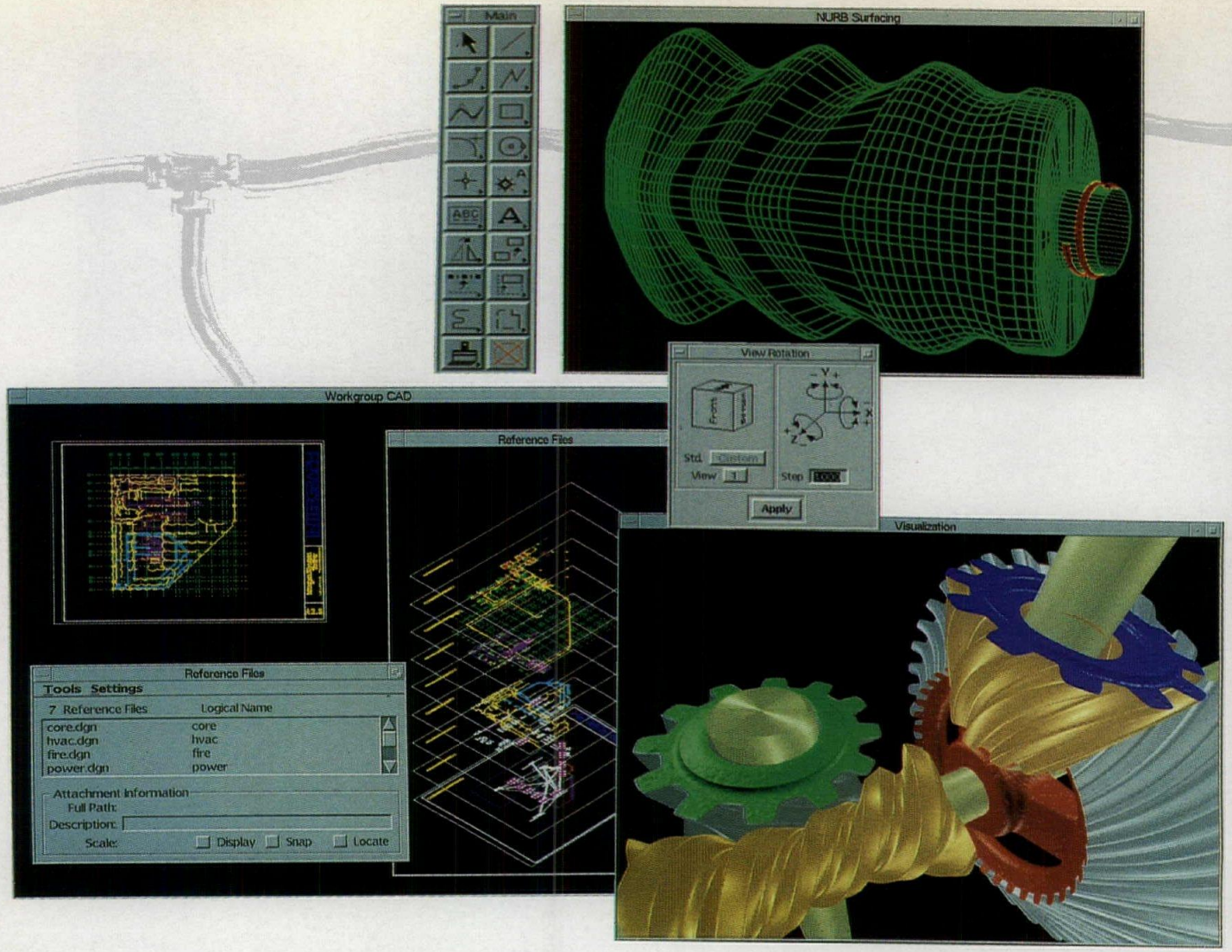

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–*PC Magazine*, March 27, 1990

Technics
Acoustics For Small Spaces

Consultant **Mark Holden** of Jaffe Acoustics explains the problems of and materials for designing the acoustics of small rooms.

The acoustician is often consulted for the acoustical design of large auditoriums, theaters, and concert halls; however, that is rarely the case with smaller, simpler spaces. In the past, the designer and final user expected very little from corporate conference rooms, board rooms, classrooms, and seminar rooms other than a comfortable space in which to work. The quality of room acoustics was frequently left to chance, or worse, ignored altogether – often with less than ideal results.

Today's architect can no longer be so cavalier about the acoustic quality and performance of spaces designed primarily for communication of the spoken word or recorded music. Users' expectations have risen considerably in the last 20 years. They demand spaces where lecturers and teachers can be heard and understood perfectly, and rightly so: The physics of sound and the physiology of the listener are now understood so well that there is no excuse for small rooms that do not function at the "state of the art." Note that rooms designed primarily for speech will, by definition, not be good rooms for performing or listening to either live or recorded music. And remember, there is no such thing as "perfect acoustics," only acoustics suited for the program.

Acoustics may seem as complex as a proposition in nuclear physics, or Einstein's theory of relativity. It is not. Each of us has experienced the fundamental principles of acoustics in daily life; we need only to be aware of them.

Reverberation

Take "reverberation." Nowhere has a simple scientific principle been more misunderstood, misapplied, and overrated. Reverberation is simply sound reflecting from surfaces in a confined space and decreasing in energy over time. Intuitively, we know that a sound like a hand clap persists longer in a large space such as a church or a cathedral than it does in an office conference room. That persistence of sound energy gives our ears clues as to the size and materials in a room. Even the most visually oriented designers, clapping blindfolded, could determine whether they were in a cathedral (long reverberation time), a lecture hall (medium reverberation), open plan office (low reverberation time), or outside (zero reverberation).

Reverberation time was defined in 1895 by Wallace Sabine, who first described the characteristics of Harvard's then-new Fogg Art Museum lecture hall by playing an organ pipe and measuring, with a stop watch, the length of time it took for sound to dissipate to inaudibility. Even though Alexander Graham Bell had invented the telephone years before, in 1876, and there had been scientific advances in medicine, physics, electricity, and light, acoustics research barely proceeded beyond the work of Sabine for 50 years. Only in the last 20 years, for example, have we been able to perfect the coupling of the elements of a telephone and the acoustics in a room to form a workable teleconference system.

Reverberation time in conference rooms, corporate board rooms, and classrooms is actually less important than the manner in which sound reflects from the room's surfaces. In fact, reverberation time cannot be defined or measured in a small room. Reverberation, as the scientist defines it, requires that the sound energy be evenly distributed and "diffuse" throughout the space – a physical impossibility in the average conference room with an 8- or 9-foot ceiling. So what is it that we hear after we clap our hands once in the classroom? We perceive the sound reflecting from surfaces, often many times a second, and losing energy at each reflection (the rate of which depends on the surface material's characteristics) until it becomes inaudible.

It is often helpful to visualize sound energy traveling at over 1130 feet per second – faster than buckshot from the barrel of a shotgun. In a short period of time, sound energy pressure waves hit many more room surfaces in a small space than in a large one. The patterns of the reflections to a listener are often more important than the reverberation time.

Achieving the correct reflection patterns for sound in a small space is the key to proper room acoustics. The designer has many tools that can be used to control, angle, direct, absorb, reflect, or diffuse sound within a room. They range from the most simple – such as carpet and acoustic tile – to state-of-the-art electronic systems that provide exact replicas of sound reflections from surfaces that do not, in fact, physically exist. But first, the room must be correctly sized.

Room dimensions

Often the first decision the architect faces when designing a classroom, teleconference room, or seminar room is the basic footprint and ceiling

Durston Saylor

1

height. While these might be derived from programmatic studies or standard texts on the required sizes of such spaces, it is important that the acoustical characteristics be examined in terms of the basic dimensions selected.

Room resonances should be reviewed and proportions adjusted, if needed, to eliminate the strange tonality ("colorations") that can occur when rooms have dimensions that support resonances (see page 45). Simply by enlarging one dimension and shrinking another, room resonances can be shifted in frequency (tone) so they do not coincide in a common resonance. This is particularly important where the program demands the playback of recorded music either for listening or as part of an audio/visual sound track – in a board room, for example.

Flutter Echo

Flutter echo receives its name from the "fluttering" sound it describes. It can be an annoyance and a hindrance to speech intelligibility, especially in teleconference facilities. Flutter echo, commonly misnamed reverberation or resonance, is characterized by discrete replications of the original source sound between two highly sound reflective surfaces more than 30 feet apart. It is often heard as a high frequency "ringing" or "buzzing."

This effect is confusing to the ear and even more disruptive when reproduced via microphones. Skewing walls as little as one inch in one foot (1:12) is enough to dissipate the effect, but it is rarely necessary to skew all walls so they are not parallel (as is sometimes prescribed). Another, perhaps more realistic, approach is to absorb the sound energy by treating the offending surfaces with highly absorptive materials, or to diffuse the sound energy by articulating the surfaces with elements over 6 inches in relief or depth.

Acoustic Materials ("Fuzz")

Another common misunderstanding is the notion that "acoustic materials" are the cure-all for poor speech intelligibility, excessive reverberation, and room resonances. All materials, from concrete and masonry to sound-absorbing panels, have acoustic characteristics. All materials reflect or absorb sound, the degree to which depends upon the material's composition, thickness, surface weight, stiffness, porosity, and support structure. Often we think of materials that have high sound-absorbing characteristics (such as acoustic tile or fabric-wrapped wall panels) as "acoustic" materials. But the surfaces of gypsum board and wood panels provide sound reflections that are necessary to improve speech intelligibility and music quality, so these are also acoustic materials. The improper use of fabric-wrapped acoustic panels can actually degrade a room's acoustical performance when used indiscriminately.

Most materials used in construction today have been tested by acoustic laboratories and assigned an octave-by-octave series of coefficients that describe the way in which sound is absorbed by the material. It is important to understand that the construction of a material and the way in which it is supported can drastically affect its efficiency. For example, acoustic tile glued to a concrete surface is much less absorptive than the same tile hung with a 16-inch air space, and absorption can further be improved with the addition of batt insulation laid on top of the tile.

Sound absorption coefficients are expressed as the non-dimensional ratio (designated by the Greek letter alpha, α) of the sound energy absorbed within a given frequency band (usually in one octave bandwidths) to that received at the surface. Ratios greater than 0.5 indicate that more than half of the incident sound energy is absorbed. The frequency of sound (see Building Science Brief, p. 43) is important because a one-number coefficient does not give sufficient information about the acoustic performance of the material. This is why the NRC (Noise Reduction Coefficient), which is a single number average of mid-frequency sound absorption, can be confusing and deceptive. Two materials might have the same NRC but, because of the limited frequency range and the averaging of four octaves, the two might have very different absorption characteristics. Recall the story of the statistician who drowned in the lake that was an average of 2 inches deep.

Sound reflective surfaces, such as thick drywall, plaster, concrete, painted masonry, and glazed ceramic tile, have absorption coefficients generally less than 0.2 at most octave bands, while fabric-wrapped panels can approach 0.99 in mid and high frequencies. Some materials are reported as having ratios greater than 1.0; this is because the laboratory test method allows the edges of the material to be exposed, even though the measured rating applies only to the face-plane area.

1 *Acoustic rules of thumb for large conference rooms:*

- *Avoid concave domes and barrel vaults; these surfaces cause acoustic focusing and can create "whispering galleries." Treating curved ceilings with sound-absorbing materials may cure this problem.*
- *Carpet the floor.*
- *Make the ceiling above the table sound reflective (plaster or gypsum board, for example); the rest of the ceiling may be absorptive (acoustic tile, for example).*
- *In rectangular or square rooms, treat two adjacent walls with one inch thick absorptive material, floor to ceiling.*
- *Extend the walls to the underside of the floor slab above. Use two layers of gypsum board on both sides of the walls.*
- *Ambient room noise from mechanical systems and other sources should be kept lower than NC-30. Exclude fan or VAV boxes from ceiling spaces; keep air register velocities less than 500 fpm; locate HVAC units at least 25 feet away.*

This board room contains speakers and microphones integrated with fabric-covered ceiling panels and fabric-covered 2"-thick fiberglass panels for absorption. Architect: Carol Groh & Associates; acoustical consultants: Jaffe Acoustics.

Try This at Home

Digital signal processing (DSP) has made possible a new world of audio equipment that includes electronic simulation, in your home, of symphony and chamber halls, cathedrals, jazz clubs, and rock venues. The more sophisticated processors allow the user to adjust reverberation time, apparent size of the room, the timing of reflections from the back and sides of the sound stage, and the balance of front and rear reflections from the electronic space. These are available from several manufacturers – but should not be confused with more prosaic movie surround sound systems.

If you don't have upward of $1500 to plunk down for a DSP unit, another power amplifier or two, and four more speakers, you can buy for $52.95 a startling compact disc of chamber and orchestral music recorded without any room character at all. Denon's *Anechoic Orchestral Music Recording* (Denon America, Parsippany, NJ 201-882-7467) was recorded in an enclosure free of most reflections and reverberation. The music sounds dreadful, and the musicians had such difficulty playing that they had to wear headphones with electronic reverberation added to the monitor mix. It vividly demonstrates the acoustical importance of architecture. The recording was made to substitute for a live orchestra in measuring hall acoustical characteristics. The CD includes tracks of the anechoic recording with added electronic simulation of Boston Symphony Hall, Amsterdam's Concertgebouw, and the Vienna Musikvereinssaal, plus sine waves, toneburst, and other room analysis test signals.

If your interest leans toward hearing and perception, the Acoustical Society of America's *Auditory Demonstrations* CD (ASA, 500 Sunnyside Blvd., Woodbury, NY 11797, 516-349-7800, $20 postpaid) will help you understand loudness, the decibel scale, stretched partials, virtual pitch, and much more. It is not directly "useful," as architecture goes, but it is good sensitivity training – and greater acoustic sensitivity can't be a bad thing for designers. **Kenneth Labs** ■

RPG Diffusor Systems

2 *Recorded music is mixed and the playback evaluated by reproduction over loudspeakers in recording studio control rooms. Control rooms are the most critical music listening environments that exist, and researchers have spent much effort trying to understand and overcome the acoustical problems inherent in these small spaces. Architects can learn a great deal from the literature and techniques of control room design.*

This control room's rear wall features a series of fluted panels that reflect sound diffusely. Diffusers give the space a live ambience without incurring flutter echoes and the acoustical interference of other specular reflections from flat surfaces.

Wall Absorption

Fabric-wrapped acoustic panels are the most common form of wall treatment used to control flutter echo and to reduce unwanted reverberation and reflection patterns in small rooms. The general rule of thumb is that the thicker the material used in the core of the panel, the broader the frequency range and the more effective the treatment. For example:

- Upholstery padding (¼″) on solid backing has virtually no absorption except at the highest frequencies; it is almost useless at speech frequencies.
- Acoustic panels 1″ to 2½″ thick absorb the higher components of speech frequencies, but have no low frequency absorption.
- Acoustic panels 2″ to 4″ thick are effective at all speech and music frequencies.

The core material, usually fiberglass between 3 to 7 pcf density, is covered with fabric that protects the material from abuse, provides a desirable appearance, and serves as a sound-transparent skin. It is important that this fabric be dimensionally stable under all conditions, including changes in temperature and relative humidity; it must also be porous (usually an open weave) so that sound can pass through it with minimal reflection and be absorbed in the core behind.

Often the designer needs a broader palette of materials than simply the fabric panel. Other facings and fabrications include:

- Open-weave fabrics, perforated vinyls, glass cloth, and sisal mats.
- Metal-perforated sheets (round, square, or hexagonal holes, for example), expanded metals, lathing, metal mesh, screens, grates, grilles, and linear patterns.
- Slatted wood grilles, perforated wood, and egg crate and linear patterns.
- Sheet plastic, including mylar and Barisol (thickness less than 30 mils).

Shredded wood fiber bonded with cement makes an inexpensive panel system, but is less efficient than fiberglass, so more material might be needed. Slotted concrete block is a type of volume (Helmholtz) resonator that reduces sound energy by friction at the slot and through absorption in the cavity. The dimensions of the slot can be sized to "tune" the resonator to absorb sound within a narrow frequency range.

Ceiling Absorption

While wall absorption can control echoes, flutter, and resonances, the ceiling is always the preferred location for placing "fuzz." The reasons are obvious: By virtue of its close proximity to all sources and listeners, the ceiling is the most efficient location; the ceiling is out of harm's way; and the plenum air space behind the material improves its efficiency, especially at difficult-to-absorb low frequencies. These advantages can be outweighed by the designer's desire for a wallboard or plaster "look," as is the fashion today.

Architects often ask,"Can you give me sound absorption that looks like sheetrock?" If I could, I'd be making it now. Options for ceiling treatment are almost infinite, but fall into the following general categories:

- Acoustic tile is seemingly limitless in form and absorption characteristics. Mineral boards usually are lower in efficiency (α = 0.6) as a mid frequency average coefficient, varying by type and style, than fiberglass ceiling tiles (α = 0.9). Concealed spline tiles, because of their high density, have the lowest absorption coefficients.
- The efficiency of fabric panels is much improved by the air space above, so a 1″ thickness is usually sufficient (see wall absorption for more in-depth description).
- Acoustic plaster is really a misnomer; the sprayed or troweled-on material is limited in thickness to about 1″, which limits absorption to high frequencies. The material should look mottled and fibrous; when tamped it looks better, but loses some absorption capabilities.

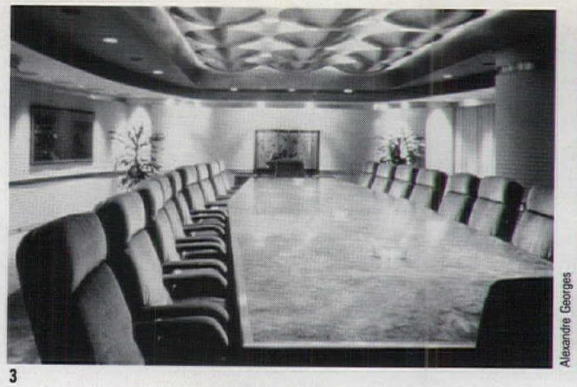
Special Absorption/Diffusion Materials

Quadratic residue diffusers provide the designer with the opportunity to reduce specular reflections and "spray" the reflected sound energy around in many directions without absorbing it. The basic principle behind these devices is complex and is based on mathematics worked out by the German acoustician Manfred Schroeder in the 1970s. It is sufficient to say that diffusers distribute sound energy in broad patterns that are determined by their depth and size. Looking much like mail slots of different depths, they can be an effective, albeit expensive, way to control room reflections when absorption would reduce total energy. Quadratic residue diffusers are commonly used in recording studios and on the rear walls of

PERFORMANCE COMPARISON OF DIFFERENT ABSORPTION PRODUCTS

MATERIALS	ABSORPTION						NRC	ADVANTAGES	DISADVANTAGES
	125	250	500	1K	2K	4K			
Fabric-wrapped acoustic panel (widely available; values are representative)	**1" thick**							• Thin panel – good at mid to high frequencies • Thicker panel - good at all frequencies • Ease of installation • Wide color selection	• Little low frequency absorption • Less durable than many materials • Cleaning is difficult • Thickness often a problem • Can't be painted
	.11	.45	.94	1.10	1.01	.86	NRC 0.90		
	2" thick								
	.40	.97	1.16	1.08	1.01	1.00	NRC 1.05		
	1" thick over 6" air space								
	.83	.92	.81	1.00	1.06	1.02	NRC 0.95		
Slotted Concrete Block (Soundblox®)	**6" cavity resonator w/o fibrous insert (A-1)**							• Good selective absorber at low frequencies • Durable finish • Structural • Good sound isolation (STC) • Low cost • Paintable • Cleanable	• Limited high frequency absorption • Can cause echoes • Heavy • Difficult to install
	.62	.84	.36	.43	.27	.50	NRC 0.50		
	6" cavity resonator with fibrous insert (R)								
	.39	.99	.65	.58	.43	.45	NRC 0.65		
	8" cavity resonator with fibrous insert (RSC)								
	.50	1.00	1.06	.66	.56	.72	NRC 0.80		
Acoustic Foam (values are for Sonex®; others may differ)	**2" thick**							• Highly absorptive at mid to high frequencies • Follows complex shapes easily • Light weight • Easy to install • Low cost	• Combustible • Fire-rated material less absorptive • Can't be repainted • Less durable than many materials
	.06	.25	.61	.92	.94	.93	NRC 0.70		
	3" thick								
	.15	.43	.98	1.03	1.00	1.00	NRC 0.85		
	4" thick								
	.20	.70	1.06	1.01	1.00	1.00	NRC 0.95		
Cement Bonded Wood Fiber (Tectum®)	**1" thick**							• Needs no protective cover • Moderately durable • Light weight • Easily installed • Can be painted • Very low cost	• Absorption lower than fiberglass • "Rough" material
	.06	.13	.24	.45	.82	.64	NRC 0.40		
	1 ½" thick								
	.07	.22	.48	.82	.64	.96	NRC 0.55		
	2" thick								
	.15	.26	.62	.94	.64	.92	NRC 0.60		
	2" thick over air space								
	.43	.50	.42	.62	.86	1.04	NRC 0.60		
Perforated Metal Over Fiberglass Core Thickness ranges from l" to 4". Openings must allow sound to reach core. 40 to 60% open. (custom made)	**1" thick**							• Non-combustible • High-tech look • Can be cleaned or repainted without degrading absorption • Inherent structural strength • Formed in complex curves • Resistance to abuse and damage	• Expensive • Complex installation • Can dent • High frequency reflective if holes are not open enough
	.37	.69	.97	.93	.92	.93	NRC 0.90		
	1" over air space								
	.74	.97	.87	1.02	1.05	.95	NRC 0.95		
Wood Grilles Over Fiberglass Core Opening must be > 40% (custom made)	**Over 1" fuzz**							• Durable finish • Elegant look • Can fit curved surfaces	• Costly • Combustible • Complex installation
	.21	.87	.99	.90	.82	.73	NRC 0.90		
	Over 2" fuzz								
	.19	.80	.99	.94	.84	.77	NRC 0.90		
Sintered Aluminum (Almute®)	**Over 1" air space**							• Not perforated • Monolithic look • High absorption, especially at low frequencies • Durable	• Costly • Small panels • Can't be painted • One manufacturer • Brittle
	.00	.10	.31	.62	.83	.72	NRC 0.45		
	Over 1" fuzz								
	.09	.41	.81	1.02	.97	.89	NRC 0.80		
	Over 2" air space								
	.13	.28	.59	.86	.90	.67	NRC 0.65		
	Over 2" fuzz								
	.36	.86	1.13	1.06	.90	.71	NRC 1.00		
Ceramic Absorber (Sekisui®)	**Over 1" air space**							• Monolithic look • Durable • Looks solid	• Costly • Small panels • Can't paint • One manufacturer • Not highly absorptive
	.06	.23	.65	.75	.63	.55	NRC 0.60		
	Over 2" air space								
	.20	.49	.84	.63	.56	.79	NRC 0.65		
Precast Concrete (Sierra Wall®)	**3 ½" block**							• Monolithic look • Durable • Solid • Can be painted • High absorption at low frequency	• Costly • Heavy • Difficult to install • Not absorptive at high frequencies
	.25	.76	1.09	.82	.77	.60	NRC 0.90		

Note: All materials are surface mounted, except as stated otherwise.


Alexandre Georges

3


Hedrich Blessing

4

3 *Even for small rooms, the difference between the speed of sound in air, 1.13 feet per millisecond (ms), and the instantaneous travel of electrical signals must be considered in the design of sound reinforcement systems.*

Every other saucer (8' apart) in the center row of this board room ceiling contains a microphone and a pair of speakers, one aimed at each side of the table. The sound picked up by each microphone is electronically delayed in proportion to the distance between it and the other saucer modules, so that the amplified sound from the loudspeakers arrives at the listener's ear 5 to 20 ms after the direct sound. This system is designed so that the chairman's speech arrives through the overhead loudspeaker at the far end of the 26'-long table with a 32 ms delay – 10 ms after the direct sound reaches the end of the table.

As long as the sound from the loudspeakers is not too loud and arrives within about 40 ms of the original sound, the ear and brain fuse the two different signals together and perceive it as a single, louder sound from the first source alone. This phenomenon is known as the Haas effect.

Natomas Company Board Room, San Francisco; Bond & Brown, architects; Jaffe Acoustics, acoustical consultants.

4 *The ceiling of the Large Hearing Room in Connecticut's Legislative Office Building in Hartford was designed as a sound reflective surface with sound-absorbing materials distributed on the upper side walls, rear wall, and behind the screen to optimize speech clarity. Audio/video systems were integrated into the legislators' desks to allow them to view videos simultaneously projected onto the screen behind them. Architects: Russell Gibson von Dolen Architects; acoustical consultants: Jaffe Acoustics.*

recording studio control rooms, where a combination of prefabricated and built-up units are used to diffuse the strong reflection that would otherwise bounce off it.

Tubular low frequency "traps" are specialty sound absorbers that have particularly important applications in small rooms. Best located in corners of ceilings and walls or walls and floors, these traps reduce room resonances and low frequency modes that plague small rooms. We find them particularly helpful in music listening rooms, recording studios, and media rooms, where they tighten up the "boominess" of bass tones. Some of these are passive devices, while others use a sensing system that responds electronically to drive a pressure-cancelling columnar transducer.

Electronic Architecture

Some of the most exciting new developments in acoustics are technologies that allow the designer to do more than just absorb, diffuse, and reflect sound with building materials. Electronic voice reinforcement offers flexible cost-effective use of space as conference, meeting, and training areas as needed. This interchangeability is possible (even in difficult spaces) without concern for wiring or equipment changes. Modular furniture can readily be moved about to best suit the function of the meeting. Skilled attendants are not required.

Large spaces can be subdivided by partition walls, allowing simultaneous use of the divided areas, with the electronics following the same pattern of use. When incorporated into the system design, a "screen" or "front" zone allows the presenter to wander freely, making maximum use of visual aids, without carrying a wireless or lavaliere microphone. Questions from the audience up front are clearly heard in the rear, and questions from the rear are clearly heard up front, without shouting or the need for repetition. Installed in the ceilings of conference rooms and board rooms, electronic voice reinforcement allows full use of the table surface for materials germane to the meeting, without interference from intrusive microphones and cables. Participants are not subject to "mike fright."

Hard-wired systems provide economical interfaces for full duplex audio teleconference capability (in 2- and/or 4-wire modes), further extending space utilization; 2- and/or 4-wire audio links for video conference systems; program inputs from A/V equipment, saving duplication of systems; archival recording; impaired hearing (infrared or wired) systems; simultaneous translation channels; chairman and/or presenter mute capability; and overflow space linkage. This same technology is now allowing the designer new flexibility in theater, concert hall, and multipurpose auditorium design (P/A, February 1983, pp. 129–135).

"Electronic architecture" is now being used around the country to provide sound reflection patterns and reverberation rivaling the greatest halls in the world, without limiting the designer to fixed geometries such as shoe-box shaped halls. But while electronic space can enhance and extend the usefulness, acoustical clarity, and perceptible size of rooms, it does not overrule the need to understand the fundamentals of and materials for controlling natural acoustics. These must be in the hands and minds of architects. **Mark Holden** ■

The author is a principal of and director of design at Jaffe Acoustics, Inc., Norwalk, Connecticut. He has consulted on performance spaces such as the Houston Grand Opera and the Majestic Theater renovation (P/A, June 1990, p. 93), as well as on numerous board rooms, conference centers, and television and recording studios. Jaffe Acoustics has been designing electronic sound reinforcement systems for small rooms for more than 15 years.

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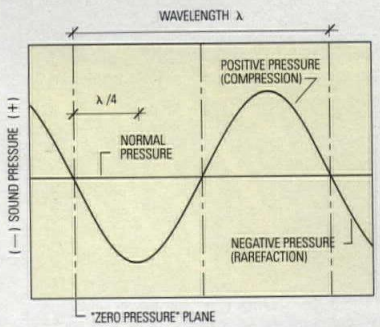
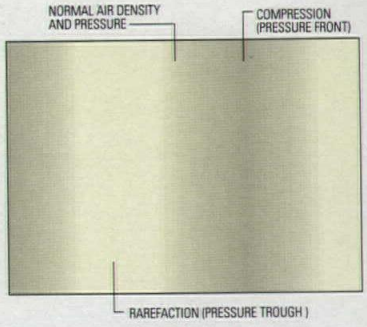
Building Science Brief 4/91
The Dimensions of Sound



1 SINE CURVE REPRESENTATION OF SOUND WAVE



2 REPRESENTATION OF SOUND WAVE IN AIR

It was Goethe, the 19th-Century poet, who said, "architecture is frozen music." And it was a 20th-Century musician who rejoined, "but music isn't thawed architecture." However you see or hear it, music does have physical dimensions, and most applications of wave theory acoustics to room design and detailing revolve around these dimensions.

A sound wave is a high pressure front (a compression) followed by a low pressure front, (or rarefaction). A succession of pressure fronts of equal spacing vibrates the eardrum at a regular frequency — measured in cycles per second, or Hertz (Hz) – and this vibration is perceived as a tone, or pitch. The spacing between the pressure fronts is termed the *wavelength* of the tone, and it is measured in feet or inches. Frequency f and wavelength λ (the Greek letter lambda) are related to one another by the speed of sound, roughly 1130 feet per second at room temperature:

$$\lambda = 1130/f \text{ and } f = 1130/\lambda.$$

The range of hearing for adults extends from about 20 to 16,000 Hz. The corresponding wavelengths for these tones are 56′ 6″ and 27/32″ respectively. What does this mean? In the words of the acoustician Vern Knudsen, "Virtually every architectural detail in an auditorium or music room will be large compared with the shortest wavelengths, and small compared with the longest." And, we may add, almost every dimensional decision an architect makes has acoustic consequences, whether or not he or she is aware of it.

While the dimensions of sound may seem both abstract and inaccessible, they can be experienced by anyone with a compact disc player, a home stereo, and $18 to spend on a test CD that contains sine waves at different frequencies. Play the signal through a single speaker and walk around the room with one ear covered: With a 1000 Hz tone, for example, you can plainly hear yourself walking through the wave fronts, which are on 13½″ centers.

Converting simple tones into wavelengths is the first step in applying acoustical theory – and in giving theory a sensible appeal. **Kenneth Labs** ■

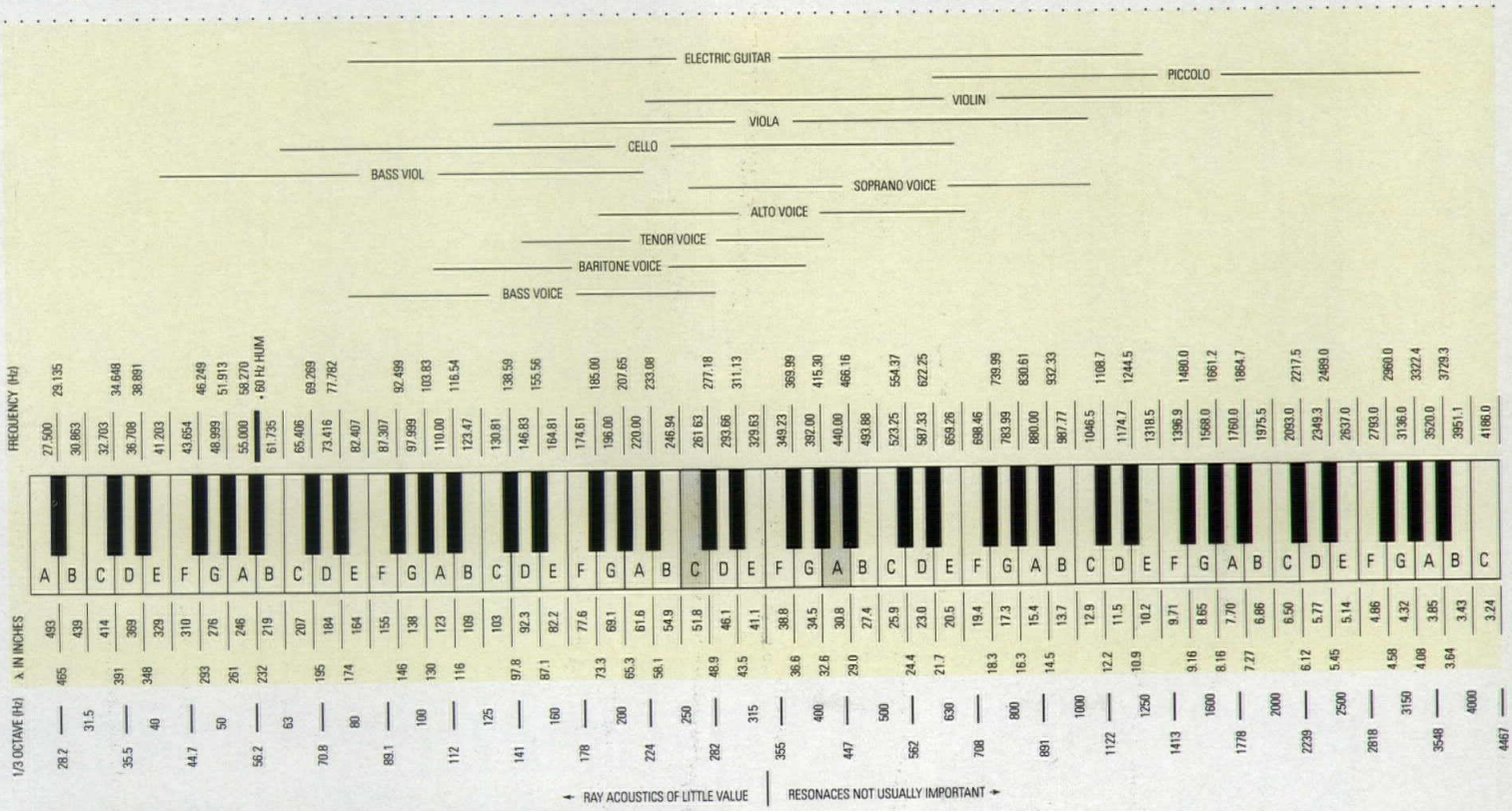
Recommended Reading

Acoustics for You, J.H. Prout and G.R. Bienvenue, Krieger Publishing, Melbourne, FL (407) 724-9542, 1990.

The Master Handbook of Acoustics, F.A. Everest, TAB Books, Blue Ridge Summit, PA (800) 822-8138, 1989.

The Science of Musical Sound, J.R. Pierce, Scientific American Books, New York, 1983.

Below: Frequencies and wavelengths given are for fundamental tones only. Each note has many overtones, the most prominent of which are the first few multiples of the fundamental. Speech overtones extend to 4000 Hz.



3 RELATIONSHIP OF FREQUENCY AND WAVELENGTH TO INSTRUMENT RANGES (FUNDAMENTAL ONLY)

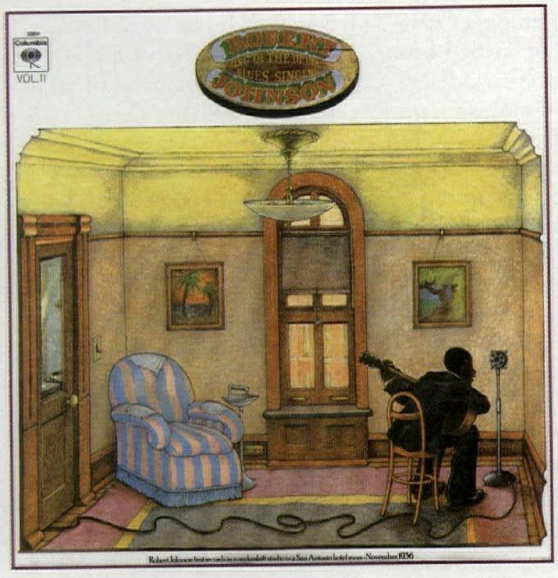
Technics Topics

Rooms have acoustical, as well as physical dimensions that architects need to understand.

Acoustical Dimensions of Design

When blues singer/guitarist Robert Johnson recorded the 29 songs during 1936–1937 that secured his musical immortality, he is said to have sat facing into a corner of the recording studio. Legend has it that he was intimidated by the (white) recording engineers. But, guitarist Ry Cooder suggests[1], Johnson was no timid man: He probably faced into the corner because he liked the increased volume and boost in midrange frequencies provided by sound reflections from the two wall surfaces.

Cooder is probably right, at least in part; the selective "coloration" in mid-range sound that Johnson may have preferred is the same effect that manufacturers of high-end home audio loudspeakers try to avoid when they recommend placing them away from corners, and especially at unequal distances from walls, ceilings, and floors.[2] Like most room acoustical phenomena, the effect is explained in terms of the wavelengths of sound.



1 *Why is this man sitting in a corner? It could be that he just liked the sound of it.*

Standing Waves

Consider the Middle C, in the center of the vocal range: With a frequency of 261.6 Hertz (Hz), the wavelength λ – or distance from one pressure front to the next – is almost 52″ (see BSB, p. 43, for an explanation of the relationship between frequency and wavelength). When a Middle C sounds at a distance of 26″ from a wall, the pressure front from one cycle of vibration will return to the source at the same time the next one is emitted. The reflected wave continues in its direction away from the wall in synchronization, or *in phase*, with the pressure front emitted from the source. The reflected wave reinforces the pressure front from the source (2), and increases its loudness.

If the pressure front reflects off an opposite, parallel wall in phase with the incident wave reflected from the first wall, then all pressure fronts coming and going will coincide with one another (3). This produces a *standing wave*. Every room with parallel surfaces supports standing waves at frequencies that are multiples of $f = 1130/2D$, where 1130 is the speed of sound in air (in feet per second) and D is the room width, length, or height (in feet). These are the *resonant frequencies* of the room, and notes sounded at them are sustained longer and sound both louder and weaker – depending on where your ear is – than other tones. The sound source doesn't have to fall at some fraction or multiple of λ/2 to set up the standing wave, although it establishes it sooner and stronger.

When length, width, and height of a room are the same dimension or multiples of one another's half dimensions, the standing waves supported between each pair of surfaces reinforce each other, and the room favors some tones more than others. This affects the apparent frequency balance of sound performed or played back in the room, whether it is a music rehearsal space, an audiovisual room, or a home living room. In a musical instrument, a strongly resonant tone is called a "wolf" note – presumably, because it howls; the fundamental resonant frequencies associated with room dimensions fall primarily in the bass range, and give building space a "boomy" rather than "wolfish" quality. At some points in the room, the tones are significantly weakened, and

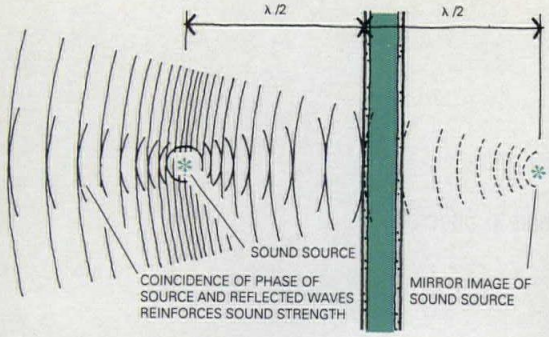
Tech Notes

The workshop *Bugs, Mold, and Rot: Identifying and Remedying Moisture Damage in Existing Residential Structures* will be held in Washington, May 20–21, by the National Institute of Building Sciences. Speakers include experts on moisture control, mycology, dust mites, termites, and residential siding. NIBS (202) 289-7800.

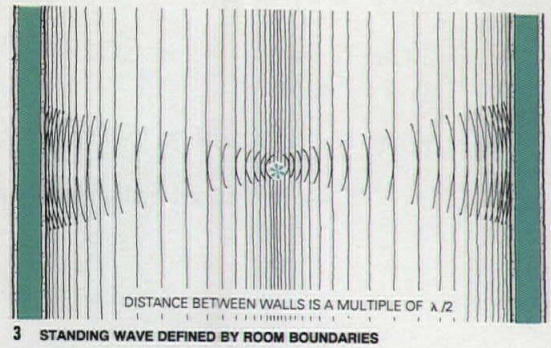
***Repairing and Extending Nonstructural Metals and Repairing and Extending Doors and Windows* are new volumes in H. Leslie Simmons's Building Renovation and Restoration Series. They are valuable guides to materials, typical problems and problem solving, standards, specifications, and information resources. VNR, New York (800) 926-BOOK, 356 and 406 pp., respectively, $42.95 each.**

***Building Sealants: Materials, Properties, and Performance,* STP 1069, contains 24 papers on movement capacity, field performance, laboratory testing, joint design, joint failures and structural glazing presented at a Committee C-24 symposium. ASTM, Philadelphia (215) 299-5585, 351 pp., $45.00.**

About 190,000 injuries each year are associated with architectural glazing, according to the Consumer Products Safety Commission. The National Glass Association's *Guide to Federal Glazing Laws and the Model Safety Glazing Code 1990* explains CPSC standards for passage doors and sidelights. NGA, McLean, VA (703) 442-4890, 24 pp., $12.95.



2 REINFORCING REFLECTION OF SOUND WAVE



3 STANDING WAVE DEFINED BY ROOM BOUNDARIES

2 *Reflections of sound waves reinforce the loudness of the sound when the wave fronts coincide with one another.*

3 *Room dimensions that are multiples of one-half wavelengths reinforce tones having frequencies corresponding to these wavelengths. The tones may sound louder or softer than normal, depending on where the listener's ear is within the standing wave.*

are "sheepish." None of these qualities is desirable.

There are no resonances at frequencies f that are less than $1130/2L$, where L is the largest dimension of the room. Colorations from resonances disappear for practical purposes at frequencies f greater than $11{,}250\ (T_{60}/V)^{1/2}$, where T_{60} is the reverberation time of the room (in seconds) and V is the volume in cubic feet [3,4] In lieu of this relation, some writers give a frequency of 300 Hz as a rule-of-thumb upper cutoff for resonance effects. So, although resonances occur at all frequencies corresponding to wavelengths that are multiples of $\lambda/2$, usually only the first few multiples are of interest.

Proportion and Resonance

If parallel walls create standing waves, won't splaying them rid the room of resonances? No, resonances occur in all contained spaces. Skewing the room out of square only makes the sound field more difficult to analyze and predict,[3,5] although non-parallel walls can aid diffusion of reflected sound and prevent flutter echoes – two other important considerations. A simple way to avoid resonances is to avoid closed corners: Connect the room to other spaces through doorways or let the space "flow" into corridors or ells.

Many guidelines and rules of thumb have been proffered over the years for sizing rectangular rooms to minimize resonance effects. Among the most recent was a ranking of 125 different room dimension ratios in order of "decreasing quality" by M.M. Louden in 1971.[6] Ten years later, audio engineer Oscar Juan Bonello described how the resonant frequencies determined by conventional wave theory analysis of rooms could further determine the acoustical acceptability of enclosed spaces.[7] Bonello's method goes beyond previous proportionality guidelines in that it can analyze rooms with real dimensions.

Bonello's procedure follows three steps:

1 The resonant frequencies f are calculated for each room by the well-known theoretical relation,

$$f = (1130/2)[(a/x)^2 + (b/y)^2 + (c/z)^2]^{1/2},$$

where x, y, and z are the width, length, and height, and a, b, and c are integers (increasing from 0) that represent the number of zero pressure planes along each of the three axes.

2 The resonant frequencies are sorted into ⅓ octave bands (see BSB, p. 43), and the number of resonances in each bandwidth is counted. The results can be graphed, with frequency on the horizontal axis and the number of resonances per ⅓ octave on the vertical axis.

3 For optimal room dimensions, the following conditions should be met: (a) The curve should increase monotonically; *each ⅓ octave should have more modes* [resonances] *than the preceding one, or at least an equal number*. (b) *There should be no double modes*; at most, double modes will be tolerated only in ⅓ octave bands with densities of 5 or greater.

In graphic terms, the curve plotted for a good room rises continuously with increasing frequency; it has no valleys. Plateaus in the curve are acceptable only for pairs of adjacent bandwidths.

Some Room Ratios Analyzed

P/A asked Dr. Peter D'Antonio to apply Bonello's analysis method to some of Louden's recommended ratios and some other rooms of similar dimensions. The results (4–13) confirm the expected unacceptability of square rooms and rooms in which a plan dimension is the same as or a multiple of the ceiling height. Louden's best-rated proporations of 1:1.4:1.9 and 1:1.3:1.9 yield good rooms. His ninth best (5) out of 125, however, resonates in the 80 Hz range at the dimensions given.

Bonello concluded from his own evaluations of proportioned rules of thumb that a ratio of room dimensions that is satisfactory for one volume may not be acceptable for another. Aside from certain proscriptive rules (room dimensions should not be simple multiples of the half-dimensions of one another), generalizations about room ratios generally are not trustworthy.

While Bonello's method can be worked by hand, D'Antonio used the computer program *ROOMODES*™, developed by acoustician David Conant of McKay Conant Brook, Inc., Acoustical Consultants.[8] In addition to figuring room resonance distributions, the software analyzes pressure fields and other room characteristics.

Control of Reflections

Reflections are just as often destructive as they are supportive of sound strength. At a distance of $\lambda/4$ and its odd multiples ($3\lambda/4$, $5\lambda/4$, etc.), the reflected wave is diametrically *out of phase* with – and tends to cancel – the strength of the source wave. Even small shifts in phase between source waves and those reflected from nearby surfaces can "color" – or alter – the original source sound by acoustical interference. "Coloration" of sound is just as undesirable to a musician or sensitive listener as lighting paintings with mercury vapor lamps.

In order to avoid interference from wall and ceiling reflections, sound sources (and receivers, like microphones) should be kept at a distance from reflective surfaces that is many times the wavelength of the frequencies of greatest interest. This is a problem for speech frequencies only in tiny recording booths, but it is impossible in small music rooms, which are often smaller in all dimensions than the 27.4′ wavelength of a low E note of an orchestral or electric bass.

Mounting speakers (in recording studio control rooms and home listening rooms) and microphones (in teleconference rooms, for example) flush with wall or ceiling surfaces eliminates one surface as a reflector, but others still exist. One or more of three separate, but complementary, techniques can create a *reflection free zone* (14,15). The techniques are:

1 Geometry. The walls and ceiling are angled so that there is no reflected view of the sound source from the listening area in the front half of the room. This is effective and desirable when the budget and

4-13 *These graphs plot the distribution of resonances among 1/3 octave bandwidths for different rooms. Smooth, continuously rising curves indicate good rooms, while curves with peaks and (to a lesser extent) plateaus reveal concentrations of resonances that give such rooms an undesirable sound of their own.*

program allows for non-rectangular spaces.

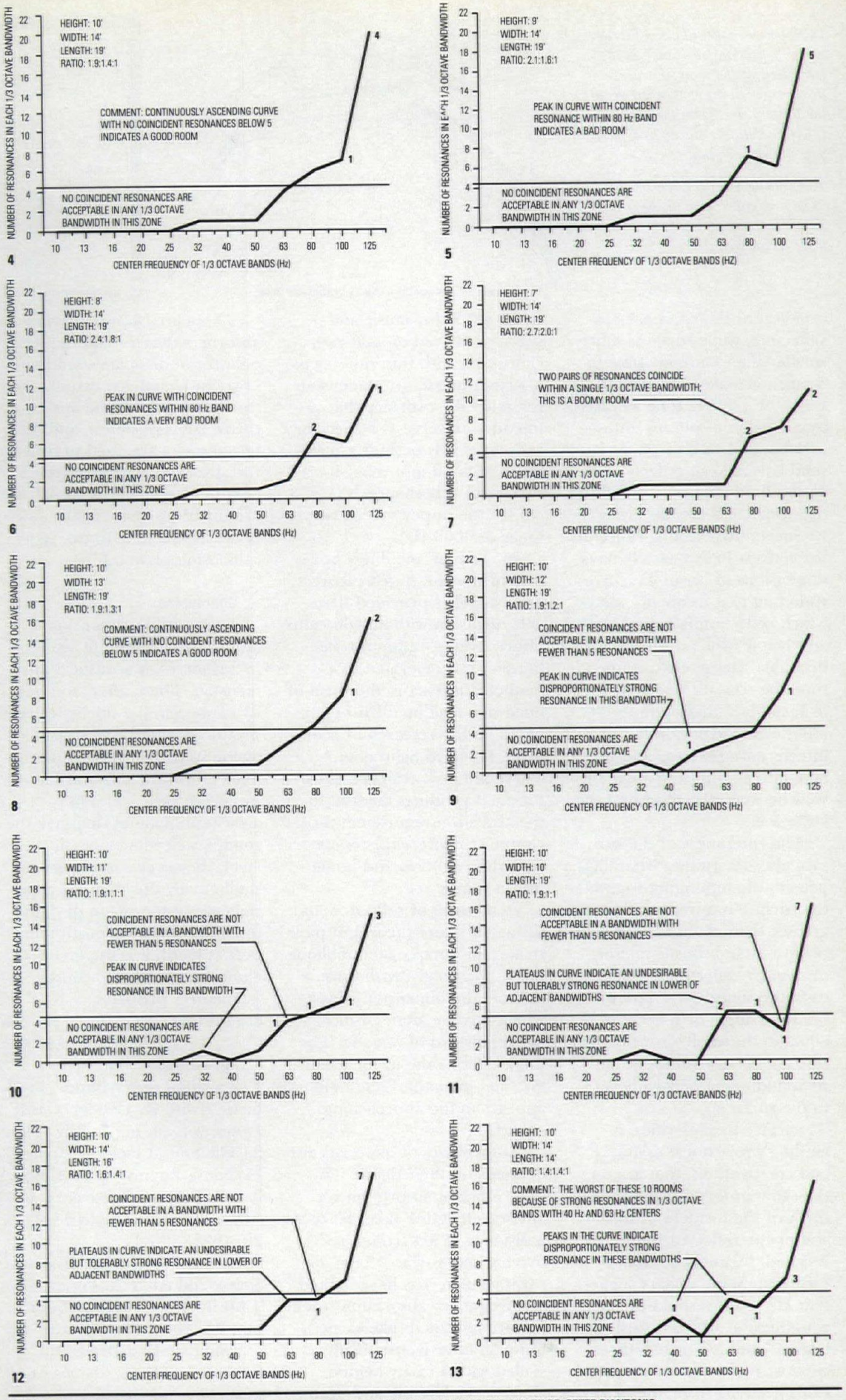
2 Absorption. All wall and ceiling surfaces that provide a reflected view of the sound source in the front half of the room are treated with an absorptive material. Absorbing materials are inexpensive and can easily be worked into the design, if planned for in advance. Too much absorption "deadens" the space.

3 Diffusion. Wall and ceiling surfaces that provide a reflected view of the sound source in the front half of the room are treated with a diffusive material. Diffusing surfaces preserve the ambience of the room and can often be substituted for absorbers. They are generally more expensive and deeper than surface-mounted absorbers, and require more consideration in design.

The aim of creating a reflection free zone is not to avoid all room reflections, only those that would arrive at the listener's position within 20 milliseconds of the direct sound. At a speed of sound of 1130 feet per second, this is a distance of 23 feet difference in path lengths between the line of sight to the source and along the paths of mirror images of the source. These and other concepts are explained more fully in the literature of recording studio and home listening room design.[3,4,9,10]

Reflectors, Diffusors, Absorbers

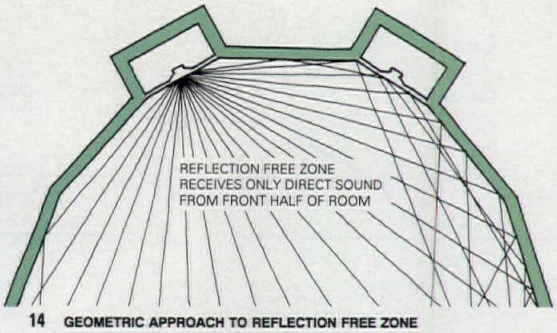
What size is a reflector? The dimension of a surface in relation to the wavelength λ of sound striking it determines what happens to the sound. Surfaces much larger in both



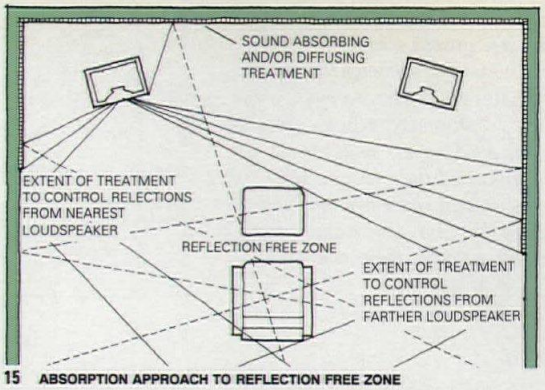
4–13 ROOM RESONANCE ANALYSIS OF DIFFERENT ROOMS BY BONELLO'S CRITERIA, PREPARED FOR P/A BY DR. PETER D'ANTONIO. NUMERICAL VALUES AT INFLECTION POINTS GIVE NUMBER OF COINCIDENT RESONANCE (MODE) GROUPS PER BAND.

14 *Room geometry alone can create a "reflection free zone" in the front half of the room. Early reflections (arriving within 20 ms of the sound direct from the source) interfere with the clarity and fidelity of the original sound.*

15 *Treating surfaces that would show a mirror image of the sound source is another way of creating a reflection free zone.*



14 GEOMETRIC APPROACH TO REFLECTION FREE ZONE



15 ABSORPTION APPROACH TO REFLECTION FREE ZONE

Drawings: K. Labs

dimensions than λ behave as reflectors, while surfaces much smaller than λ are invisible to the sound wave. The sound waves of a 60 Hz tone will pass by a 2′ square column undisturbed, while a 3′ high fascia or solid balcony rail reflects most of the fundamentals and all the overtones of a piccolo's range.

Suspended "cloud" reflectors for concert halls typically have dimensions of about 4λ, corresponding to a frequency above which reflection is desirable and below which diffusion is desirable. Designers can fine-tune the size of these according to formulae[5] that optimize dimensions to avoid undesirable interference patterns and that take into account the angle of view between the stage and the audience.

The roughness of the surface also determines what happens to the impinging sound. If the surface has irregularities no greater than about λ/10, it will behave as an acoustic mirror, or *specular* reflector. In this case, the sound wave bounces off at an angle of reflection equal to the angle of incidence (the angle between the sound path and a line perpendicular to the surface).

Surface irregularities, including projections, cavities, and corrugations, that are on the same order of magnitude as the λ of the incident sound scatter the reflected sound; this is called diffuse reflection, or diffusion. Some writers suggest that λ/7 is a threshold of roughness at which diffusion begins,[9] and λ/4 is sometimes cited as a minimum dimension of projections from and/or recesses in a surface to reflect diffusely (6″-7″ for music and speech centered on 500 Hz). Consistent with this, others give λ/10 as a maximum dimension for relief on a surface that is intended to serve as a specular reflector;[5] this permits a maximum of 8–10 mm relief for a surface to reflect speech (λ = 8 cm for the upper speech overtones of 4000 Hz).

In the past, moldings, surface ornament, fluted pilasters, and bas relief provided desirable diffusion without conscious effort. Today, random reflection has been elevated to a mathematical art in the form of quadratic residue diffusors, based on the research of acoustician Manfred Schroeder. These are now available as off-the-shelf products tailored to the acoustical requirements of churches, conference rooms, recording studios, and home media rooms.

In all cases of reflection and diffusion where the sound path strikes the surface at an oblique angle, the relief depth must refer to the dimension λcos θ, where θ is the angle of incidence, instead of λ alone. The more oblique the incidence angle, the "smoother" the wall appears to the approaching sound.

Absorptivity of materials also depends on their depth. The most efficient absorption for any wavelength λ takes place at a distance of λ/4 from a reflective backing surface. Thin absorptive materials have limited low frequency absorption when surface mounted (like carpet), but gain effectiveness if installed with a cavity behind (acoustic ceiling tile and draperies, for example).

There are two other types of absorbers that use internal resonances to dissipate sound energy. In Helmholtz resonators, the dimensions of the aperture, throat (slots or holes), and internal cavity are sized to tune the absorber to narrow frequency ranges. Panel absorbers are tuned by cavity depth and panel mass and stiffness, typically using plywood.[11]

Conclusion

Every visible dimension – and some that are not visible – in a room is an acoustical dimension. These affect the clarity of speech, the fidelity of reproduced sound, the suitability of the space for musical performance, and the sense of intimacy, warmth, and other acoustical qualities that give the room a welcome or harsh "feel," however consciously or subliminally they may be experienced. In the realm of daily practice, with no acoustical expert at hand, it is the architect alone who pens the acoustic "signature" of space.

Kenneth Labs ■

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8 *ROOMODES*™, McKay Conant Brook, Inc., 5655 Lindero Canyon Road, Suite 325, Westlake Village, California 91362, (818) 991-9300, $49.00 (DOS only).
9 "Optimizing Home Listening Rooms," P. D'Antonio, C. Bilello, D. Davis, Preprint 2735, *AES 85th Convention*, Audio Engineering Society, New York, (212) 661-8528, 1988.
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Acknowledgment

P/A would like to thank Dr. Peter D'Antonio, president of RPG Diffusor Systems and adjunct professor of acoustics at the Cleveland Institute of Music for his cooperation in analyzing Louden's room ratio recommendations.

We also thank David A. Conant of McKay Conant Brook, Consultants in Acoustics and Audiovisual, for his review and valuable comments.

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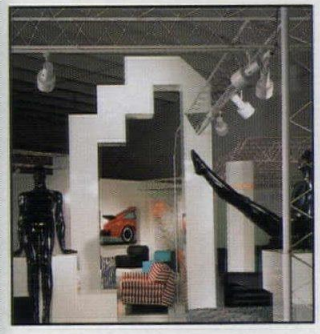

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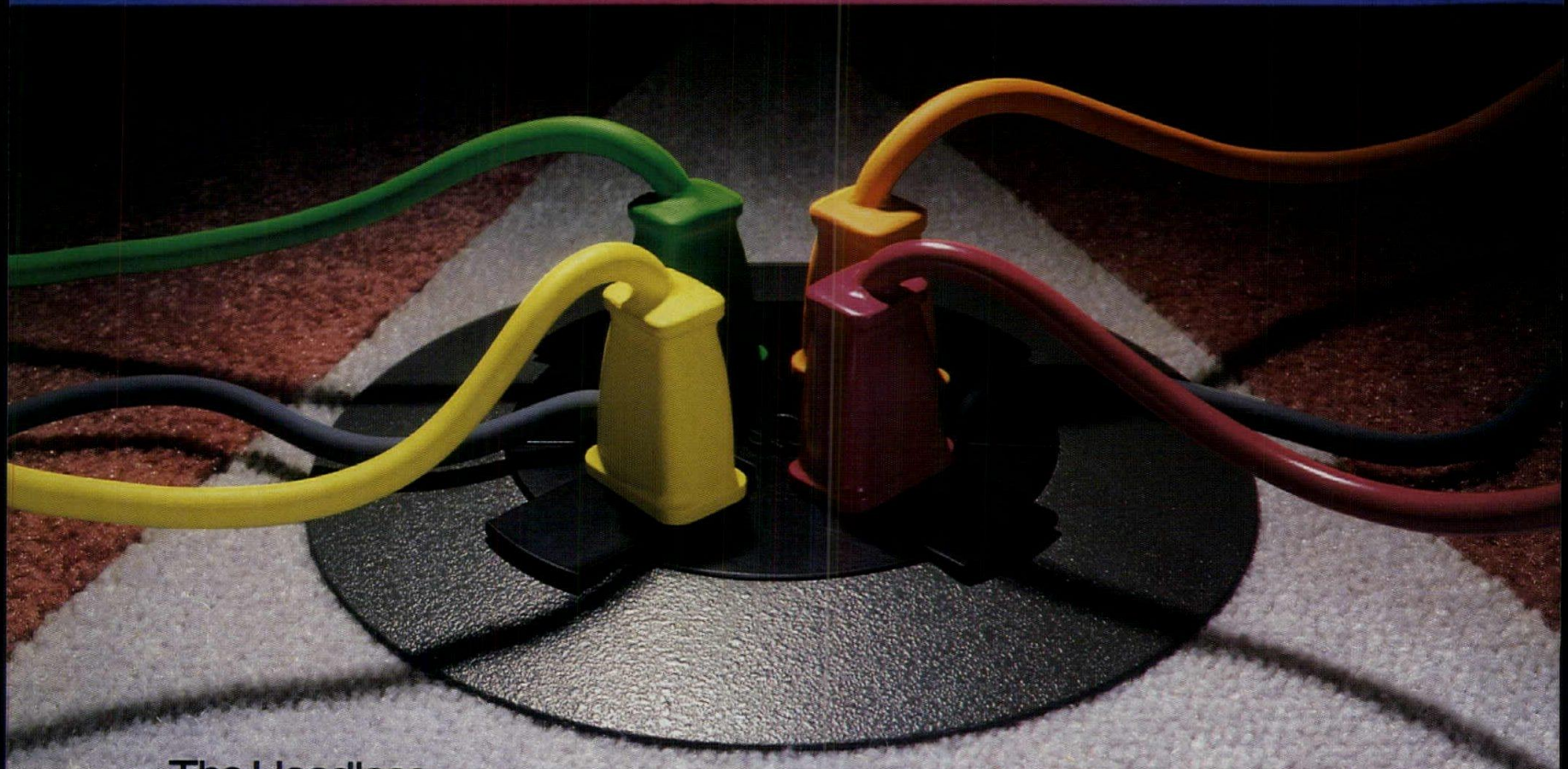

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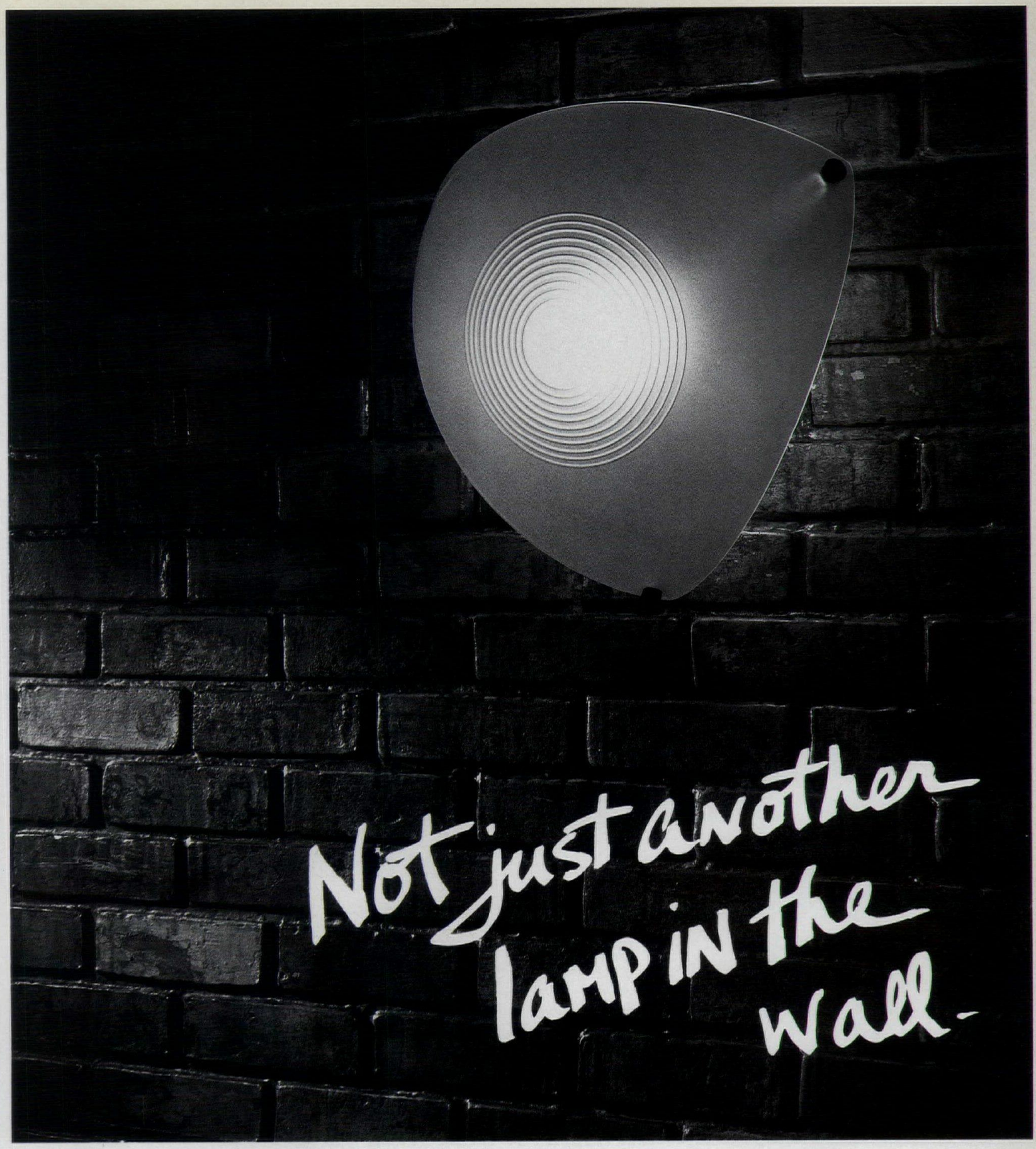

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Practice

In this first of a series of articles on ownership transition, **Robert Gutman** finds four traits that have enabled firms to survive the death of founding partners.

Management: Survival Patterns for Firms

The success of an architectural firm is perceived to flow from the talent of its designers. So dearly do we cling to this image of the profession that it is difficult to conceive of a practice enduring beyond the life of the designer who has given the work of the firm its distinctive stamp. The careers of some legendary American architects contribute to the persistence of this view, as in the demise of the practices once led by Louis Sullivan and Louis Kahn.

But this legend, that architectural practices fold once the great founding partner dies, has just as frequently proven false. The quality of the work may change and it may lose the specific design aesthetic associated with the practice's rise to prominence, but, many 19th- and early 20th-Century practices have survived through one or more generations. Richard Morris Hunt's practice, started in 1857, was continued by two sons after his death and, under the name of Hunt and Hunt, built some distinguished buildings. H.H. Richardson's firm which began just after the Civil War, was continued after his death in 1886 by his son-in-law, George Shepley, as Shepley, Rutan and Coolidge; with further name changes, it maintains its office in Boston today. Other examples include Daniel Burnham's firm, which was managed after his death in 1912 by two sons who were architects; McKim, Mead and White, which took in former associates as partners following White's murder in 1906; and Frank Lloyd Wright's practice, which survives as Taliesin Associates under his son-in-law, William Wesley Peters.

Architectural firms are group enterprises. All the practices mentioned, including Kahn's office and Sullivan's after he broke up with Adler, included teams of designers and production specialists. One can assume that associates wanted the enterprise to go forward, yet some firms survived and others closed. Why? Four factors appear to have had a major influence.

1. Family ties between leading partners and more junior people in the firm were important. If the principal partner or proprietor was connected by marriage or blood ties to other members, and these other people wished it to go on, then clearly greater effort was devoted to thinking through the process of succession. The experiences of the firms founded by Hunt, Richardson, Burnham, and Wright illustrate the influence of these connections.
2. A second relevant factor was the leaders' attitude about architecture. Apparently it made a difference whether architecture was regarded primarily as a design art or as a service profession. The fact that Mead, who was a project manager and business type, became the surviving partner after White's murder and McKim's retirement greatly facilitated the partnership's transition.
3. Another condition that favored the endurance of a practice was a legal arrangement permitting the orderly transfer of responsibility, control, and ownership before the principals retired or died. Burnham, Mead, and even Wright were enabled or persuaded by associates, family members, or circumstances, to deal directly with the problem. McKim, Mead and White adopted the partnership form, as did most firms at the turn of the century, to spread responsibility and control to other senior personnel.
4. Practices were more likely to endure when they were engaged in major building projects at the time the principals died or retired. Louis Sullivan never formally retired from practice. His practice just faded away, and he died in misery. The success of Hunt and Hunt was helped immeasurably because the design of the East Wing of the Metropolitan Museum, which their father had begun before his death, had to be further developed and constructed.

Are the experiences of these venerable firms relevant to the succession problems of practices today? My observations would support this idea. Many firms still attempt to solve transition problems by installing family members. The service-oriented practices appear to adapt to changed circumstances more easily than design or "signature" firms. Those firms that have a leadership development plan in place long before the founders are ready to retire smoothe the changeover when it must occur. And for a firm bent on surviving, nothing is more helpful than having a string of long-term projects already in the office.

Robert Gutman ■

The author is a member of the architecture faculty at Princeton University and a consultant on management issues.

Practice Points

More U.S. construction contracts were awarded in 1990 than in 1989 for airport buildings, recreational facilities, and schools. According to *ENR*, an increase in the construction of public facilities will continue in 1991 despite a general recession.

The AIA offers two *Building Relationships* booklets for clients, which explain the role of the architect and what is expected from the client in construction projects. One booklet is geared to institutional clients and the other is intended for corporate clients. One copy is free; additional copies are $5 + $3 shipping, (202) 626-7461.

Confused about state code irregularities? The NCSBCS is replacing the defunct CodeWorks database with a series of 20-page *State Focus* documents that summarize code variations. The first three reports for Kentucky, New Jersey, and Virginia are now available and cost $24.95 each. Contact NCSBCS in Virginia at (800) 362-2633.

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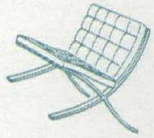
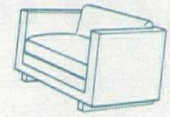
C. Jaye Berger discusses precautions that must be taken to comply with taxes on interior design services.



Law: Sales Tax On Interior Design Services

A number of states now have a sales tax on interior design services. These tax laws affect not only interior designers, but architects who provide interior design services. The repercussions for failure to collect it can be great, so architects should be familiar with the laws in the states in which they live. Effective June 1, 1990, an 8¼ percent sales tax on interior design services was enacted by New York City, and it represents a good example of the issues presented by such laws.

Like other such statutes, it is potentially a very difficult tax to enforce, as well as comply with, because of the lack of a precise definition of what constitutes interior design services as opposed to architectural services. The drafters of the statute say they will look to definitions in the architectural and interior design licensing laws to determine compliance. It is more difficult for architects who provide both architectural and interior design services to comply, since they will have somehow to divide up their billing for sales tax purposes.

Under the New York law, interior decorating and design services include, but are not limited to: preparation of layout drawings; furniture arrangements, design and planning of furniture, fixtures, and other furnishings which are not permanently attached to a building or structure; and selection, purchase, and arrangement of surface coverings, draperies, furniture, furnishings, and other decorations or any similar service. When an architect specifies finishes, it is a taxable service.

Many design professionals mistakenly look only at whether or not a capital improvement is involved to determine taxability. A better rule of thumb is whether the work needs to be filed by a licensed architect with the local building department. If it does, then that portion of the work is non-taxable. Further, if you mix taxable and non-taxable services, they will most likely be construed as taxable, so it is important to divide the services in your contract to eliminate any ambiguity.

There are many fine points of the law. For example, if design plans are delivered to a client in Connecticut but they relate to property in New York City, they are taxable. Although generally tax is due when the sale is completed, this tax may be paid on partial completion. Ultimately it is the client who pays the tax, and this should be made clear in the contract. If the tax is not collected, the client will be liable. The design professional also can be personally liable, even if the firm is incorporated.

Some of my architectural clients have divided their services and now have separate contracts for architectural and interior design services. Others have one contract which spells out which services are interior design services and which are for architecture, and how they will be billed and taxed.

C. Jaye Berger ■

The author is the founder of Law Offices C. Jaye Berger, and is a New York City attorney specializing in building construction, real estate, and environmental law.

Computers: Scanning the Scanners

One major obstacle to CAD implementation in architectural offices is, oddly enough, the existence of drawings. With hard-copy already present, it seems counter-productive (that is, expensive) to spend time redrawing on a computer. A scanner, just like a photocopier, is capable of "copying" an existing drawing, only the output is a computer file, not a piece of paper; so clearly, this could be a powerful tool for the conversion of existing drawings into CAD systems for editing or archives. Unfortunately, it is not quite that easy.

Drawings must undergo a great deal of post-scanning conversion to be of use to CAD programs, and this time can exceed that of starting the project on a CAD system from scratch. Problems include cleaning up dirty, ripped, or folded drawings (since each spot will result in an equivalent mark in the scanned file), and misaligned drawing registration, possibly resulting in incorrect dimensioning.

But the basic issue is the file format of the scanned image. The scanner reads the data in a "raster" format, reducing a drawing page into a matrix of black or white dots. CAD systems use some form of "vector" format, where each line is described by its basic geometry, such as its position, thickness, length, or other details. Each vector is defined as an object which can be edited or moved independently of the rest of the drawing. Raster files generally do not define objects in the same fashion. Thus, a scanned image must undergo some conversion to be fully usable to a CAD system, to which there are several different approaches.

Conversion Techniques

A direct raster-to-vector conversion is the most desirable. Some existing raster-to-vector conversions create hundreds of very short vectors for each line. The resulting drawings can be displayed by CAD programs, but not efficiently edited; this is sometimes called a "vector facsimile." Every year someone says that accurate raster-to-vector conversion is only a few years away, and while this software is maturing, a perfect "black box" conversion may never exist. Current programs have somewhat limited functionality for architectural plans. Dimensional accuracy, arcs, and even parallel line pairs must be carefully verified after conversion. Also, symbol recognition is limited, so full vectorization software is only functional for base plan or other simple line drawings. Even then, dedicated personnel who are familiar with the entire scanning and conversion process may be required.

The ineffectiveness of early "vectorizing" software turned some potential users off, but then a new concept emerged: scan overlays. With this method, CAD programs accept the raster format file as a base drawing layer. The image cannot be edited as a vector file, but overlays may be drawn on top of it, like mylar sheets on a pin-bar drawing. In practice, this hybrid raster-vector drawing can be traced on-screen to create a vector version of the

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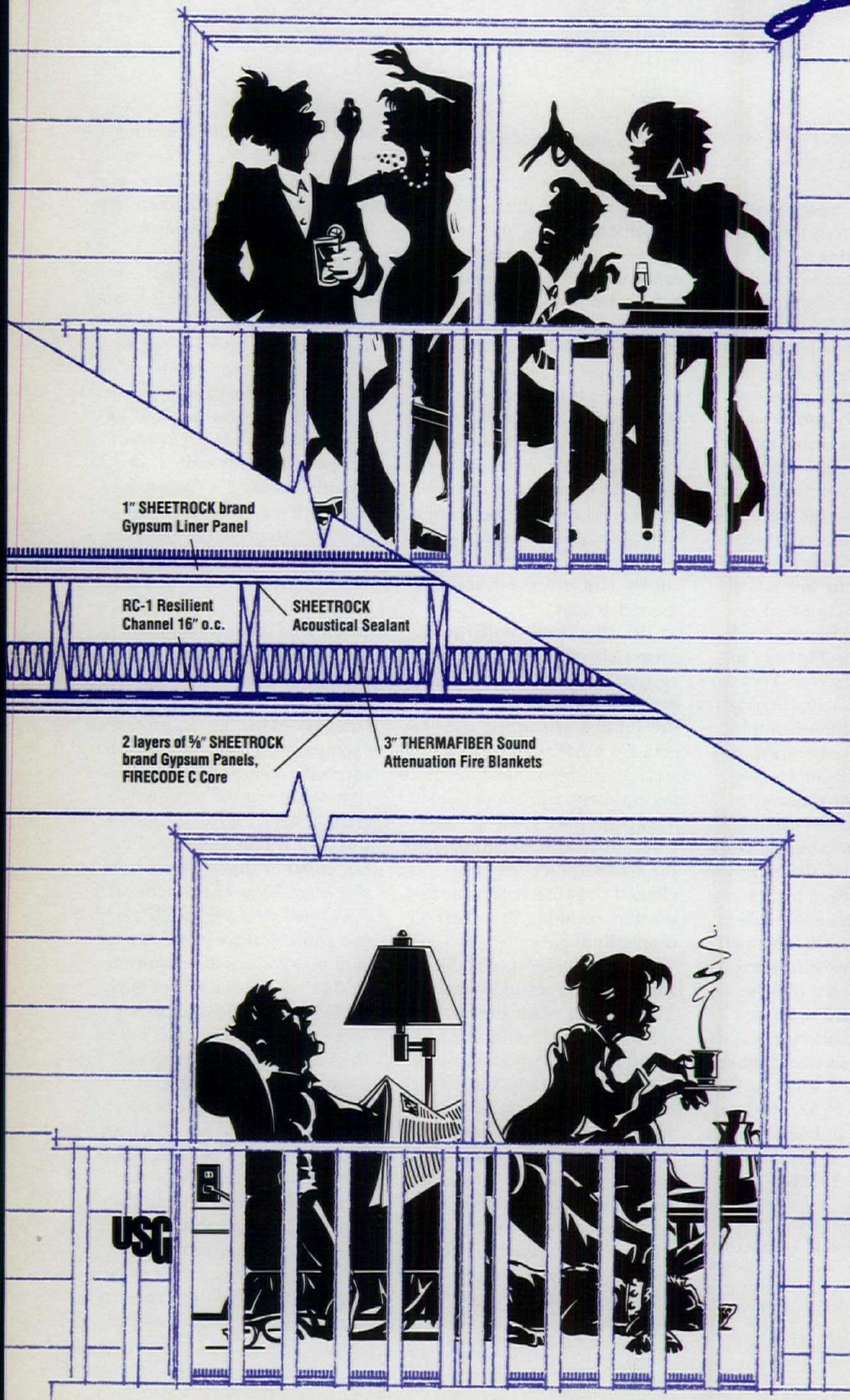

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Eric Teicholz considers the current strengths and weaknesses of scanning technology.

Leslee Ladds

drawing, or the unedited drawing can be used as a base plan for furniture layout or other applications. Newer programs, such as Intergraph's I/RAS 32 module for Microstation CAD software, even allow raster image manipulation.

If images are left in raster format, whether hybrid or not, output devices must also be capable of printing the image. Typical pen plotters cannot effectively handle a raster file, while laser printers and electrostatic plotters can.

Applications

Early scan applications mostly involved optical character recognition (OCR), a method of reading text from a page into a word processor. As scanning hardware became less expensive, software engineers developed applications for other markets. Some scanning applications for architects include:

- Producing new hard-copy from old drawings
- Revising old drawings in CAD
- Providing base plans in CAD for other applications such as furniture layout
- Transferring details from hard-copy to a new CAD project
- Displaying drawings on-screen for reference
- Electronic transfers of drawings not necessarily for CAD
- Electronic archives

The use of in-house scanning requires a fairly large volume of scanning to justify the high overhead. Likewise, if the quality of the original drawings is bad, the need for scanning may increase, but so will the cost, because of the time required to complete and clean the conversion, as well as the possibility that a more powerful scanner will be necessary. The complexity and required use of the drawings determine the level of detail to which the conversion must be made. Manipulation of symbols using CAD requires a vector format, but this may not be necessary in cases where only the scanned image need be viewed.

In fact, many applications for scanned drawings do not require vectorization. Displaying or storing plans, or producing new hard-copy, does not require that the drawings be in vector format. The overlay technique implemented in many CAD systems allows raster display. Full vectorization may be required only when edits are necessary.

An option for "view-only" use are utilities which attach raster images to database management systems (DBMS) such as dBase. The utility uses the DBMS to organize the drawings for easy access and searches, and then displays them when called up. Take note that these drawings, whether raster, hybrid, vector facsimile, or vector-only, consume large amounts of disk space – even when data compression techniques are used. The vector-only format may be the smallest, in general, but floor plans of, say, an office tower can still occupy entire hard disks. New optical storage devices can provide a memory solution, but tend to be either expensive or slow or both.

Scanning the Architectural Market

It has often been said that small offices must automate to compete with the greater resources of the large firm. However, the costs of technologies such as scanning may be prohibitive to the small firm. In some cases, service bureaus can be utilized for the scanning and conversion of as-built drawings into many different CAD system file formats. Laser Data-Images (Dallas, TX), for instance, charges about $200 for the scanning, conversion, and verification of an E-size architectural drawing. Automated Scanning (Dallas, TX) estimates about $120–$280 for a similar drawing, depending on its complexity. Not only can good service bureaus perform and verify conversions efficiently, but they can also free personnel for other duties.

The emergence of small PC scanners and scan-overlay techniques has brought the option of in-house scanning technology into the small architectural firm's reach. Scanner prices fluctuate with the size of the scan area; hand-held four-inch-wide scanners run under $500 and large E-size scanners run from around $15,000 for an Ideal Contex scanner up to $50,000. An A-size scanner may be $2,000 or more. Another consideration is the resolution of the scanner, which generally ranges from 200–1,000 dpi (for comparison, a typical laser printer has a resolution of 300 dpi). Higher resolutions are possible with laser scanners, but are extremely expensive and, for the most part, unnecessary. For most design applications, as-built drawings without gray scales or other features, 200–500 dpi is enough. Lower cost scanners of the same size and resolution may not be as good at thresholding – the ability to differentiate black and white – or they may be slower.

The software used to convert the scanned images is perhaps more important than the scanner itself. Palisades Research (Pacific Palisades, CA) offers a scanned image vectorizing program called AutoImage-Professional (AI-Pro) for under $1,500, which is capable of automatically converting E-size drawings into several possible CAD formats. Many scanner vendors offer their own conversion software bundled with the hardware.

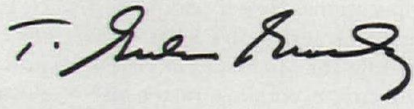
More common now, and perhaps more mature, is the overlay method. Image Systems Technology (Troy, NY) has developed a raster overlay tool kit, called CAD Overlay ESP, which offers scan layering for AutoCAD, VersaCAD, Microstation, and others. The trend today for in-house scanning is to go with overlays with raster-editing capability; they save time by displaying the scanned image and allowing raster clean-up, and they add flexibility, permitting vectorization by tracing on-screen in a CAD program when necessary.

Eric Teicholz ■

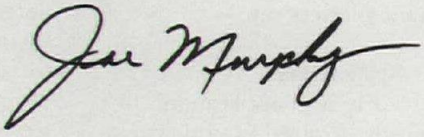
The author, an architect, is president of Graphic Systems, Inc. in Cambridge, Massachusetts.

"Joe is very availab

T. Graham Bradley is a principal of Bradley Likins Dillow Drayton, AIA, a 60-year-old firm located in Decatur, Illinois. He is a Fellow of the AIA and a past director of the national AIA. He is also past president of both the Central Illinois Chapter of the AIA and the Illinois Council of the AIA.



Joe Murphy is president of Insurance Designers, an independent insurance agency based in Petersburg, Illinois. He is a member of the Professional Liability Agents Network (PLAN), a nationwide group that specializes in serving the risk management needs of design professionals.



There's no typical day for Joe Murphy, but at least a couple of days a week you'll find him driving 250 or so miles in several different directions to: spend two hours discussing loss prevention with an architect and helping him fill out a DPIC application, two hours talking about a structural engineer's changing practice and completing a renewal application, another hour talking about project insurance with another architect, and more time with another renewal application. He met Graham on a trip like that about eight years ago. Graham had a problem on his professional liability policy and Joe helped straighten it out.

Joe says, "I don't think you have to come on strong—I think it's just being there when they need you. You finally get to the place where, when they think they have a problem, they call you—they just plain can't think of anyone else to call."

Joe's spent over 20 years in the insurance business, and nearly ten representing DPIC. Today he can hardly remember the days before he knew about professional liability for design professionals: almost 100% of his time is spent with architects and engineers. Because of his expertise and his proximity to the state capitol, he works with Graham and other design professionals to provide input to policymakers, working with government bodies like the state Capital Development Board, which handles all renovations and new buildings for the state. He's a "reference point" for them—their sounding board on what the insurance industry thinks about contractual clauses under discussion with the AIA, ACEC and others. If you're a design professional in central Illinois, you'll see Joe Murphy.

le and always responsive.

He'll call to tell us about new developments. I appreciate getting the information since I've been involved over the years in legislative affairs—which is one of the main activities for the AIA here in Illinois. I'm probably proudest of chairing a group that helped develop a better statute of limitations in Illinois.

"Joe's knowledgeable about what we do. He'll come in and talk to the partners about contract review and loss prevention—from there it's passed along to our staff. When we have a new form of contract that looks like there might be an oddity with it, Joe is the first one we call. Usually when a contract is presented to you, you don't have a lot of time to fool around with it. They expect you to almost get it back in the return mail. And, after all, it's a business arrangement that we're anxious to do, too, so we don't want to sit on it. But we don't want to do anything that negates our insurance, either. Joe's very cooperative and helpful. He'll get back to us right away with an answer. So we really feel that we can proceed without risk or with minimal risk.

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Reader Poll: Marketing Architectural Services

Answers from the respondents to a poll published in the December issue cover a range of views on how to get work.

Marketing, long a neglected discipline in many architectural offices, has taken on a much higher priority in recent years. Now, with added pressures from the economy, effective ways to corner commissions are more than ever mandatory to maintain a practice. A total of 720 responses was received by P/A marketing and research consultants Morrison & Morrison by the deadline. The possibility of multiple responses on some of the questions can lead to sums higher than 100 percent.

As is consistent with the results of many other surveys, a 62 percent majority of the firms polled (Figure 2) reported less than 10 employees. Only 14 percent of the firms comprised over 50 employees. It might be expected that the larger the firm, the more sophisticated its marketing acumen, and thus some of the poll attitudes would reflect those of the smaller firm. A 69 percent majority of those responding were partners/principals of their firms (Figure 4) – not surprising, since by an even larger percentage (89) the partner/principal was also shown to be the one primarily responsible for a firm's marketing (Figure 17).

About the firms (Figs. 1-4)

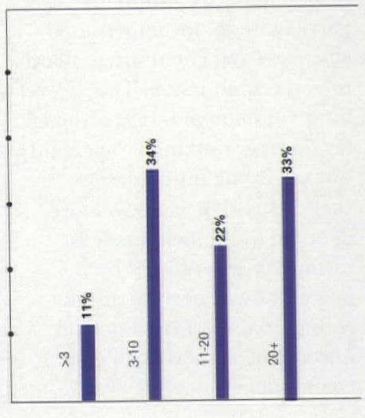
The average number of years for which the firms in this sample have been established is 13 (Figure 1). Fully one-third of the firms have been in business for 3–10 years, and another third are 20 or more years old.

By far the majority (61 percent) of the total number of respondents listed their firm as an architectural one (Figure 3), as opposed to the next highest category (a distant 15 percent) of A/E firms. Even though the questionnaire asked respondents to choose the one best categorization of a firm's scope of work, some multiple responses were received, thus causing an 11 percent group entitled "Mixed" in the tabulations. Responses coming from someone other than the partner/principal (Figure 4) were 14 percent from senior architects/designers, 11 percent from staff architects/designers, only 4 percent from marketers, and 2 percent "other."

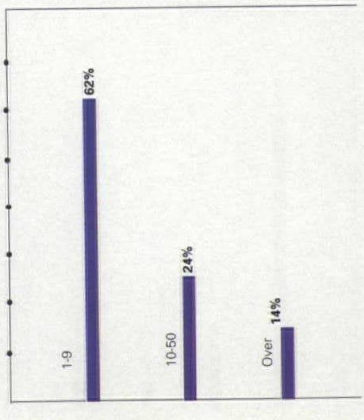
About their clients (Figs. 5-7)

Asked about the primary projects in their offices, those responding reported 62 percent did mostly individual/small client projects (Figure 5), again reflecting the smaller offices that led the list of respondents. However, following fairly closely behind were public agencies and institutions at 57 percent, and corporations at 49 percent. Nearly 40 percent also listed developers building on speculation as among their primary clients. Looking further at breakdowns of some of these figures, respondents from large firms reported only 17 percent smaller projects, compared with 77 percent from smaller firms. Only 39 percent of those from A/E firms reported having individual clients as a primary part of their practice. Conversely, larger firms are more likely to have public agencies and institutions as clients than

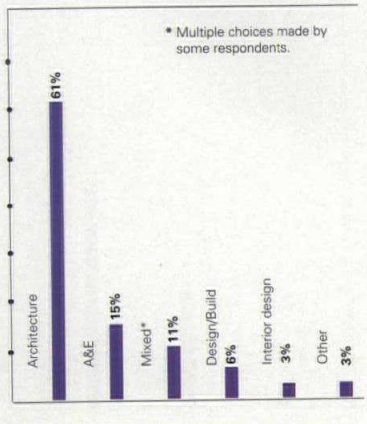
1 Age of firm.



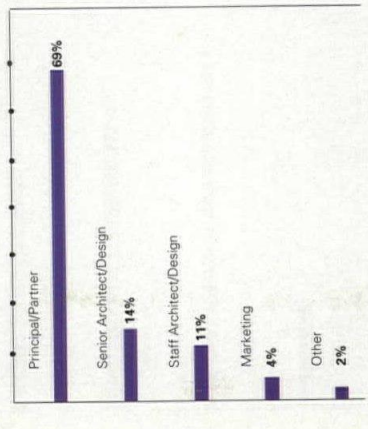
2 Size of firm.



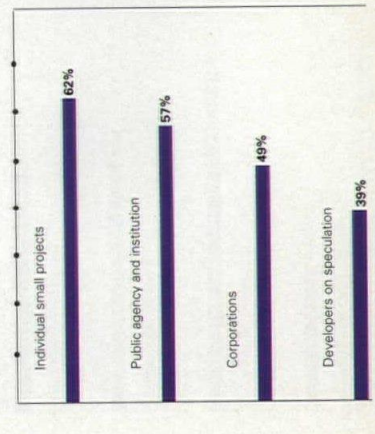
3 Scope of work.



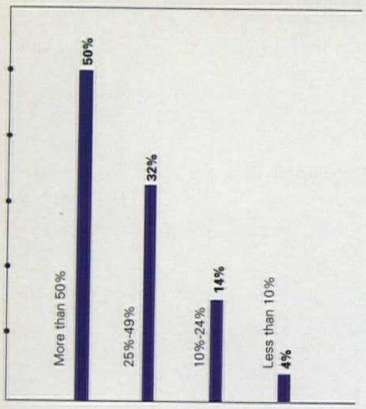
4 Role in firm



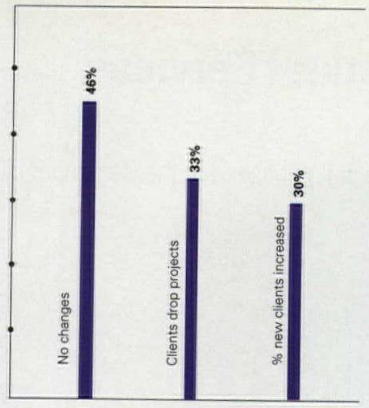
5 Firm's primary clients



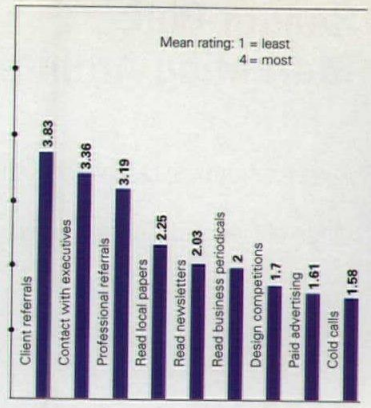
6 What percentage of your firm's commissions come from repeat clients?



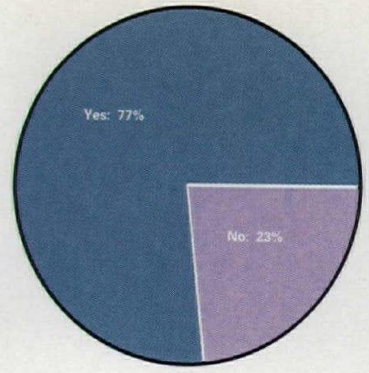
7 How have clients changed over recent years?



8 Effectiveness of ways to find leads (mean ratings)



9 Has fee bidding become more common in the past two years?



smaller practices (82 percent versus 46 percent); a high percentage of A/E firms (80 percent) also report this type of client. Corporate clients also seem to prefer larger firms (73 percent) and A/E firms.

Repeat clients represent 50 percent or more of one-half of the respondents' commissions (Figure 6). Of those from larger and A/E firms, about 60 percent credit repeat clients for half or more of their commissions. A healthy 32 percent of those polled said they got 25 to 49 percent of their work through past clients.

On the question of how clients have changed over recent years (Figure 7), 46 percent responded with "no change" of significance, while 33 percent said that clients drop a project after the firm has completed billable work. The ratio of new clients to repeat clients has increased, according to 30 percent of those answering. Percentages exceed 100 percent due to multiple answers.

About commissions (Figs. 8-13)

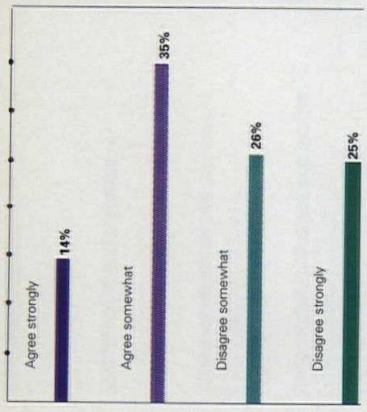
Finding leads, and the effectiveness of one method over another, were also addressed by the poll. Asked to rate the effectiveness of a number of ways to locate leads on a 1–4 scale, with 4 being highest (Figure 8), readers identified client referrals as the leading method, with a 3.83 score. Rating nearly as high were regular contact with executives (3.36) and referrals from allied professionals (3.19). Cold calls, at 1.58, were rated least effective, along with paid advertising and design competitions. Local papers, newsletters, and business periodicals ranked in the mid-low numbers.

On the subject of monetary means of inducement to prospective clients, respondents were clear in their belief that fee bidding has become a more common practice in the past two years – 77 percent yes versus 23 percent no (Figure 9). When asked to agree or disagree with a statement that price competition is a legitimate part of the commission-getting process (Figure 10), those polled were divided. Those agreeing that price is a valid means to obtain work (agreeing either strongly or somewhat) measured 49 percent. Those agreeing somewhat were the largest segment, at 35 percent. Those who were in firms not classified as either architectural or A/E are most likely to agree that price competition is a fair process.

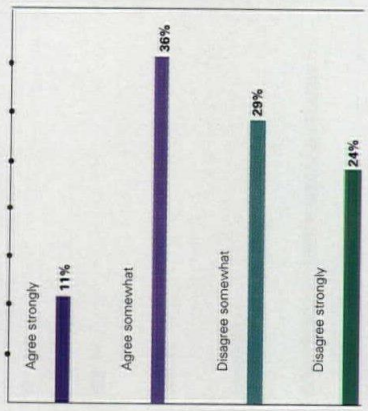
Paid advertising, still a controversial practice for many architects, continues to divide the respondents (Figure 11). A total of 47 percent felt that advertising is a valid way to get commissions. The highest percentage, 36 percent, came in the "agree somewhat" category, while 29 percent "disagree somewhat" and 24 percent "disagree strongly" with pro-advertising positions. Naturally, those who do advertise are most positive about the medium. Slightly more of the respondents in the largest firms (62 percent) disapprove of advertising as a valid means of gaining commissions. Despite what those polled feel about the validity of advertising, 94 percent of them said they "rarely" or "never" use paid ads. The 6 percent who "regularly" advertise include 10 percent of the larger architectural firms and 10 percent of the non-architectural or A/E firms.

One other issue that came up at the same time as the ethics of advertising was that of doing uncompensated work to procure a commission (Figure 13). A heavy majority (89 percent) of respondents are willing to participate in uncompensated site visits and client discussions to get a commission. The second most common practice, although far down in ranking (16 percent), was providing initial design sketches and/or models. More detailed work, including cost estimates, was offered by 7 percent, but 8 percent are not willing to undertake any kind of uncompensated work to gain a commission.

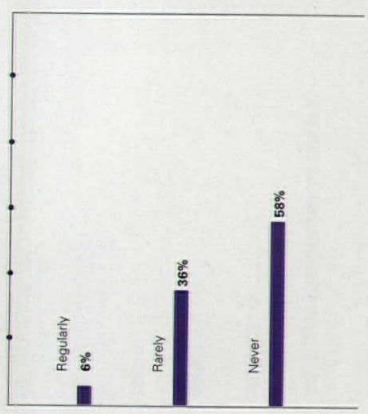
10 Price competition is a legitimate part of the process of obtaining commissions



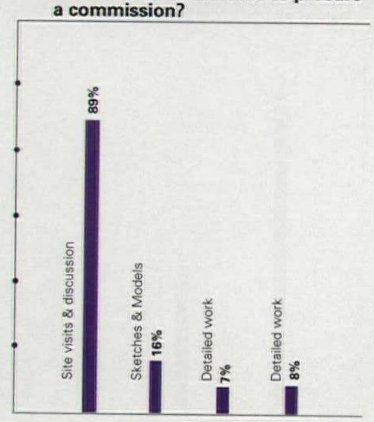
11 Paid advertising is a valid way to get commissions.



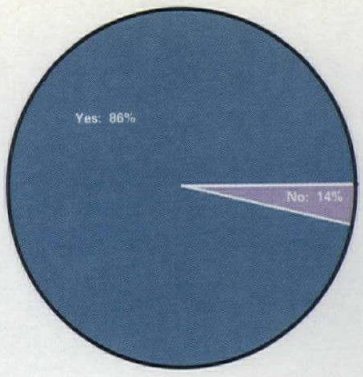
12 Firm's use of paid advertising.



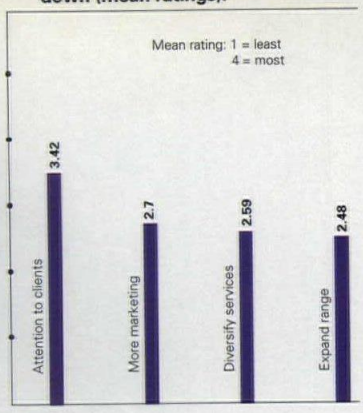
13 How much uncompensated work should a firm undertake to procure a commission?



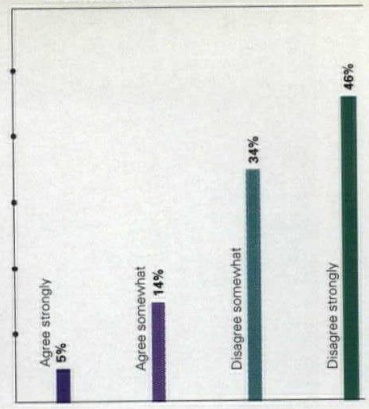
14 Do you believe that other firms have increased marketing efforts over the past two years?



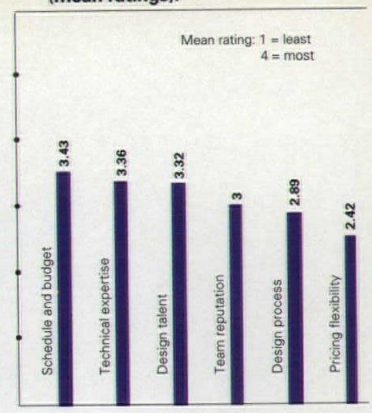
15 Effectiveness of marketing changes during economic slow-down (mean ratings).



16 Marketing architectural services should be left to specialists, not architects.



17 Importance of inducements when marketing to a prospective client (mean ratings).



About marketing (Figs, 14-16, 18)

Still another strong majority of those polled (86 percent) believe that other firms have increased their marketing efforts over the past two years (Figure 14). The effectiveness of marketing changes during an economic slow-down was the subject of a part of the questionnaire (Figure 15). Readers were again asked to rate the least to the most effective, with 4 being the highest rating. Devoting more attention to previous clients gained the highest score among the readers, with a 3.42. Other changes followed, with expanded funding for a firm's marketing rating 2.7, diversifying into architecturally related services at 2.59, and expanding the geographical range of marketing efforts, 2.48. It follows that firms with less than 25 percent of their business from repeat clients do not tend to devote more attention to previous clients. The younger firms appear to be more flexible in trying other related services, while the older firms are less likely to diversify during hard times.

On the question of whether marketing of architectural services should be left to non-architect specialists (Figure 16), respondents indicated the strong belief that architects do the best marketing; 80 percent of those polled disagreed, either strongly or somewhat, with the notion that specialists market better. Fewer individuals in larger firms (66 percent) and in A/E firms (69 percent) disagreed with the statement.

As mentioned earlier, the partner/principal has the primary responsibility for a firm's marketing, said 89 percent of the respondents in those positions (Figure 18). Among staff architects, 5 percent said they played the main role. Of those listed as special in-house marketers, 15 percent have the primary responsibility. In 67 percent of the firms polled, outside consultants have no responsibility for marketing. Minor roles in marketing are most often fulfilled by anyone who shows initiative, with staff architects playing almost equal major (39 percent) and minor (36 percent) roles, say P/A researchers.

Inducements (Figs. 17, 19-20)

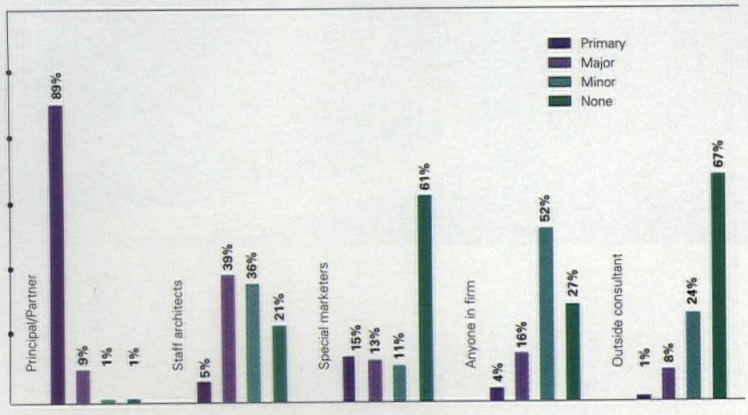
There are a number of inducements that can affect a potential client's decision on which architect to choose (Figure 17). On a rating scale of 1 to 4 (least important to most), three attributes were judged almost equally high by readers: adherence to schedule and budget (3.43), technical expertise (3.36), and the firm's design talent (3.32) headed the list. Somewhat less important were the firm's reputation as a team player and its design process. About half of those responding were on either side of the issue of how important a firm's pricing and fee flexibility were. Larger firms and A/E firms were more likely to feel team player aspects were important as a marketing inducement.

Of activities seen as most likely to enhance a firm's marketability (Figure 19), involvement in local civic and charitable organizations was rated most important by 70 percent of the respondents. Informal community contacts and business group memberships were next, with 62 percent and 61 percent respectively. Political involvement was seen by 54 percent as valuable, and the least effective were private club memberships and *pro bono* architectural services.

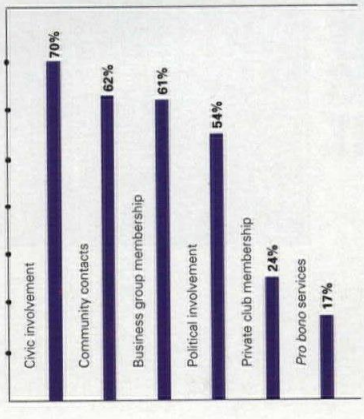
Even though most firms recognize the need for some form of marketing, it does not replace certain other values in the readers' minds. According to 74 percent of the participants in this poll (Figure 20), architects should attain commissions on the strength of their professional reputations rather than depend on marketing. In the largest firms, as expected, fewer individuals (62 percent) agreed with that statement.

Jim Murphy ■

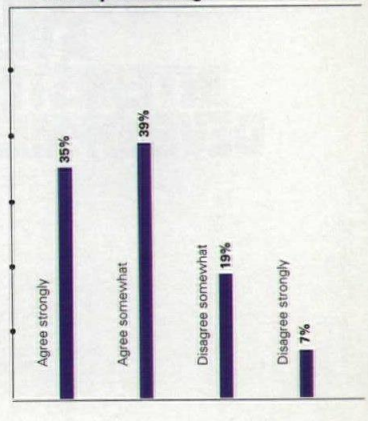
18 Marketing responsibility in firm by position.



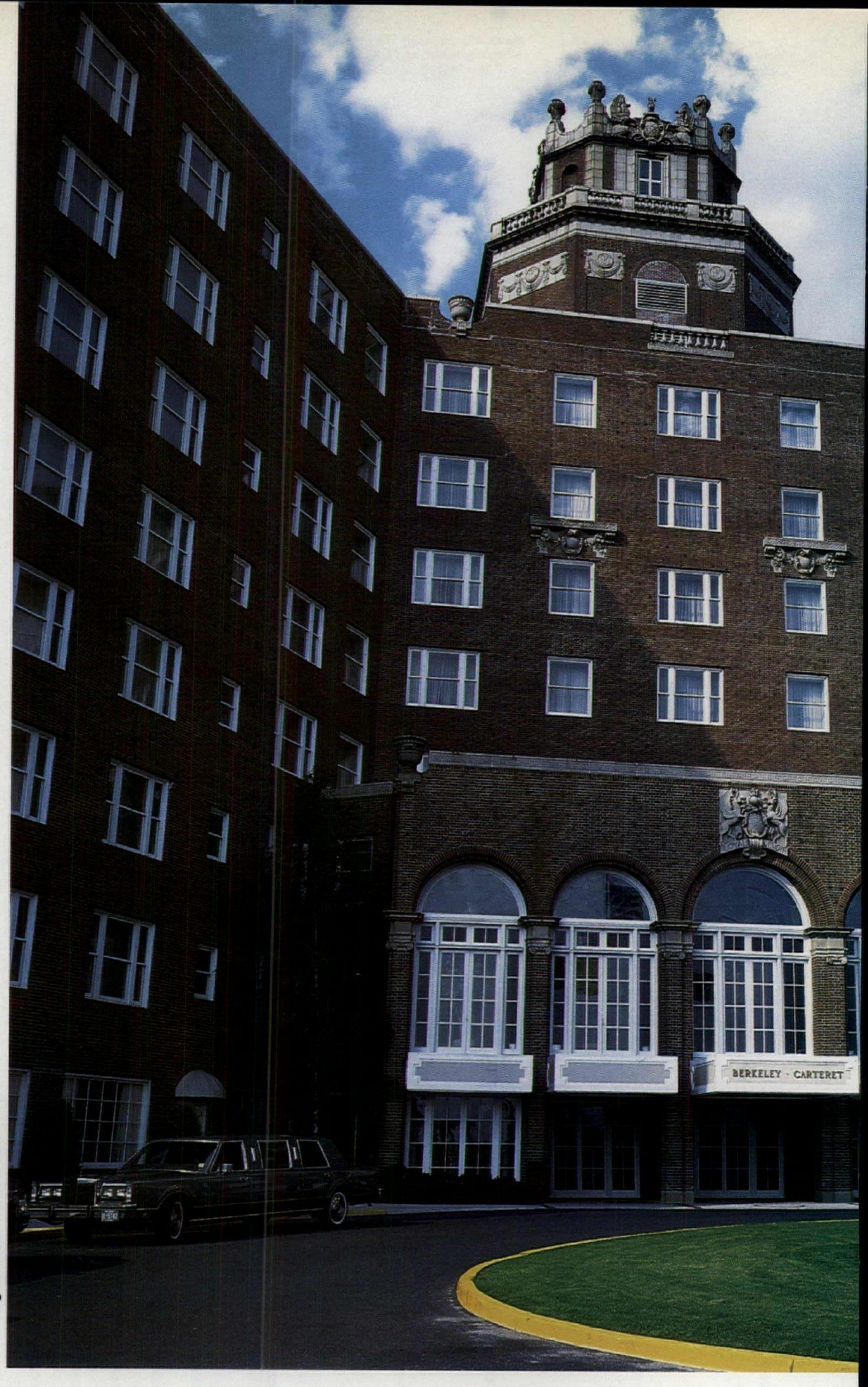
19 Activities most likely to enhance a firm's marketability.



20 Architects should get commissions on the strength of reputation rather than by marketing.



COST CONSIDERATIONS MADE THIS A VERY INTERESTING DEVELOPMENT.



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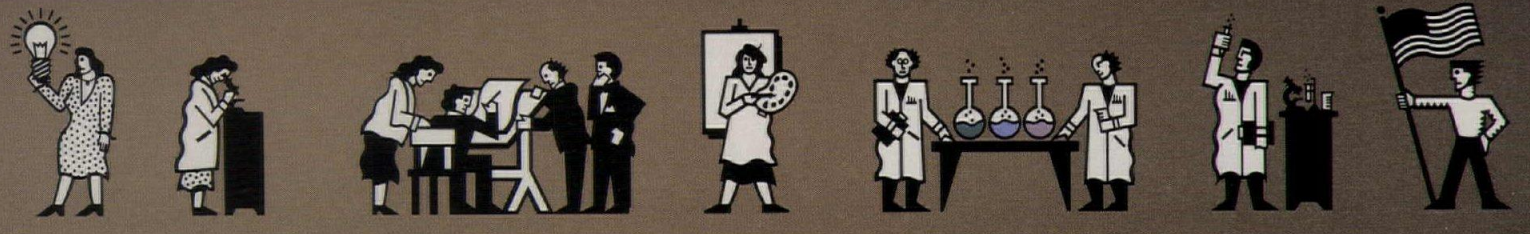

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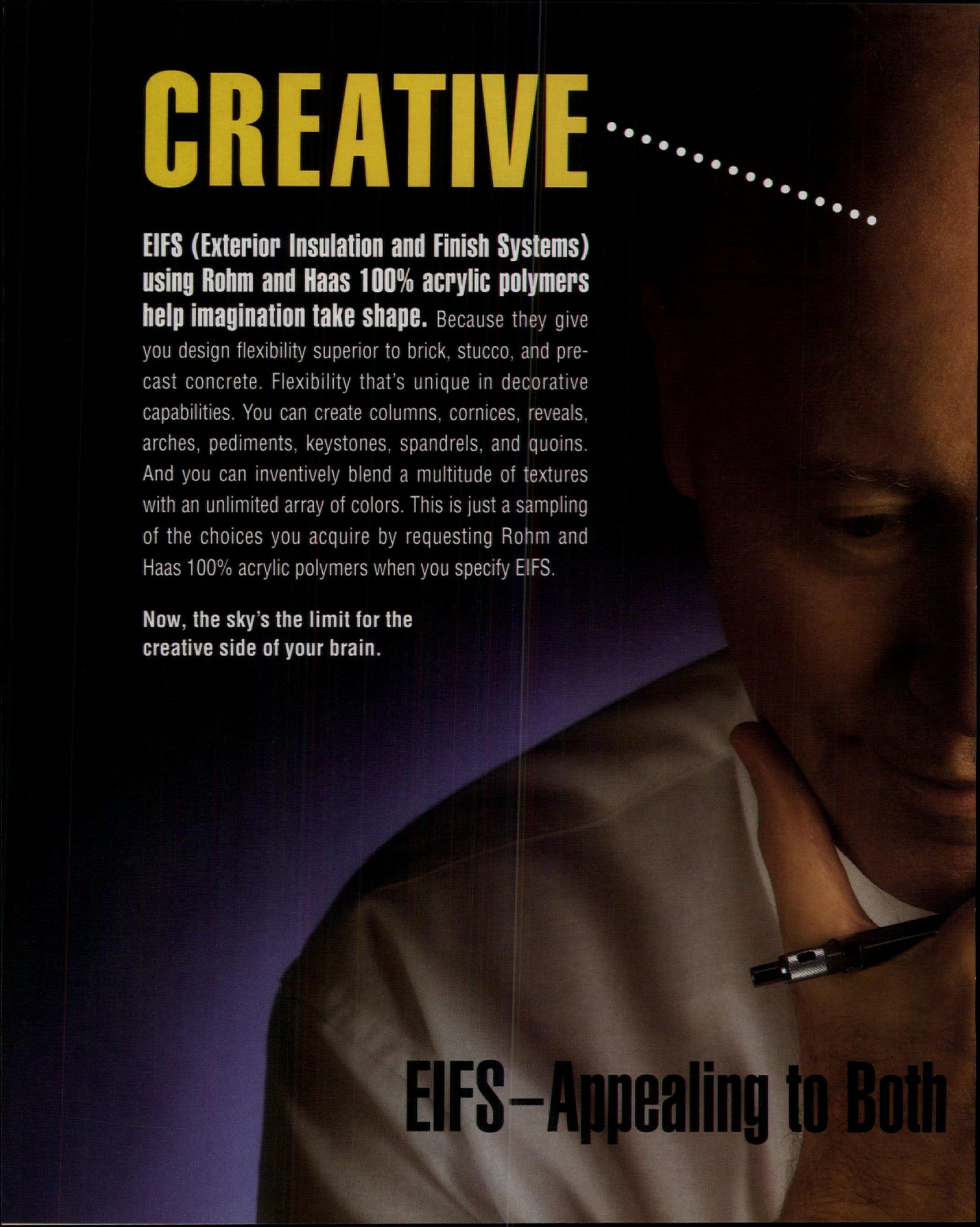

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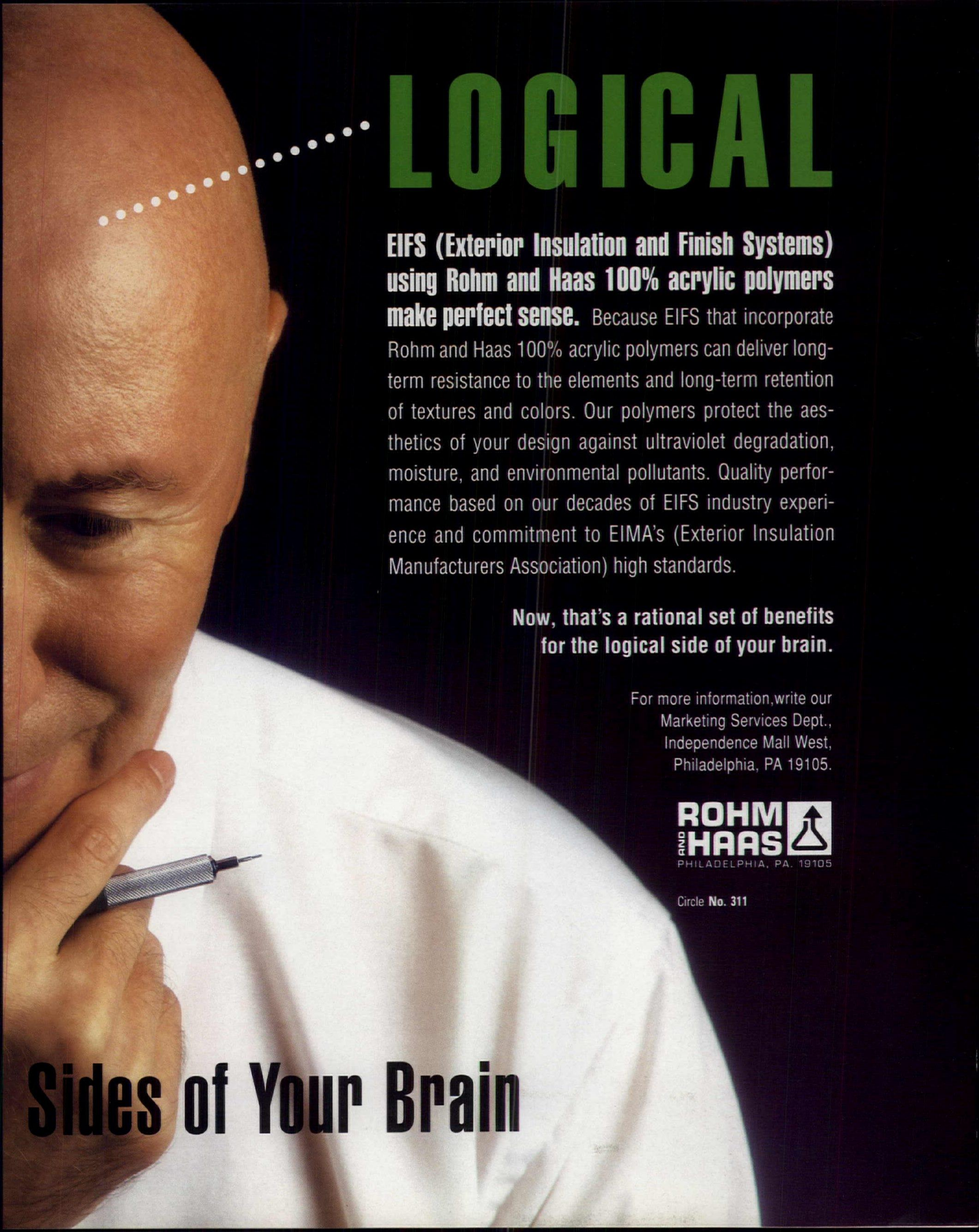
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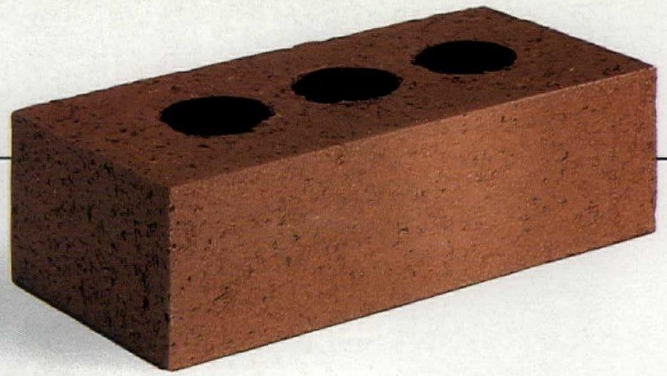

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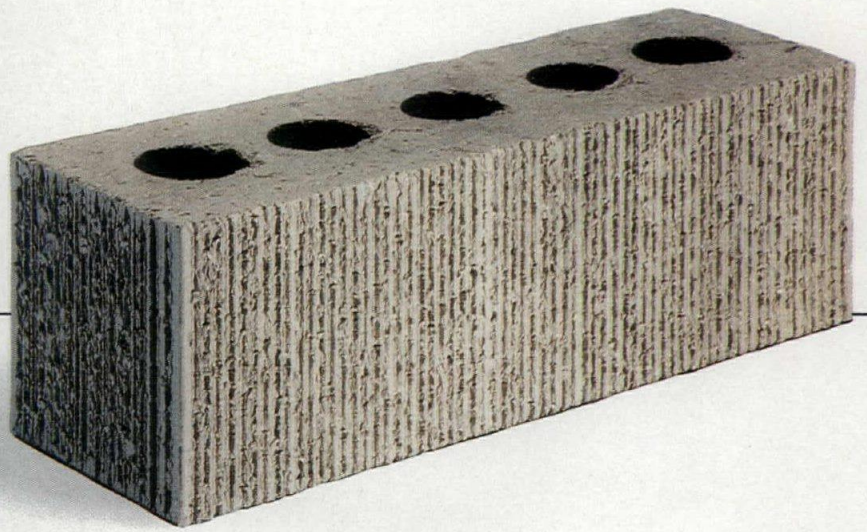

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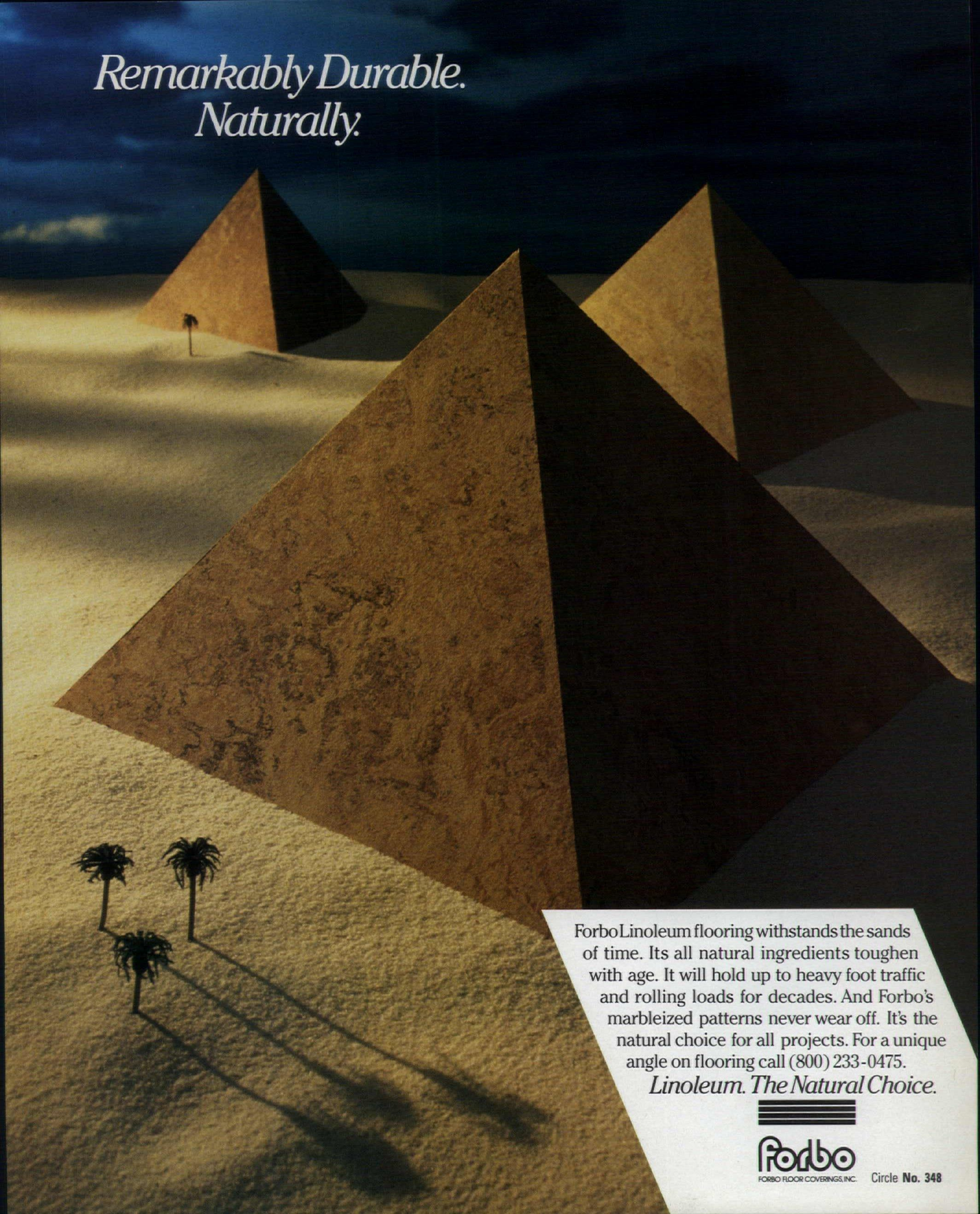

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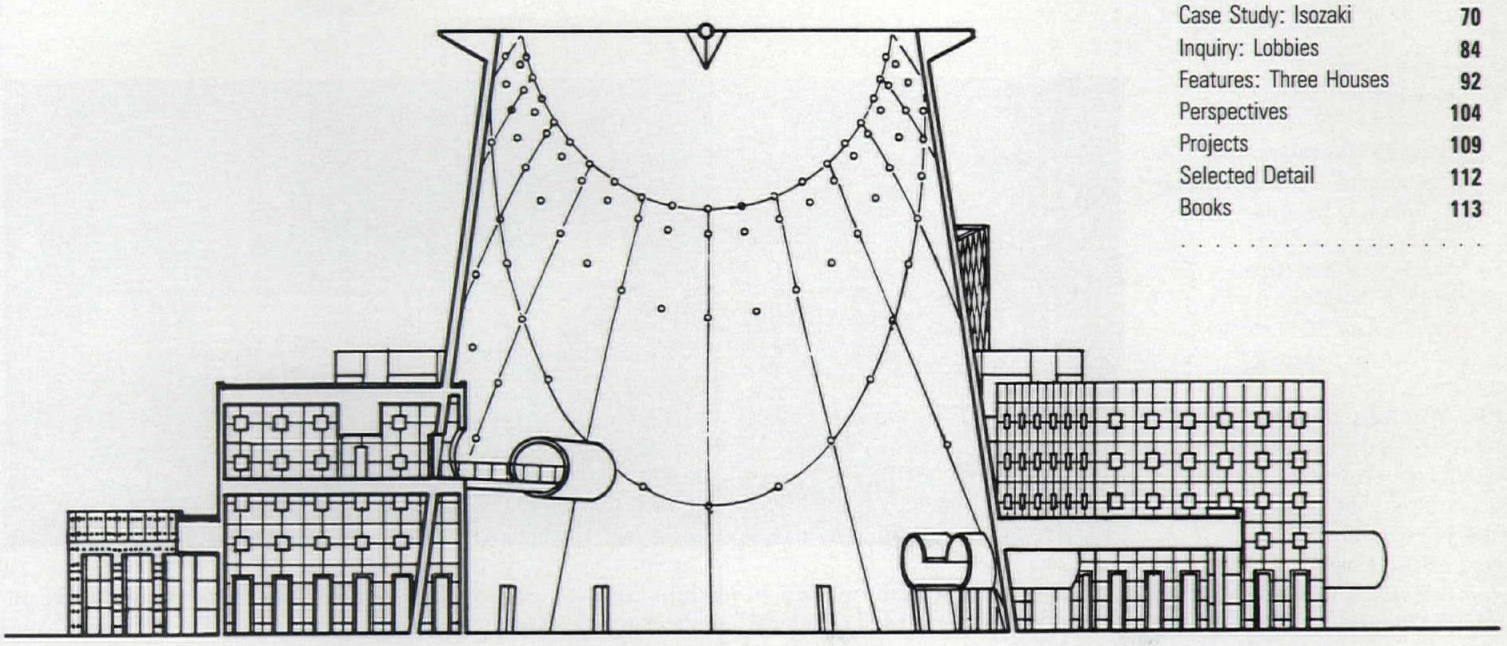


Section through court of Team Disney building.

In Florida and in Spain, Arata Isozaki reveals a vision that is both particular and universal.

Those in need of evidence of the globalization of architecture need look no further than the two buildings by Arata Isozaki that are featured herein. Neither is in Japan, and neither could be called "Japanese" in any overriding sense. Unlike many architects whose international exports run the risk of seeming either acultural or of another culture, Isozaki has shown even in his Japanese work that he is particularly well-suited to be a "citizen of anywhere" (as he refers to himself in the interview on page 70).

In the Team Disney building (next page), Isozaki found inspiration in his client's well-known facility for playing with scale, and employed the bright colors and even the mouse ears associated with Disney. But the physical and spiritual center of the building is the court, which deals with the more universal theme of time. At the Sant Jordi Sports Hall in Barcelona (page 78), the inspirations and the results are very different: The gentle curves of the dome echo those of the surrounding hills, and the symmetrical, vaguely Classical entrance forecourts respond to the formal layout of the Olympic site.

Isozaki's work is proof that – especially when architects are building around the world – the greatest success comes to those who see each building in its own geographical, social, and cultural context (rather than in the context of their next monograph). Today, an architect must be a "citizen of anywhere" without becoming a "citizen of nowhere." **Mark Alden Branch** ■

Architectural Timepiece

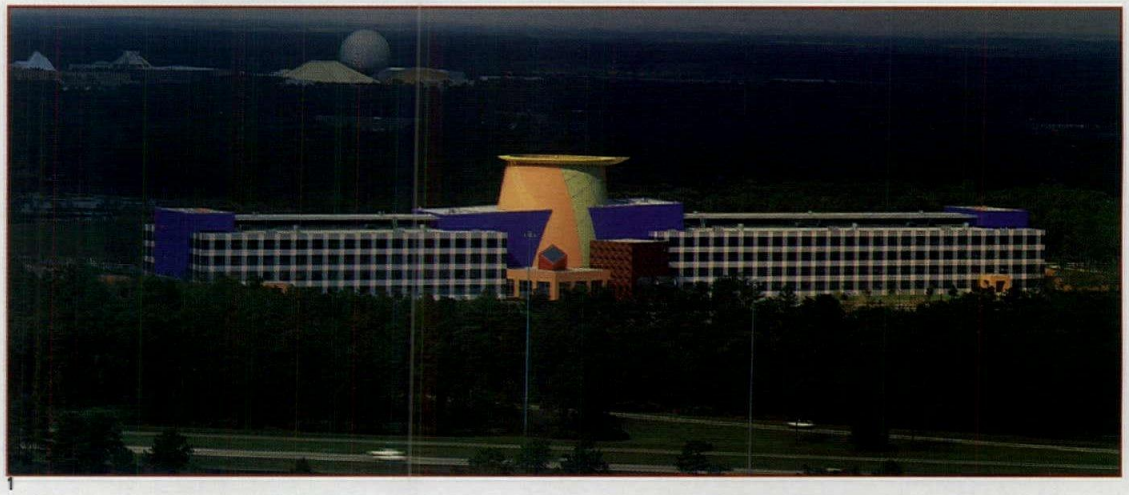
Arata Isozaki & Associates have designed an office building for Disney that probes the question of time.

Accompanying the article is an interview with Isozaki conducted by Francesca Garcia-Marques.

Interview

Francesca Garcia-Marques, a Los Angeles architect who contributes to Domus, l'Arca, *and other publications, interviewed Arata Isozaki by telephone for P/A recently. Excerpts from their conversation follow:*

P/A: You have designed and built projects in Japan, the U.S., Europe, South America, and North Africa. Do you regard yourself as a "citizen of the world," or do you feel that your process and sensibilities are essentially rooted in Japan?
Isozaki: Today I feel every culture, from every part of the world. For example, some European traditions, like Classical architecture, or some in Japan, like vernacular architecture, are equally important to me. I have no difficulty working in LA or Barcelona, in Japan or Europe. I cannot say I am a "citizen of the world," or a citizen of anywhere – actually I like "citizen of anywhere." I love working anywhere at the same time;



1

The office building rises like a great ship above the lake and trees that surround it (1). It stands next to a highway at the edge of the Walt Disney World property near Orlando. Common functions – elevator and stair cores, reception room, main conference room, credit union, travel department – occupy cubic volumes grouped around a central sundial court (2), some clad in blue or red aluminum, others in granite, synthetic stucco, or tile.

Time is not something most of us think much about (except perhaps to wonder where it all goes). We often just assume that, despite the discoveries of modern physics, it moves in a line from the past to the future, and that it is absolute, continuing regardless of the events that occur within it. But, as Arata Isozaki reminds us in his new office building for Walt Disney World near Orlando, those assumptions are not the only way, and may even be the wrong way, to think about time.

"We thought that time was important to Disney," says Yasuyori Yada, the project architect in Isozaki's office. They were right: In its various theme parks, Disney constantly plays upon our assumptions about time. In the Magic Kingdom, for example, the Victoriana of Main Street U.S.A. stands next to Tomorrowland, which stands across from Frontierland. And all of the structures there have a diminutive scale, as if to recover for us our childhood, when we were closer in size to the toys we played with. One reason this juxtaposition of past, present, and future is so effective – so universally appealing to people around the globe – is that it makes available to us something that we normally think is inaccessible: If we assume that time is linear and absolute, then the past is something that we cannot relive and the future is something we cannot know (except perhaps in our imagination through the reading of history or science fiction). Disney offers a respite from this, as we walk through the past and into the future.

Disney, of course, is in the amusement business, and so, while the pavilions and rides may manipulate our sense of time, they never seriously challenge it. But Isozaki does in his design of Team Disney's new office building. The structure consists of two four-story wings, a short south wing that houses the company's finance and accounting departments, and a long north wing that contains, among other things, the administrative offices for Walt Disney World and Euro Disney. A cafeteria occupies the end of the south wing, and a fitness center the end of the north wing. Where these two wings meet are other common functions – a reception lobby, a main conference room, a travel department, a credit union, and an exhibition area – all grouped around an open court.

From the outside, the building looks like a huge ship. The silvery-gray office wings extend, fore and aft, from a colorful clash of cubic shapes that culminate in the courtyard's stack — an eight-story-high, lopsided cone, sliced off and open at the top. This "ship" rises from a sea of cars in the front and an artificial lake in the back. While the ship imagery and the boldly patterned cubes recall earlier Isozaki works such as the Museum of Contemporary Art in Los Angeles (P/A, Nov. 1986, p. 83), the building, says Yada, also responds to its immediate context: the iconic shapes and intense colors used throughout Walt Disney World. This connection is reinforced by the least impressive part of the building: the mouse-eared entrance canopy and gates over the drive. Architecture is rarely successful when it tries to be representational.

The court is the building's physical and conceptual center, although it barely serves its traditional role of bringing light, nature, or usable outdoor space into the middle of a building. It has very few

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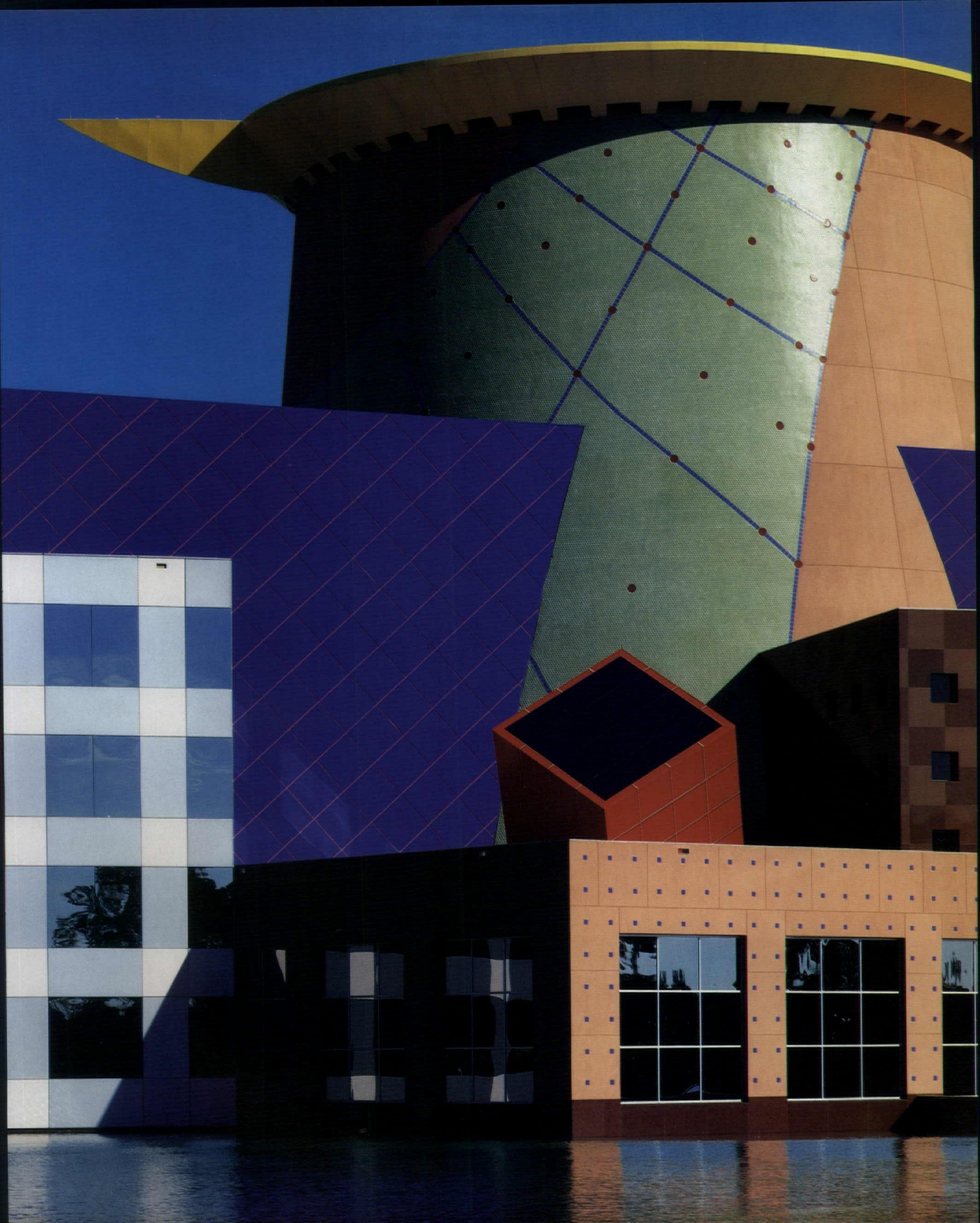


being free, responding to different situations in my own way.

P/A: You are often referred to as a Post-Modern architect. Can you comment on this attribution?

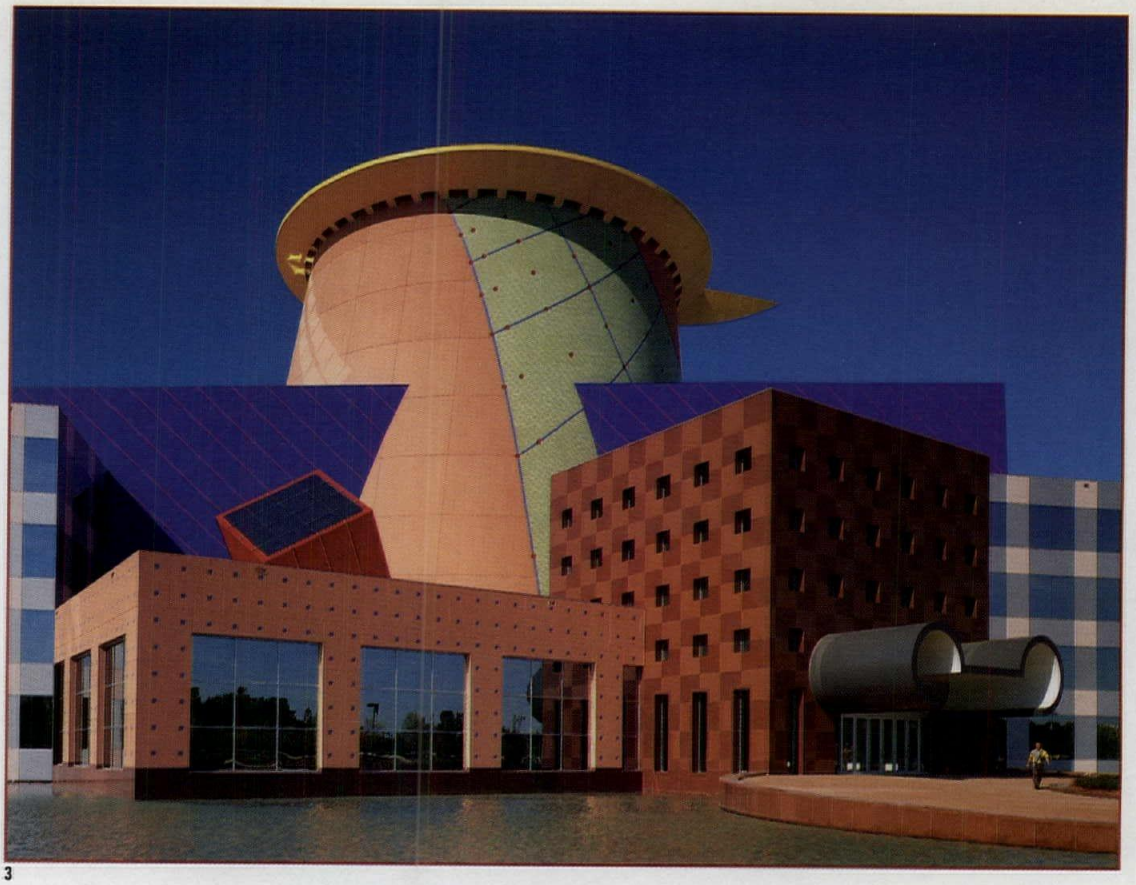
Isozaki: Almost ten years ago I designed the Tsukuba Center Building in Japan. At that time Post-Modern architecture was not popular all over the world. I used several quoted images, mostly from architectural history, and assembled them in a very special way which I called "disjunction" — "disjunctive connections." After completion it was called Post-Modern. In some ways it has a similarity, but it is my understanding that Post-Modernism implies just borrowing historical elements to decorate normal structures. This was not my intention.

From a political or philosophical point of view, I am interested in learning from other fields of so-called Post-Modern theory – for example in history, literature, science – as a different way of approching Modernism. But I am a little ambivalent about being called a Post-Modernist.

P/A: You initiated your career as a Metabolist from the school of Kenzo Tange. Can you explain the change of direction in your work from the 1960s to the present?

Isozaki: In the past, I was part of the Metabolist group. The main group consisted of three or four members: Kikutake, Kurokawa, Maki, and there was Kenzo Tange, my teacher. We shared some

The plans and longitudinal section of the building (right) show how the two office wings extend in different lengths, north and south, from the common spaces, which also are asymmetrically arranged around the circular sundial court. Those funtions that require access to loading docks, such as the kitchen and building service areas, are located at the ends of each of the office wings.



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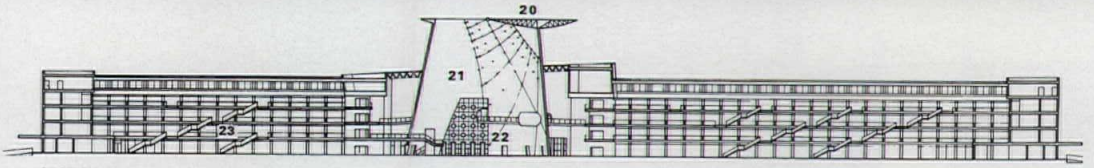
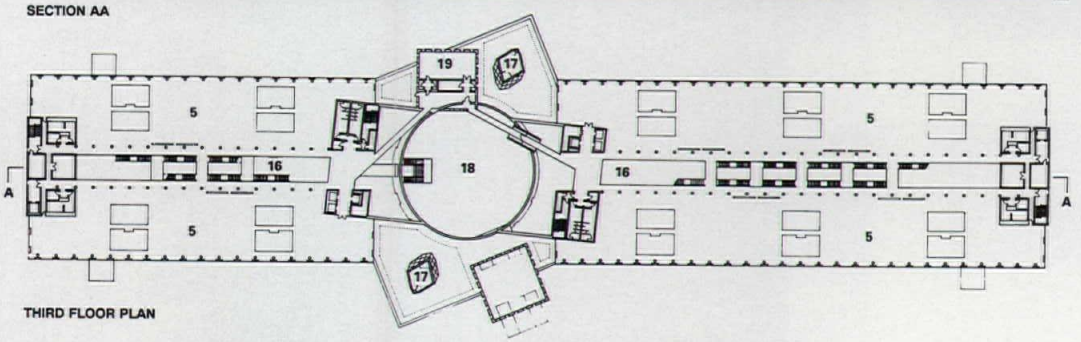
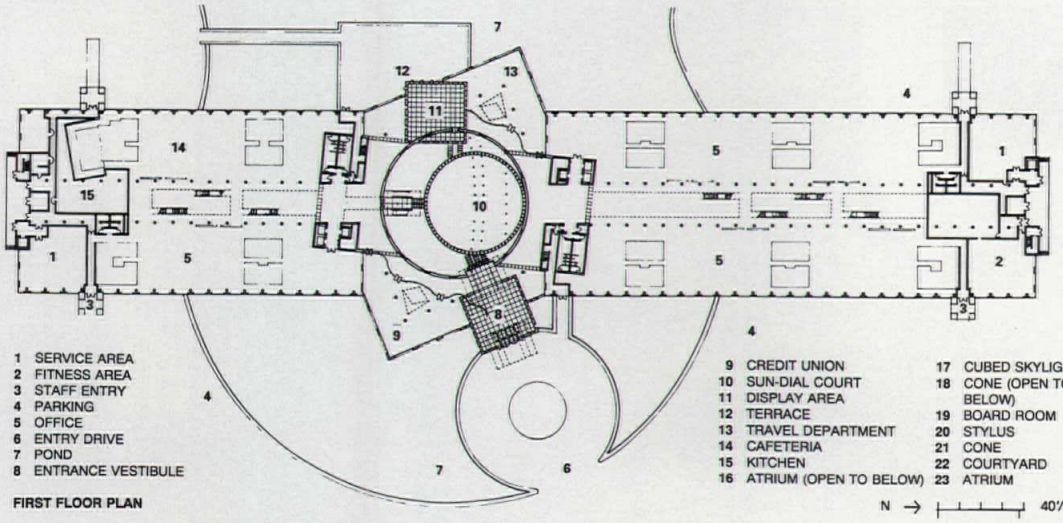


SECTION AA



THIRD FLOOR PLAN



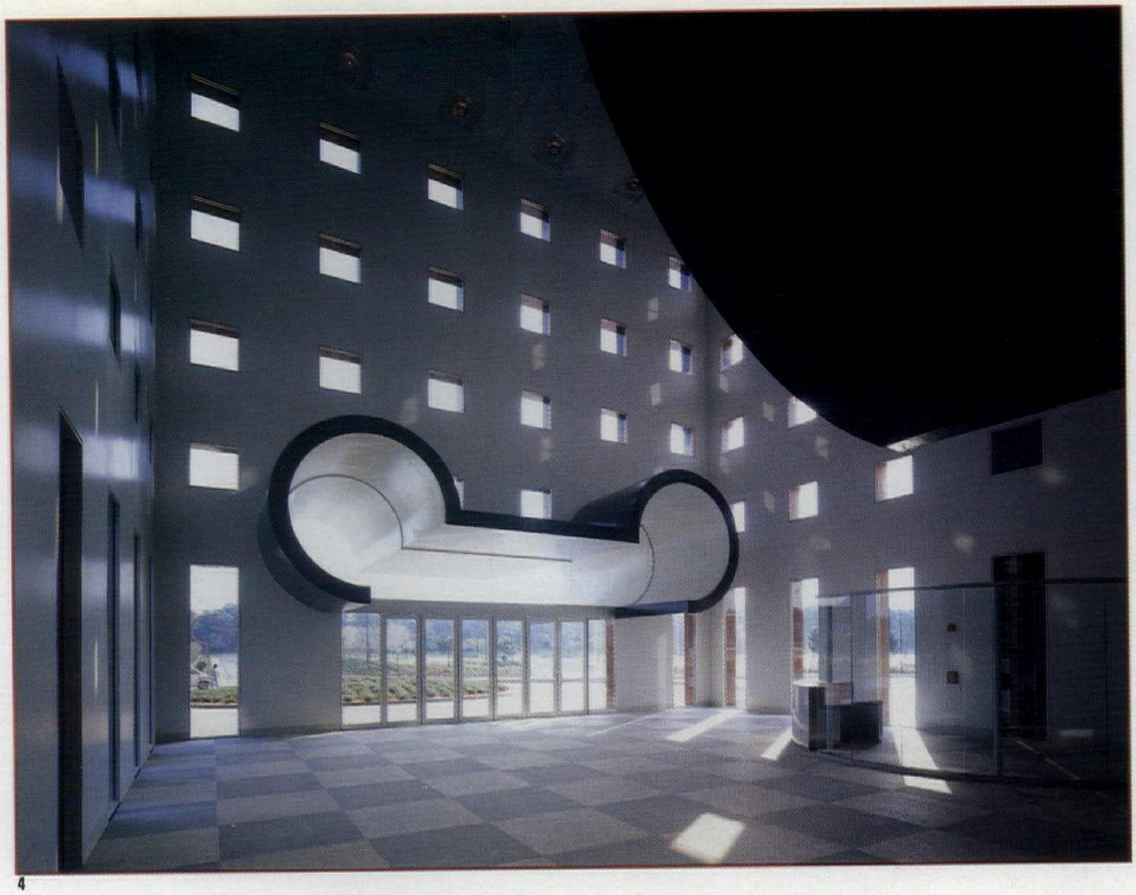
1 SERVICE AREA
2 FITNESS AREA
3 STAFF ENTRY
4 PARKING
5 OFFICE
6 ENTRY DRIVE
7 POND
8 ENTRANCE VESTIBULE

FIRST FLOOR PLAN

4

9 CREDIT UNION
10 SUN-DIAL COURT
11 DISPLAY AREA
12 TERRACE
13 TRAVEL DEPARTMENT
14 CAFETERIA
15 KITCHEN
16 ATRIUM (OPEN TO BELOW)
17 CUBED SKYLIGHT
18 CONE (OPEN TO BELOW)
19 BOARD ROOM
20 STYLUS
21 CONE
22 COURTYARD
23 ATRIUM

N → 40'/12m



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windows, no greenery, and a floor of loose-laid river rock that is difficult to traverse. Indeed, the only way to cross the court is via a circle of granite stepping stones, in which are embedded quotes on the subject of time.

In eschewing these traditional functions, the architects have focused on the courtyard's other role as an enormous sundial. A huge yellow stylus, cantilevered over the opening in the top of the cone, has on its end a ball, whose shadow moves slowly between the curved lines of tile embedded in the stuccoed walls of the court: The tiled lines and dots indicate the month, day, and hour.

The Metaphor of Time

This sundial is no ornamental nicety. As in most of Isozaki's work, where a central metaphor informs the entire project, this building-as-solar-clock serves as an organizing principle for the architecture and as a way of commenting upon its context. The sundial reminds us, for example, that throughout human history, it has been common to think of time as cyclical and its measurement as relative to particular events, such as the rising and setting of the sun or the change of seasons.

Further, cyclical time – solar time – is essentially spatial: A sundial measures time with the movement of the sun's shadow through space. In many ancient cultures, and in some "primitive" societies even today, built structures were essential to the keeping of time. This connection between architecture and time was lost, at least in the West, with the growing belief in linear, absolute time and the reliance on clockwork to measure it.

The empty heart of this building recalls that loss. As you stand among the river rock (the traditional landscape material around Japanese shrines) and watch the sun's slow crawl as the clouds slip by overhead, you realize that the central court is primarily a place of meditation – a place to contemplate the broken connection between architecture and Nature's cycles.

Time and Relativity

Yet the metaphor of time takes on another, more modern meaning elsewhere in the building. The fragmented, collided blocks around the building's center, for example, express a 20th-Century notion of time, a notion that began with Einstein's discovery that time is, in fact, nonlinear and relative to our position in (and speed as we travel through) space. While physicists have not exactly returned to the ancient idea of cyclical time, they have certainly unseated the old view that it is absolute and one-directional, and, perhaps more important for architecture, they have reconnected time and space in the concept of space-time.

In the Disney building, that idea takes several forms. Isozaki, for example, provides several vantage points from which to examine the sundial, including a monumental stair leading up to the second floor and a third-floor walkway that shoots across the space to the main conference room. While these have functional roles as viewing platforms, they reinforce the idea that our perception of time can differ according to our position in space. Likewise, the colliding blocks at the building's center play a game of scale; the reception and

The main entrance is via a circular drive that sits in the reflecting pool that surrounds the center of the building (3). Marking the entry is a canopy in the shape of abstracted mouse ears, recalling the Disney logo. This form is repeated in two steel gates that extend over the approach drive, creating for the visitor a forced perspective. The reception space (4) is one of the more powerful ones in the building. Recalling the minimalist gridded spaces of other Isozaki work, this room has nothing in it but a reception desk and an information sign. Its grid of windows not only alters the scale of the space, making it feel larger than it is, but creates a light-filled interior, enhanced by the shimmering reflections of sunlight off the surrounding water.

things, we had some exhibitions, but I was not really a member. The main reason I did not join them was their optimistic belief in the use of technology. I think of technology as a tool that supports the concepts of architecture, but I do not believe that it has a definitive purpose in itself. The motivation behind my design is to set up a critical stance towards the dominant trends in Japan. So I proposed directions somewhat different from the Metabolist idea.

The cultural revolution of the late 1960s had a very strong impact on me. On one hand I sympathized with the student protests against the establishment, on the other I had to work with the establishment. This contradiction caused me to collapse completely both mentally and physically. That was my starting point at the beginning of the 1970s. I had to start from nothingness, to create something. I thought of very simple forms – the square, the triangle – the most fundamental elements which cannot be reduced any further. You can see this in some of my early work, for example the Gunma Museum or the Kitakyushu Library. Most of my work from the 1970s to the present is about manipulating these simple geometries within more complex three-dimensional forms.

The real tour-de-force of the building is the sundial court (6), a huge, lopsided cone sliced off and open at the top. Accessible from the reception room, the court has a floor of washed river rock, with a circular walk of granite stepping stones, some of which have sayings about time embedded in them. This space can also be viewed from the landing of the monumental stair up to the second floor, or from the bridge which punctures the cone at the third floor (5,10). The sundial on the outer surface of the cone features green, blue, and red tile.

5

exhibition room enclosures, for example, are large in size but small in scale, while the pieces housing the travel department and bank are small in size, but large in scale. This refers, as Yada acknowledges, to Disney's own expertise in the game of scale. But it also reminds us that scale is relative and changes according to our relationship to an object. You are never sure exactly how large those central volumes are until you stand next to them.

Working Time

This building, however, is not just a collection of conceptual set pieces; it is a large office building that appears to function very well, possibly better than most. The reason, once again, has at least partly to do with our thinking about time. As the idea of absolute, linear time arose many centuries ago (first among merchants and business people), there also emerged the notion that people's work should be judged upon how quickly they performed. Time became equated with money, and efficiency with profit, as the values of quality and craft began to wane.

Many businesses obviously still believe that time equals money, and build accordingly: The standard office structure, with its repetitive floors of cubicles, packed in as efficiently as possible, is the ultimate icon of the idea. And Isozaki's building could not totally escape this. The office interiors, designed by CRS Sirrine and Associated Space Design, consist mainly of rows of gray cubicles on gray carpet surrounded by white walls. Although small mechanical cores, which also contain conference and coffee rooms, do break up the expanse of cubicles, and although boldly colored chairs and accessories do brighten each office, the whole remains too monochromatic.

The atrium spaces are another matter. They extend almost the entire length of each wing, have high clerestories providing natural light, and feature cascading stairs and bridges to encourage people to walk between floors. On the 24 solid walls overlooking the two atriums, the artist Sol LeWitt has produced starburst wall drawings made by rubbing brightly colored inks into the wet paint on the walls. (Tracking the stars, we are reminded, was another means by which ancient people kept time.) At the ground level, the atriums provide a broad expanse of open carpeted space. These areas, like the terrace behind the building and the paths around the lake to the rear offer places where employees can congregate and take a break from work. They are not the most efficient use of space, but they are things necessary to instill a sense of quality in people's work.

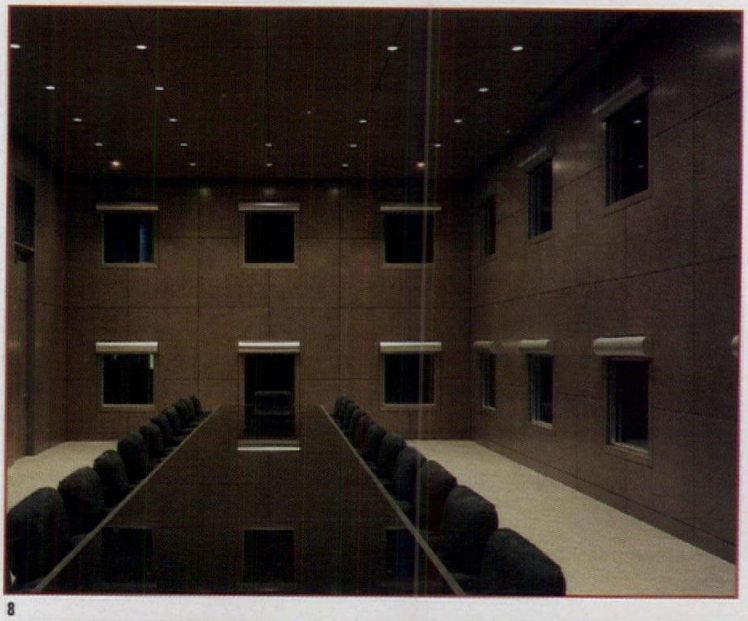
Disney has been criticized by some in the profession for commissioning a lot of frivolous design, work that is all illusion with little substance. Illusion, of course, is Disney's stock-in-trade, but it may not be the stuff of great architecture. This administration building, however, is different. Despite its bright colors and abstracted Mickey Mouse ears in the gates and entry canopy, this is a serious work, as intellectually challenging as it is functionally adept. For a company that aspires, admirably, to be a patron of great architecture, Disney may finally have had its wish come true. **Thomas Fisher** ■

Yasuhiro Ishimoto [photo credit]

Then, during the 1970s, I became aware of similar attitudes in the projects of some of the 18th-Century French visionary architects and in the work of the Russian constructivists. I became interested in studying the history of architecture. I studied 16th-century Italian art and architecture, from Michelangelo to Giulio Romano, Palladio, Vignola; late 18th-Century architecture in France and England; the early period of the Modernists; and Japanese traditional architecture. At the beginning of the 1980s, in the Tsukuba Center Building, I quoted several elements directly from history. My basic design method at the time was to juxtapose, to make disjunctive junctions, using basic geometries and classic elements at the same time to create a dialogue. Today, I continue to use very simple geometrical forms but they are more fragmented and complex, as in the Disney building.

My understanding today is that there are no uniformities, no definitive solutions to architecture. Every area in the world is different. I think that these situations can be classified into three categories. One I call the "real world," where there is a continuation of history and where the best solution is to respect the existing historical context; we find this in most European and some Japanese cities, like Kyoto. In Tokyo, traditional and technological elements overlap with no meaning. This creates struggle and conflict; everything looks unreal. I call these "unreal cities." In the third situation, like the theme park in Orlando or Disneyland, only fictional structures exist, with no connection to history. I call these "fictional cities." I work in all three situations, so I have to change my attitude all the time. ■

7



8

Yasuhiro Ishimoto

9

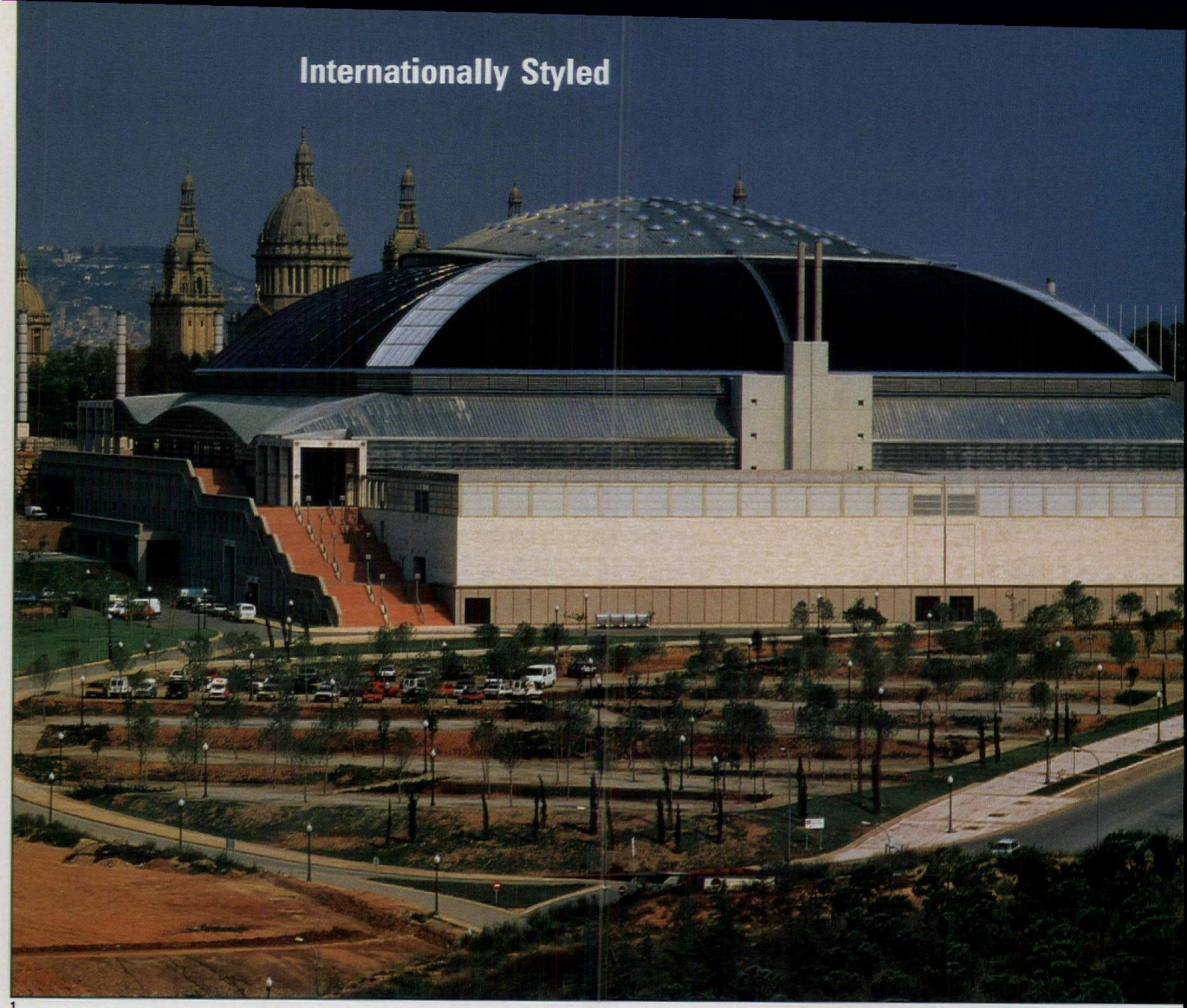
Yasuhiro Ishimoto

Project: *Team Disney, Lake Buena Vista, Florida.*
Architects: *Arata Isozaki & Associates, Tokyo (Arata Isozaki, Makoto Kikuchi, Yasuyori Yada, Hisayoshi Ota, Lorisa Kim, Makoto Watanabe).*
Associate Architects: *Hunton Brady Pryor Maso Architects, Orlando (Fred H. Pryor, Carlos Barrios).*
Client: *Disney Development Company (Tim Johnson, senior project manager).*
Site: *57.78-acre site within Walt Disney World, of which 19 acres are wetlands.*
Program: *401,000-square-foot office building for several departments of the Walt Disney Company, with 1765-space parking lot on grade.*
Structure: *shallow concrete spread footings, post-tensioned concrete beams and joists, reinforced concrete columns and slabs.*
Major materials: *reflective glass and aluminum curtain wall, granite, concrete, EIFS, ceramic tile, painted aluminum panels, (see Building Materials, p. 138).*
Mechanical: *two independent chiller plants, one at each end of the building, with distribution to 48 air handling units.*
Consultants: *Foster, Conant & Associates, landscape; CRS Sirrine, Associated Space Design, interiors; O.E. Olsen & Associates, structural; Tilden, Lobnitz, Cooper, mechanical; Ivey, Harris & Wall, civil; Westinghouse Environmental and Geotechnical Services, geotechnical; Tracy Turner Design, graphics, Fisher & Marantz, lighting.*
Contractor: *Holder Construction.*
Costs: *withheld at owner's request.*
Photography: *©Peter Aaron/Esto, except as noted.*

The office atriums (7) are skylighted, with bridges and cascading stairs to facilitate movement and communication among departments. Sol LeWitt murals give color to the otherwise gray space. The main conference room (8) also is visually quiet, clad in gray bird's-eye mple, with a number of small windows and electric shades in aluminum housings. Daylight is admitted into the credit union and travel departments by angled skylights (9), whose housings have a strange red glow afforded by pink fluorescent lamps in the corners. The boardroom is connected to the offices by a bridge that shoots across the sundial court (10).

10

Internationally Styled

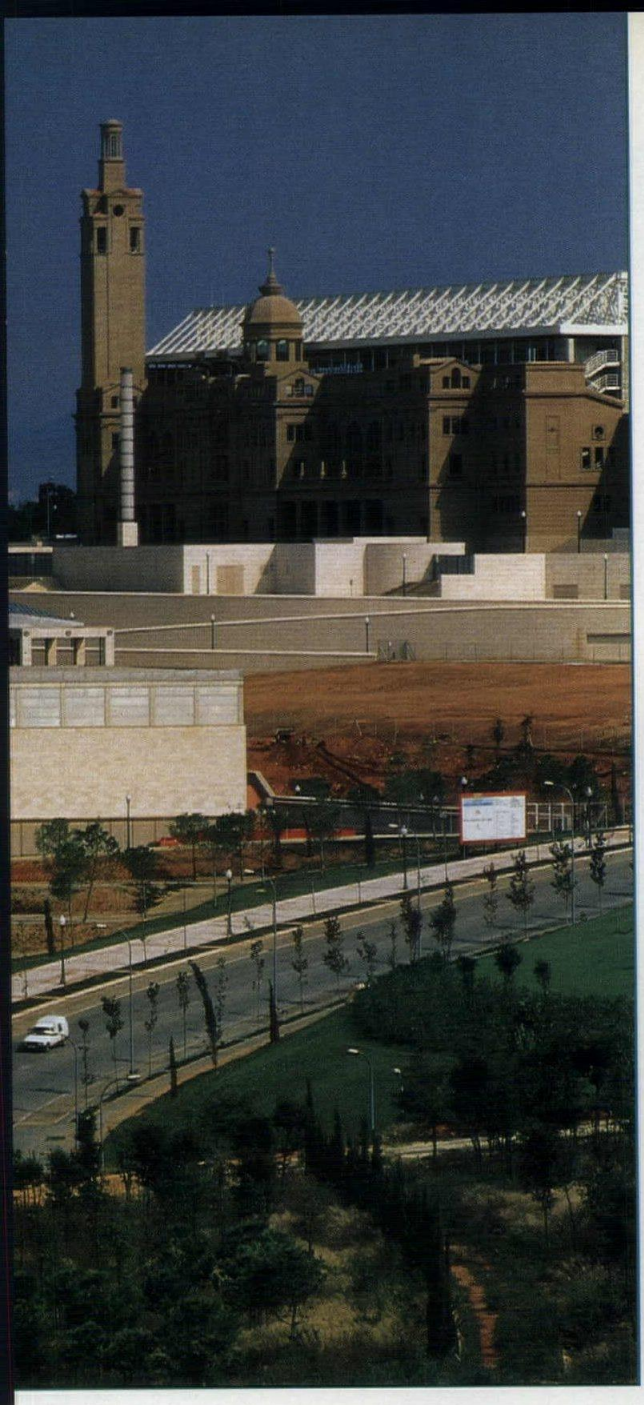


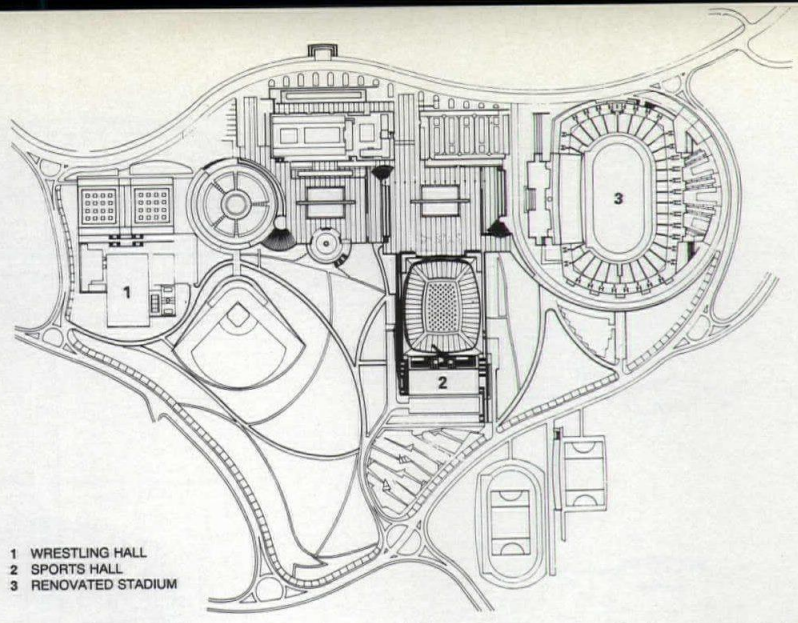
1

Isozaki's Sant Jordi Sports Hall borrows from many cultures and from the land itself.

Arata Isozaki's Sant Jordi Sports Hall in Barcelona is something of an architectural Rorschach test; people can see in it the architectural inspirations, references, and sources they want to see. The building's dome can be seen as a tribute to the Catalan vault- and dome-building tradition, or a reference to Isozaki's own Metabolist roots, or an attempt to echo the curves of the hill it sits on and those that surround it. Further, the building's stone base and porticos are in character with Isozaki's more recent work, with its suggestions of Classicism.

The site, on Barcelona's Montjuic Hill, was planned by the Barcelona architects Federico Correa and Alfonso Mila (in a competition-winning design) as a kind of Acropolis of Olympic athletic facilities. These include a wrestling hall/press center by Ricardo Bofill, a stadium (built for the 1936 Olympics, which were moved to Berlin when the Spanish Civil War broke out) renovated under the



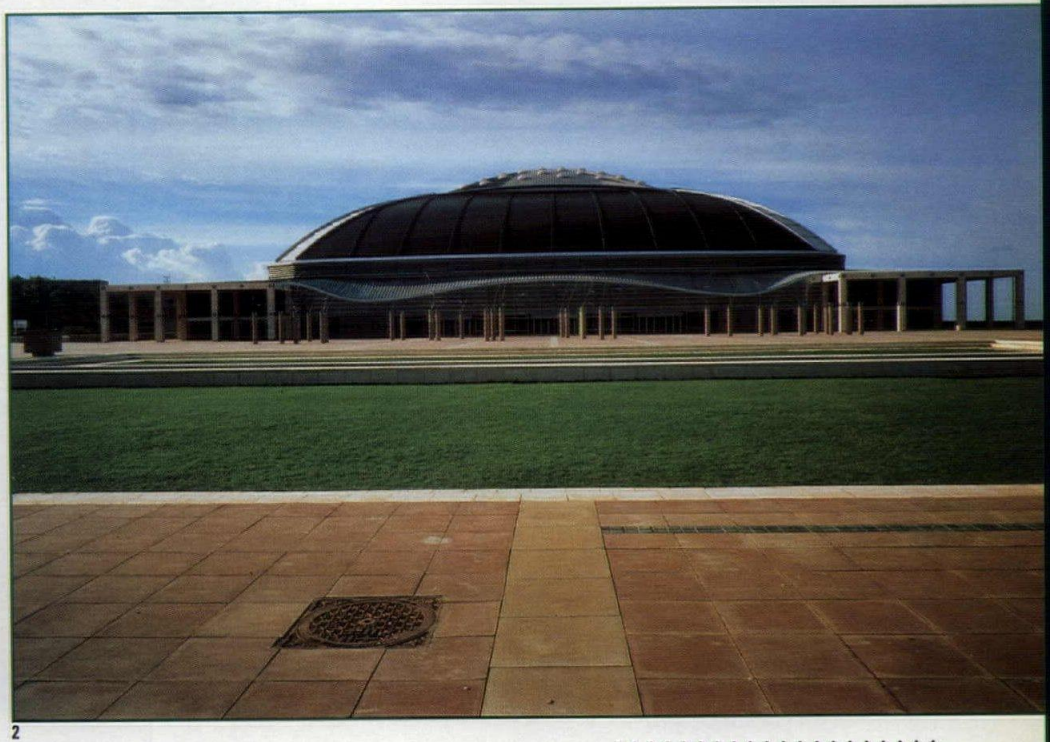


1 WRESTLING HALL
2 SPORTS HALL
3 RENOVATED STADIUM

SITE PLAN, MONTJUIC HILL

N ↑ 500'/150m

Sports Hall



2

direction of Vittorio Gregotti, a swimming pool, and the Sports Hall, all facing a vast public plaza.

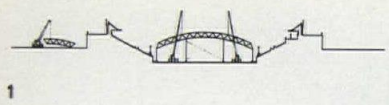
Isozaki's building, like Bofill's and the stadium, presents a symmetrical, formal appearance on the plaza, but in the longer side elevations the asymmetry of the dome becomes apparent. The precast concrete and travertine base, which becomes more visible at the sides and rear of the building, is the element most familiar to students of Isozaki's work. In an essay for the catalog of Isozaki's current exhibition at the Museum of Contemporary Art in Los Angeles (Calendar, p. 27), David Stewart discusses the influence of Schinkel's work on Isozaki; the pilastered façades and cascading stairs of this building's base are especially reminiscent of Schinkel's project for a Royal Palace on the Acropolis (although details like the punch-press-style balustrades are more distinctly Post-Modern). The contrast between this Classical rectilinearity and the shell-like, organic nature of the dome is as close as Isozaki comes in this building to the aesthetic of fragmentation he has employed and espoused elsewhere.

Mediating between the dome and the base are the plaza-level circulation areas, with low wave-like roofs and cantilevered screens of perforated metal. In discussing these, Isozaki introduces another influence on his design: "The large and low roofs are traditionally used between the different sections of Japanese temples to achieve the greatest contrast between closeness and distance." Spectators entering the arena pass through this lower – more intimate, Isozaki says, although here that term is relative – space on the way to the enormous main arena.

The circulation space, with its steel structure painted purple, green, and yellow, is as colorful as the exterior is not. The exposed underside of the undulating roof provides an effective prelude to

(continued on page 82)

The Sant Jordi Sports Hall sits in the "Olympic ring" (see site plan), a kind of athletic acropolis atop Montjuic Hill on the south side of Barcelona. The site, planned by Barcelona architects Federico Correa and Alfonso Mila, also contains a stadium renovated by Vittorio Gregotti, a wrestling hall by Ricardo Bofill, and a swimming pool. Spectators enter from a plaza (2) with a grid of steel-cable sculptures by Aiko Miyawaki, Isozaki's wife. Athletes, press, and service staff enter at arena floor level (50 feet lower) at the back (1). The band of louvers just below the roof is part of a passive cooling system. The curve of the asymmetrical dome is meant to suggest the surrounding hills.



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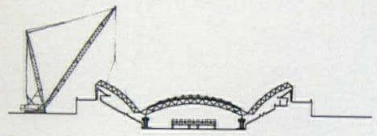

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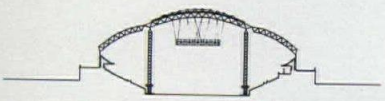

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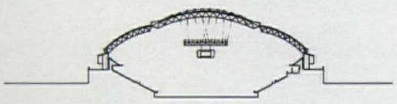
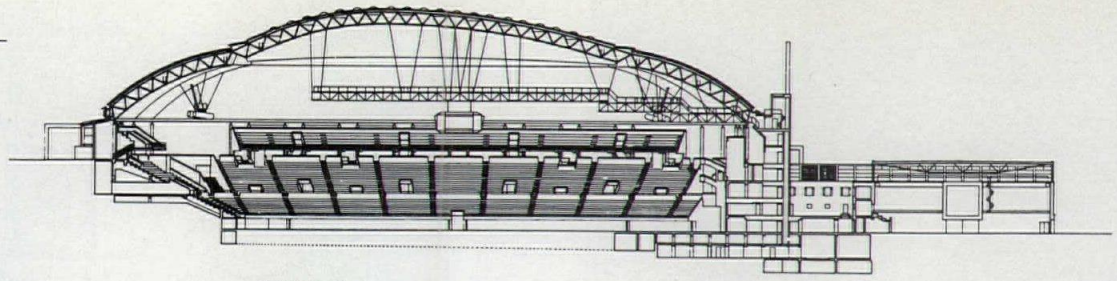


5

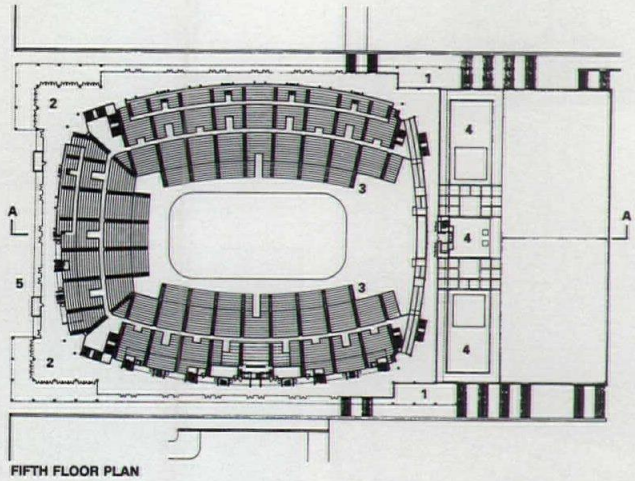
Building the Dome

In order to build the Sports Hall's 140-foot-high dome economically and reduce risk to workers, Isozaki chose the Pantadome System, (developed by Mamoru Kawaguchi, the project's engineer) wherein the dome structure is intentionally left unstable during construction so that it can be raised and folded into position. Frame assembly and roofing of the main section took place on the arena floor (1) while the side pieces were built and lifted into place with cranes (2). The grid that holds the scoreboard and mechanical equipment was also erected on the floor, then attached to the dome. Hydraulic jacks lifted the structure to its full height (3,4), after which the "missing" members were added to make the structure stable (5) and the jacks were removed.

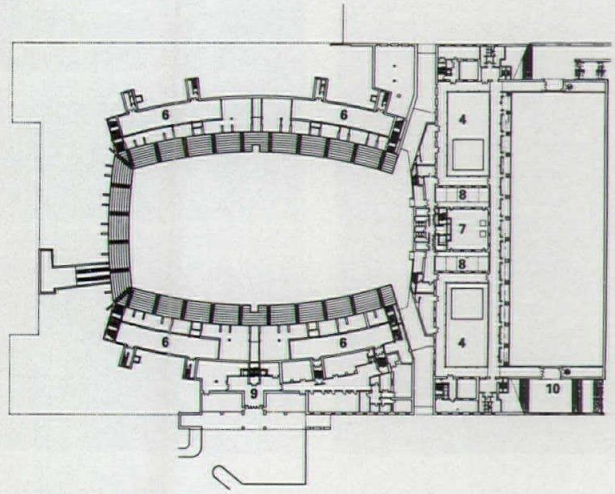


SECTION A-A

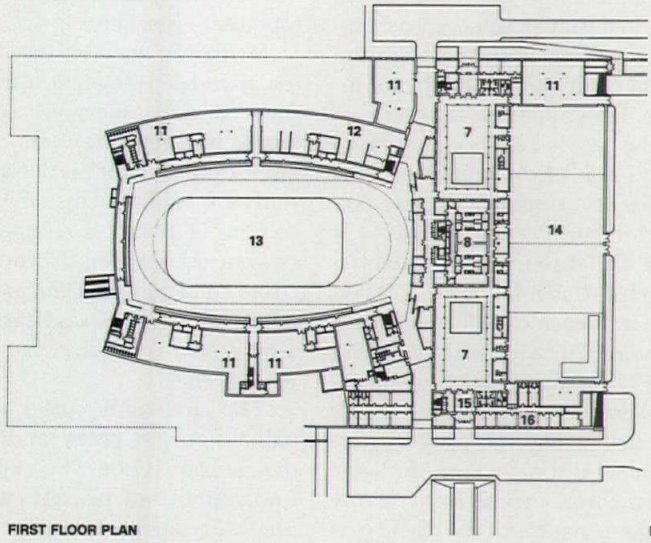
100'/30m



FIFTH FLOOR PLAN



SECOND FLOOR PLAN



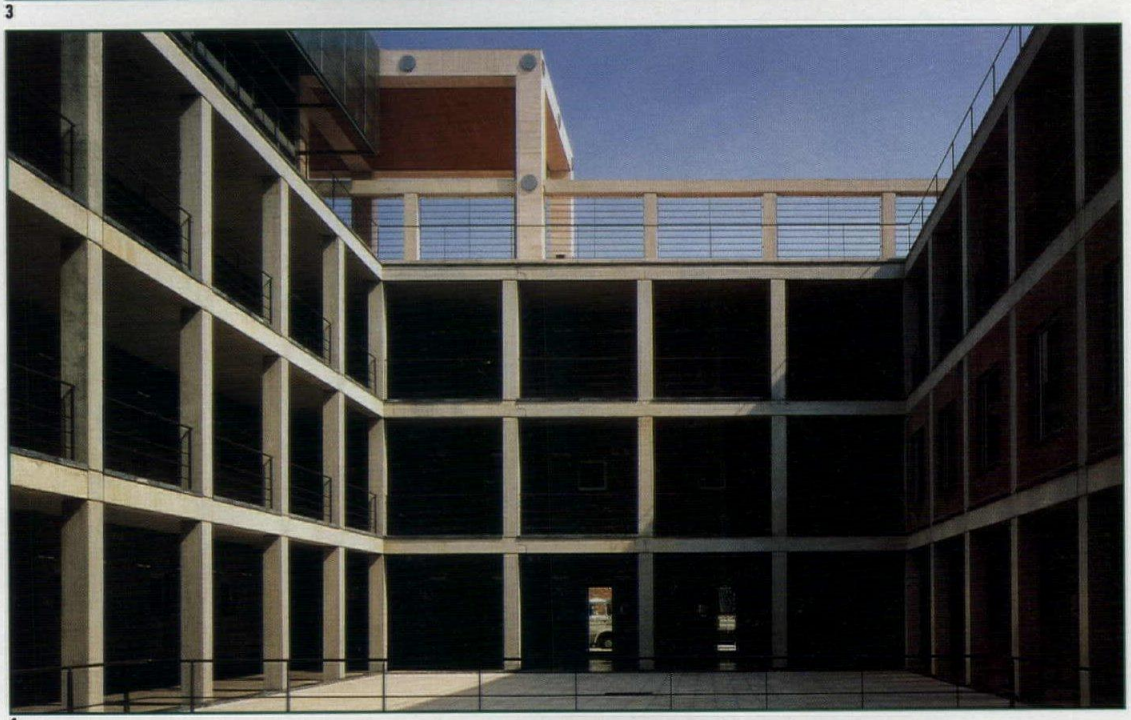
FIRST FLOOR PLAN

N

100'/30m

1 REAR ENTRANCE
2 FOYER
3 RETRACTABLE SEATS
4 PATIO BELOW
5 MAIN ENTRANCE
6 MECHANICAL
7 PATIO
8 DRESSING ROOMS
9 VIP ENTRANCE
10 SUB-ARENA ENTRANCE
11 STORAGE
12 WORKSHOP
13 MAIN ARENA
14 SUB-ARENA
15 SERVICE ENTRANCE
16 ADMINISTRATIVE OFFICES

3

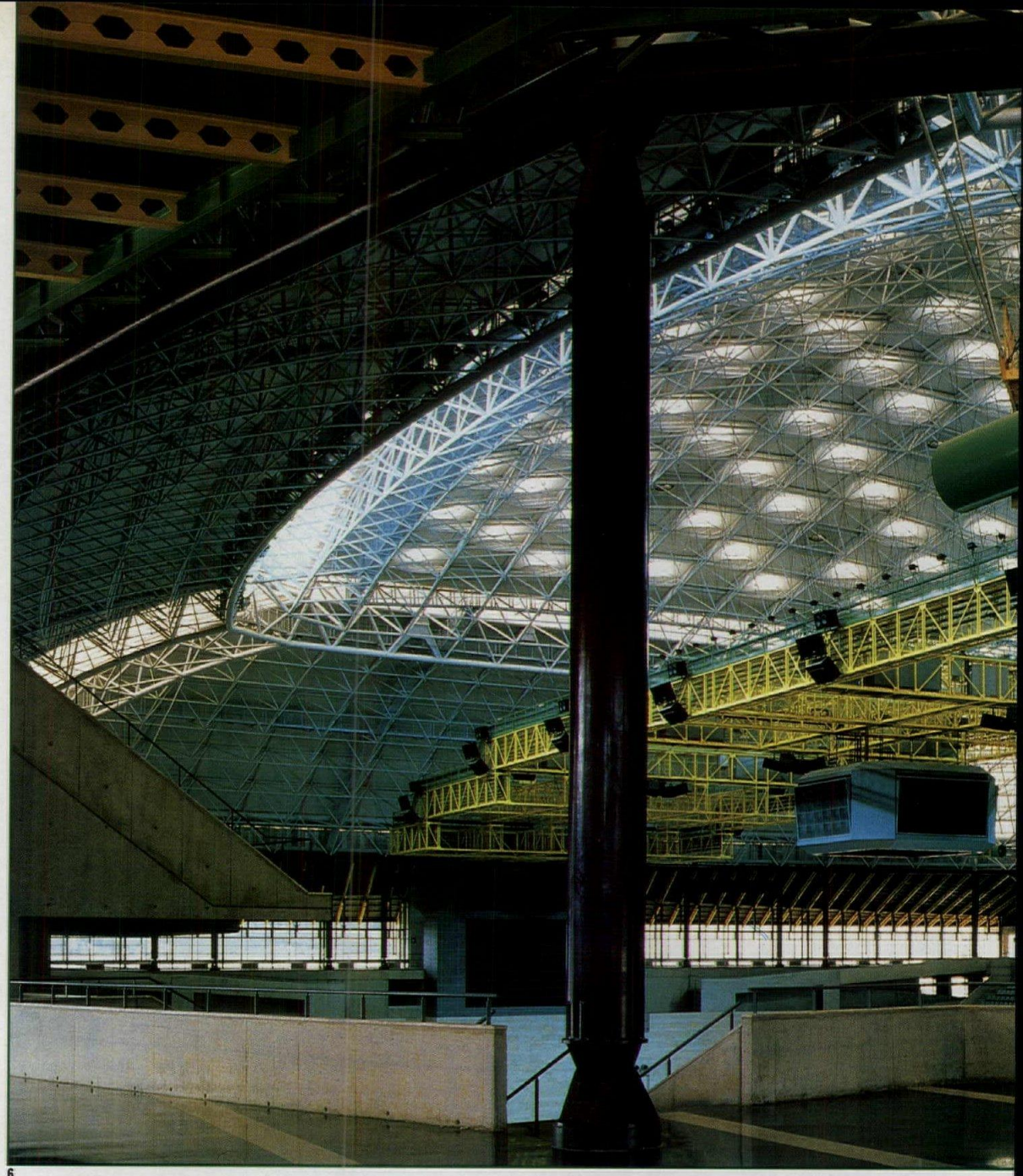


4

5

The entrance porticos (3) are reminiscent of those at Isozaki's 1974 Prefectural Museum of Modern Art at Gumma. Three cloister-like patios (4) are nestled between the arenas; they aid circulation, ventilation, and natural lighting in the service and changing areas that surround them. The roof trusses of the more conventional secondary arena (5), used for warmups and practice, span above a band of clerestories. Isozakian geometry is present even in the backboard.

Project: *Sant Jordi Sports Hall, Barcelona, Spain.*
Architects: *Arata Isozaki & Associates, Tokyo and Barcelona (Arata Isozaki; Juan Carlos Cardenal, associate architect; Rafael Delgado, architectural engineer; Shuichi Fujie, Naoki Inagawa, Masato Hori, Toshiaki Tange, Kunio Uesugi, Hiroshi Aoki, Shogo Kishida, project team).*
Client: *City of Barcelona.*
Site: *Montjuic, a mountain park on the south side of Barcelona, the principal area for the 1992 summer Olympic games.*
Program: *600,000-sq-ft, 17,000-seat hall with 200-meter track and ice rink; is also used for concerts, conventions, and exhibitions.*
Structural systems: *reinforced concrete; steel space-frame roof made in hinged sections for lift-up assembly.*
Major materials: *roof: ceramic tile, zinc panels, gravel; exterior walls: sand-blasted precast concrete panels, travertine; interior walls: brick, exposed reinforced concrete, travertine; floors: terrazzo, precast concrete.*
Mechanical systems: *water chiller air-conditioning; gas-fired boilers.*
Consultants: *Mamoru Kawaguchi Engineers, Tokyo, and Julio Martinez-Calzon, Madrid (structural); Francesco Labastida, Barcelona, and Josep Maria Milian, Barcelona (mechanical).*
Construction Manager: *Anillo Olimpico de Montjuic S.A., Barcelona.*
Contractors: *Dragados y Construcciones S.A., Barcelona (roof); COMSA, Barcelona (building).*
Costs: *8,300,000,000 pesetas (approximately $79,807,000).*
Photos: *Yasuhiro Ishimoto.*



6

(continued from page 79)

the main arena itself.

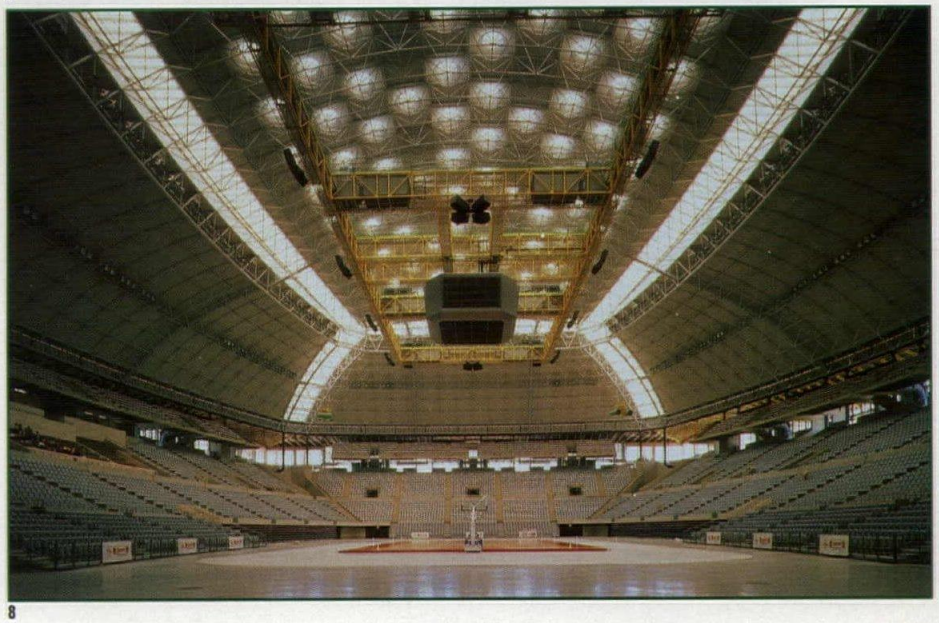
From inside the arena, the inventively constructed space frame roof (see "Building the Dome," p. 80) appears astonishingly light — at least during the daytime. Isozaki introduces light via linear and round skylights in the ceiling and through the windows of the circulation space, which is visible between the upper and lower tiers of seats. The roof membrane itself appears paper-thin when seen against the skylights.

A smaller, boxlike secondary arena, used mainly for warmups and practice, employs a similar idea in a less dramatic way by way of a band of clerestories just below its shallow-trussed roof. Between the two arenas is a block of service spaces, dressing rooms, offices, and a restaurant, all served by cloistered patios – a traditional Spanish building type, Isozaki points out.

Spanish courtyards, Schinkel-inspired façades, mountain-contoured (and part Japanese) roofs: Without even trying to enumerate further sources and inspirations for this building, it becomes clear that Isozaki, the self-proclaimed "citizen of anywhere," was an appropriate choice to design an arena for such an international event as the Olympic games. Far from representing the unity through sameness that once drove Modernism, the Sports Hall posits that we can be united with diverse origins intact. **Mark Alden Branch** ■

7

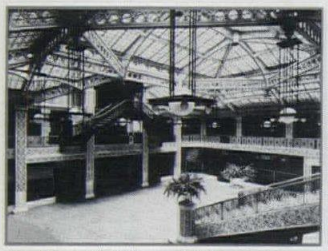
Entering near the top of the arena via brightly colored circulation spaces (7), visitors pass through columns (6) to reach their seats. The linear skylights that edge the top segment of the dome (6,8), and the 100 round skylights within that segment, help to dematerialize the immense roof structure. The top of the dome is 140 feet above the arena floor.



8

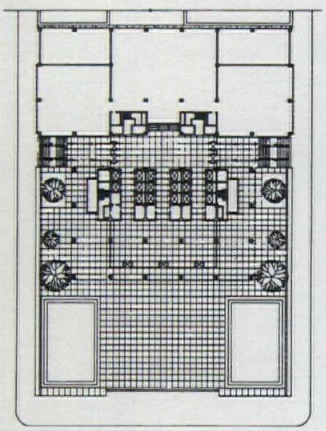
Inquiry: What Becomes a Lobby Most?

The city is the starting point for studying the lobby, an interior molded by its context. With a portfolio of 14 examples, we survey the ways architects configure these urban thresholds.

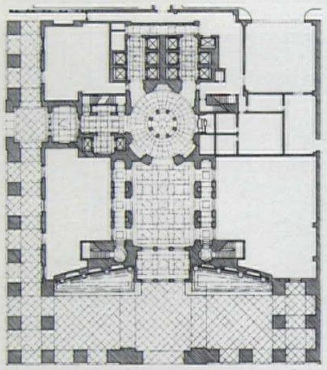


Chicago Historical Society

Rookery Building, Chicago (1888), Burnham & Root



Seagram Building, New York (1959), Mies van der Rohe



Humana Building, Louisville, Kentucky (1985), Michael Graves

Lobby design is a corollary of urban design. Even though few city plans set guidelines for lobbies, these interior spaces augment, in conceptual and physical terms, the urban patterns that surround them. While few of those who create lobbies ever get the chance to reconfigure the city, broad-minded architects apply their criteria for good urban design to lobby commissions. They understand that lobbies are tributaries of the city's armature of streets and squares, the junction of public and private space.

As our prototypes for the city have changed, so have standards of lobby design. A century ago, when the City Beautiful Movement promoted Beaux-Arts plans throughout North America, architects emulated a suitably Classical building model – the palazzo. They filled city blocks with broad masonry buildings that, despite their unprecedented size, followed a centuries-old strategy for layering space, with a common core of space surrounded by stacks of offices. Burnham and Root's Rookery Building (1888) exemplified the epoch's embrace of traditional urban design, as well as its architectural counterpoint – the radically new steel building frame. Both converged in the design of the lobby, a glass-roofed urban oasis, laced with steel staircases leading to a masonry-clad periphery of offices.

Within a few decades, steel technology, which had inflected traditional models, became the springboard of a new paradigm – the Modern Movement's concept of universal space. The traditional city, with its dense hierarchy of figural spaces and distinct building types, was replaced by arrays of object buildings, sometimes reduced to the least common denominators of Modern architecture – innovative structure and freely configured space. Architects bypassed traditional relationships between buildings and streets, and designed a proliferation of freestanding buildings surrounded by plazas or landscaping. Many believed that the Modern office building's ultimate setting was in suburbia, where it could dominate a truly expansive space. But before too long, the automobile, fundamental to exurban development, created new logistical problems that still elude resolution, on the scale of regional planning as well as lobby design.

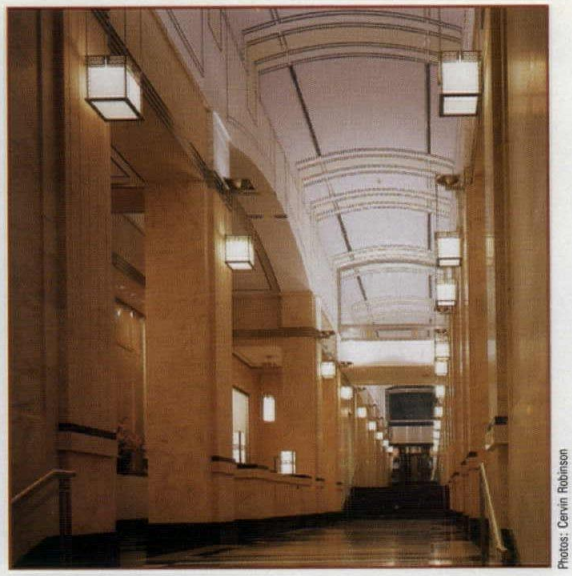
In 1959, when the Modern urban agenda was still new, the Seagram Tower showed how to apply it to the North American city: Mies van der Rohe's steel and glass tower overlooks a Minimalist plaza, a clearing in the fabric of Midtown Manhattan. The lobby is reduced to the glazed periphery of an elevator core; it is a nominally interior space. One surmises that if security and the weather were of no concern, the glass walls would be superfluous, and the lobby and plaza could constitute the same horizontal continuum.

The next (and still prevalent) prospectus for structuring the city was Colin Rowe's return to the contiguous city, punctuated by the towers and megabuildings of the Modernists. By 1985, when Michael Graves's Humana Building was erected, the Classical plans referred by Rowe and his allies had returned to the design studio. Once again, Academic models inspired the way architects shaped the city, as well as the lobbies within it.

Rowe's term for his ameliorative urbanism – *bricollage* – has been an ironically apt description of the process of creating a good lobby. Budget-conscious developers demand high ratios of leasable-to-gross space, and the pragmatics of parking, security, and utilities often govern the configuration of the interior. Planning boards (some enlightened, others not) try to reconcile bureaucratic statutes with the architect's intentions. It's impossible to distill the range of contemporary lobbies to a single *parti*. The lobby is a consequence of the building it occupies and the city it adjoins: Each situation brings its own range of problems. We offer a sample of today's recurring issues in lobby design. Fourteen examples follow, paired according to the issues they address, from reweaving pedestrian byways to creating a graceful passage to the parking garage.

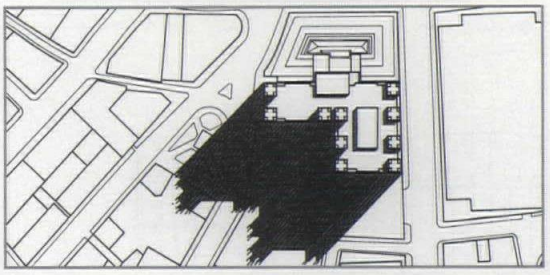
The lobby is one of the architect's most likely opportunities to configure a piece of the public realm. Admittedly, the lobby is a tiny part of the urban totality, confined to the interior, and often restricted to a select group of tenants and guests. Nevertheless, the lobby is a valid medium for understanding the way we believe our cities should be. It is a concise design problem, a built increment of cities not yet realized. **Philip Arcidi** ■

EAST ELEVATION, NEW AND OLD BUILDINGS

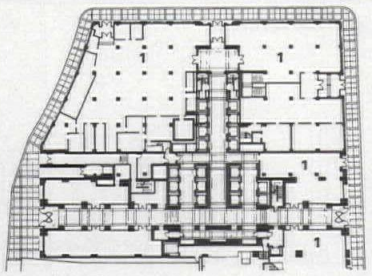


Photos: Cervin Robinson

NEW LOBBY ON EAST-WEST AXIS

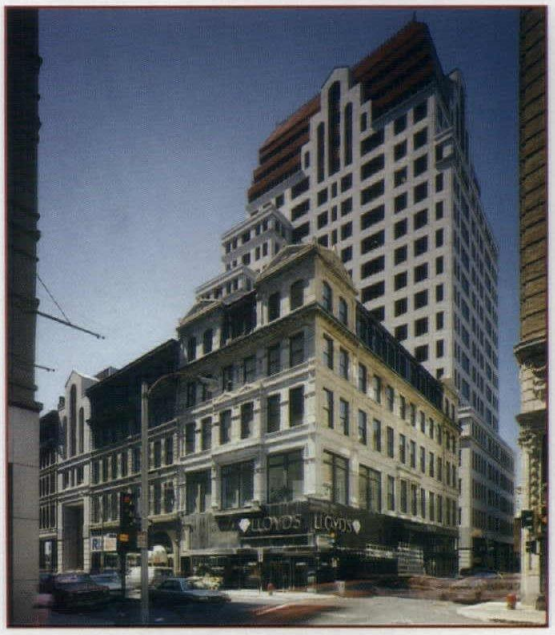


SITE PLAN N 100'/30m



1 RETAIL

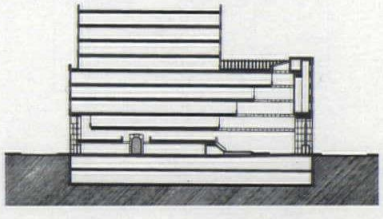
FIRST FLOOR PLAN N 100'/30m



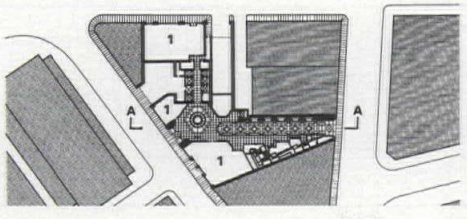
VIEW OF INFILL LOBBY FAÇADE (LEFT) AND TOWER

Photos: Nick Wheeler

LOBBY WITH SUMMER STREET ENTRANCE



SECTION A-A 100'/30m



SITE PLAN 1 RETAIL N 100'/30m

Lobby as Passageway

101 Federal Street, Boston

Architects: *Kohn Pedersen Fox Associates, New York.*

Downtown Boston's cranked streets may bewilder the motorist, but to the resourceful pedestrian they offer a wealth of alleyways and shortcuts between office buildings. At 101 Federal Street, one of these passages, formerly enclosed by a 1920s building, is now the segment of a new T-shaped lobby by Kohn Pedersen Fox. The firm elongated the new lobby into a through-block passageway because it was functionally expedient and mandated by law: The Boston Redevelopment Authority asked the architects to preserve the one they inherited. The designers took their stylistic cues from the Art Deco lobby of the adjoining building, which they annexed: They reciprocated with a stylized Classical vocabulary that bears comparison with Otto Wagner's late work – it is monumental but sensitively scaled.

99 Summer Street, Boston

Architects: *Goody, Clancy & Associates, Boston*

Crammed streets and a rich collection of old buildings make Boston a delicate setting for new skyscrapers: The urban fabric calls for a strategy of compromise between the scale of the skyline and the street. Goody, Clancy & Associates followed this course at 99 Summer Street: They shifted their 20-story tower far behind a 19th-Century streetfront of 5-story buildings. From a distance, the tower looks like a gatepost for the cluster of skyscrapers beyond. The front door is part of the traditional streetfront in the foreground; it is set in a satellite façade for the Summer Street lobby.

Given an L-shaped site, the architects set this lobby beside rather than beneath the tower, to provide a mid-block passage between South Station and the financial district. This interior street, illuminated by skylights and the unobstructed 5-story façade, also brings sunlight to four tiers of office space cantilevered over the passage.

Figured Spaces in Sequence

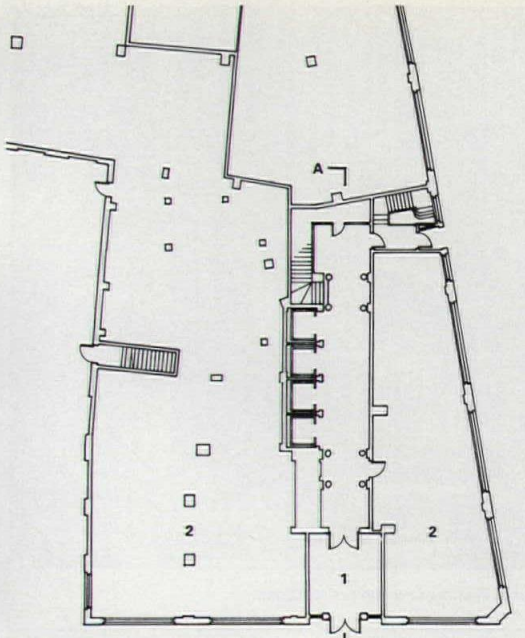
84 State Street, Boston

Architects: *Schwartz Silver Architects, Boston*

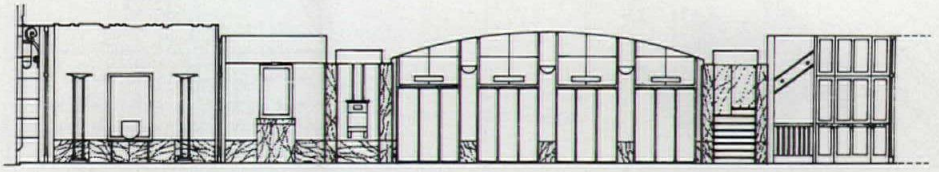
Commissioned to renovate a lobby without changing its plan, Schwartz Silver instead focused on the ceiling, where they had free rein: In plan the corridor-like lobby's only changes are two sets of columns, but the section reveals a new four-stage sequence of spaces from street to elevator. The restored vestibule is thoroughly Classical, but in the lobby itself the architects' simplified columns are distinctly Modern interventions. A shallow vault spans the length (rather than the width) of the elevator lobby. Its role is spatial, rather than structural: The arched profile makes the space in front of the elevators seem shorter and wider than it actually is. By centering the new ceiling above the elevator doors, Schwartz Silver implies that this is a waiting room, not merely a hallway.

Paul Gobell

VIEW INTO LOBBY FROM VESTIBULE



FIRST FLOOR PLAN
1 VESTIBULE
2 RETAIL



SECTION A-A

10'/3m

1325 Avenue of the Americas, New York

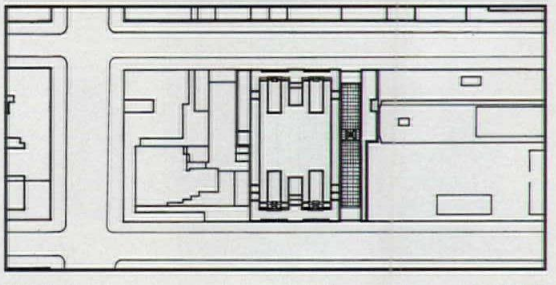
Architects: *Kohn Pedersen Fox Associates, New York*

While Kohn Pedersen Fox's skyscrapers are best known for their evocative façades, their lobby plans are equally important for understanding their lyrical Classicism. In 1325 Avenue of the Americas, for instance, the plan has a hierarchy of parts that is as carefully structured as any of their façades. The building's semicircular lobbies – paired for access from 53rd and 54th Streets – complement the neutrality of the Manhattan gridiron. They are distinct rooms embedded in the urban block, with a plan reminiscent of the Beaux-Arts. At the same time, they are a graceful device for negotiating the three turns one takes between the front door and the elevator bank. The piers and cornices of the marble walls, like the figurative plan, recall Manhattan interiors of the 1920s, when the Classical syntax structured both the tall building and the city.

SEMICIRCULAR FOYER, CENTERED ON STREET ENTRY

Jack Pottle/Esto

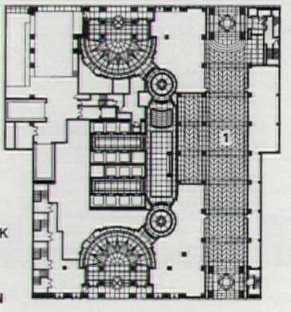
ELEVATOR LOBBY, ACCESSIBLE FROM PAIRED FOYERS



SITE PLAN

N

200'/60m



1 THROUGH-BLOCK PASSAGE

FIRST FLOOR PLAN

N

100'/30m

Lobbies to the Fore

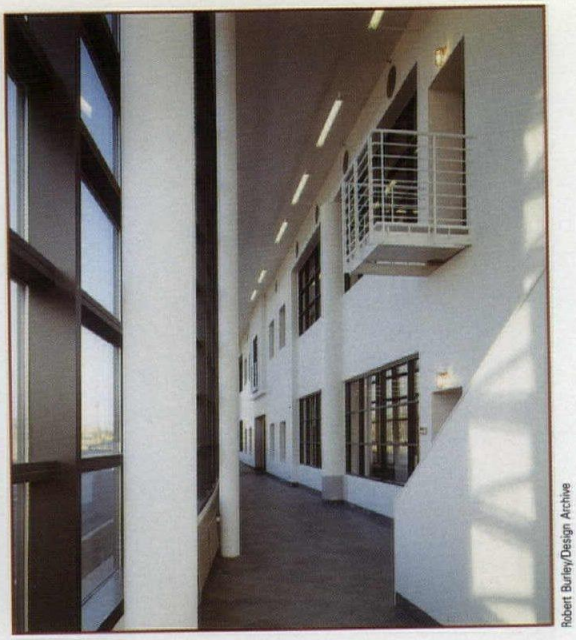
S.A. Armstrong Ltd. Headquarters, Scarborough, Ontario

Architects: *Jones & Kirkland, Toronto*

Lobbies are an unlikely presence in an industrial park. They imply a more orderly sequence from street to office than one finds in an array of warehouses and production plants, where access for trucks and cars is of prime concern. Edward Jones turned this inauspicious environment to advantage. He attached a glazed lobby to the entire front of a client's office building so that it doubles as a vast colonnaded hallway and structures the building's context: The central door marks the axis of the cross street, and the concave glass wall, with its flanking trees, implies that the front parking lot is a figural space. Jones's envelope of glass suggests an inside/outside continuum, in the spirit of the factories Gropius built in pre-war Germany.

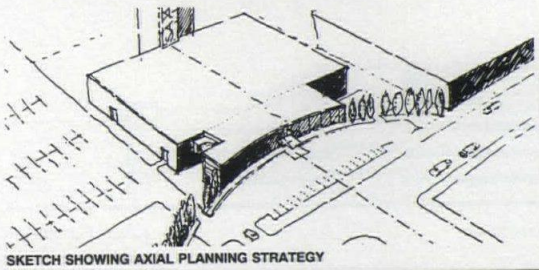
The Canadian Architect magazine

GLAZED LOBBY SEEN FROM EMPLOYEE PARKING LOT

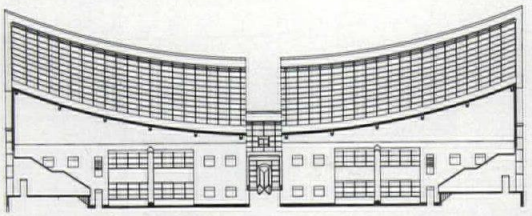


Robert Burley/Design Archive

LOBBY INTERIOR



SKETCH SHOWING AXIAL PLANNING STRATEGY



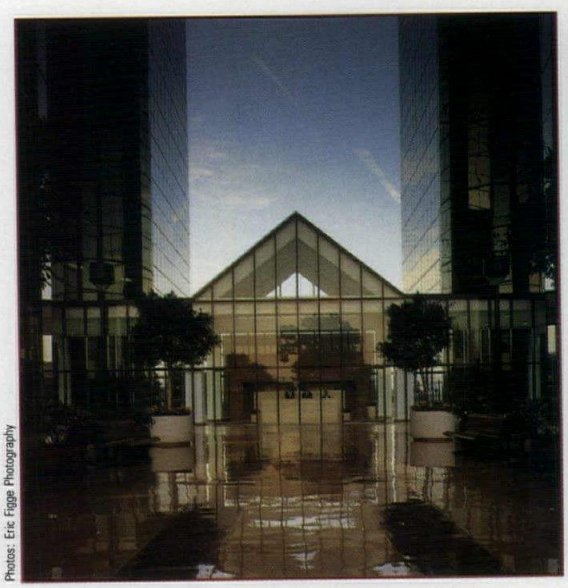
WORM'S EYE AXONOMETRIC OF LOBBY

40'/12m

Arco Plaza, Long Beach, California

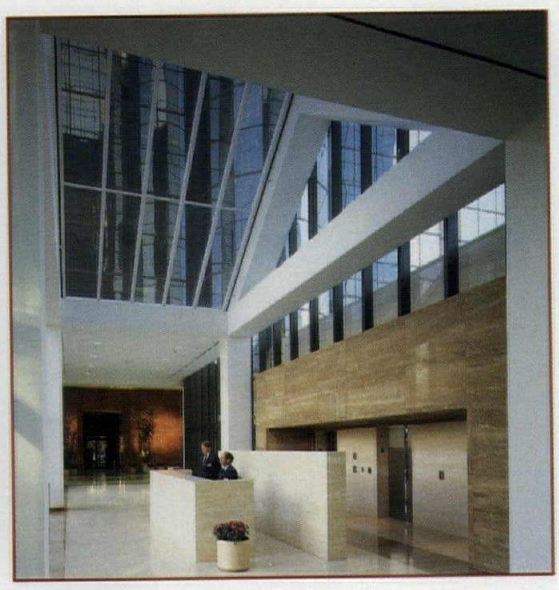
Architects: *Gensler & Associates, Irvine, California*

At Arco's Long Beach headquarters, the Modernist scheme of towers-on-the-plaza proved more appealing in concept than in reality. Envisioned as a landscaped terrace for the towers, the plaza never became the primary approach to the buildings: Most of the employees drove to the underground garage, where they took elevators directly to the floors above. Few saw the plaza until they looked down on it from their offices. When Gensler & Associates was commissioned to upgrade the 16-year-old building, they pursued a strategy proposed by B. Luckman Partnership, the original architects, and built a glazed lobby as a link between the towers. The lobby is a building itself, neither a volume embedded in a periphery of leased space, nor the transparent base for a tower. It is a new point of access – a part of all occupants' entrance to and departure from their offices.

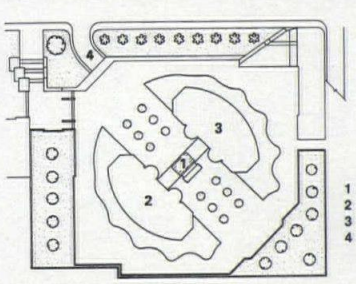


Photos: Eric Figge Photography

VIEW OF LOBBY FROM PLAZA



LOBBY INTERIOR



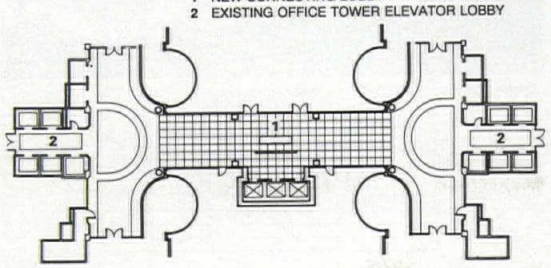
1 NEW CONNECTING LOBBY
2 EXISTING WEST TOWER
3 EXISTING EAST TOWER
4 ENTRANCE TO GARAGE

ROOF PLAN, ARCO PLAZA

N

200'/60m

1 NEW CONNECTING LOBBY
2 EXISTING OFFICE TOWER ELEVATOR LOBBY



LOBBY PLAN

N

40'/12m

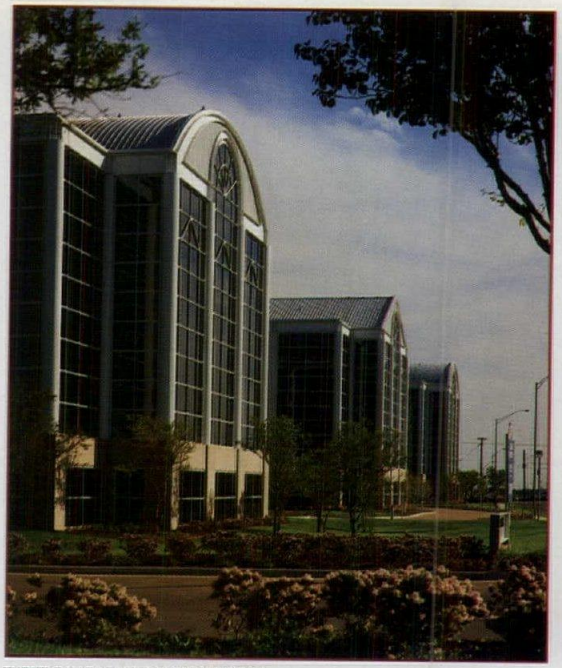
Entered from the Garage

8300 Mopac Office Building, Austin, Texas

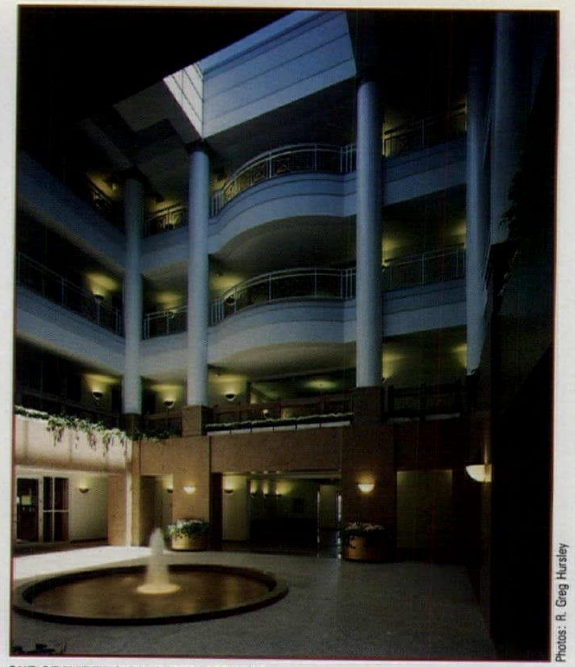
Architects: *Hammond Beeby & Babka, Chicago*

Although the suburban office park is predicated on easy automobile access to the workplace, it usually relegates the passage from car to office to second-rate status. Hammond Beeby & Babka solved this problem with skylighted courtyards that double as foyers to the garage and hallways for four floors of offices. Although there is no easy access between these atriums (one exits the building to traverse it), they are a welcome exception to the windowless hallways typical of speculative office buildings.

The forthright parti is a structure of parallel layers: The parking garage is the counterpart to the circular drives in the front, where visitors follow arcaded walkways to the atriums; service rooms and fire stairs form a secondary spine along the garage.

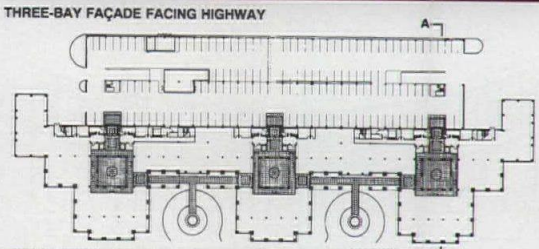


THREE-BAY FAÇADE FACING HIGHWAY

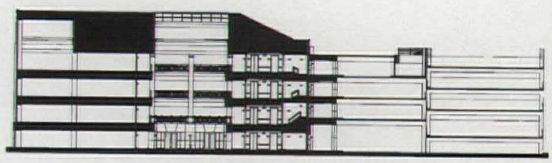


ONE OF THREE SKYLIGHTED ATRIUMS

Photos: R. Greg Hursley



FIRST FLOOR PLAN



SECTION A-A

40'/12m

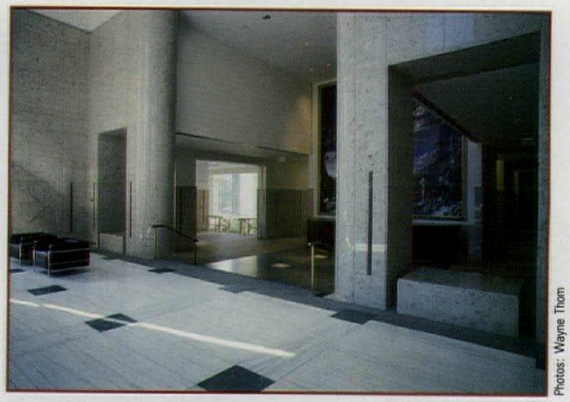
Center West Office Building, Los Angeles

Architects: *Mitchell/Giurgola, New York*

In Sunbelt cities, where downtown office towers have their own garages, the lobby is a compound design problem: It should provide a dignified passage from the car to the office, and also function as a front room for those who enter from the street. Steven Goldberg of Mitchell/Giurgola compares the situation to designing a house: Both seem incomplete without a front reception area, even when the path from the garage is the habitual route of entry.

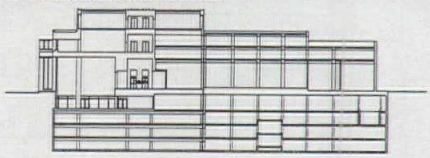
At Center West, pedestrians on Wilshire Boulevard enter a front room that overlooks a double-height lobby for visitors entering from the subterranean garage. Unlike most such drop-off stations, with their low ceilings and artificial illumination, this lower lobby is as spacious as its grade-level counterpart: Large windows offer views to the street, and a double-run stair and dedicated elevator bring visitors to the street-level lobby.

LOWER LOBBY ENTERED FROM GARAGE



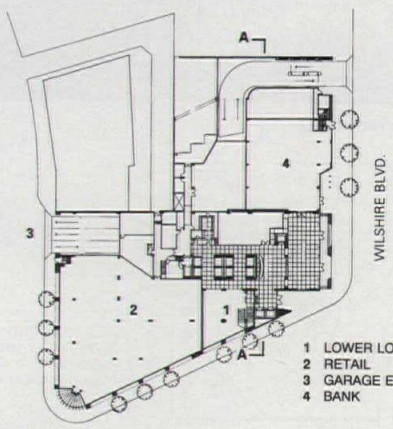
FIRST FLOOR LOBBY ENTERED FROM WILSHIRE BLVD.

Photos: Wayne Thom



SECTION A-A

100'/30m



FIRST FLOOR PLAN

Bilevel Lobbies

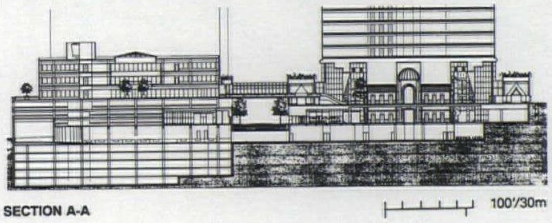
One Peachtree Center Tower, Atlanta

Architects: *John Portman & Associates, Atlanta*

Security, convenience, and easy parking have made John Portman's Peachtree complex in downtown Atlanta popular, but at a cost: It is an introverted complex, poorly integrated with Atlanta's street life. In an attempt to remedy this problem, Portman's newest office tower is being built with a 62-foot-high lobby that links the Peachtree network with the street. Stores will be open to both the sidewalk and the lobby, a space which adapts the heroic scale of Portman's atriums to a more compact volume. It has a cylindrical elevator core, with an upper level that is accessible (via a skybridge) from a neighboring retail arcade and garage. Applied Classical motifs, the architects hope, will add a human scale to the vast building and underscore its spatial layering.

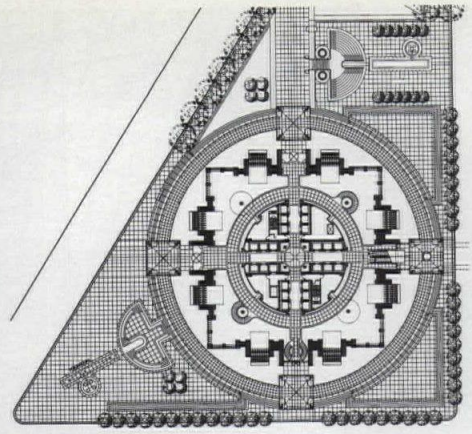
Gabriel Benzur

MODEL, TWO-FLOOR LOBBY

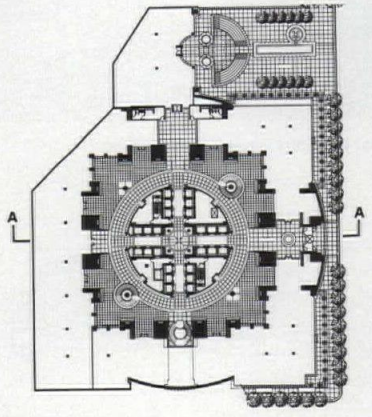


SECTION A-A

100'/30m



SECOND FLOOR PLAN



FIRST FLOOR PLAN

N

100'/30m

L.J. Hooker Office Building, Atlanta

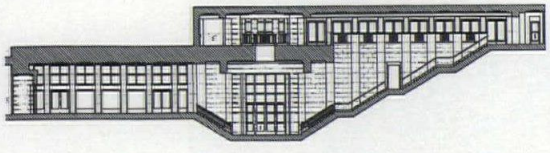
Architect: *Michael Graves, Princeton, New Jersey*

In this tower, Michael Graves's characteristic figural spaces appear in a section-driven solution: Given a narrow site and three different floor levels for as many entrances, he created a hierarchical procession of stairs and mezzanines. The lobby is a compressed and stratified adaptation of Beaux-Arts design, modulated by indirect sunlight so that it seems more ample than it really is.

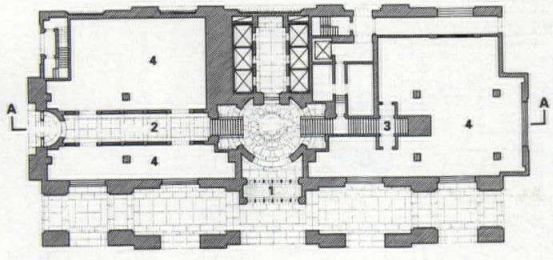
The approach from the street (the route of access for most of the tenants) leads one through a double-height arcade and a glazed vestibule to the rotunda lobby, a cylindrical volume open to the floor above. The longer, transverse axis is negotiated by stairs: One flight leads to a retail gallery that opens to a side street. On the opposite side of the rotunda, a two-floor staircase leads to the entry of a rapid transit station, with an ascent that aspires to the ceremonial.

VIEW OF TRANSVERSE LOBBY (UPPER LEVEL)

1 TWO-STORY ARCADE
2 GALLERY
3 STAIR TO RAPID TRANSIT STATION
4 TENANT SPACE



SECTION A-A



FIRST FLOOR PLAN

N

40'/12m

Awkward Plans Resolved

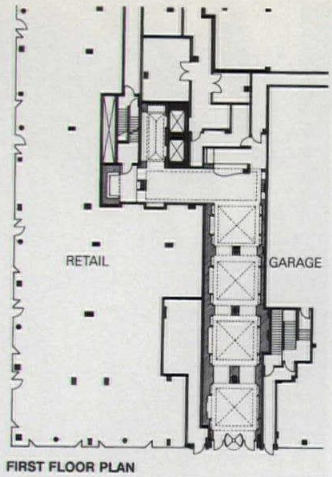
World Wide Plaza Residential Lobby, New York

Architects: *Pilat Davis, New York*

Making graceful lobbies in tight passageways is a specialty of Pilat Davis. This young firm welcomes these commissions as a chance to create a generously budgeted and program-free interior. But the design dividends don't come easily: At the World Wide Plaza condominiums Pilat Davis contended with a windowless hall, floors that slope with the incline of an adjacent parking garage, irregular column spacing, and a circuitous path to the elevators. The architects divided the inclined hallway into four pyramidally roofed pavilions, understated in their detailing and references to the outdoors. Seen in parallax, this space seems to be divided into rooms. The ceilings, like the mirrored walls, tend to dematerialize the enclosure: Each pavilion has lattices set under a backlighted soffit.

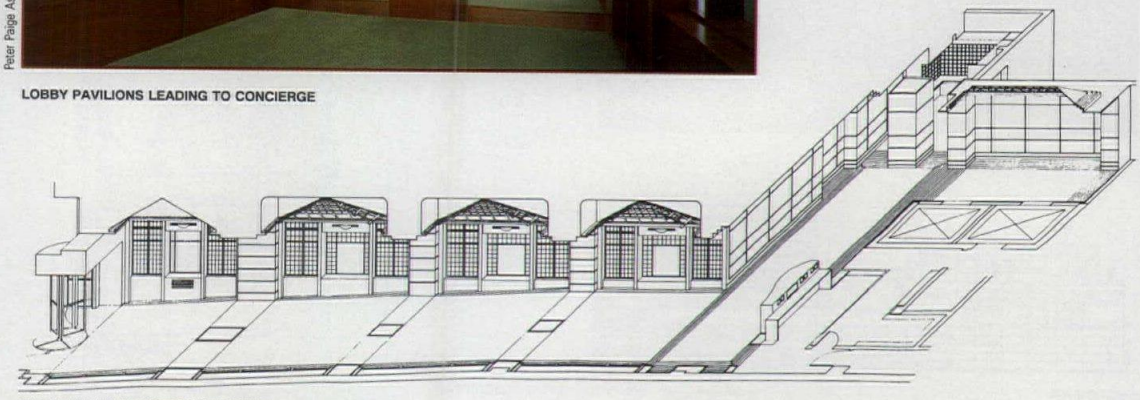
Peter Paige Associates

LOBBY PAVILIONS LEADING TO CONCIERGE



FIRST FLOOR PLAN

N 40'/12m

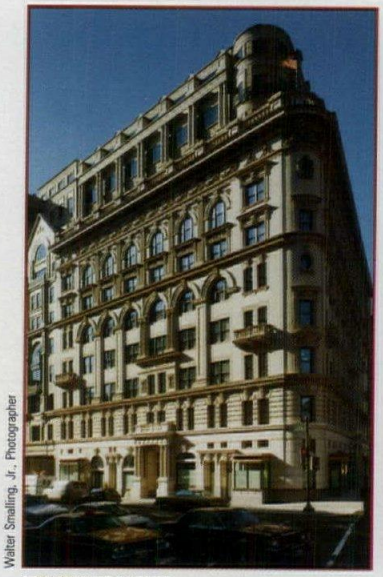


CUT-AWAY AXONOMETRIC OF LOBBY

The Bond Building, Washington, D.C.

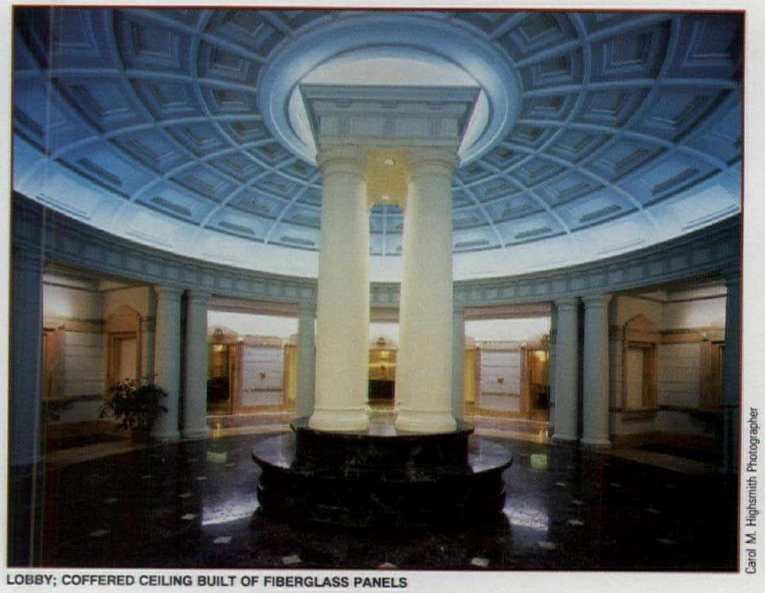
Architects: *Shalom Baranes, Washington, D.C.*

Pierre L'Enfant's plan for Washington, D.C., criss-crossed by diagonal avenues, gives landmarks their due prominence, but it yields corner lots with unwieldy angles. When Shalom Baranes Associates rehabilitated the Bond Building, located on one such lot, they showed that the Classical syntax can reconcile these site irregularities within a balanced whole. The architects gave both street entrances equal prominence and connected them to the central lobby with a pair of angled hallways. A pair of elliptical foyers makes the cranks in the two halls less noticeable. Because the circular lobby does not have any dominant axis, it gives equal priority to both foyers. Baranes's columns are not simply rhetorical: The four in the center are loadbearing – an economical alternative to bisecting the lobby with a 5-foot-deep transfer beam.



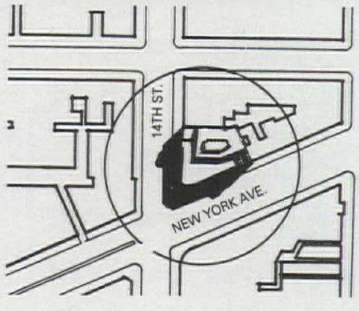
Walter Smalling, Jr., Photographer

14TH STREET FAÇADE

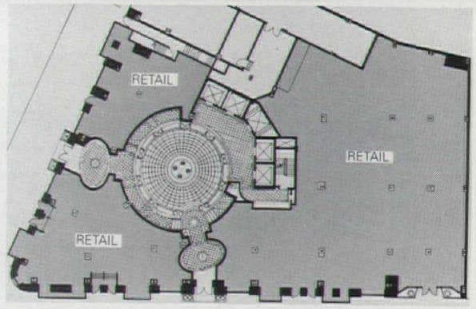


Carol M. Highsmith Photographer

LOBBY; COFFERED CEILING BUILT OF FIBERGLASS PANELS



SITE PLAN N 200'/60m



FIRST FLOOR PLAN N 40'/12m

Lobby as Atrium

250 24th Street, N.W., Washington, D.C.
Architects: *Hisaka & Associates, Cambridge, Massachusetts.*

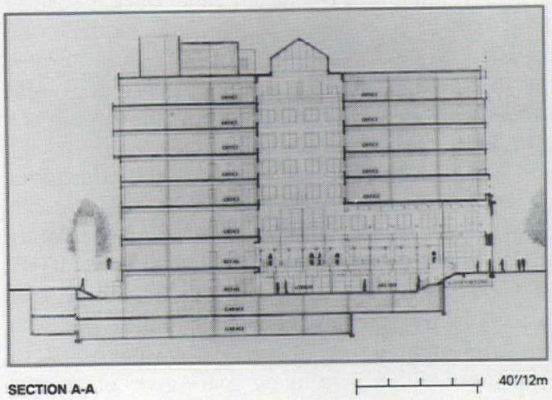
The atrium lobby has become one of the most marketable dividends of Washington's restrictions on tall buildings: Developers often ask architects to design a skylighted courtyard as an alternative to the highrise vistas they would offer in other American cities.

When Kaempfer Development asked Don Hisaka to build a 6-story office structure that would preserve the façade of a landmarked 2-story garage, the architect responded with a three-stage sequence from sidewalk to atrium. He created a small patio behind the original street façade, as a forecourt to the lobby proper. Here, one traverses two floors of retail space set in front of the skylighted court, whose industrial lamps and steel detailing evoke the site's formerly utilitarian program.

Mark Barchelt

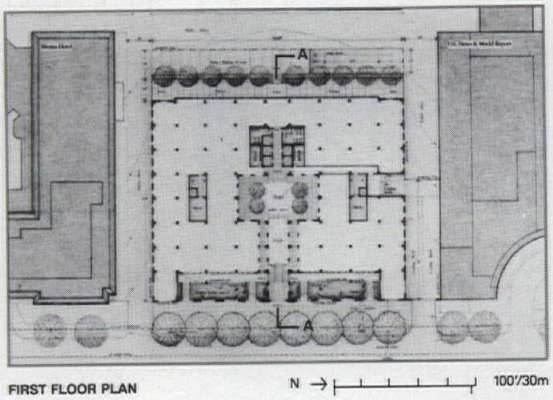
GARDEN FORECOURT

LOBBY LEADING TO ATRIUM



SECTION A-A

40'/12m



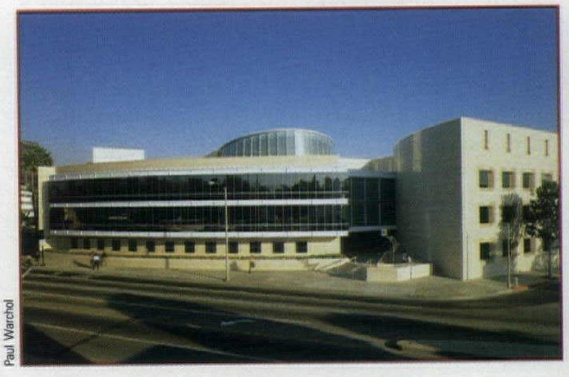
FIRST FLOOR PLAN

N → 100'/30m

Creative Artists Agency, Beverly Hills, California
Architects: *Pei Cobb Freed & Partners, New York*

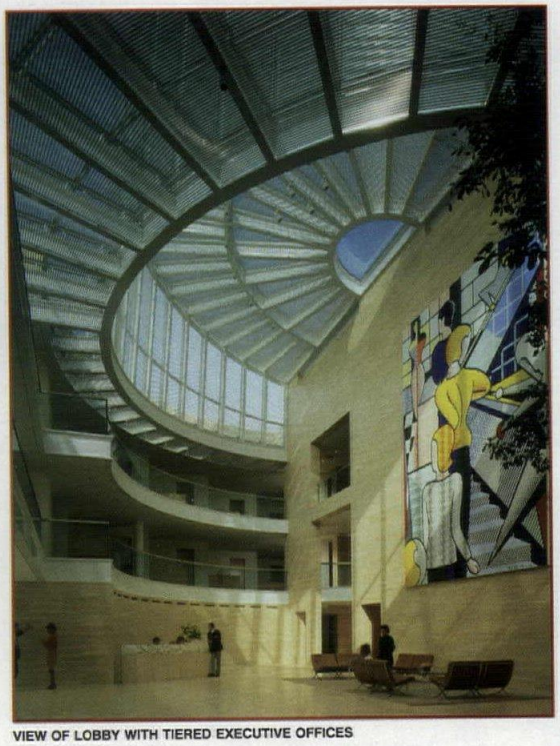
In its massing and profile, the Creative Artist Agency (CAA) building is a signature Pei design – a collection of large sculptural units and bold spatial geometries. Built on an irregular site that gracefully accommodates its asymmetrical composition, CAA brings the atrium to the front of the building. Given a high-end clientele and budget, CAA recognized that an exceptional lobby could become part of its corporate identity, a space that offers an image as important as the façade.

Far more generous than most lobbies, the CAA atrium is surrounded by tiers of executive offices as if it were a grand common room rather than a more neutral urban courtyard. This space is an understated oasis in a city that prizes architectural exuberance, an inner sanctum in a city of unpredictable urban moments.

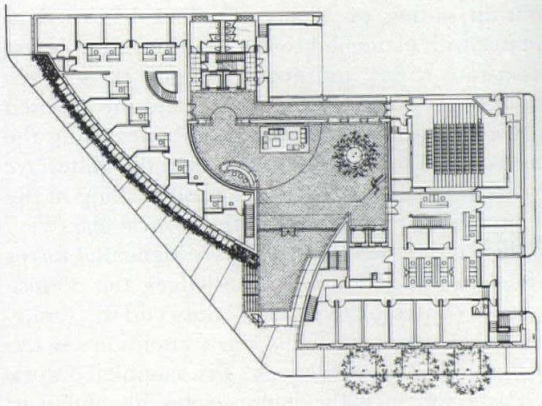


Paul Warchol

CAA SEEN FROM SANTA MONICA BLVD.

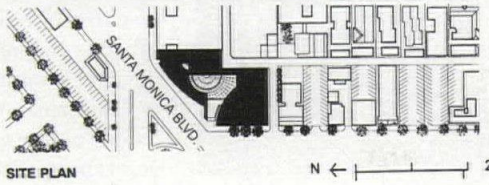


VIEW OF LOBBY WITH TIERED EXECUTIVE OFFICES



FIRST FLOOR PLAN

N ← 40'/12m



SITE PLAN

N ← 200'/60m

Transcendence on the Beach

In a speculative house for a beachfront site in Venice, California, Antoine Predock generates spatial theater that partakes of beachfront life yet transcends it.

1

2

Architect Antoine Predock has long been known for the regional sensitivity of the buildings designed in his Albuquerque office. A few years ago, when he opened a second office in Venice, California, he proclaimed himself "no more Mr. Adobe," and his work has taken on more of a mainstream, industrial-world character. The first of his buildings in this new, more urbane idiom is a speculative house in Venice, right along the boardwalk, with its roller-skating hordes.

Prized as they are, beachfront lots in Venice bring with them a frustrating mix of assets and liabilities: While the narrow west end of this site presents a spectacular vista, it is bordered by the busy boardwalk, and the other three sides offer neither pleasant outlooks nor privacy. (The lot just to the south, now vacant, will presumably accommodate a house only six feet away from this one.)

Predock's strategy has been to present an unassertive, thin-skinned façade to the street; the use of frosted glass, with mirrors on the inevitable garage doors, makes the house seem to emit light into this tight alley. From the moment one enters, however, the neutrality gives way to a theatrical treatment of the beach view. Dark, polished granite steps lead up half a level, where a "runway" of the same glossy material reflects the western sky and points to the infinite view out over the Pacific. By angling the edge of the reflective granite path, Predock has created a reverse perspective, foreshortening the 60-foot dimension to the glazed west wall.

This western wall is a sculpture of concrete and glass that does several things: It indicates the overriding value of this western exposure by its sheer density of incidents, in contrast to the coolly minimal quality of the house as a whole. (Predock observes wryly that the house cost $300 per square foot – for the first three feet from the beach – only $50 from there on.) This complex wall also divides a basically undifferentiated view into several distinctive parts.

The half-story elevation of the main living space gives occupants a fine view of the beach without necessarily seeing – or being seen by – the colorful throngs on the boardwalk. But Predock also found a way to clear the vista of the railings that would otherwise be required by the elevation. This he did by placing a shallow pool of water outside the area of glazing; since the pool is not occupiable space, it requires no railing. As a public dividend, a thin film of water pours over the black granite side of the pool, providing a point of seemingly endless interest to passersby.

At the east end of the main living space, a study is raised above the entrance to the four-car garage that burrows under the house. (In congested Venice, even visitors need on-site spaces.) Just inside the west wall, an exposed steel stair leads up to the master bedroom suite, offering new viewpoints along the way. At the bedroom level, an oceanside terrace is partially roofed and defined visually by a prominent concrete portal. At the east end of the bedroom floor, views out are limited, but frosted glass, used liberally in exterior walls and interior partitions, creates a luminous interior.

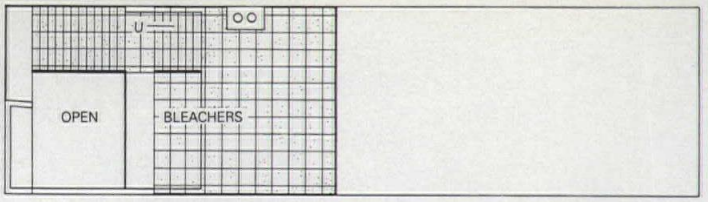
Even in the built-up setting of Venice, Predock has tried to connect his architecture with elemental forces. For him, "the house affirms mythic connections to sea and geologic past." He sees the "glistening black granite runway" as "sea-related," and the exposed concrete of the west wall as suggesting "bleached bones along the shore." "Timeless aspects of Los Angeles rather than the glitter are expressed," says Predock: "sea, stone, desert – wind rushing in the pivot window – the mystery of light entering the vertical glass slit."

For the visitor to this house, these connections to elemental forces do not seem far-fetched. The house acknowledges the Venice beachfront setting, yet its contemplative spaces transcend the funky, ephemeral qualities of the locale to focus one's attention on the eternal elements of the situation. As Predock's first completed work in California, the house convincingly demonstrates his ability to generate site-specific design solutions away from his Southwest Desert base. **John Morris Dixon** ■

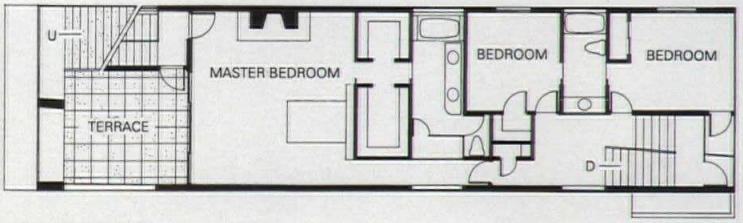
The narrow front of the house (1) is a restrained, purist composition of industrialized components such as pipe railings and frosted glass in aluminum frames. A mirrored garage door acknowledges the narcissism of the community, while the front door is secluded behind a wall; balconies in front of the glazed stairwell offer some rain protection. The long south wall (2) is likely to be covered up by another house only six feet away. From inside the entry (3), the view extends straight through to the Pacific. The wedge-shaped black granite "runway" through the main living space visually shortens the distance to the large glazed opening in the west wall; here, a mullionless window measuring 9' x 13'-6" pivots to form a canopy above head height.

Views out of the living room (5) are varied by the complex openings in the west wall. A narrow strip of glass in a concrete niche (4) provides an unusual multiply reflected panorama when viewed close up. Stairs up to the master bedroom suite offer alternative viewpoints. Looking toward the east end of this long open-plan space (7), one sees the cabinets enclosing the kitchen and the study beyond, elevated to capture a long view toward the sea. The first floor ceiling is subtly modeled with angular planes that articulate areas and reflect daylight. Seen from outside, the concrete-framed west wall (8) is a strong presence along the busy boardwalk; passersby pause to examine the film of water spilling over the black granite block at its base. The tile-clad "bleachers" on the rooftop (6) afford the most sweeping view of beach and ocean, with foreground interest provided by the concrete portal that defines the master bedroom terrace.

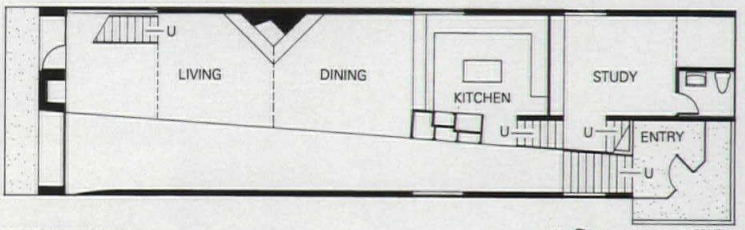
Project: *House, Venice, California.*
Architects: *Antoine Predock Architect, Albuquerque, New Mexico and Los Angeles (Geoffrey Beebe, Kevin Spence, Doug Friend, project team).*
Site: *28' x 90' flat site, directly on beachfront boardwalk.*
Program: *family living space for unspecified occupants; upper level outdoor spaces; parking for up to four cars below house.*
Structural system: *wood frame with steel seismic bracing.*
Major materials: *cast-in-place concrete, black granite, steel pivot window, steel handrails, aluminum-framed windows with frosted glass, white stucco.*
Mechanical system: *forced air heating.*
Consultants: *Parker-Resnick, structural; Robert Rentz, special window fabricator.*
General contractor: *Robert Douroux.*
Cost: *not available.*
Photographs: *Tim Hursley, except as noted.*



ROOF PLAN



SECOND FLOOR PLAN



FIRST FLOOR PLAN

Mary Nichols

4

5

6

7

8

On the Ascent

A coastal house by architect Ronald McCoy

is organized around a rewarding

three-dimensional procession.

1

The simple massing is a diagram of maximum construction allowed on the site. The "front" door is actually located off the street-facing southeast façade (1) in a recess on the side wall and marked by a massive copper-clad column (3). The main procession of stairs (4) runs along the northeast wall of the house (2).

For Los Angeles architect Ron McCoy, a former associate of Robert Venturi and Michael Graves, the Webb Residence in Marina del Rey is an exploration of fundamental issues: scale, proportion, and the relation of the whole to its parts. Yet even with those preoccupations, the house (winner of a citation in the P/A Awards program, Jan. 1988, p. 88) is less a rigorous essay in design theory than a laboratory for the development of serene spaces and mercurial circulation systems.

If the house has a "theme," it is the promenade that leads one through the building, horizontally and vertically, to a climactic ocean view from the roof terrace. The architect has lined the route with constant shifts in wall conditions, ceiling heights, and qualities of light. McCoy explains that the composition is loosely derived from Loos's Raumplan and its notion of interlocking spaces. The house, he says, is about "the slipping and sliding between volumes, both in section and in plan, accentuated by light."

The Webb Residence sits less than a block from the ocean on the Venice Strand, a sliver of coastal land separated from the mainland by the Venice Lagoons to the east. Inside the strand is a row of residential streets that are among the most intriguing in Los Angeles: Automobiles are banished to back alleys, while streets are open only to pedestrians and bicycles. The houses here – typically small beach bungalows – have traditionally featured compact yards that open directly onto the streets, bolstering the sense of public space and "pedestrian-friendliness." On Reef Street, however, much of this established pattern is yielding to high-density apartment buildings, the design of which reflect greater concern for security than for the quality of urban space.

This three-bedroom, 6950-square-foot primary residence for a literary agent and his wife is capped with a large "media room" and a highly finished roof terrace. The site, a narrow (35′ x 90′) lot presented challenges in the provision of daylight and privacy. To allow for a yard, the construction pad was kept to 26′ x 67′.

If the flat stucco façades seem ungainly in places, particularly the southeast elevation, their overall simplicity and placidity are well calculated – almost as if a Loos villa had been transplanted to California and topped with a pergola and a satellite dish. Flush window frames of unvarnished cedar are intended to weather to a seaside gray, in homage to the wood-framed windows of Kahn's Salk Institute. McCoy investigated the effect of multiple scales, varying window dimensions from a floor-to-above-the-ceiling "sky pocket" in the master bedroom, to tiny "human-scale" lookouts on the roof.

To capture light while preserving privacy, McCoy chose to use a glass-and-paper laminate he discovered on a trip to Tokyo. At one point, the architect inserted a clear window among the translucent panes to enable visitors to "experience the reality" of aging shingle-style buildings and telephone wires nearby.

The Webb House appears somewhat unwilling to participate in that urban reality. On a street frequently used by people walking to the beach or jogging, it seems like a tower of privatism. A high perimeter wall blocks part of the front façade, and a strip of suburban-style landscaping intervenes between the wall and the street; both gestures are conspicuously out of keeping with the traditional character of the neighborhood. Happily, a portion of the fence fronting the yard dips low enough to afford a glimpse of the garden, a welcome accommodation to the pedestrian character of the street. **Morris Newman** ■

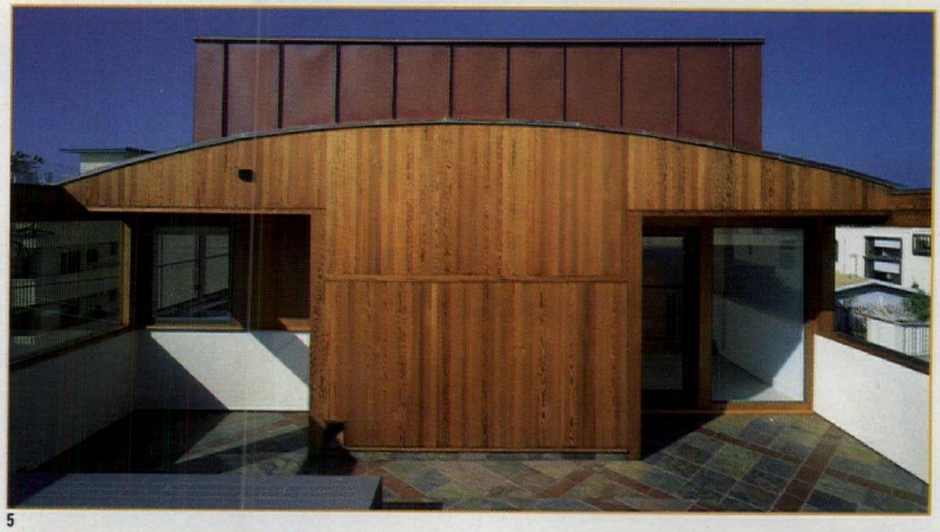
The author, a former real estate editor of the Los Angeles Business Journal, *is a freelance writer based in L.A.*

2

3

4

Project: *Webb Residence, Marina del Rey, California.*
Architects: *Ronald McCoy Architect, Los Angeles (Ronald McCoy, principal; Kathrin Brunner, project architect).*
Client: *Elliot and Susan Brooks Webb.*
Site: *35' x 90' lot on Marina peninsula*
Program: *4300-sq-ft 3-bedroom single family house with 1750-sq-ft semi-subterranean garage, 900-sq-ft roof terrace.*
Structural system: *steel and wood frame; concrete foundation.*
Major materials: *stucco, cedar siding, copper, laminated glass.*
Exterior floor surfaces: *Adoquine stone pavers, Indian slate, red slate; interior floors: red oak, Vermont purple slate (see Building Materials, p. 138).*
Mechanical system: *3-zone forced air heating and cooling.*
Consultants: *Richard Powel, landscape; Gordon Polon & Co., structural (Michael Blatt, project engineer); The Sullivan Partnership, mechanical.*
Costs: *withheld.*
Photos: *Grant Mudford.*



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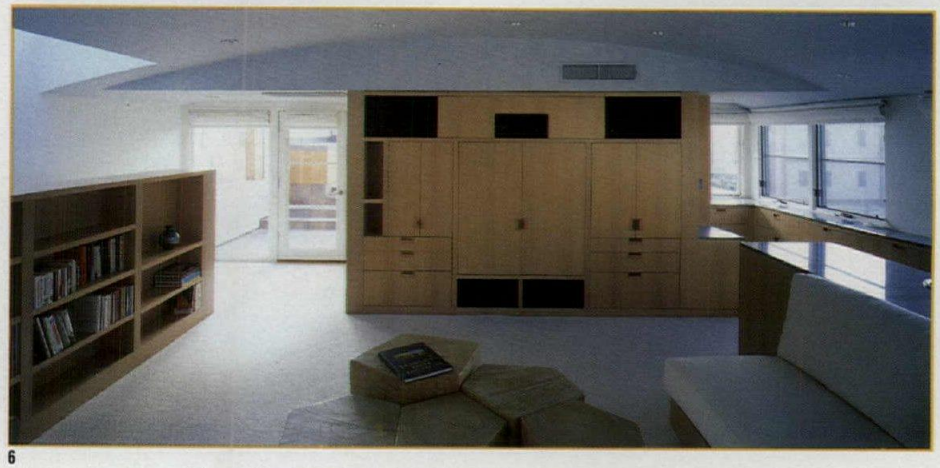

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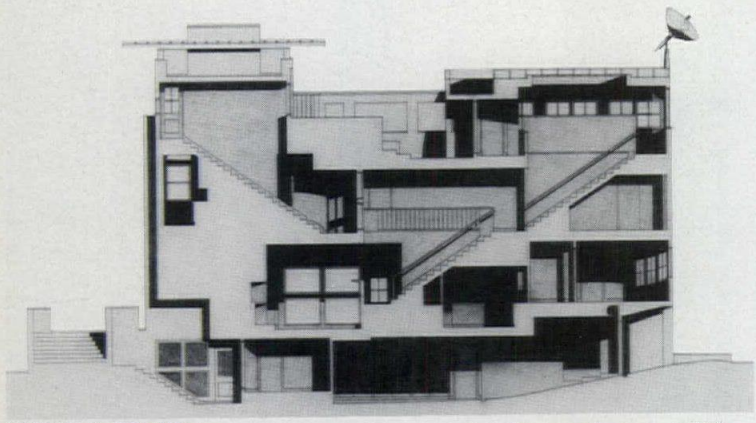
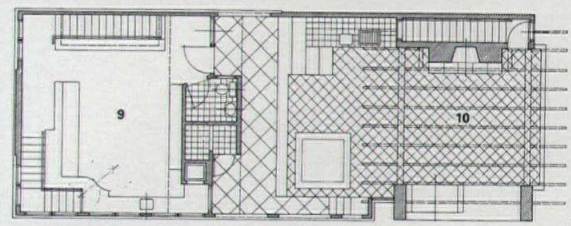
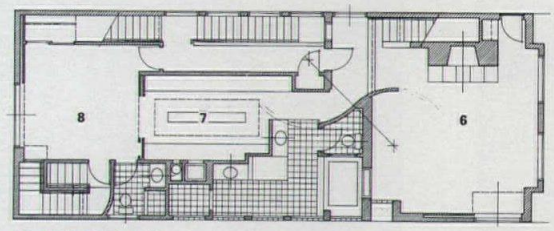


LONGITUDINAL SECTION AA

20'/6m



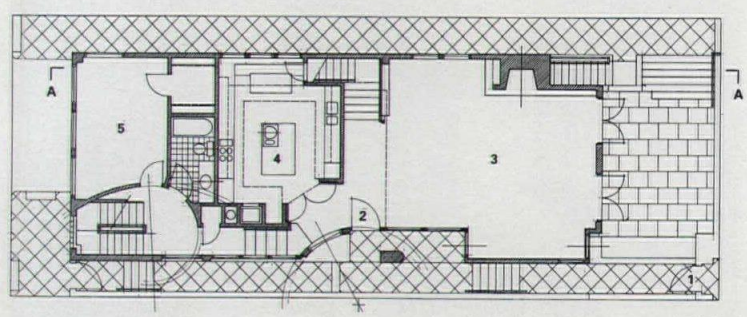
THIRD FLOOR PLAN



SECOND FLOOR PLAN

1 GATE
2 ENTRY
3 LIVING ROOM
4 KITCHEN
5 BEDROOM
6 MASTER BEDROOM
7 CLOSET
8 GYM
9 MEDIA ROOM
10 ROOF TERRACE

The second, arguably more important, entrance starts in the garage at the rear of the house, where the rear-to-front, ground-to-sky promenade really begins. From there, slate-covered stairs lead to a corridor of curving walls and low ceilings that leads, in turn, to the large living room. Visitors may then climb one flight of stairs to the bedrooms and a second flight to a sumptuous "media room" (5,6) and a tiled roof terrace (7), outfitted like a room turned inside out, with its privileged view of Pacific breakers.

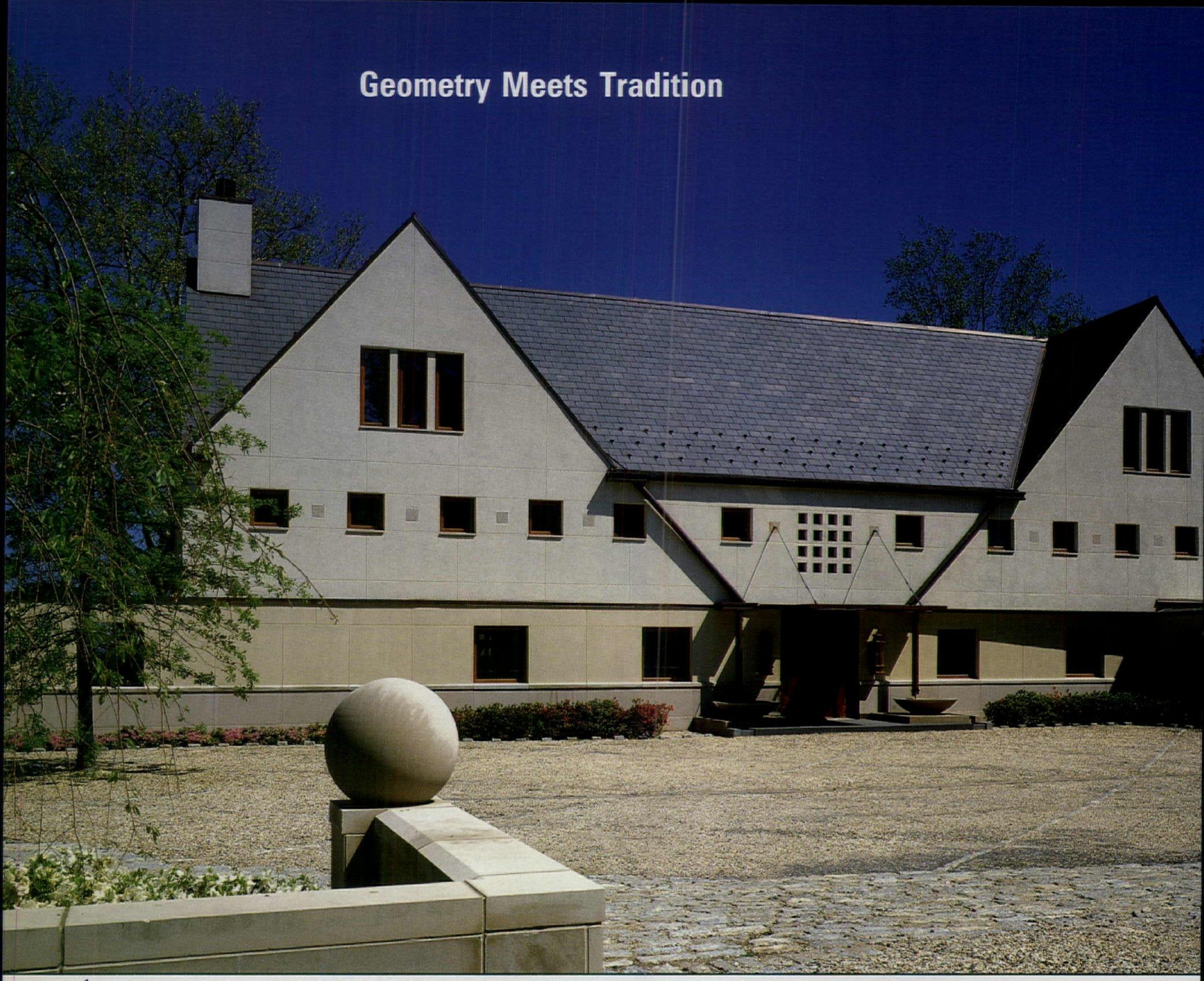


FIRST FLOOR PLAN

N

20'/6m

Geometry Meets Tradition



1

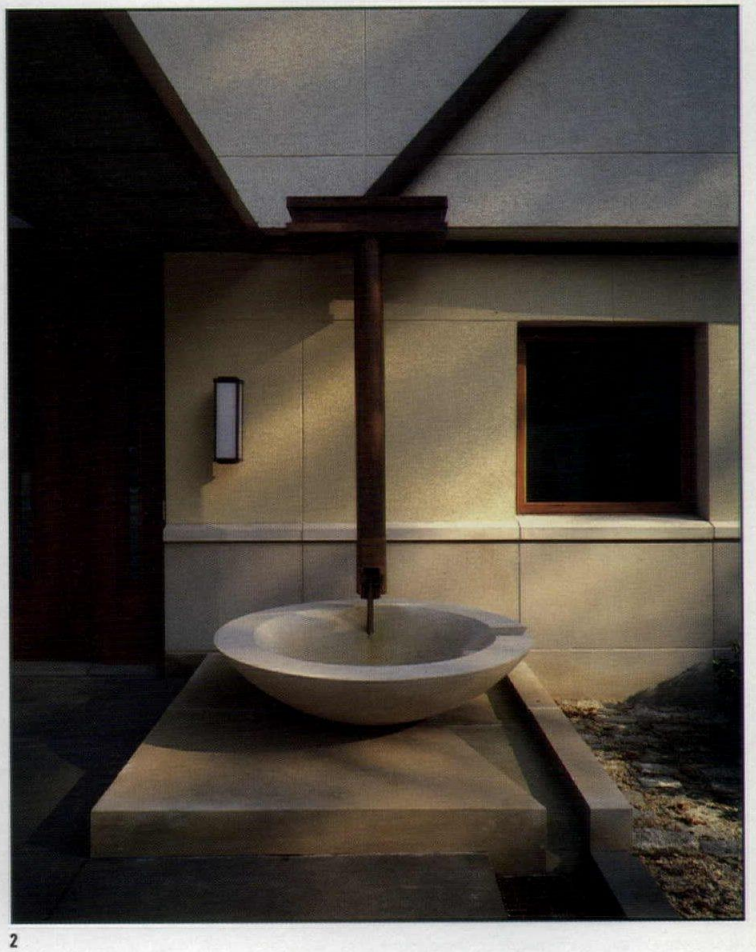
In a waterfront house in the Northeast, architect Peter Gluck has reinterpreted the grand mansions of decades past, using details that are essentially Modernist.

On the Long Island Sound shore of New York's Westchester county, a new gravel drive winds through mature trees to an imposing shorefront house that is at first glance traditional, at second look full of subtle contradictions. The large auto court, partly walled by the house and its service wing, is a device suggesting some of the romantic country seats of the 1920s. The dominant façade of the house portion, with its two tall gables, recalls some Queen Anne or Bankers' Tudor precedents; the taut surfaces of the gables and their slightly violated symmetry is likely to remind architects of Voysey's 19th-Century English country houses.

Architects Peter L. Gluck & Partners have made the basic organization of the complex apparent from the entrance court: The house itself is a linear volume flanking the court, with its other long side facing the water; the smaller service wing backs up toward the neighboring lot. First-floor walls form two continuous sides of the court, seeming to belong to this open room rather than to the building volumes. This effect is underscored by turning the court and its walls at a slight angle to the upper volumes of the house, thus generating an overhang of varying depth, and subverting the symmetry of the façade in a way that is felt before it is identified. Another effect of the angle is to direct the axis of the front door slightly toward the left side of the house, which is the more public half. And inside the angled wall, a corridor space tapers down from the more public areas of the house on the left toward the more private ones on the right.

The treatment of the gables hovers tantalizingly between vernacular revival and minimal geometry, continuing a series of formal explorations by Gluck and his firm (sidebar, page 102). The treatment of openings as repetitive, squarish punctures supports the minimalist interpretation. Against these smooth surfaces, rain leaders have been developed into sculptural elements converging on the entrance; directed down to bowls on either side of the doorway, the

Steep-roofed volumes wrapping around an auto court (1) suggest earlier country houses based on English vernacular. But a Modernist aesthetic is asserted by the long, unbroken planes of acrylic stucco and punctured windows arrayed in abstract patterns that deny traditional scale and structural rhythms. The central entry is sheltered by a cable-supported canopy. Copper gutters and downspouts (2) feed rain water from the roof slopes into bowls and sluices on either side of the door.



2

draining water becomes a kinetic event. The device recalls, though not directly, the way rain water is handled Japan, where Gluck has spent substantial periods.

The owners, long-time residents of the area, wanted a house that would be comfortable for them and visiting grown-up children, yet accommodate up to 100 guests for chamber concerts. The architects have laid out an entertainment area extending both ways from a short center hall: to the right a dining room of apsidal plan, to the left a living room that expands into side aisles and balconies to hold concert guests. The core of this room is a two-story arcaded volume that could hardly be anticipated from the house's exterior geometry. Flanking spaces serve in daily life as moderately scaled living areas on their own – one serving as a fireplace alcove, another taking the form of an enclosed porch, lined with steel-framed French doors facing the water.

On the second floor, an upper-level center hall – linked to the one below by an unusual oculus arrangement – leads to a generous master bedroom suite. Rooms for visiting family are on the third floor, in attic-like volumes, with their own loggia cut into the roof.

The seaward side of the house, very different from the front, is lined with porches on two levels, which extend into a pergola reaching along the pool's edge toward the sound. Waterfront houses of the area have typically had formal entrance fronts contrasting with agglomerations of verandahs and other extensions on the water side. As is so often the case with them, the roof forms here are unifying elements that ride above the ad hoc assemblage.

On the whole, the house shows how an accomplished Modernist can adopt aspects of tradition without, for instance, using scalloped shingles or Tuscan pilasters. Here, the minimal exterior surfaces are acrylic stucco, chosen for its neutral texture and finely adjustable color – and its ease of maintenance compared with traditional stucco. Inside, the surfaces are painted gypsum board and look like it; elegant cabinetry is set into them, but no paneling. At the somewhat tucked-away main stair, there is a screen of closely spaced balusters in a manner recalling Voysey, with details that could be minimalist.

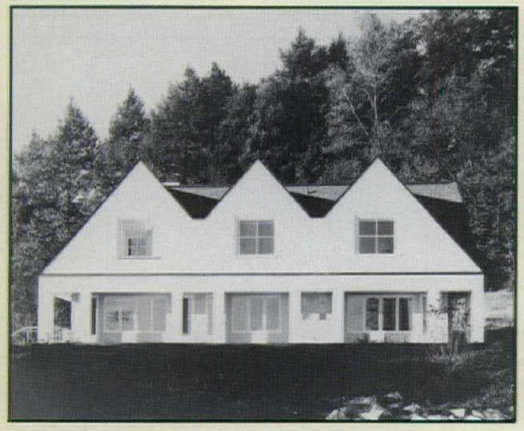
We are now seeing many efforts to regain some of the symbolism and spatial richness of earlier periods with details and materials that are not imitative. This particular effort, with intellectual backbone and an amiable kind of irony, is on the whole a remarkably successful one. **John Morris Dixon** ■

Triangles or Gables?

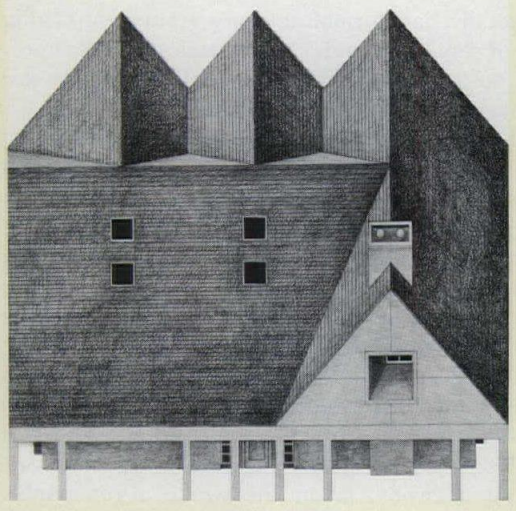
Like most architects who head their own firms today, Peter Gluck was trained in Modernism and remains committed to it. The last residential work of his that was published in P/A (April 1984, p. 122) was an addition to a house by Mies van der Rohe, with an appropriately free plan and meticuously minimal details.

But, as Gluck observes, "A house with a pitched roof is symbolically comforting." And in some of the communities where Gluck's residential clients have built, pitched roofs are required. He has seized upon necessity by using steep slopes – slate-clad where budget allows – springing from low eaves. His gables have been treated as flat triangles, with crisp, minimally detailed edges and window cutouts that emphasize geometry over traditional indications of building craft, such as sills or cornices.

In another recent house, in Lakeville, Connecticut (photo and drawing below), Gluck has given sculptural presence to a smaller house than this one, using a single off-center gable on the entry side and a three-pointed composition on the rear, facing a long view – all of the triangles rising from abstracted colonnades. Window openings here are framed with recessed bands in the acrylic stucco, rather than any trim; in two instances, the actual windows are set in deep recesses behind the plane of the exterior wall.



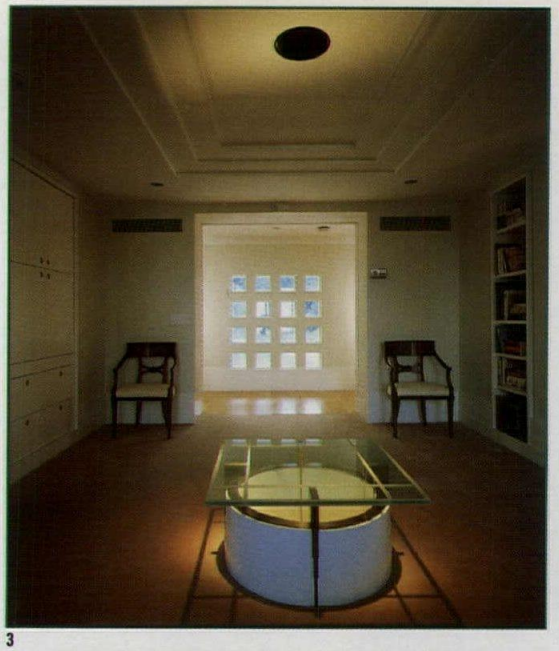
RESIDENCE, LAKEVILLE, CONNECTICUT, FROM SOUTH



NORTH, VIEW, LAKEVILLE RESIDENCE

The interior of the house contains a symmetrical core, separated from the exterior envelope by ambulatory spaces on the first two floors (plans, facing page). At the central crossing of axes are a second-floor sitting room (3) with a pendant lamp and glass-topped drum that transmits light to another pendant below (4). The two-story living room (6) can accommodate up to 100 guests for chamber concerts, using adjoining areas on both floors for seating. On the back of the house (5), the two-gable silhouette is maintained, but otherwise there is a casual array of decks, pergolas, and terraces facing the pool and Long Island Sound.

Project: *house, Mamaroneck, New York*
Architects: *Peter L. Gluck & Partners, New York (Kent Larson, partner in charge; Cary K. Davis, project architect; Mark Hayduk, Kelvin Ono, Shoji Mitsuda, project team).*
Site: *150-ft-wide plot on Long Island Sound; flat, with irregular shoreline.*
Program: *all-year family home; living room to accommodate chamber concerts; 9500 sq ft, including basement.*
Structural system: *CMU bearing walls and steel frame on concrete foundations and slab; floors and roofs wood frame.*
Major materials: *limestone, acrylic stucco, teak windows and door, steel casement doors, red sandstone deck.*
Mechanical system: *multizone HVAC with gas-fired boiler; special sound-control measures for living room.*
Consultants: *Richard F. Heinn & Associates, landscape; Frank A. Scandale, mechanical. Thune Associates, structural.*
Construction manager: *William A. Kelly.*
Costs: *not available.*
Photographs: *Norman McGrath, except as noted.*



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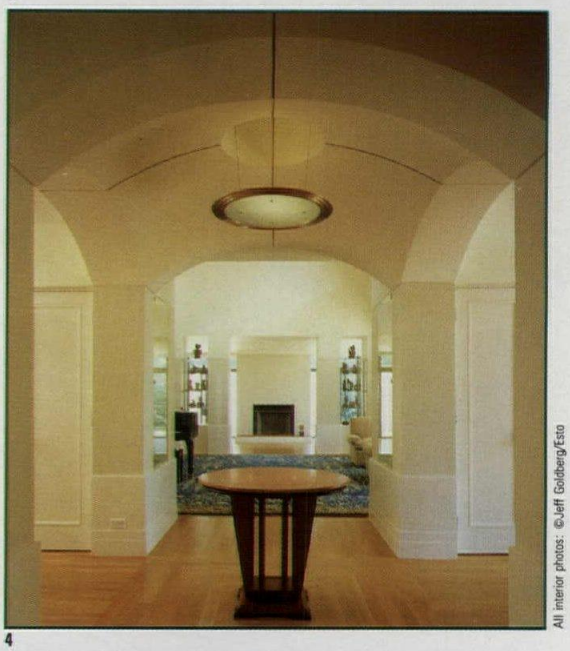
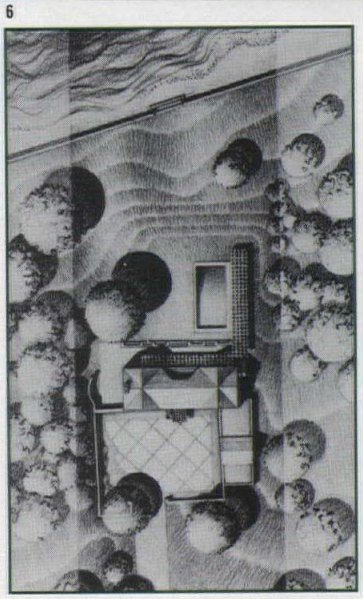


4

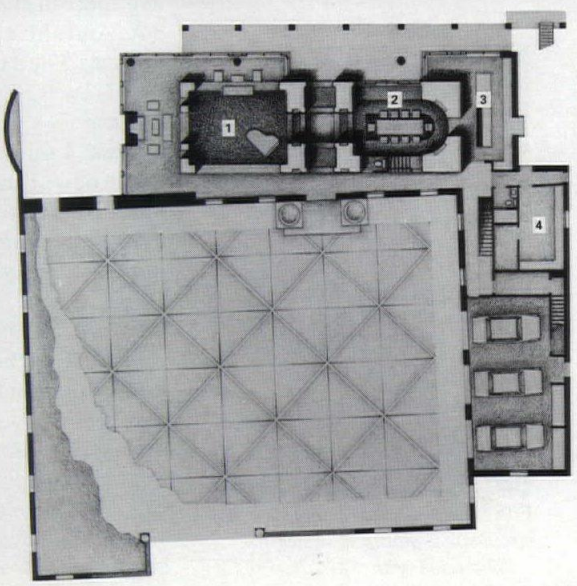
All interior photos: ©Jeff Goldberg/Esto

5

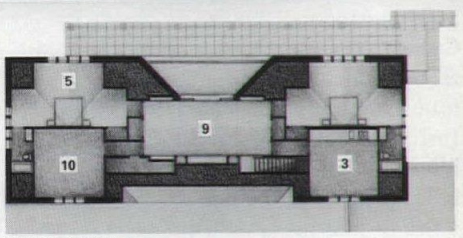
6



SITE PLAN N ↙ 100'/30m

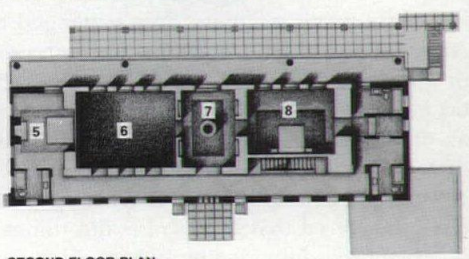


FIRST FLOOR PLAN N ↙ 20'/6m



THIRD FLOOR PLAN

1 LIVING ROOM
2 DINING ROOM
3 KITCHEN
4 LAUNDRY/PANTRY
5 GUEST BEDROOM
6 OPEN TO BELOW
7 SITTING ROOM
8 MASTER BEDROOM
9 FAMILY ROOM
10 MECHANICAL



SECOND FLOOR PLAN

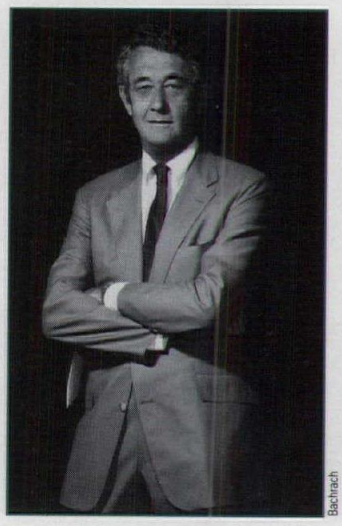
Perspectives

Outspoken as ever, **Bruce Graham** looks back at SOM over the years and forward to a new life in Florida.

Interview: Bruce Graham

P/A: When did you retire?
Bruce Graham: I didn't retire, I just left SOM. In other words, I am an architect.
P/A: Are you starting a new firm?
Graham: Yes, with my wife, who is an architect and interior designer. It's called Graham and Graham and it's based in Florida.
P/A: What are you doing now?
Graham: I am wrapping up two projects I started at SOM. I'm doing a big mixed-use building in Barcelona with Frank Gehry. That's a project I virtually created. I got the developer in on that project. Frank is doing the shopping and commercial side. I'm doing the office building and hotel. It has big steel braces on the outside with the building suspended inside.
P/A: The other is your London project?
Graham: There was an overhead railroad passage from Ludgate Circus to St. Paul's cathedral. Well, they're burying that. We're building on top of it, three buildings. I did an exciting scheme for all three with exposed steel frames. Then the Prince came along with his barbaric ideas about architecture. The city folks got scared so they let me do the one you can't see from Ludgate hill. Adrian Smith [of SOM Chicago] is doing the other two.
P/A: Are you still on the board of the foundation SOM started in 1988?
Graham: Yes. But the foundation has also retired from SOM. It's independent now. It's not a foundation anymore, it's called CIAU – Chicago Institute of Architecture and Urbanism.
P/A: How will it survive?
Graham: We've got some grants from SOM. And we're raising money for it.
P/A: How do you think SOM has changed in the 40 years that you have been associated with it?
Graham: Well, when they started there wasn't a designer on board. Neither Skidmore nor Owings were good designers. So it's changed a lot. After the war, Modernism was not just a design or a fashion. It was a social movement. It had to do with searching for a building language and an urban language for a pluralist society. Before that, American architecture was mostly about getting cities built in a hurry. When some architects discovered that Modernists did things simply they tried doing it simply but without taste.

In the 40 years he was associated with Skidmore, Owings & Merrill, Bruce Graham designed some of the firm's most famous towers, among them Inland Steel and the John Hancock Center. Now, one year after leaving the firm, Graham, 66, is starting over. P/A correspondent Cheryl Kent talked with him at SOM's Chicago office.



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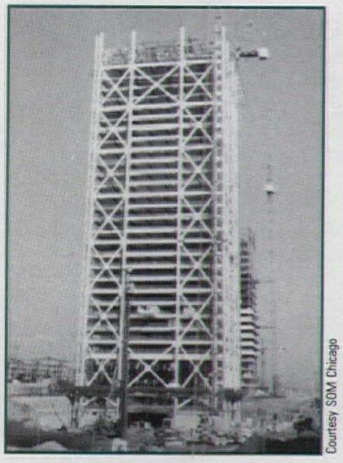


Courtesy SOM Chicago

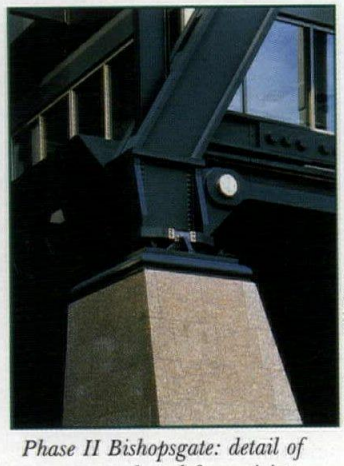
Vila Olimpica, Barcelona: a mixed-use building designed in collaboration with Frank Gehry, now under construction.

What the imitators didn't realize is that the Seagram Building ain't cheap. Nor simple. Modernism was identified with all the bad things that were not badly intended, like public housing. As early as the 1960s a different kind of breed was taking over at SOM. They didn't understand Mies, they didn't want to understand him, they started to curse him. They began to accuse architects like me and Bunshaft, saying we didn't care about the street scene. We did. Now I think we're coming back to Modernism again.
P/A: Do you mean architects are coming back to the social ideas or back to Modernism?
Graham: Both. Young architects are interested in Modernism. They don't give a damn about Post-Modernism anymore, they think it's garbage. They're interested in the purpose of architecture. Urban issues are very important to them.
P/A: But we're also seeing straight historicism.
Graham: The historicism you see in America you won't see in the rest of the world. This is a complete misunderstanding by Americans about symbolism and what architecture conveys in emotion. Americans are very weak about tradition because they haven't got any tradition.
P/A: How do you respond to those who criticize Modern architecture for its alienating qualities?
Graham: They may have felt alienated. But not the American people. They understood it. Ask any Americans in Chicago what building they like most in the city.
P/A: And the answer would be?
Graham: The Hancock Building.
P/A: How is SOM Chicago different from other offices?
Graham: I think there is no question, people admit it now: Bunshaft was the giant of American Modern architecture. The only difference was that the Chicago office – unlike New York – was more interested in building the city than in building monuments. We would almost deliberately go after background-building work if it would affect the quality of life in the city.
P/A: Contextualism became literal at SOM in the 1980s.
Graham: Bishopsgate [in London] was a big contextual problem. What I did was take the Chicago language of Louis Sullivan and use it in London. They, of course, think it's old England, but it isn't. If you go over there you'll see the Chicago bay window and the corner of the Car-

"The historicism you see in America you won't see in the rest of the world... Americans are very weak about tradition because they haven't got any tradition."

Phase II, Bishopsgate, London: the office building under construction, one of 14 that comprise the Bishopsgate development. Spanning active train tracks, the building was structurally conceived as a bridge.

"Number one, our cities reflect that we still haven't reached a point you could call civilized..."



Phase II Bishopsgate: detail of masonry and steel frame joint.

Photos: Courtesy SOM Chicago

"The best client is he who brings the fewest people to a meeting."

son building. But the whole idea was to relate to the project next door and then create my own place. In England the problem was to relate to a society with real traditions, not artificial ones. The context in the United States disappears pretty fast... I am much more interested in scale, proportion, and color than in the actual expression of the building.

P/A: How do the changes in the work of the 1970s and 1980s reflect changes in the firm?

Graham: It's not in the firm. It's in each individual architect. I don't think the firm changes *en masse*. Every time you add a new young kid to the firm you change the character of the firm, you add a page to the book. So it's Bruce Graham who is experimenting with new things.

P/A: But SOM has always been organized as a group design firm.

Graham: A group practice, but that isn't group design. Each individual partner in design is independent. I created the idea of studios here in Chicago. Each partner has design, production, and construction departments. That system attracts better people. If we walked around you would see a lot of brilliant young designers who, by their very presence, are changing the way partners design. Bunshaft worked as a kind of dictator and he trained people to be fine tools. He knew exactly how he wanted something to be done. I looked at other people's views, because I like to examine alternatives. I also worked more closely with engineers, mainly with Fazlur Khan, and Faz didn't work so much with the others.

P/A: So you think the firm is structured as it should be?

Graham: Yes. I don't believe that design firms that have somebody else doing the working drawings are architecture firms. I don't believe that system works. There's no love in it. If you don't love building you shouldn't be an architect.

P/A: Who is the best client?

Graham: The best client is he who brings the fewest people to a meeting. Gerry Hines was a great client when just he and one other person came to a meeting. Now you go to a Hines meeting and there's a whole tableful of Harvard Business School graduates around you who don't know anything about building and have no taste. My wife and I have a new rule.

P/A: What's that?

Graham: [Clients at meetings] are allowed two people and they can't be married.

P/A: You have always said you can't separate buildings from cities. If cities reflect the culture, what do American cities say about us?

Graham: Number one, our cities reflect that we still haven't reached a point you could call civilized... Certainly the exterior space of cities is more important than the interior spaces of buildings in terms of civilizing a society. We have huge problems in America. I don't think it's race separating people so much as it is economics.

P/A: What can buildings do about that?

Graham: They can inspire people if you demonstrate that there is a real possibility that rich and poor and middle-class people can live together, because they share a community.

P/A: So you are optimistic about the future of American cities?

Graham: Yes. In about four or five hundred years. But it takes that long to build a civilization. It's a grand experiment to bring together all these people of different religions, different languages, different breeds.

P/A: What else are you working on?

Graham: I'm doing the competition for the Venice Biennale, which should be easy. It's the kind of thing you cannot do in a large firm. Competitions did not interest me very much unless they were urban competitions – which I did. And I won every one of them and haven't built any of them. Now I am interested in a low-income housing project for Guatemalan Indians. Again, a project that SOM couldn't do because the office overhead is too high for it. If I go to Guatemala I can do a demonstration I couldn't do in Chicago because of the unions, and the regulations, and the politicians. We're also interested in a small museum. I can't say anything more about that right now; I'll have every architect in New York down there because they have nothing to do. But I'm most interested in a small shopping center. Then I can begin to work with the language of what Florida should be. As I get older I realize I can just take one kid, not tell anybody we have the job, and go out and do it. ■

Michael McCoy examines three works as signs of their times.

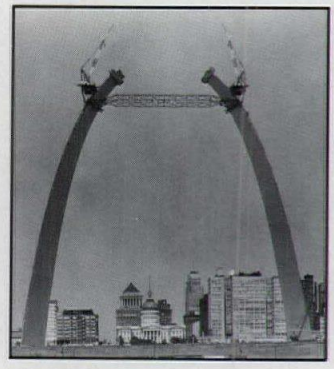
Attitudes Toward Technology: Between Nature and Culture

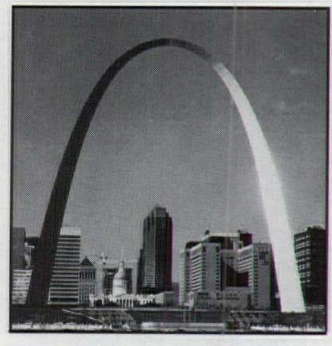
Architecture reflects our culture's views about technology. Among the disparate works of technological architecture built in the latter half of this century, three in particular come to mind as emblematic of their times: the Jefferson National Expansion Memorial Arch in St. Louis by Eero Saarinen, the HongkongBank in Hong Kong by Norman Foster, and the Astronauts Memorial proposed for the Kennedy Space Center in Cape Canaveral by Holt Hinshaw Pfau Jones.

Each project is about rationality, symbolizing its potential for domination – or its limits; Each employs advanced technologies in its realization and in so doing promotes the idea of the architect technologist as pioneer; Each is responsive to its context, yet is formally non-contextual. And each signifies fundamental attitudes toward technology that prevailed when it was designed. While architecture always incorporates technology in building, its meaning may not be dependent on that technology. These structures, however, depend on their technological means to construct their meaning.

Eero Saarinen used the advanced technologies of the 1950s to form buildings that articulated their place in the culture – a technological *architecture parlante*. These were large-scale built metaphors; enormous signs looming on the horizon. Saarinen's work flew in the face of the Bauhaus dictum that architecture was about nothing but itself, a hermetic diagram of its own being. His work was symbolically, structurally, and technologically extreme – and as expansive as the American postwar economy itself. He employed a broad range of materials, from stainless steel to organically shaped cast-in-place concrete, to sculpt his ciphers. Building technology was a means to achieve a symbolic end. In the case of the TWA Terminal at Kennedy Airport, zoomorphic forms were cast in concrete to create the birdlike shell structures that house the air terminal. It was animism writ large. In his Dulles Airport, the form was referential to the wing itself, and supported a flow of passengers from entrance to counters to mobile lounges as direct and efficient as the flow of air over a wing.

In the St. Louis Jefferson Memorial Arch, designed in 1948 and finished in 1964, the gateway





Jefferson National Expansion Memorial/National Park Service

Nature tamed: Progress shot of the construction of the Gateway Arch (top) and the completed structure, above.

"Saarinen fearlessly pursued the riskiest of structural solutions, so extending one of the central myths of 20th-Century technology – that of the heroic pioneer on the scientific frontier."

metaphor serves as an Enlightenment monument on the landscape, an entrance to a new land and new life. The arch is a beacon of hope on the prairie, seen from the river whence pioneers embarked from the known to the unknown. It is the rainbow that promises a pot of gold at its end, the American West. Given Thomas Jefferson's own interest in the Enlightenment, the Arch is an appropriate symbol of the power of the intellect to subdue nature and take dominion over the land. It is a theme that recurs in later architecture of technology.

Like many technological works, the Arch displays an ephemeral nature. For all its immense size it is strangely attenuated in the landscape, changing with the shifting light and sky conditions. Its stainless steel skin dematerializes the structure, making it a metaphysical monument, scaleless on the horizon. E.G. Ballard has commented on its perceptual ambiguity, including the phenomenon that its legs appear to shift in orientation when viewed from the north or south. It is non-contextual, dwarfing everything around it but river and sky. It is autonomous, as if dropped there from space. At the same time, the Arch frames the city, and in particular the old courthouse. The view from East to West is the most impressive and laden with imagery. It evokes the mythology of the Odyssey, the journey, and the search.

Saarinen described the arch as the purest structural expression of forces at work. His gateway Arch is a catenary curve, the inverted shape of a suspended chain. Saarinen fearlessly pursued the boldest of structural solutions, so extending one of the central myths of 20th-Century technology, that of the heroic pioneer on the scientific frontier. Everything about the Arch – its gleaming steel skin, the special cranes that climbed the structure during construction, and the customized elevators that negotiate the catenary – is new and risky. One of the spectacular moments in the documentary on the building of the Arch occurs when the two halves are joined 600 feet over the Mississippi: The sun on the southern half of the structure has caused it to expand more than has the northern half. Huge streams of water are sprayed on the southern half to cool it, and shrink it to fit. At the climactic moment the two halves are joined. Nature is tamed.

The HongkongBank by Norman Foster, (P/A

Richard Bryant

Cathedral of commerce: HongkongBank, Hong Kong.

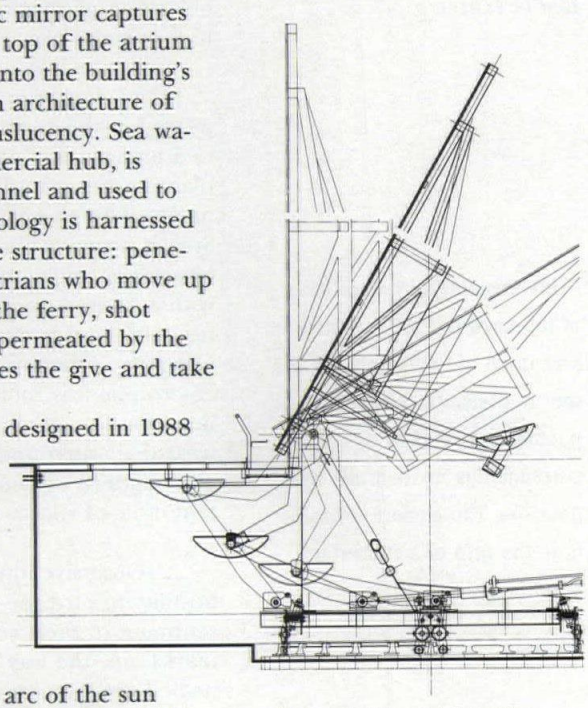
"By articulating the structural and metabolic innovations in the building, Foster has displayed the risk-taking inherent to the meaning of [the HongkongBank]."

Mar. 1986 Special Issue) displays all the structural and technological virtuosity of the great Gothic structures that Foster so reveres. And so it should, as a cathedral of international commerce located at the epicenter of Pacific Rim trade. By articulating the structural and metabolic innovations in the building, Foster has displayed the risk taking inherent to the meaning of this building. It, too, perpetuates the myth of the architect as a high-wire artist testing the limits of structural possibilities. The people of the city can pass beneath the building and peer up through its transparent belly into its internal organs.

Like the other works discussed here, the HongkongBank celebrates light and is transformed by light. The nature of the space inside it changes a great deal with changing conditions outside. The center is hollowed out at the lower floors creating a kind of atrium space suspended over the plaza below. A giant heliostatic mirror captures and bounces sunlight into the top of the atrium whence it is in turn reflected into the building's inner reaches. The result is an architecture of shifting transparency and translucency. Sea water, the lifeblood of the commercial hub, is sucked up through a large tunnel and used to cool the building. Thus technology is harnessed to support a highly permeable structure: penetrated by the stream of pedestrians who move up along the central route from the ferry, shot through with light, and even permeated by the harbor water itself. It embodies the give and take of the trading city.

"While [the Astronauts Memorial] illuminates the doomed trajectory of Icarus it also traces the outlines of a more sensitive and positive direction for technology and architecture."

The Astronauts Memorial, designed in 1988 by Holt Hinshaw Pfau Jones (P/A, Jan. 1989, p. 60), represents the poignant myth of the limit of technology, Icarus. Designed to commemorate the astronauts who have died since the space program began, the Memorial rotates to track the arc of the sun across the sky. Like the other works discussed here it is ephemeral, public, and changeable. Unlike the other two buildings, it alludes to the fallibility – as well as to the infinite promise – of technology. It speaks poetically of a need for harmony between technology and nature, exploring the possibilities for a responsive architecture. The memorial emphasizes the role of technology as a connective, rather than controlling process – a bridge, not a dam.



Astronauts Memorial: section through mechanism.

The memorial's steel structure is reminiscent of the radio tracking antennas used in space technology. On one side are rotating mirrors that work in concert with the rotation of the entire structure to track the sun. The other side is faced with polished black granite slabs in which the names of the lost astronauts are cut. The mirrors send sunlight through the incisions, so that they are illuminated when viewed from the granite-faced side. The polished stone is inclined and thus the glowing names are engraved on the reflected sky. The design is provocative in that it brings about the intersection of the cultural and the natural in an unexpected way, responding to open space as well as to the scientific devices of the surrounding space center. The imposition of the text, written on the sky but grounded on the stone, is a remarkable fusion of linguistic and experiential ideas in one work. While it illuminates the doomed trajectory of Icarus it also traces the outlines of a more sensitive and positive direction for technology and architecture.

All three works point to a possible resolution of the relationship between our society and our technology. From the Victorian Mary Shelley's vision of technology as Frankenstein's monster/child to the naïve Buck Rogers techno-fantasies of the 1950s, the rejection of anything technological in the late 1960s and the mythologizing of Star Wars in the 1970s, our relationship to technology has been a stormy one of love, hate, and reconciliation. Architecture about technology has tended to be either overly optimistic (as in Los Angeles airport's theme restaurant) or extremely pessimistic, as in Shin Takamatsu's work (P/A, Aug. 1990 p. 115). The problem for the 1990s is to project an integrated architectural vision of a connective technology that is benign and liveable.

Michael McCoy ■

The author, an industrial and interior designer, is co-chairman of the design department at Cranbrook and partner in the studios of McCoy & McCoy and Fahnstrom/McCoy.

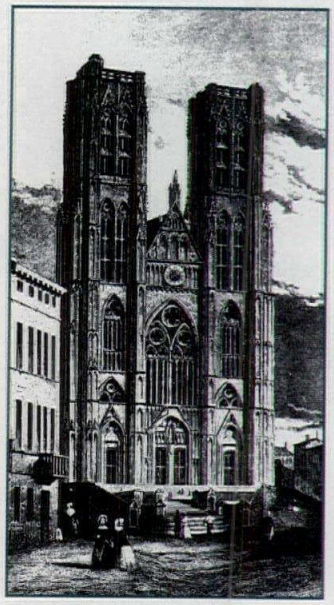
In the following passages from his recently published book, **Richard Sennett** explores the ethical and psychological roots of Western urbanism.

Excerpts: The Conscience of the Eye

One difference between the Greek past and the present is that whereas the ancients could use their eyes in the city to think about political, religious, and erotic experiences, modern culture suffers from a divide between the inside and the outside. It is a divide between subjective experience and worldly experience, self and city. Moreover, our culture is marked by hard struggle whenever people seek to make inner life concrete. This sets us off not just from our own origins but also from non-European cultures nearer in time whose masks, dances, ceremonials, shrines, sacred grounds, and cosmologies connect subjective life to physical things.

. . . The spaces full of people in the modern city are either spaces limited to and carefully orchestrating consumption, like the shopping mall, or spaces limited to and carefully orchestrating the experience of tourism. This reduction and trivializing of the city as a stage of life is no accident. Beyond all the economic and demographic reasons for the neutralized city there exists a profound, indeed, "spiritual" reason why people are willing to tolerate such a bland scene for their lives. The way cities look reflects a great, unreckoned fear of exposure. "Exposure" more connotes the likelihood of being hurt than of being stimulated. The fear of exposure is in one way a militarized conception of everyday experience as though attack-and-defense is as apt a model of subjective life as it is of warfare. What is characteristic of our city-building is to wall off the differences between people, assuming that these differences are more likely to be mutually threatening than mutually stimulating. What we make in the urban realm are therefore bland, neutralizing spaces, spaces which remove the threat of social contact. . .

In cities that began as monasteries, like Magdeburg in Germany or Saint Gall in Switzerland, one way to establish sanctuary was in the spaces directly outside the churches; these became no-man's lands. . . The break established around the church. . . a locality of immunity. Here beggars established themselves, here the still-living victims of plague were carried from their houses and laid upon the ground. Here also was the place where babies were abandoned.



"The way [modern] cities look reflects a great, unreckoned fear of exposure. . ."

"This compulsive neutralizing of the environment is rooted in part in an old unhappiness, the fear of pleasure, which led people to treat their surroundings as neutrally as possible. The modern urbanist is in the grip of a Protestant ethic of space."

The corrosive dualism between the inside and outside first became visible as urban form in this medieval way of marking territory. For the space of sanctuary also necessarily established where charity and regard for others was absent: charity does not exist on the street. After prayers one might stroll outside to witness someone being drawn and quartered. . . The zone of immunity protected people from the city, yet left the *civitas* of the secular world amorphous, violent, undefined, a space of moral amnesia.

Here, then, is one historical root of the modern fear of exposure. Pain could be seen, tolerated, and indeed therefore enjoyed in those places where people were exposed. It had no aversive moral value in the "outside"; if one paid much attention to those who were suffering in an exposed place, it was mostly as a spectacle. Whereas once one stepped onto the grounds of a temple, suffering suddenly acquired a gravity; the sight of it suddenly put upon the viewer an obligation of charity. . . Ethics became concrete in terms of place. . .

[The] change in Christian imagery which appeared in the coming of Protestantism connects to a modern way of seeing. It is the way the planner sees who designs neutral, sterile environments. The planner never meant to, of course. Still, it is curious how the designers of parking lots, malls, and public plazas seem to be endowed with a positive genius for sterility, in the use of materials and in details, as well as in overall planning. This compulsive neutralizing of the environment is rooted in part in an old unhappiness, the fear of pleasure, which led people to treat their surroundings as neutrally as possible. The modern urbanist is in the grip of a Protestant ethic of space.

. . . Obsessive inner struggle may imply a deep hostility toward the needs of other people, a resentment of their very presence. . . This hostility marks now the way the homeless or mentally disturbed are seen on the streets; they are resented because they, who are obviously needy, are visible. The very sight of their need is an intrusion upon the self. To ward them off, one wants to treat the outside as neutral; then one is alone with oneself at last. . .

Projects: The Architecture of Competitions in France

Enlightened patronage has ushered in a creative burst of Modernism in France.

Wojciech Lesnikowski reviews four buildings premiated in recent competions.

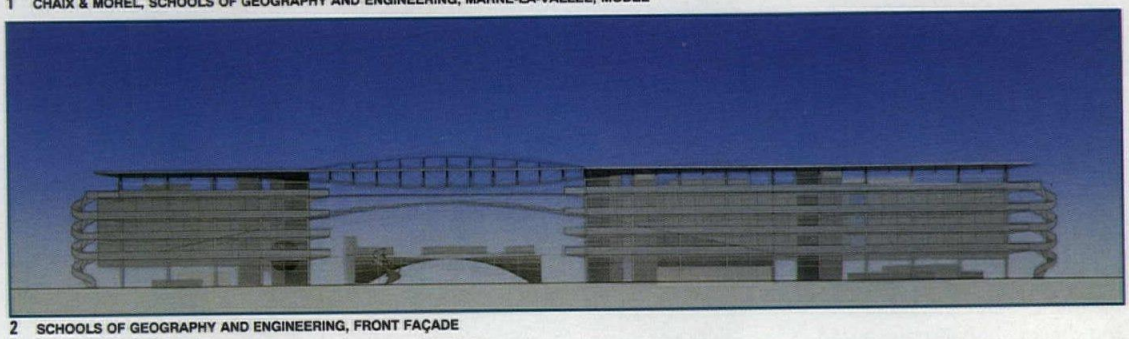
The last decade witnessed a remarkable rebirth of creative architecture in France. High profile patronage has become an important initiative: Vast government building programs, enlightened cultural sponsorship, and entrepreneurial ventures are underway to make France a leader in the united Europe and to advance the nation's building technology. The new French architecture is the product of a generation of young architects who are culturally sophisticated, internationalist at heart, broadly educated, and familiar with the latest technology.

There is no doubt that recent successes in French architecture can be attributed to an ambitious competition system that has been in place for a decade. Today all major public commissions must be won by participation in competitions; this effort has a rich payback – excellent creative work. By encouraging diversity, bold ideas, and conceptual risk-taking, the French hope to save the architectural profession from a purely pragmatic stature.

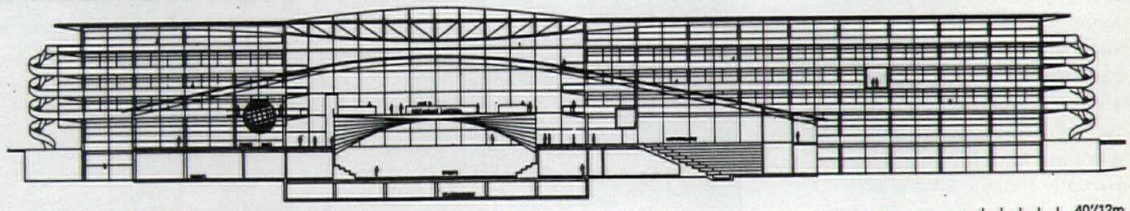
Of course, the competition system does not lack its detractors. Some say that it makes access to interesting commissions difficult for the average architect. Others believe it advances a narrow elite of winners at the expense of others. Several critics believe that today's competitions are comparable to those of the Beaux-Arts: Both are seen as elitist structures, codified in their style and conceptual framework. In fact, both of these competition structures generate highly abstract architecture with impressive volumes, simple, reductive forms, precise geometry, and a coldly rationalist character with absolutist connotations. Jurors and the public often associate this architecture with the

Studio Littré

1 CHAIX & MOREL, SCHOOLS OF GEOGRAPHY AND ENGINEERING, MARNE-LA-VALLÉE, MODEL

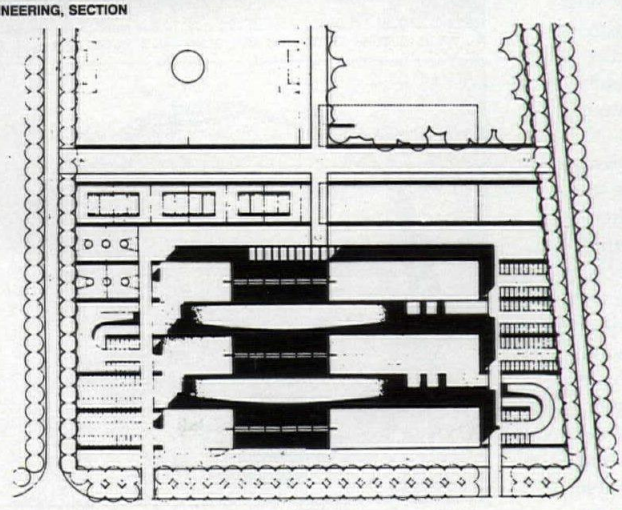


2 SCHOOLS OF GEOGRAPHY AND ENGINEERING, FRONT FAÇADE



SCHOOLS OF GEOGRAPHY AND ENGINEERING, SECTION

40'/12m



SCHOOLS OF GEOGRAPHY AND ENGINEERING, SITE PLAN

N

200'/60m

particular traditions, intellectual tendencies, and aesthetic character of France.

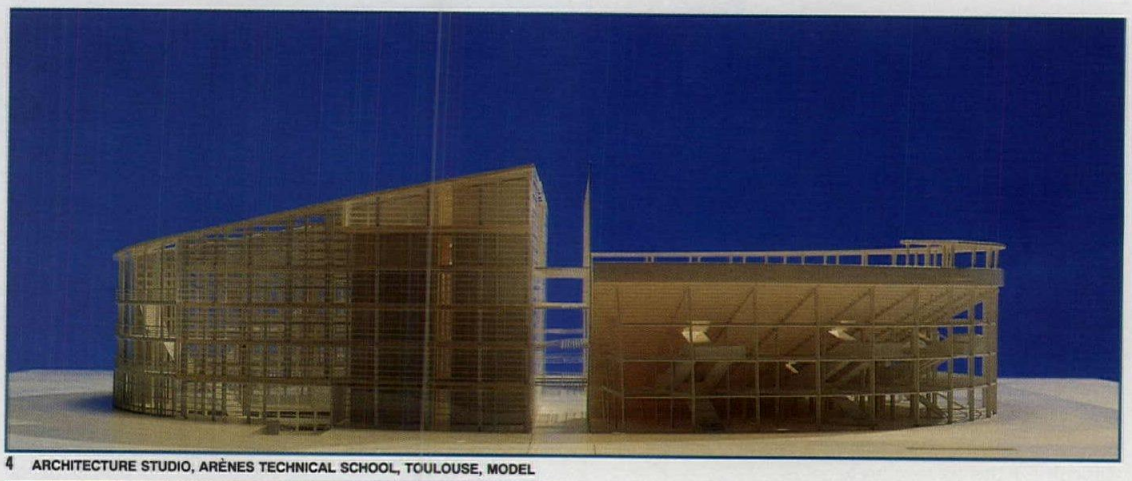
A strongly rational design and technological bravura (self-defined French traits) typically win the support of politicians and cultural leaders. There is no doubt that these arbiters are acting in concert with clients and the building industry to support this type of architecture. This may be based on two motives: First, it could advance the rank of sophisticated French technologies in the global marketplace. Second, it could give French architecture an avant-garde character, itself a promotion for a progressive French image. Actually, technical avant-gardism has been a consistent French feature that dates back to the structuralist exercises of the Gothic cathedrals. However, as the following four projects suggest, technology is not the sole source of inspiration; a new plurality of ideas is flourishing.

The team of Philippe Chaix and Jean-Paul Morel designed an academic building in the new town of Marne-la-Vallée that brings together two schools of seemingly contradictory nature – Geography and Engineering (1)(2). The architects turned this difficult combination into an elegant one with simple, rationalized plans and lyrical spatial effects. Dualistic in program and spirit, the building is refined and precise, but also poetic and emotive. Chaix and Morel's design, which follows extensive study of the effects of glass, will align three parallel glazed structures for research, teaching, and administrative facilities with one partially sunken volume for sports and recreation. The floating roofs refer to the passage of air and light, symbolic of the universal nature of geography and the science of engineered constructions.

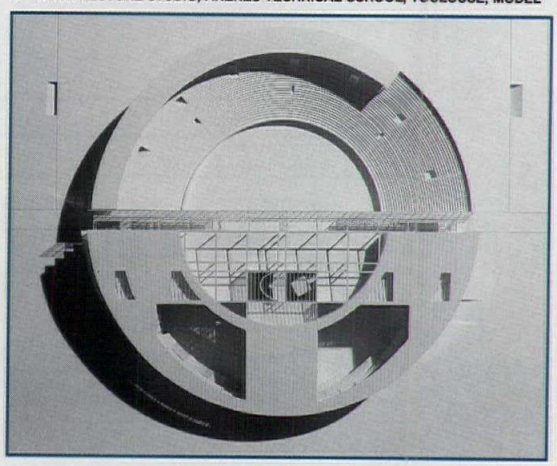
The art of skyscraper design is relatively new in France, and few exceptional tall buildings have appeared there. On the other hand, the French, lacking a tradition in this building type, feel free to experiment and give it their own conceptual and stylistic language. The Esso headquarters by Jean-Paul Viguier and Jean-François Jodry (3) exemplifies the best of French skyscraper design: It has a simple yet refined *parti*, a strong volu-

3 VIGUIER & JODRY, ESSO HEADQUARTERS, LA DÉFENSE, PARIS, PERSPECTIVE

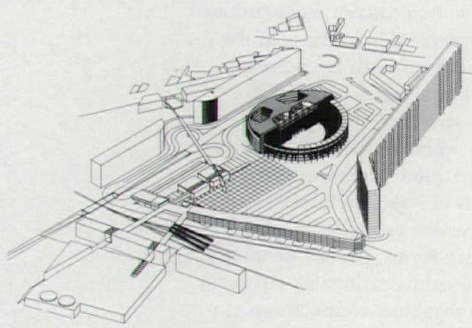
John Edmm



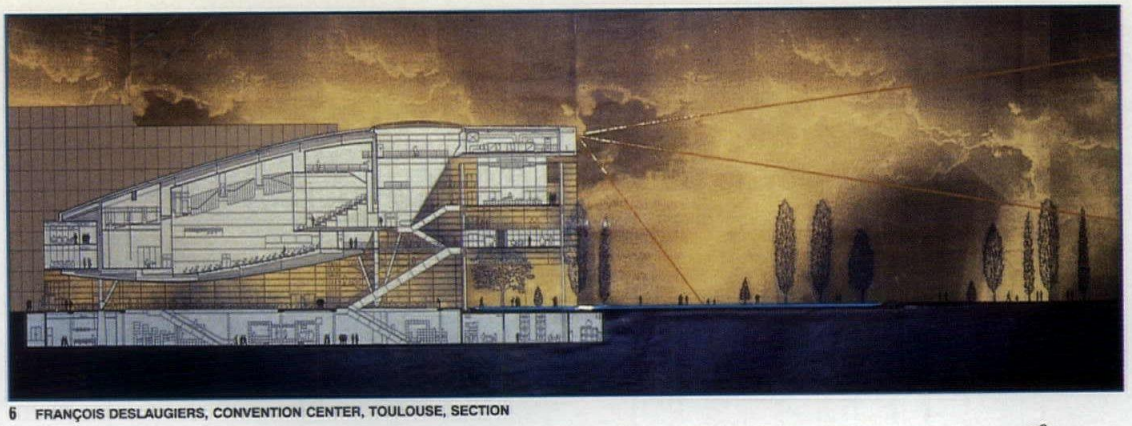
4 ARCHITECTURE STUDIO, ARÈNES TECHNICAL SCHOOL, TOULOUSE, MODEL



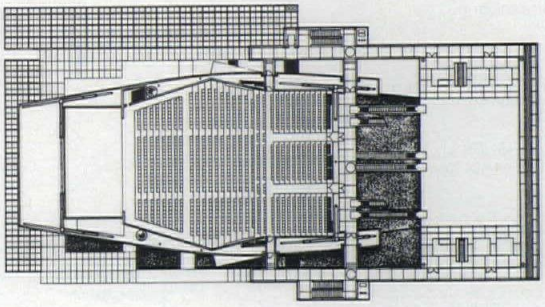
5 ARÈNES TECHNICAL SCHOOL, MODEL



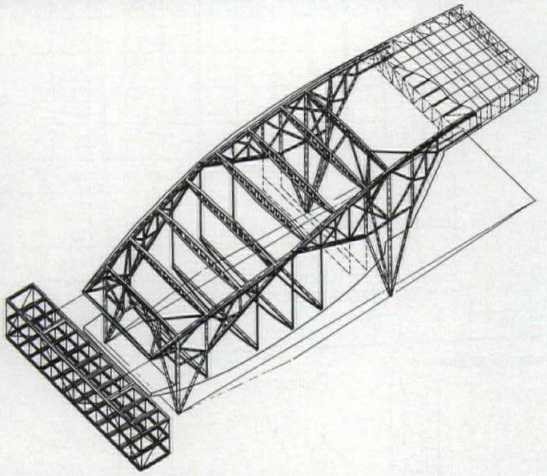
ARÈNES TECHNICAL SCHOOL, PERSPECTIVE



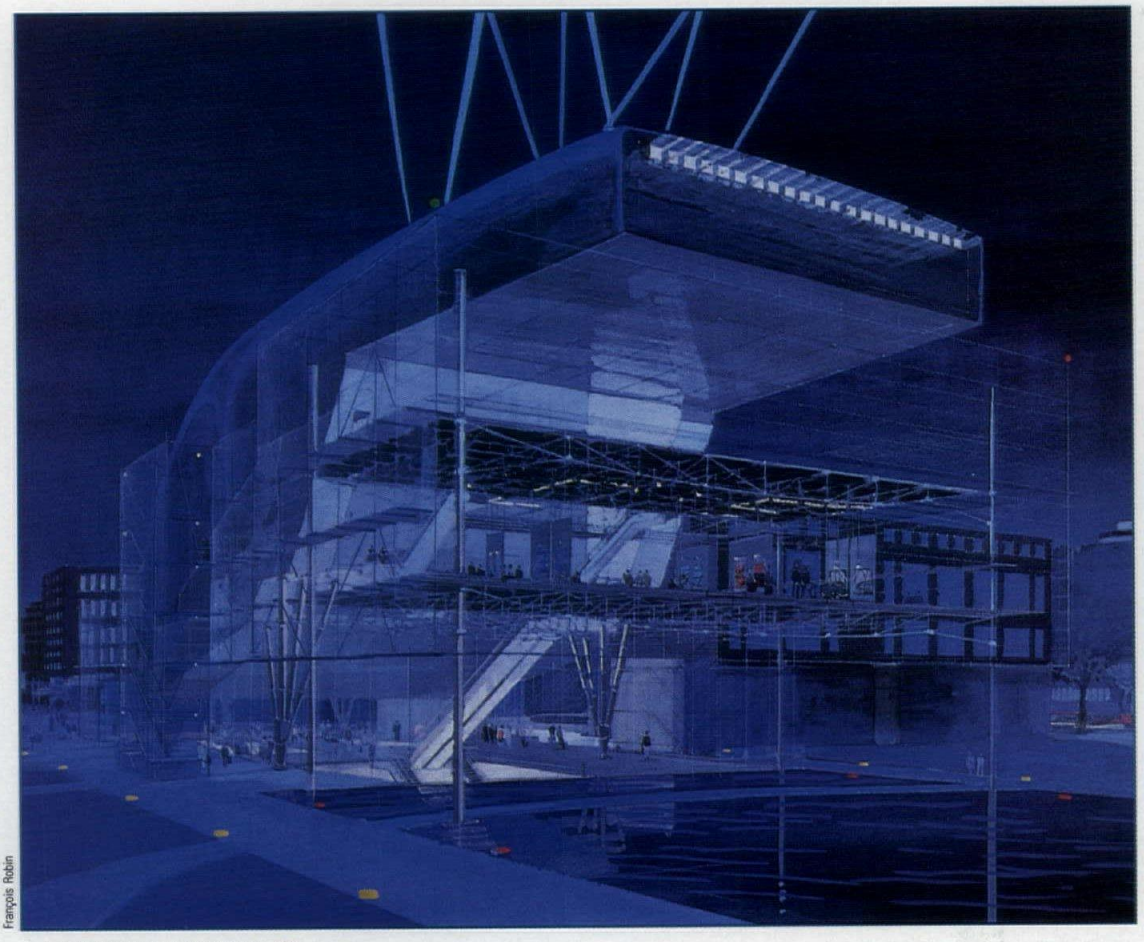
6 FRANÇOIS DESLAUGIERS, CONVENTION CENTER, TOULOUSE, SECTION



CONVENTION CENTER, AUDITORIUM LEVEL PLAN N 40'/12m



CONVENTION CENTER, AXONOMETRIC OF STRUCTURE



François Robin

7 CONVENTION CENTER, PERSPECTIVE

metric character, consistency in detailing, and an emphasis on the symbolic role of advanced technology. Although this tower will be entirely commercial in program, it has a poetically dematerialized quality, effected by its curved façades and transparent canopies cantilevered from the top floors.

The Arènes Technical School, the pivotal component for renovating a central district of Toulouse, is being designed by Architecture Studio, a Parisian partnership (4)(5). They will preserve half of an old amphitheatre and adapt it for commercial and public use; the new school will fill the rest of the circular figure with classrooms and laboratories. A giant projection screen will serve as the internal façade for the new structure – a wall for presenting the students' audio-visual projects. In this award-winning project, as in all of Architecture Studio's work, the designers use strong and direct contrasts to intensify the dialogue among the past, present, and future. At the same time, they bind the architectural composition with a single regulated geometry, their springboard for a potent urban contextualism.

A project for a convention center in Toulouse (6)(7), the capital of the French aviation industry, expresses François Deslaugiers's belief in the symbolic power of technology: He conceived the structure as an airship, poised for for flight on a launch structure, with a prow that points into space above a reflecting pool. The airship structure, which encloses a grand auditorium, resembles a great, streamlined aluminum fuselage built over an articulated internal frame of steel. Contact between the auditorium and the ground is maintained with four articulated columns of a heroic scale. The "launch structure" wraps administrative and technical facilities around the airship; it is enclosed by glass walls to heighten the sense of transparency and reveal the airship within.

Wojciech Lesnikowski ■

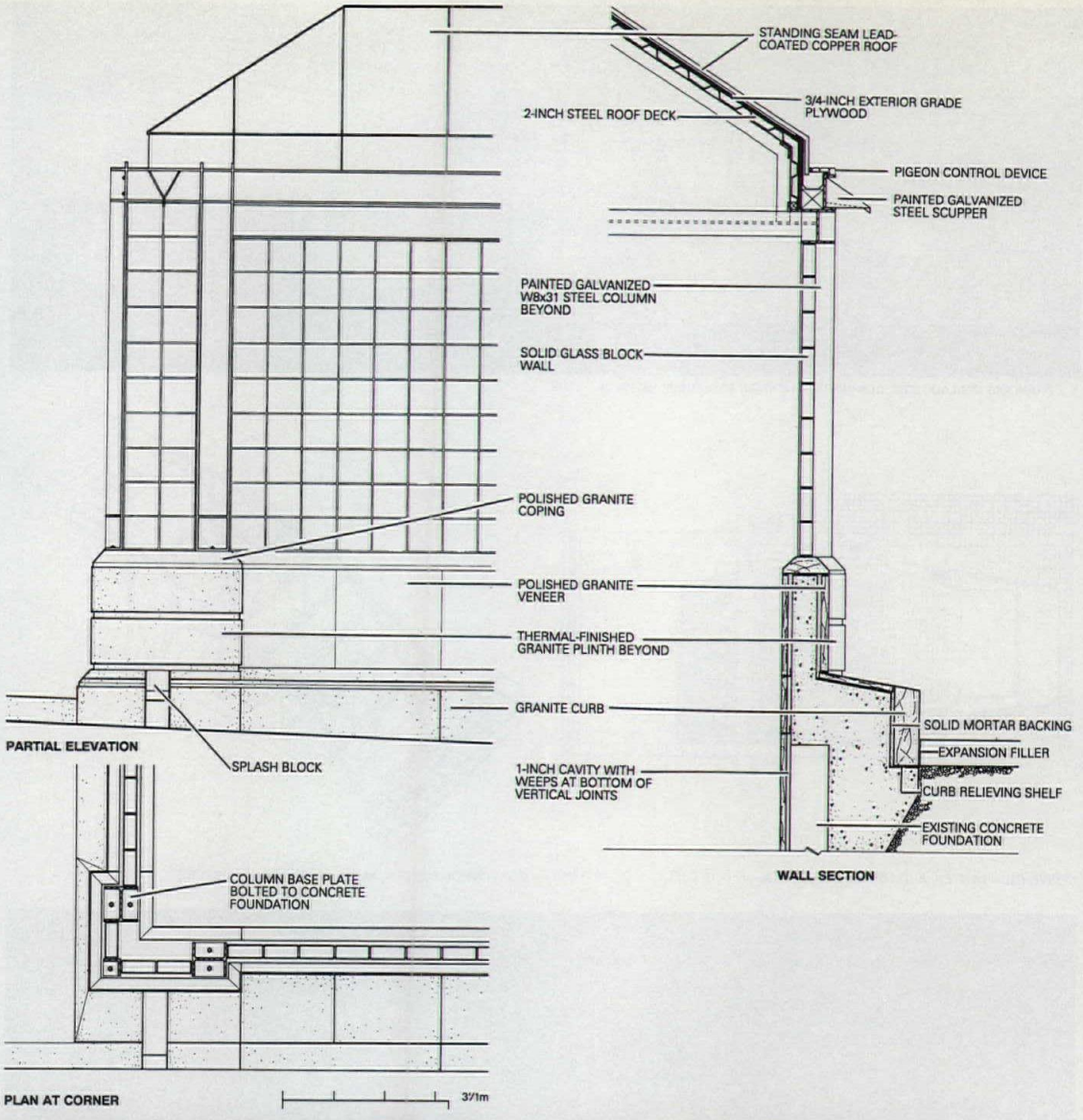
A Distinguished Professor of Architecture at the University of Kansas, the author wrote The New French Architecture *(Rizzoli 1990); he thanks the French Institute of Architecture for their assistance.*

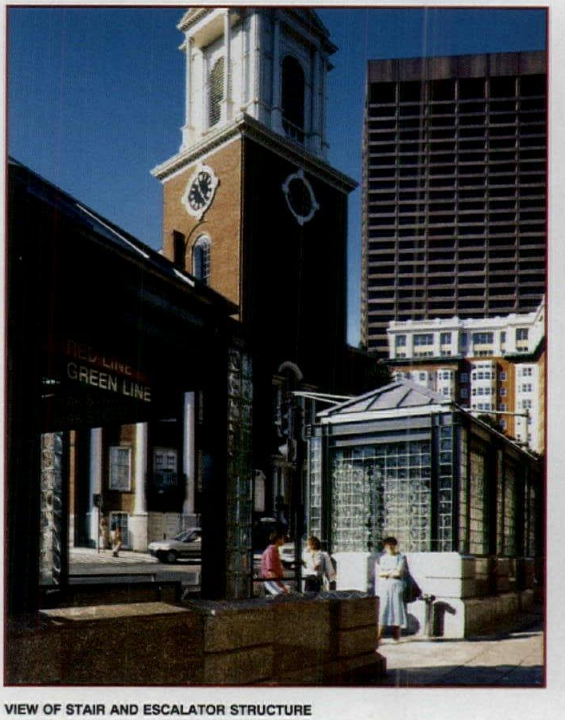
Selected Detail

Wall Section and Plan
Subway Structures
Boston, Massachusetts

These steel, glass, and granite structures, designed by Leers, Weinzapfel Associates of Boston, are unusual in being utilitarian buildings that are both architecturally distinguished and contextually responsive. Housing two escalators, two stairs, an elevator, and two ventilation shafts for the Park Street Station in Boston's subway system, these Miesian structures reinterpret Classical form in Modern materials.

These structures have high bases made of concrete and are clad in granite (backed with solid mortar on the exterior) to withstand impact. Portions of the granite bases form plinths below the steel columns. Composed of steel channels and angles, these columns were fabricated, galvanized, and painted in the shop and bolted together and to the concrete foundation in the field. In the escalator and stair structures, panels of solid glass block fill the space among the columns; each course of glass block has steel reinforcing welded to the columns for increased durability. In the elevator housing, where daylight was not needed, infill panels of steel plate are covered with a steel grid. Painted steel channels form the structures' "cornices," to which are attached custom-formed steel scuppers and pigeon-control devices. Behind these cornices are gutters running along the base of the metal decking, plywood sheathing, and metal roofing. These are carefully detailed, elegant structures, proving that utility and beauty can be synonymous. ■





VIEW OF STAIR AND ESCALATOR STRUCTURE

CORNER DETAIL OF ESCALATOR HOUSING

Photos: Michael Moran

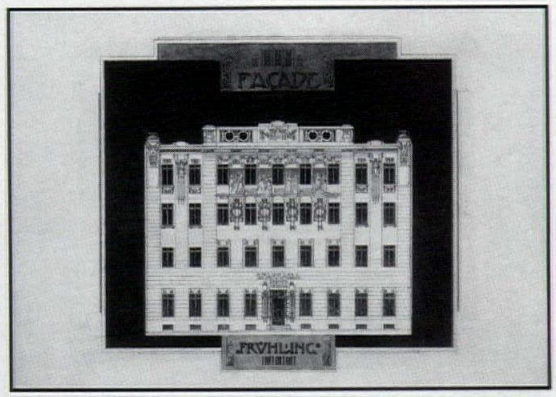
Books: *Die Moderne* – Otto Wagner's Vision, as Built by his Students

Eduard F. Sekler discusses three books on the Modernist idioms that emanated from turn-of-the-century Vienna.

Modern Architecture *by Otto Wagner, introduction and translation by Harry Francis Mallgrave, the Getty Center for the History of Art and the Humanities, Santa Monica, 1988, 185 pp., illus., $29.95 cloth, $14.95 paper.*

Three Architects of the Master Class of Otto Wagner: Emil Hoppe, Marcel Kammerer, Otto Schönthal *by Ian Boyd Whyte, MIT Press, Cambridge, Mass., 1989, 204 pp., illus., $50.00.*

Jože Plečnik: Architect: 1872–1957 *edited by François Burkhardt, Claude Eveno, and Boris Podrecca, translated by Carol Volk, MIT Press, Cambridge, Mass., 1989, 204 pp., illus., $39.95.*



Otto Schönthal: Competition project for a savings bank in Elbogen, Austria, 1898.

Though they differ significantly one from the other, the three books under review have one thing in common: they would not have been written without the steadily growing interest shown during the past two decades in the work of Otto Wagner and his pupils. Former students of his are discussed in two of the three books reviewed here; the third volume is a new translation of the treatise in which Wagner, primarily for the benefit of his students, summed up his architectural principles.

This volume initiates a series of important texts and documents in translation planned by the publications programs of the Getty Center for the History of Art and the Humanities. The author of the translation, Harry Francis Mallgrave, correctly decided to work with the 1902 edition because it presents the book at its best, textually and visually. In the translator's own words it is "a particularly beautifully crafted book" with "the layout of each page ... consistent throughout the book."

Agreeing with this evaluation, the reviewer wonders why the original text was not reproduced in full together with its translation. Should not an institution that has set the highest possible standards for itself apply these standards also to its Texts and Documents series by printing both versions side by side? This would give an interested reader the opportunity to accompany the translator in his struggles and, in the present case, admire him for the care and ingenuity with which he worked.

In addition to his translation, Dr. Mallgrave provides a very useful concordance of the different editions as well as an extensive and highly enlightening introduction that sets Wagner's publication in its proper historic framework, with regard both to its 19th-Century antecedents and to the architectural debate that surrounded it. He carefully analyzes a number of German theorists, from Gottfried Semper to lesser lights who turn out to be equally important, and uncovers many roots of Wagner's theoretical arguments. For a while these arguments must have seemed irrefutable, at least to Wagner's students for whom he had summed up his perspective in his inaugural address of 1894, when he declared: "...the starting point of every artistic creation must be the need, ability, means, and achievements of our time... Art knows only one master – the need... Our living conditions and methods of construction must be fully and completely expressed if architecture is not to be reduced to a caricature. The realism of our time must pervade the developing work of art."

Emil Hoppe, Marcel Kammerer, and Otto Schönthal were among the most talented disciples (and eventual collaborators) of Wagner. Ian Boyd Whyte's book catalogues a substantial collection of unpublished drawings by these three architects and includes a well written, highly informative introductory essay. His publication is attractively laid out and, with illustrations of high quality, presents many unknown or little known architectural and decorative designs from the period 1898 to roughly 1912. The text, like Dr. Mallgrave's, is largely free of misprints.

The author sets the stage with a broadly conceived yet concise sketch of the Viennese cultural scene in the first decade of the 20th Century, when "the architectural life of Vienna...was both prosperous and purposeful." The work the triumvirate of

(continued on page 142)

Books of Note

The Conscience of the Eye *by Richard Sennett, Alfred A. Knopf, New York, 1991, 416 pp., $24.95.*
Sennett analyzes the evolution of Western cities, from Ancient Greece to contemporary America, on cultural, architectural, and artistic grounds. He considers the city a reaction to an interior/exterior struggle between the eye and the self (see Perspectives, p. 108 for excerpts).

The Museum Transformed: Design and Culture in the Post-Pompidou Age *by Douglas Davis, Abbeville Press, New York, 1990, 238 pp., illus., $55.*
This survey of late 20th-Century museum architecture explores the evolution of the museum as cultural/entertainment center for an increasingly diverse audience.

Michael Graves: Buildings and Projects 1982–1989 *by Karen Nichols, Patrick Burke, and Caroline Hancock, Princeton Architectural Press, New York, 1990, 352 pp., illus., $49.95 cloth, $34.95 paper.*
Christian Norberg-Schulz opens this portfolio with an essay affirming the richness of Graves's language, now mature, but not yet ripe.

Boston Architecture 1975–1990 *by Naomi Miller and Keith Morgan, Prestel, Munich, 1990, illus., 248 pp., $65.*
Buildings and urban projects are concisely surveyed in an effort to understand what renders Boston a "livable city."

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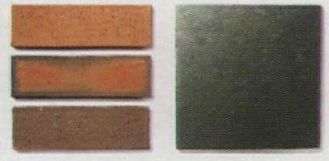

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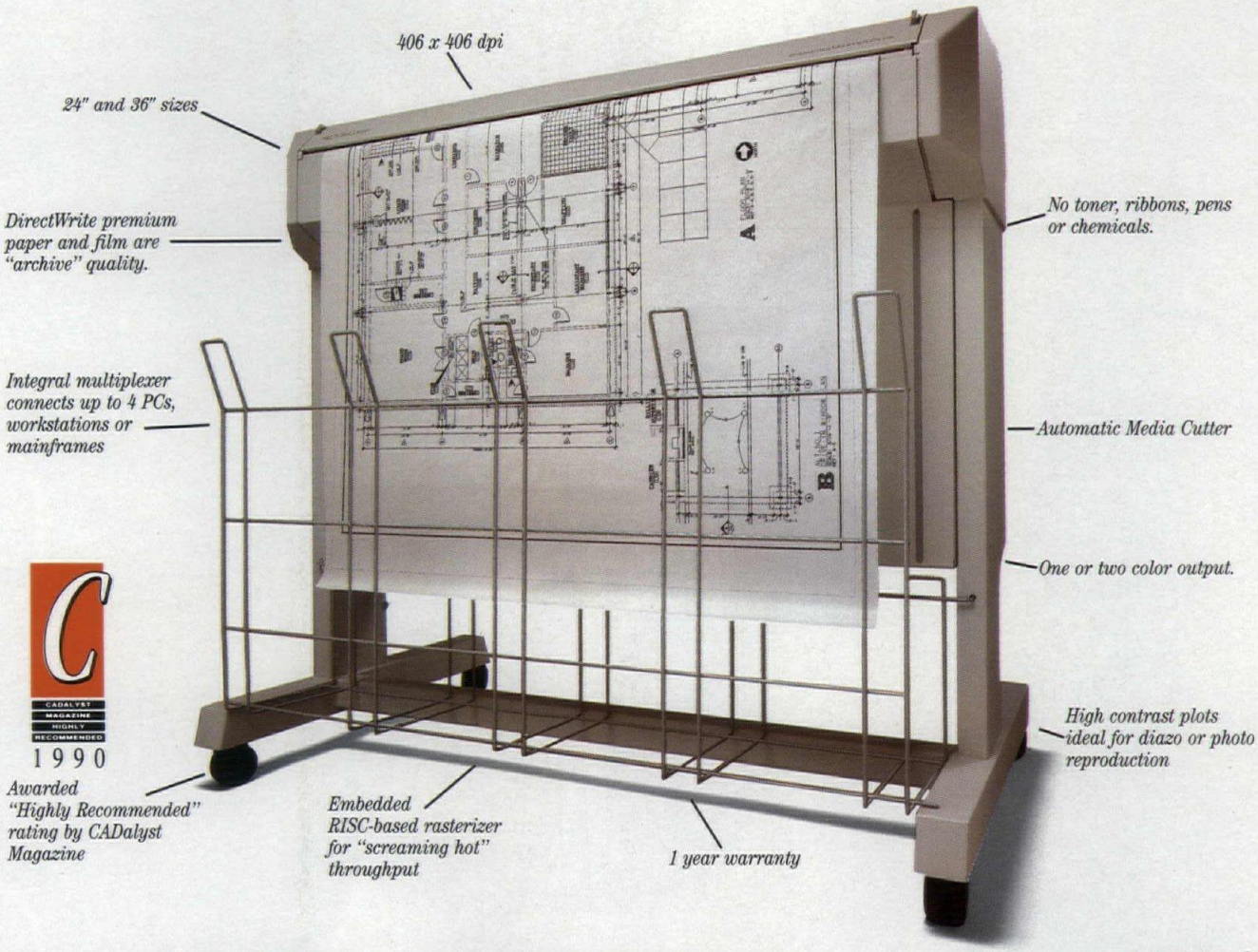

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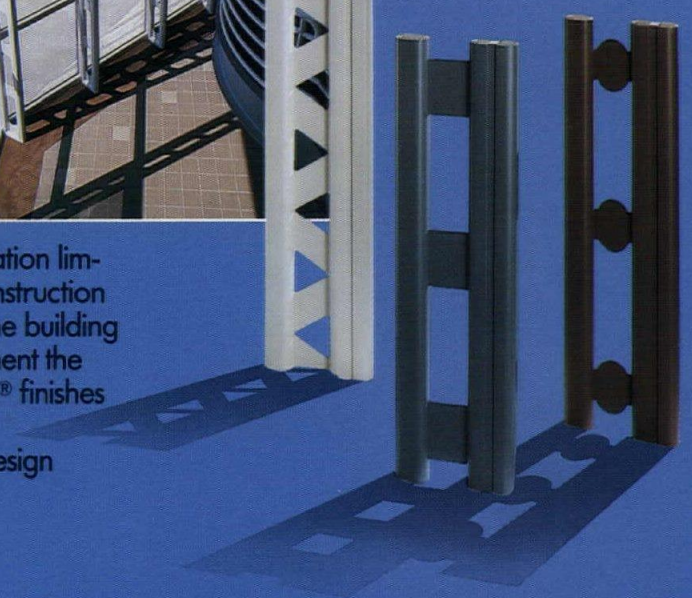

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New Products and Literature

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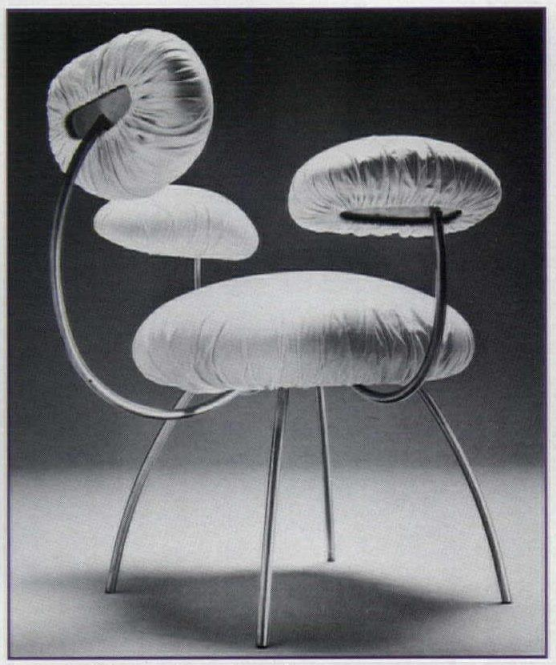

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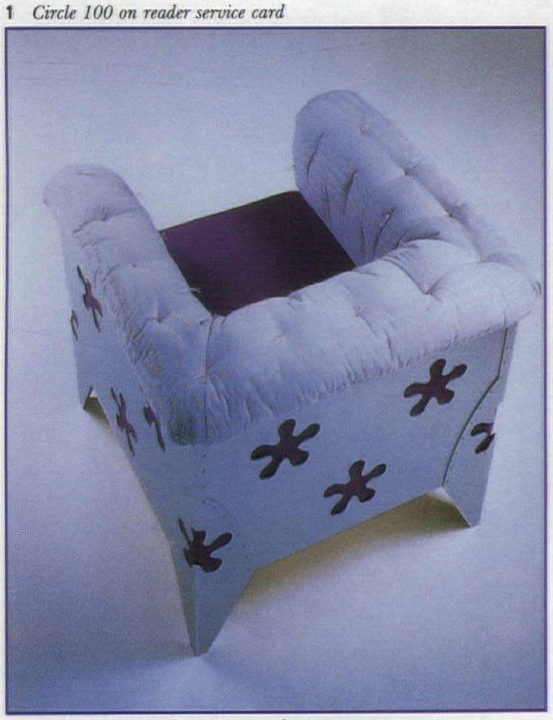

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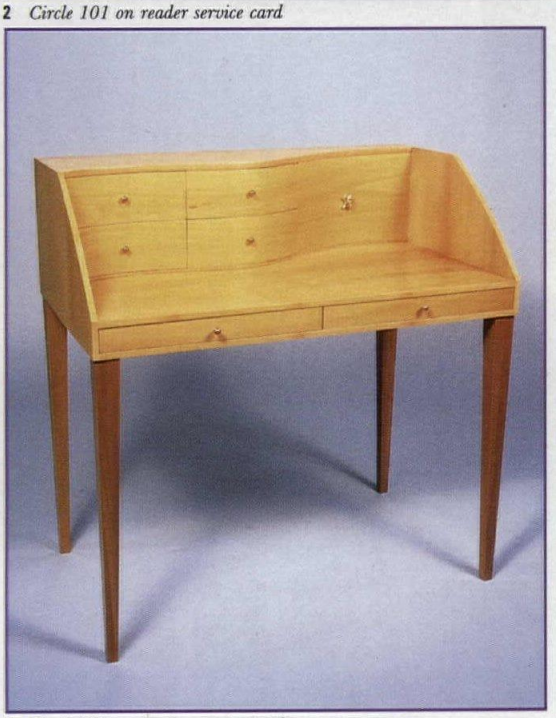


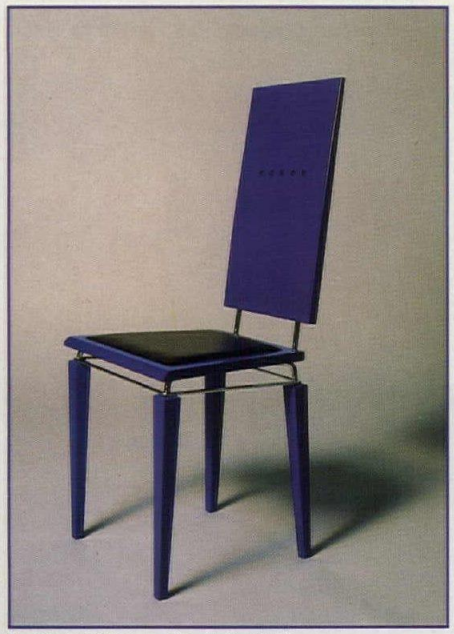
4 *Circle 103 on reader service card*

Jean Nouvel's "Elémentaire" (1) and "St. James" (2) chairs for Ligne Roset; Hiroyuki Yamakado's "Haori" chair (3) for Yamakado; and Sylvia Corrette's "Viperella" desk (4) for VIA.

Paris Furniture Fair: Putting Milan on the Defensive?

The Paris Furniture Fair, held in January at the Porte de Versailles, is a civilized event. The contemporary section, contained in one hall, is readily accessible and, unlike Milan, is of a comprehensible size. I visited just as the Gulf War broke out and reflected that the event represented a kind of collective sanity. The order and optimism there made one all the more aware of the chaos elsewhere. Inevitably, a sense of unreality persisted: It was impossible not to notice how much of the furniture was of the emphemeral, incidental kind, implying frivolous luxury and thus apt to render design a mere conceit.

The Critic's Award given after the fair, for example, was revealing in its promotion of such vanity. Judges, drawn from the press (*Elle, Vogue Décoration, Le Figaro, Quotidien du Médicin*), gave the prize to Sylvia Corrette's collection for the Valorisation de l'Innovation dans Ameublement (VIA). For me, her furniture lacked energy. The "Viperella" desk, in particular, suggested nothing more taxing than the composition of scented *billets-doux*. It was something of a relief to discover the solid geometries of Jean Nouvel's seating for Ligne Roset and Andreé Putman's leather and beech chair for CMB Creations. Nouvel's "St. James" chair, also for Ligne Roset, was about the best piece in the show (significantly, it was designed for a specific context, the St. James Hotel in Bordeaux). Nouvel and Putman's individual elaborations on Mod-



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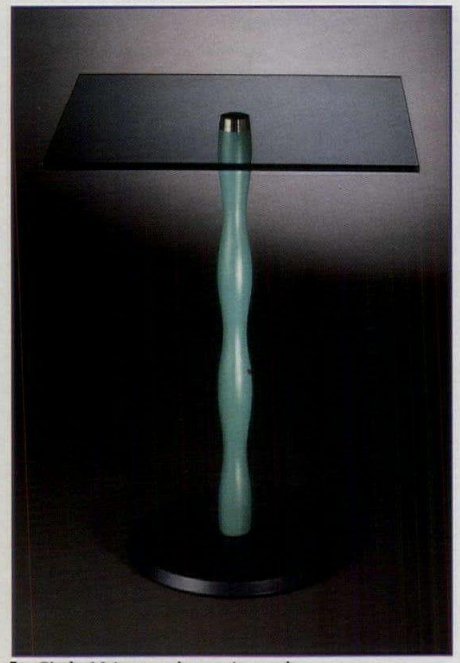

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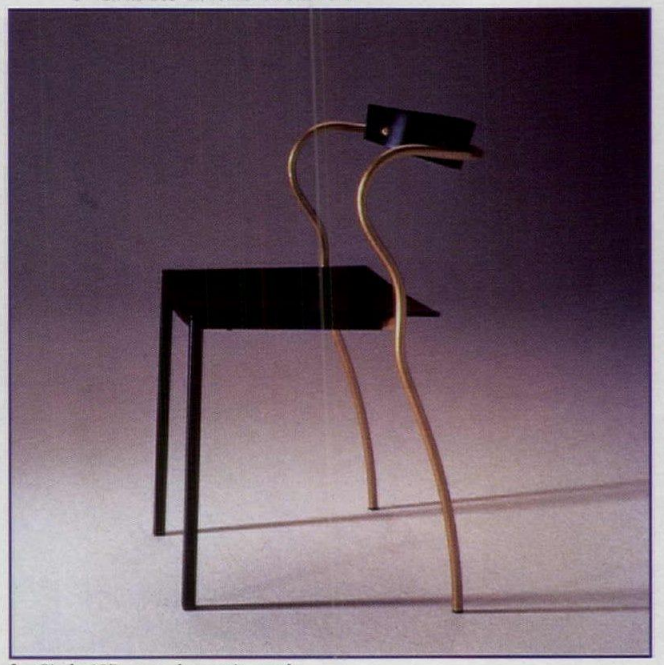


8 *Circle 107 on reader service card*

9 *Circle 108 on reader service card*

Patrick Sarran's "Frog" chair (5) for Art+Design; Andrée Putman's chair (6) for CMB Creations; Pascal Morgue's table (7) for Fermob and "Rio" stacking chair (8) for Artelano; and Garouste and Bonetti's "Jour et Nuit" table and chairs (9).

ernist traditions are at one end of the French spectrum of design which is now diverse in its forms and provenances. At the other end are various manifestations of the operatic, a category embraced by the work of Elizabeth Garouste and Mattia Bonetti, winners of the fair's Designers of the Year Award. These designers have for some time been disturbing conventional notions of what constitutes design. Perversely, their new range of furniture called "Jour et Nuit" was a model of sobriety. The team's characteristic subversion was confined to the collection's surfaces, embroidered with mystical emblems of suns and moons.

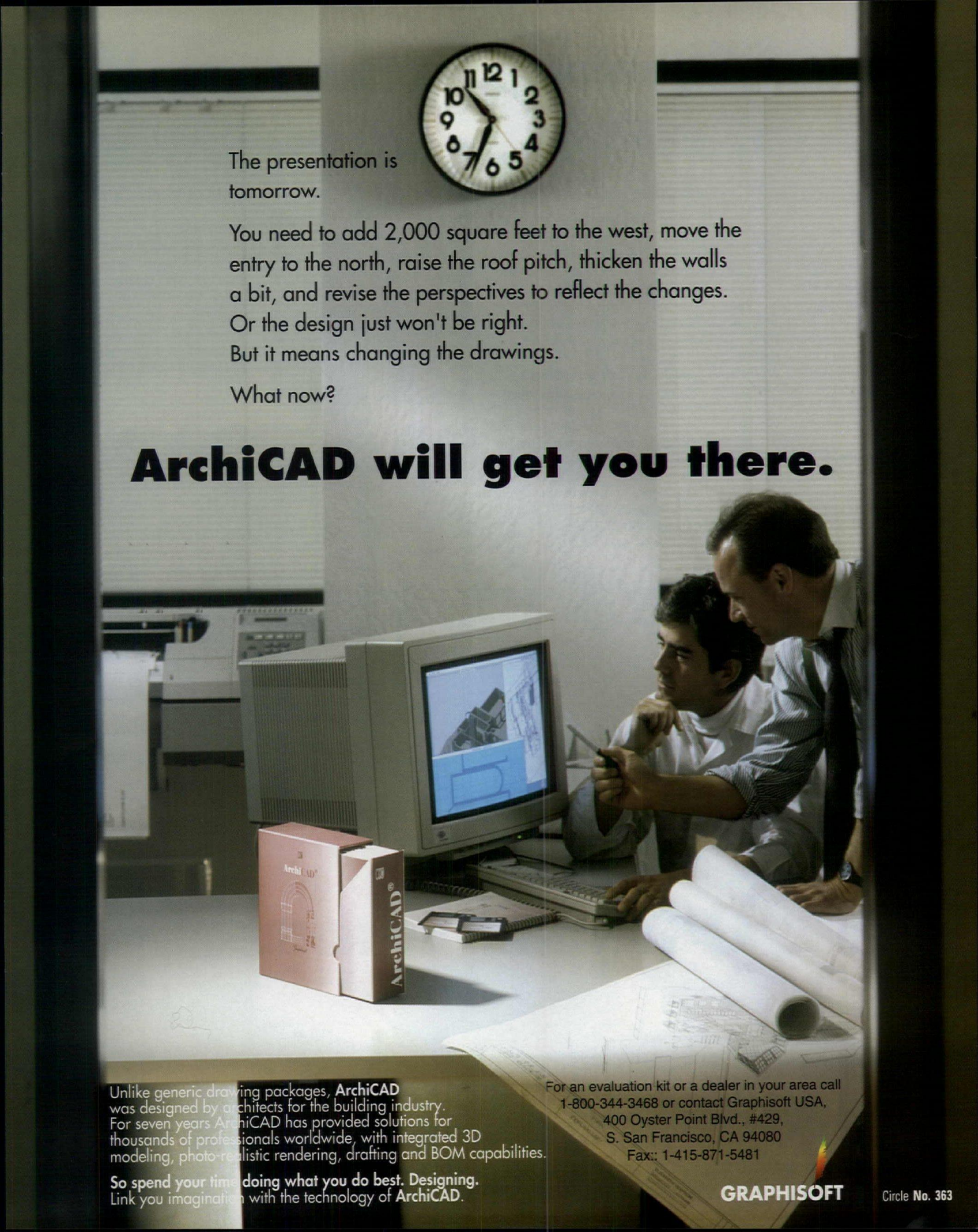
A biomorphic tendency emerged as the only overt design theme this year. References to natural forms were evident in pieces like Hiroyuki Yamakado's "Haori" seating; the twisting, colored metal stem of Pascal Morgue's tables for Fermob were more abstract, as was his "Rio" stacking chair for Artelano. Even Nouvel's "St. James" chair strayed into the botanical.

The French Decorative Arts Movement was also influential this year. It was detectable in Thibault Desombre's furniture for Soca-Line, in Patrick Sarran's Macintosh-inspired "Frog" chair for Art+Design, and in Loic Beuchet's restrained cabinet for Martin Karen.

The Italians have cleverly switched the date of the Milan Furniture Fair from September to April. This, it is said, is an attempt to upstage the competition: While some exhibitors kept new designs back (waiting for the bigger show), the combined weight of interest in fairs elsewhere – in Spain, Germany, and France – may cause a weakening of Milan's magnetic power, due not least to the talents of French designers.

Penny Maguire. ■

The author is an architecture and design journalist and critic living in France.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The "Tom-Tom Table" has a 26-inch ebonized cherry base; the top is 15¾ inches in diameter and may be specified in a choice of three woods. Larimore Furniture.
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Fire-resistant Roofing
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Attic Ventilation System
"Roof Over Vent-A-Ridge" is a low profile vent for shingle roofs. It is available in Frost, Bark, and Slate colors. Alcoa Building Products.
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Concrete, masonry, and dimension stone façades of completed and in-progress projects, may be protected from water intrusion with the "Structure Protection Package" – "GEPEL™ TWR 255" water-repellent penetrant and "SILPRUF®" silicone sealant. GE Silicones.
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Tapeless Measuring Tape
The "Sonic Yardstick+™" measures distances up to 50 feet (to nearest ½ inch) and converts to metric; a second model, called "Target," has a range of 100 feet. Digitool Corporation.
Circle 113 on reader service card

Maple Chair
"My Dear" is a solid maple chair with an upholstered seat available in a variety of materials. The chair is 18 inches wide, 20½ inches deep, and 35 inches high at the antlers. Dialogica.
Circle 114 on reader service card

New Tapestry
"Jazz Tech," designed by Steven Hensel, is a muted red, green, blue, and white cotton tapestry; it is 54 inches wide. Artex Designs.
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VOC-compliant Weatherproofing
"CHEM-TRETE® BSM 40 VOC" weatherproofer has been reformulated to contain less solvent than "CHEM-TRETE® BSM 40;" it contains "less than 600 grams per liter of VOCs." This silane water-repellent is suggested as protective coating for new construction, historic structures, and for other surfaces. Hüls America.
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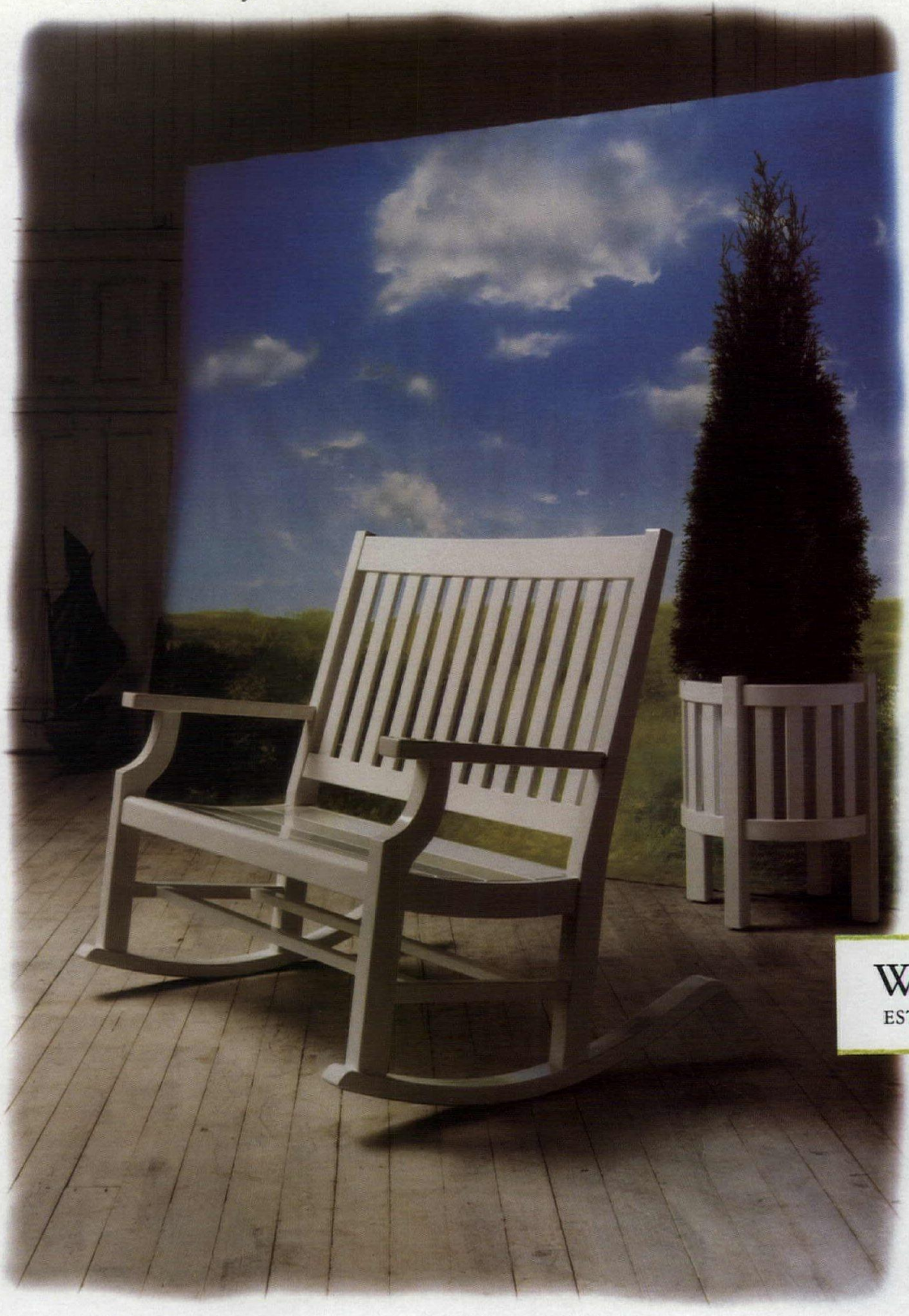
(continued on page 130)

The Weatherend Story.



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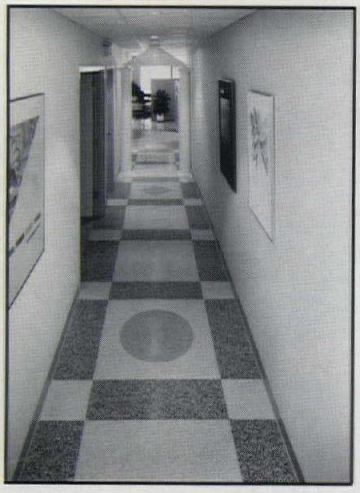

Commercial Vinyl Flooring
"Boulevard," part of the "Marathon" line of heavy-duty commercial inlaid sheet vinyl flooring, has a 55-millimeter-thick wear layer and is suitable for hospital, school, office, and museum applications. Congoleum Corporation.
Circle 117 on reader service card

New Rubber Flooring Colors
The Noraplan and Norament rubber flooring systems are now available in over 50 colors – Seaspray, Terracotta, and Sandlewood among them. The product is applicable for institutional, retail, and commercial interiors. Freudenberg Building Systems.
Circle 118 on reader service card

Architectural Signage
Metal and marble architectural letters and logos, produced with ultrahigh pressure abrasive jet cutting equipment, are available for interior and exterior applications. Steel Art.
Circle 119 on reader service card

Storm Door Brochure
The "Estate Series Model 5500" beveled glass storm door has a solid brass lever, vinyl locking strips, brass finish trim, concealed installation screws, and color-matched interior hardware. A brochure is available. Cole Sewell.
Circle 200 on reader service card

Glass Block Ends
"WeckEnd" glass block ends have 90-degree corners and perpendicular faces and are available in clear or distorted patterns. Glashaus Inc.
Circle 120 on reader service card

Arch Top French Door
A two-panel swinging French door has a radius top and heavy wood jambs with 4¾-inch stiles and 1¾-inch-thick door panels of Ponderosa pine; insulating glass and heavy foam-filled weatherstripping are standard. Marvin Windows.
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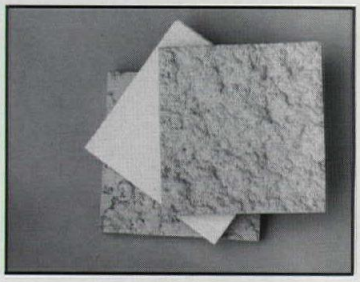

Single-Application Stucco
"Monocouche®" is an integrally-colored, "crack-resistant," "waterproof" stucco that can be sprayed or troweled on a variety of substrates in a single application. Parex® Incorporated.
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(continued on page 132)

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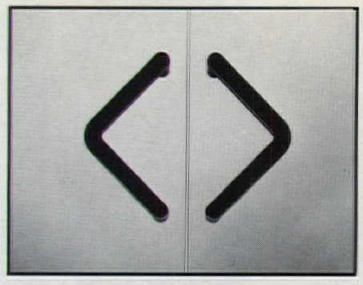

Nylon/Steel Door Pull
A new (model 550.31gkw) door pull has a nylon-covered corrosion-resistant steel core; it is available in 13 colors. Hewi.
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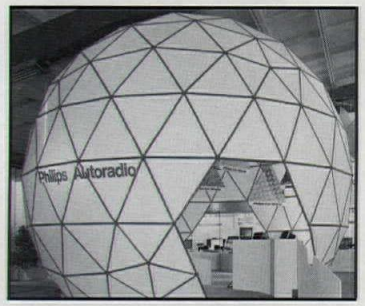

Exhibition Display System
This lightweight exhibition display dome may be constructed in half spheres and spherical segments. Its icosahedron geometry is created with light aluminum anodized or powder paint coated or chromed tubes and nodes. Meroform®.
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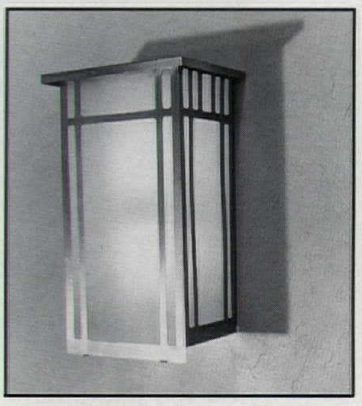

Wall Hung Lamp
Finished in bright copper, burled copper, and verdigris copper, the Luz Azul series of wall-hung lamps is available in two sizes: 16″ × 9½″ × 7″ or 11½″ × 7½″ × 6¾″. Ultrlights Architectural Lighting.
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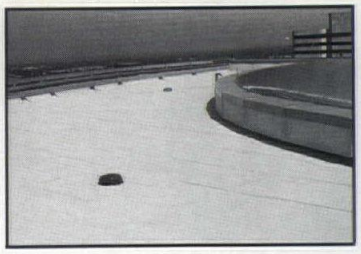

Roofing Specs Catalog
The 48-page *1991 Commercial Roofing Specification & Detail* manual includes technical information on modified bitumen, fiberglass, and organic built-up roofing products. Tamko Asphalt Products.
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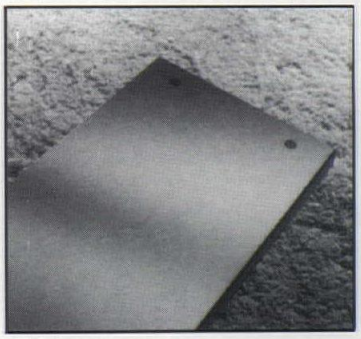

Engineered Wood Trim
Available in 16-foot lengths, "PrimeTrim™" engineered wood trim has a factory-applied oven-cured prime coat for moisture protection and product durability and does not require on-site priming. Georgia-Pacific.
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Textile Wallcovering
"Bergamo" textile wallcoverings are paper-backed 100 percent rayon strings, pretrimmed, peelable, and stain and soil "resistant." Patterns include marbleized and moiré motifs with architectural borders. Gramercy.
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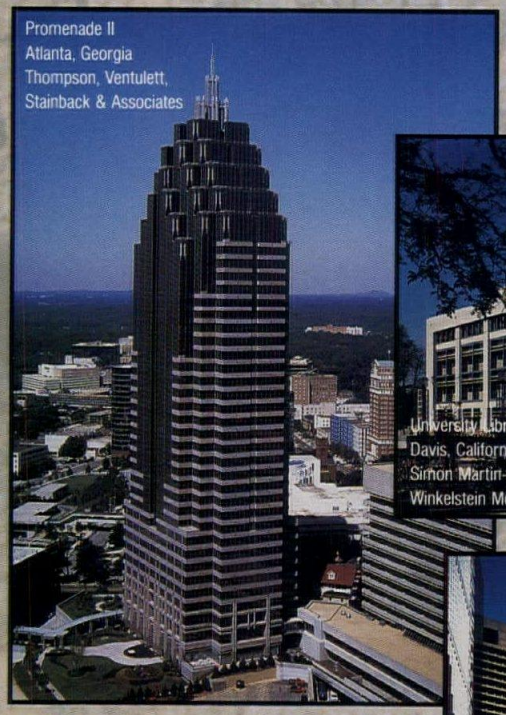
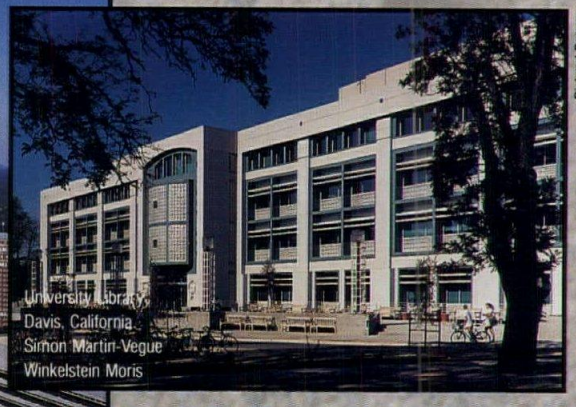
IN ARCHITECTURAL EXCELLENCE

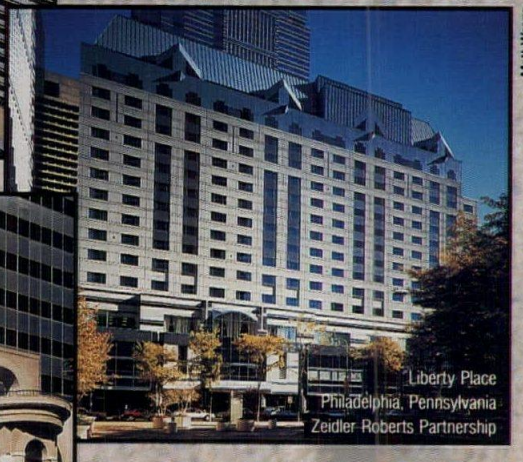


Promenade II
Atlanta, Georgia
Thompson, Ventulett,
Stainback & Associates



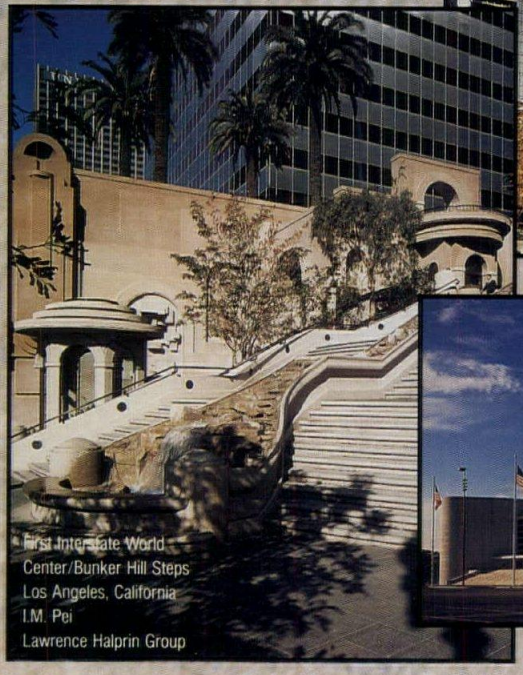
Richard Barnes

University Library
Davis, California
Simon Martin-Vegue
Winkelstein Moris

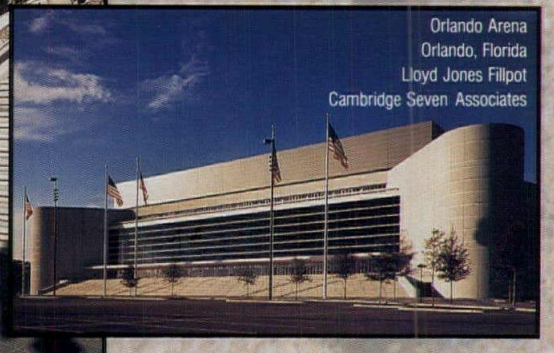


Matt Wargo

Liberty Place
Philadelphia, Pennsylvania
Zeidler Roberts Partnership



First Interstate World
Center/Bunker Hill Steps
Los Angeles, California
I.M. Pei
Lawrence Halprin Group



Orlando Arena
Orlando, Florida
Lloyd Jones Fillpot
Cambridge Seven Associates

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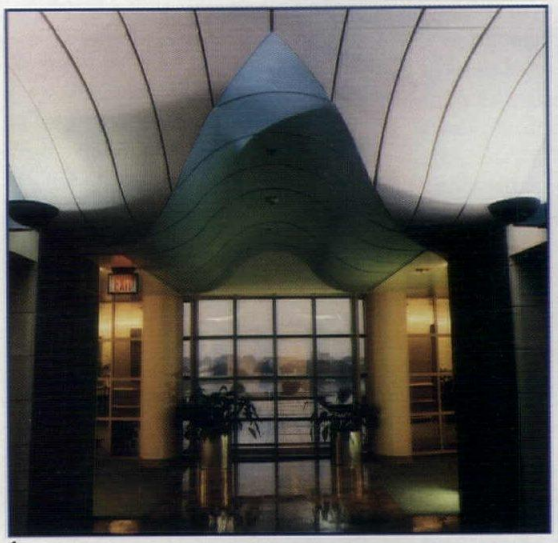

1

2

3

4

Room Acoustics

1 Fabric Panels

Decoustics acoustical panels can be custom-designed to fit almost any application, including complex curved surfaces. Choose from five standard cores, 11 edges, and 14 mounting systems. The panels can be finished in a variety of fabrics or vinyl. Decoustics.

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2 Sound Diffusers

RPG Diffusor Systems offers a wide range of quadratic residue diffusers, mathematically designed to diffuse reflection of sound. RPG also offers corner units that destroy standing waves, panels that combine diffusion and absorption, and rotating units that change the acoustical character of a room with a simple swivel. RPG.

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3 Aluminum Soundproofing

Almute sintered aluminum panels can be a dramatic design element as well as an effective sound-absorbing surface. The panels can be specified with a smooth, embossed, or corrugated surface and come in natural silver or a variety of colored finishes. NDC.

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4 Acoustical Foam Panels

Acoustical foams feature unique surfaces for maximum sound diffusion. A range of foams and ceiling tiles is available for commercial and industrial applications. AZ-USA.

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Technics-Related Products: Room Acoustics

Perforated Metal Literature
A 9-page brochure, *Acoustical Applications for Perforated Metals* and a 76-page book, *Acoustical Uses for Perforated Metals: Principles and Applications*, provide architectural details, formulas, and illustrations of the acoustical applications of perforated metal. Industrial Perforators Association.
Circle 201 on reader service card

Acoustical Panels
This line of acoustical panels includes standard wall and ceiling panels, hanging baffles, sound absorption blocks, and fabric-covered acoustical wall systems. The panels are composed of aspen wood fibers in a cement binder. Tectum.
Circle 127 on reader service card

Active Acoustic Control
The Phantom Acoustics *Shadow* is a column-shaped device that reduces the acoustic pressure that builds up in the corners of a room to reduce room resonance. Phantom Acoustics.
Circle 128 on reader service card

Acoustical Tile
The Cutting Wedge™ foam acoustical tiles are available in two- to six-inch thicknesses for noise reduction applications. Thomas M. Chaffee Music.
Circle 129 on reader service card

Wedge Foam
Designed to absorb reverberation noise in manufacturing plants, offices, and recreational facilities, Wedge Foam is available in several thicknesses to control sounds of varying frequency. United McGill.
Circle 130 on reader service card

Formed Ceiling Panels
High Profile® acoustical ceiling panels in five different deep-profile designs and 22 colors that fit into standard T-Bar exposed grid system ceilings. Sound Concepts.
Circle 131 on reader service card

Design Elements
SONEX ceiling tiles and acoustical foams are attractive, lightweight materials that can be used as room design elements as well as for acoustical control. Architectural Surfaces.
Circle 132 on reader service card

Fabric Panels
Designer's Touch wall panels are available in four constructions for different applications. The panels can be installed with the GB-350 Movable wall system. Gold Bond.
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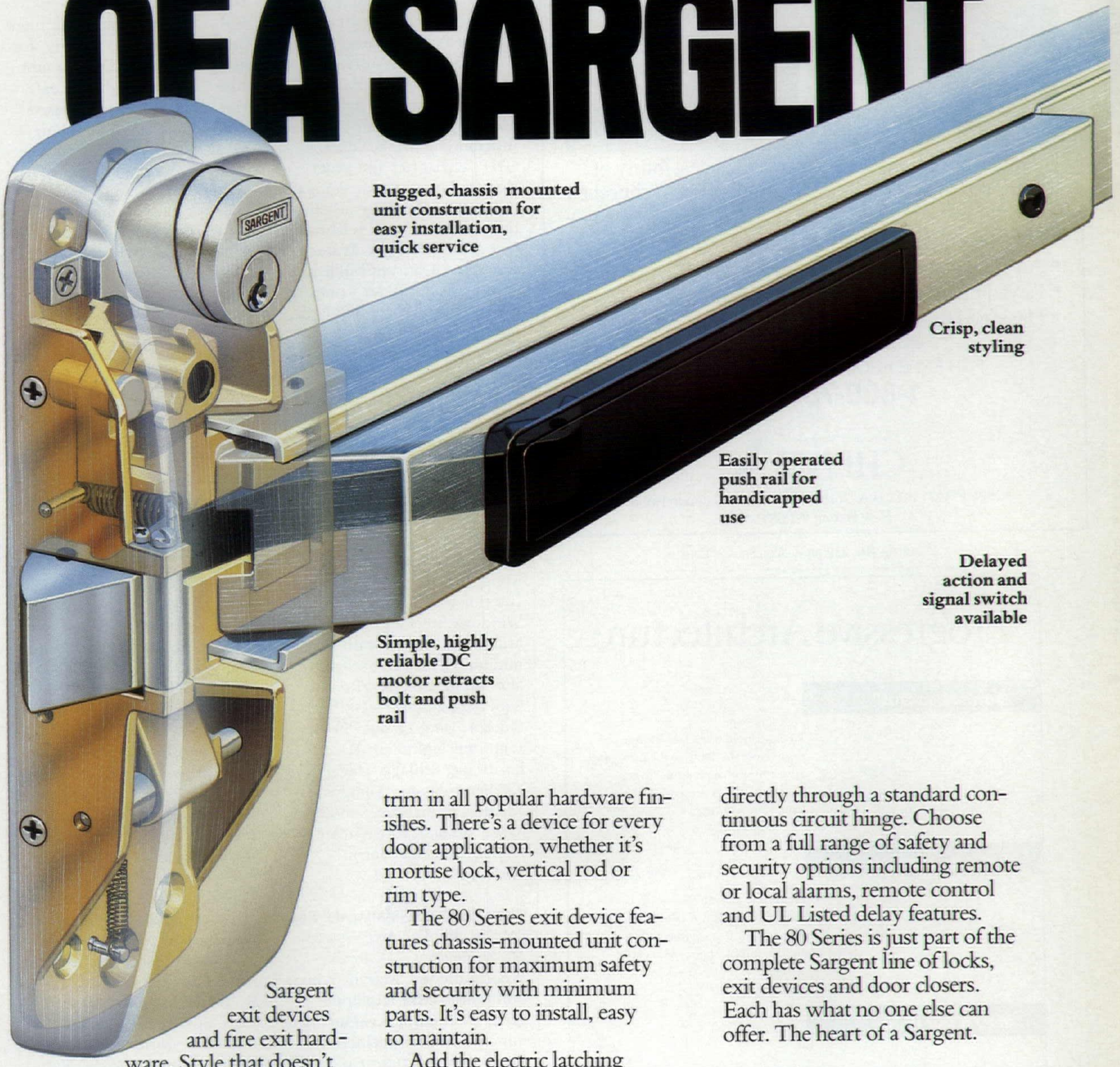
Building Materials

Major materials suppliers for buildings that are featured this month as they were furnished to P/A by the architects.

Team Disney, Lake Buena Vista, Florida (p. 70). *Architects: Arata Isozaki & Associates, Tokyo; Hunton Brady Pryor Maso Architects, Orlando.* Reinforced concrete structure: Rinker Concrete, Florida Steel. Metal stud/gypsum board walls and acoustical and perforated aluminum ceilings: USG. Aluminum and glass curtainwall and doors: Thermalum. EIFS: Dryvit. Ceramic tile: Ludowici-Celadon. Granite: Campolonghi. Skylights: Unistrut/Unisky. Metal interior doors: Firedoor. Wood doors: Algoma. Interior carpet: Interface. Tile floors: Monoceram, American Olean. Fluid-applied roofing: Uniroof. Insulating concrete: Cellcore/W.R.Grace. Fiberglass insulation: USG. Exterior paint: Kynar/Desoto. In-

(continued on page 140)

THE HEART OF A SARGENT



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(continued from page 138)

terior paint: Glidden. Hinges and locksets: Yale. Door closers and panic exits: Rixon Firemark. Kitchen equipment: American Metal. Laundry equipment: Cissel. Access flooring: GHP. Perforated metal lockers: Penco. Signage: McCurdy-Shea. Elevators: Schindler. Aluminum handrails: MH Atkins. Fluorescent lighting: Metalex. Access floor electrical distribution: Walker duct, GHP. Lavatories and water closets: Crane. Plastic laminate toilet stalls: Specialty installations. Stainless steel washroom accessories: Bobrick. Water fountains: Oasis. Sprinklers: Automatic Sprinkler Company of America. Air conditioning and environmental controls: Carrier. Open office system: Action Office/Herman Miller. Executive desks: Geiger. Lateral files: Marriden. Blinds: Levolor.

Project: House, Venice, California (p. 92). *Architects: Antoine Predock Architect, Albuquerque, New Mexico, and Los Angeles.* Foundation: c.m.u. Sheathing, subfloor: plywood. Exterior walls: stucco. Interior walls: gypsum board. Windows, steel and aluminum: Millguard. Entrance doors: aluminum. Overhead garage door, aluminum: Colepay. Roofing, liquid applied: Merko. Paint: Sinclair. Door closers: Boomer. Lighting: Lightolier. Door hardware: Schlage, Hagar. Kitchen cabinets: Allmilmo. Kitchen appliances: Sub Zero, Modern Maid, Kitchen Aid. HVAC: Rheem. Alarm: Radionics.

Webb Residence, Marina del Rey, Calif. (p. 96). *Architects: Ronald McCoy Architect, Los Angeles.* Wood windows: Marvin Windows with Asahi Lamitone glass. Aluminum skylights: Aluminex. Stainless steel garage door: Cooksen Door Co. Roofing: Dex-O-Tex, Crossfield Products Corp. Waterproofing/sealants: Elasto-Deck B.T., Pacific Polymers. Fiberglass insulation. Exterior paint & stain: Dunn-Edwards. Custom interior stains: Dunn-Edwards; Cavallo Bros. Hardware: Hager. Locksets: Baldwin. Rixon Pivot Hinges. Kitchen equipment: oven, Thermador; range, Gaggenau; refrigerator/freezer, Sub Zero. Kitchen sinks: Franke. Communication/intercom/ satellite: Custom Engineering Assoc. Dumbwaiter: Rise Elevator. Lighting: exterior sconces, Bega; Recessed downlights, Halo. Plumbing & Sanitary: tubs and lavatories, Amerex; water closets, American Standard. Whirlpool baths, Galaxy Spa. Plumbing fittings/showerheads: Armonia; Grohe; KWC. Bathroom accessories: Dornbracht. Custom cabinets: Jones Woodworks. Tilework: Ron Vogel.

Project: house, Mamaroneck, New York. (p. 100.) *Architects: Peter L. Gluck & Partners, New York.* Foundations: reinforced concrete. Frame: steel. Bearing walls: CMU. Floor framing: laminated beams, Gang Nail Systems. Roof framing: wood. Exterior walls, acrylic stucco: Dryvit. Interior walls, gypsum wallboard. Exterior steel doors: Hope's. Exterior wood doors: J. Zeluck. Exterior paving, Colorado sandstone. Interior floors, hardwood, carpet, vinyl. Roofing, slate shingles, modified bitumen (flat). Sheet applied waterproofing: W. R. Grace & Co. Insulation, fiberglass batts (walls and roof), EPS (foundation). Interior paint: Benjamin Moore. Elevator: Elevette by Inclinator. Exterior lighting, recessed: Bega. Interior lighting: Omega, Lightolier, Kurt Versen (recessed incandescent), Lightolier (fluorescent), Alinea (linear incandescent). Electrical distribution: Nova T-Star by Lutron. Bathroom fixtures: American Standard, Eljer, Kohler. Plumbing fittings: Chicago, Speakman, Kohler. Bathroom accessories: Chicago, Kroin, Capital Cubicle, Nutone. Stainless steel sinks: Elkay. Gas-fired, hot-air heating system: Hydrotherm, Carrier. AC: Carrier. HVAC controls: Honeywell. Blinds: Mecho Shade Systems. ■

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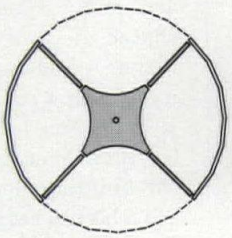
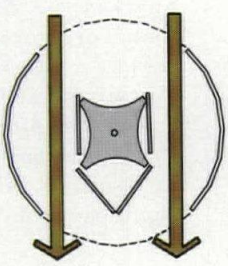


Normal stopped position shown. During rotation, wings are always in contact with the enclosure.



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(continued from page 113)

young architects did in Wagner's office is treated in some detail, making it clear how much some of the best known presentation drawings from Wagner's studio owed to such superb draftsmen as Kammerer and his colleagues. While in Wagner's employ, and with his permission, the three friends were able to carry out a number of independent projects of great interest.

They set up their own office in 1901, which functioned until 1918, when Kammerer withdrew to give up architecture for painting, and to pursue with ever greater intensity a German-nationalist ideology that eventually led him to a high official position under the Nazi regime, followed by an embittered exile in Canada. Hoppe and Schönthal, by contrast, continued their collaboration for many years. "They left a body of work," as Dr. Whyte puts it, "in which Otto Wagner's doctrine of Modernism had been reconciled to the architectural traditions of the city – a series of buildings that were Viennese 'in the good sense'."

"(Hoppe and Schönthal) left a body of work in which Otto Wagner's doctrine of Modernism had been reconciled to the architectural traditions of the city."

The question of where a positive traditionalism ends and an actually reactionary attitude begins is left unanswered. Kammerer gave his own answer by assuming official responsibility for the suppresion of "degenerate art," and it is known that Hoppe shared much of his former colleague's ideology. Was it then more than a coincidence that in 1938 the Nazi leadership selected for their Vienna headquarters the building Hoppe, Kammerer, and Schönthal had designed for the Centralbank der deutschen Sparkassen? Yet Schönthal, under pressure from the new regime, had to leave for Switzerland and Yugoslavia, to return only after 1945. Within the limitations of an enlarged catalogue, Dr. Whyte has made a significant contribution to the better understanding of a little studied period of Austrian architectural history.

The third book under review – translated from an exhibition catalogue of the Centre Georges Pompidou in Paris – deals with another disciple of Otto Wagner, Jože Plečnik, whose work, except for a few early buildings, such as the Zacherl house in Vienna, was hardly discussed in the standard works on 20th-Century architecture. The Plečnik catalogue, being the work of a dozen authors, of necessity lacks the kind of unity a single author is able to impose.

In a brief introduction, François Burkhardt explains that the intent of the exhibition was not just to do justice to Plečnik's total achievement but also to revitalize the debate about the relationship between form and content in architecture. Burkhardt also contributes a lucid essay in which he refutes any Post-Modernist claims at co-opting Plečnik as a precursor: "... he is neither pre-postmodern nor modern.... His main intention was to adapt architecture...to an ethical concept of the world, while using a diversified, pluralistic vocabulary. For him, 'style' was the art of finding the means to transmit content through the best adapted forms."

Content in Plečnik's case chiefly meant two concerns: Slavic, or more precisely Slovene, ethnicity/nationalism, and the Catholic religion. Friedrich Achleitner, in a brief but penetrating analysis, rightly concludes that in certain respects Plečnik can be compared to Gaudí, and that Plečnik could even permit himself, "through an extreme self-control, to integrate emotional phenomena such as kitsch into his field of reference."

The following essays contain a good deal of valuable, at times unpublished, information on Plečnik's life, work, and influence. Together with a portfolio of illustrations, mostly small in size, they enable the reader to form an opinion about a man who never lost his attachment to the arts and crafts ideals and the modified

(continued on page 144)

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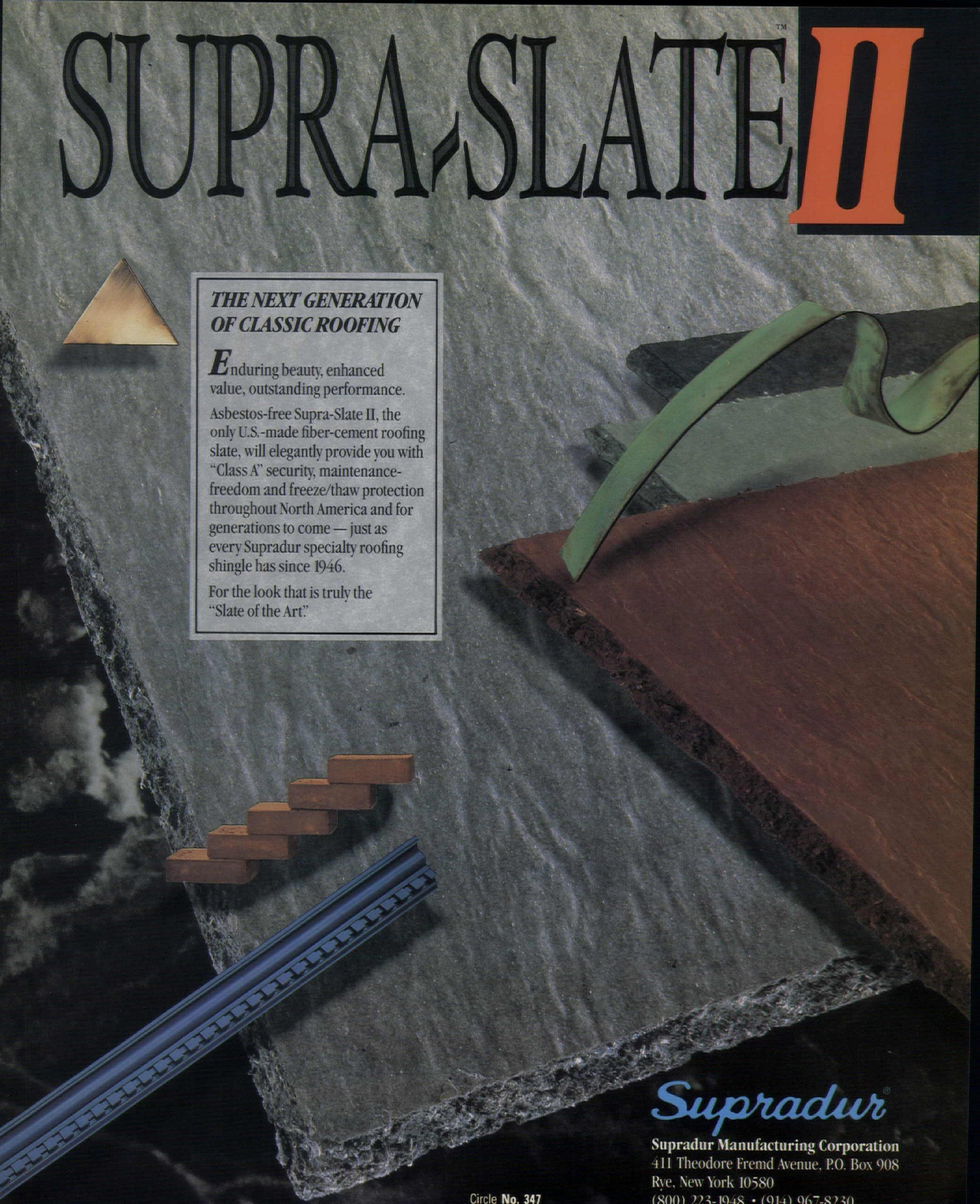

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(continued from page 142)

Classicism of his youth, and who became ever more idiosyncratic as he moved further away from the influence of Otto Wagner, until he lived entirely in a poetic universe of his own making. A descriptive and photographic essay by Lucius Burckhardt and Linde Burkhardt succeeds in conveying the poetic quality with which Plečnik as urban designer endowed portions of his native Ljubljana. One wishes that the kind of integration of text and illustrations this essay achieves could be found throughout the book.

There are two hermetic essays in the catalogue. One, by Boris Podrecca, is entitled "Columns, Walls, Space." It is an interpretative evocation of Plečnik's aura, with a text that has its own set of convincingly selected, mostly uncaptioned photographic images as well as a selection of architectural plans, sections, and elevations, shown without scales. The material challenges readers to work hard in order to integrate text and images.

Hermeticism of a different kind prevails in the essay "Plečnik, Vienna, and the Arcana of the Baroque Tradition" by Alain Arvois and Cristina Conrad von Eybesfeld. The authors, in very broad sweeps, propound the argument that Plečnik's architecture is Baroque "in its deep structure," or as they put it in another place: "The depth of Plečnik's architecture and that of the Wagnerschule ... is *the baroque tradition*." Baroque here is not to be understood as a purely stylistic term, but in the broadest possible sense as a term of cultural and political history. Unfortunately, however, they never take the time to elaborate their thesis, preferring allusions and convenient assumptions instead, as when they state with reference to Alois Riegl's *The Modern Cult of Monuments*: "There is no question that Plečnik was inspired by these analyses for his church and sacred architecture projects." What evidence is there, a skeptical reader might ask, that Plečnik read Riegl's essay?

In fairness, however, it must be said that these two authors made a noble and interesting attempt; it is all the more regrettable that for their English version they were so poorly served by a translator apparently quite unfamiliar with the subject matter, and who seems to have worked without benefit of informed editorial advice.

In some cases, the translator bypassed an original English text, and instead turned a French translation into English. In this spirit, Ruskin's famous Seven Lamps appears as "seven flames" (translated from *"sept flambeaux"*). An abundance of misprints and spelling errors bespeak a serious lack of proof reading, as when Vienna's renowned mayor Lueger is turned into a Leuger, and the French architect Augustin-Charles Daviler appears as Davilers.

In contrast to the other two books, the Plečnik volume falls short of what it could have been: While it provides a useful collection of essays and some handsome illustrations, it fails to be a genuine tribute to – or a much needed standard work about – an intriguing architect whose work has many lessons to teach: About what not to do as much as about what to do.

Eduard F. Sekler ■

The author, Professor of Architecture and Osgood Hooker Professor of Visual Art at Harvard University, wrote Josef Hoffman: The Architectural Work *(Princeton University Press, 1985) and numerous other publications on Modern architecture.*

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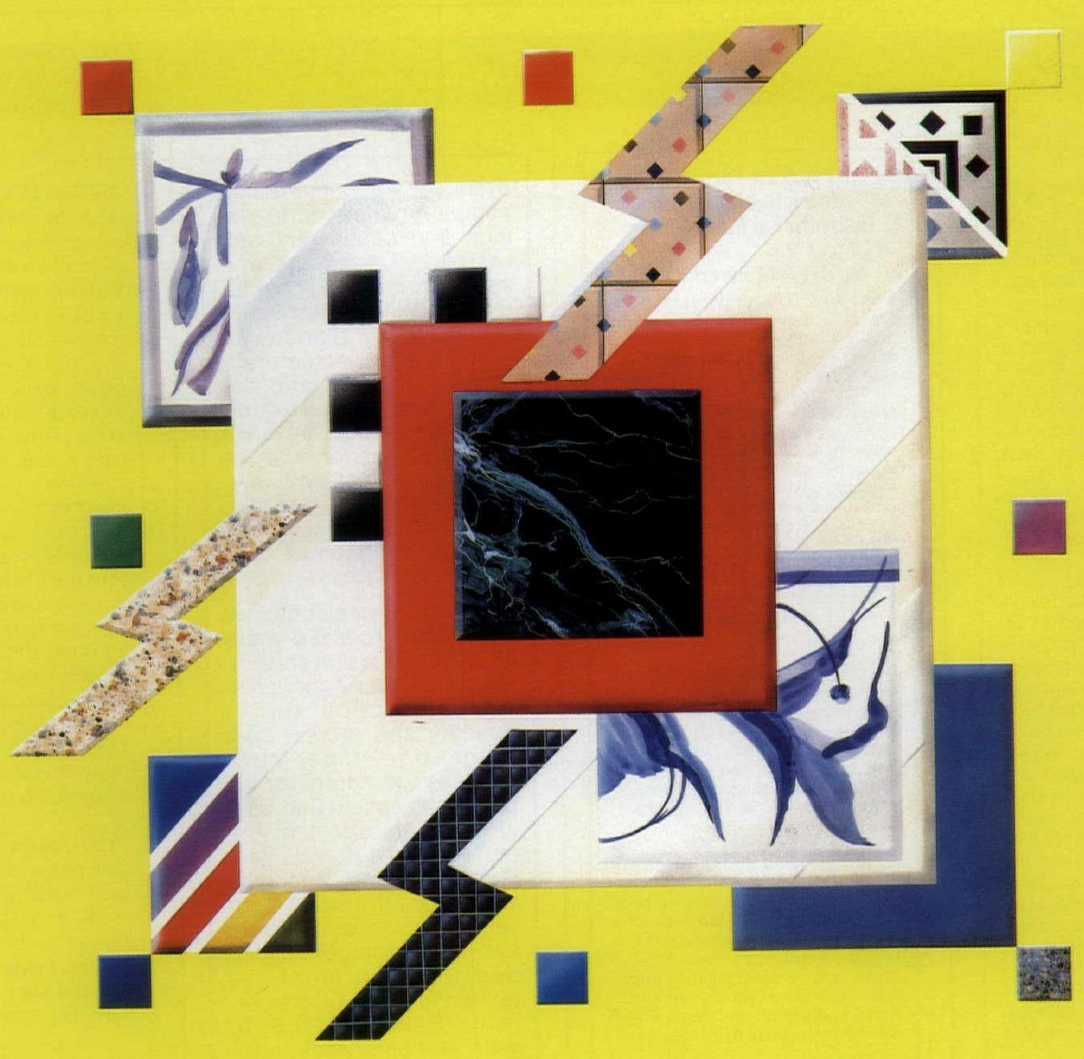

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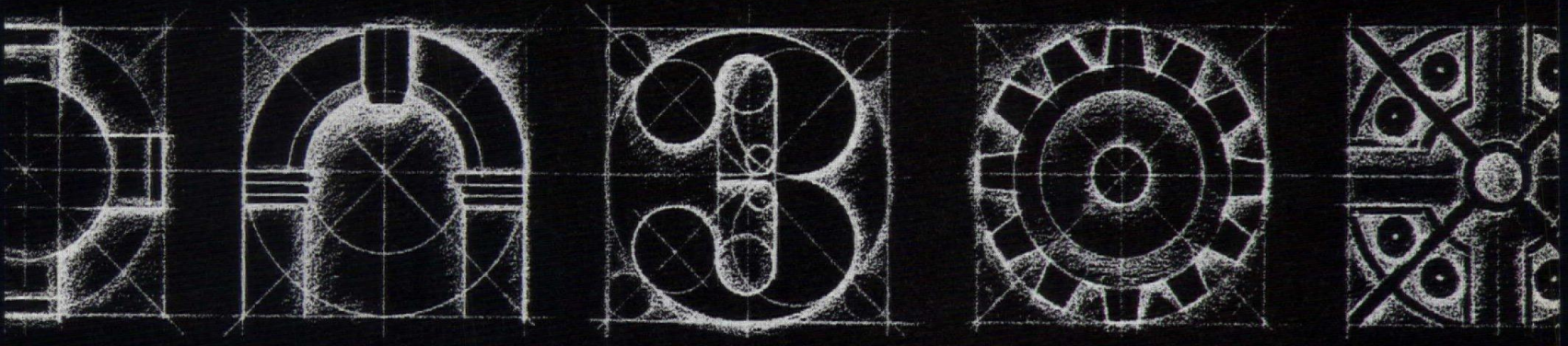

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Furthermore . . .

Sometimes it is the small items – the furnishings, as much as the architecture – that establish the sense of place. This is certainly true of the library at the MIT School of Architecture and Planning, the expansion and remodeling of which will be featured in our May issue. Anyone who has ever used this library will recall the cast head of Michelangelo's *David* that stood for decades in a focal position, straight ahead as one entered the library. Set into the repetitive matrix of MIT's anonymous structural bays, the proud head seemed to stand for aspirations beyond the school's deterministic, force-vs.-reaction world view.

It was inevitable that Schwartz Silver Architects, who expanded and reshaped this sanctuary of the arts, would have to deal with *David*. As it turns out, the head is still on the axis of the same entry door, but raised higher above the floor – closer to its height on the actual *David*, say the architects (both of whom studied at Harvard). In P/A, you will see the head where the architects put it. Current and future students will doubtless get used to it there, but old grads – who know it belongs at the level where it always was – will find its elevated position disconcerting.

. . .

We must break the law to be put in prison. But Claude-Nicolas Ledoux, whose ideas and restored work will be featured in the May issue, was incarcerated in 1793 because of his former clients, who held high positions in the courts of Louis XV and XVI. Ledoux's example suggests that it may not be freedom of expression but freedom of association that is most important for architects. Even today, architects who have had disreputable clients must be careful: Surely the architects who helped build Jim and Tammy Faye Bakker's empire or who profited from the construction money flowing out of Richard Keating's Lincoln Savings & Loan are not out broadcasting the fact. In the U.S., our connection with certain clients might not put us in prison, but it can confine us to the exile caused by bad public relations.

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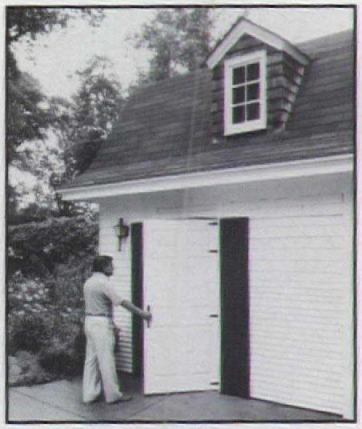
We've been doing a bit of spring cleaning here at P/A, and among the things unearthed was a pile of photos and press releases we couldn't bear to throw away:

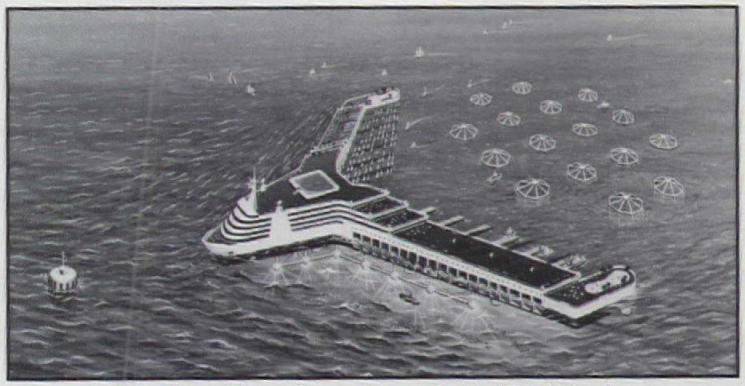
First off, from the "products we didn't have room for" category, Ashland Engineering of Park Ridge, Illinois, offers the "CYBIAG" (Can You Believe It's A Garage) door (top). The door pictured is but one option; we're told that the system will also accommodate a bay window projecting up to 18 inches. Depending on where you are, you can either hear Venturi and Scott Brown's squeals of delight or Corb rolling over in his grave.

Filed under "Noah, can you top this?" is a Japanese "artificial island" named "Jonathan" (after the trendy 1970s seagull) developed by the Taisei Corporation and the Muroran Institute of Technology. "Jonathan," (above, center) which is designed to be moored in waters about 100 meters deep, will include a marine farm zone with 16 fish farms, a marine research facility, a 1000-room hotel, a shopping arcade, a convention center, and recreational facilities. Does the Trump Princess *have a marine farm zone?*

Finally, in the "Les Paul meets Palladio" category, there's the new Hard Rock Cafe at Universal Studios in Orlando, Florida (above). Design credit goes to Aura Architecture of Orlando, and Raleigh & Associates of Maitland, Florida. The cafe is, in Raleigh's words, "a 60-foot-high three-story Italian Renaissance palazzo resting on the body of a 340-foot-long electric guitar." Where were these people when the Rock and Roll Hall of Fame was looking for an architect? ■



Ashland's CYBIAG door: Can you believe it?



Rendering of "Jonathan," Taisei's amenities-packed artificial island.

New Hard Rock Cafe at Universal Studios.