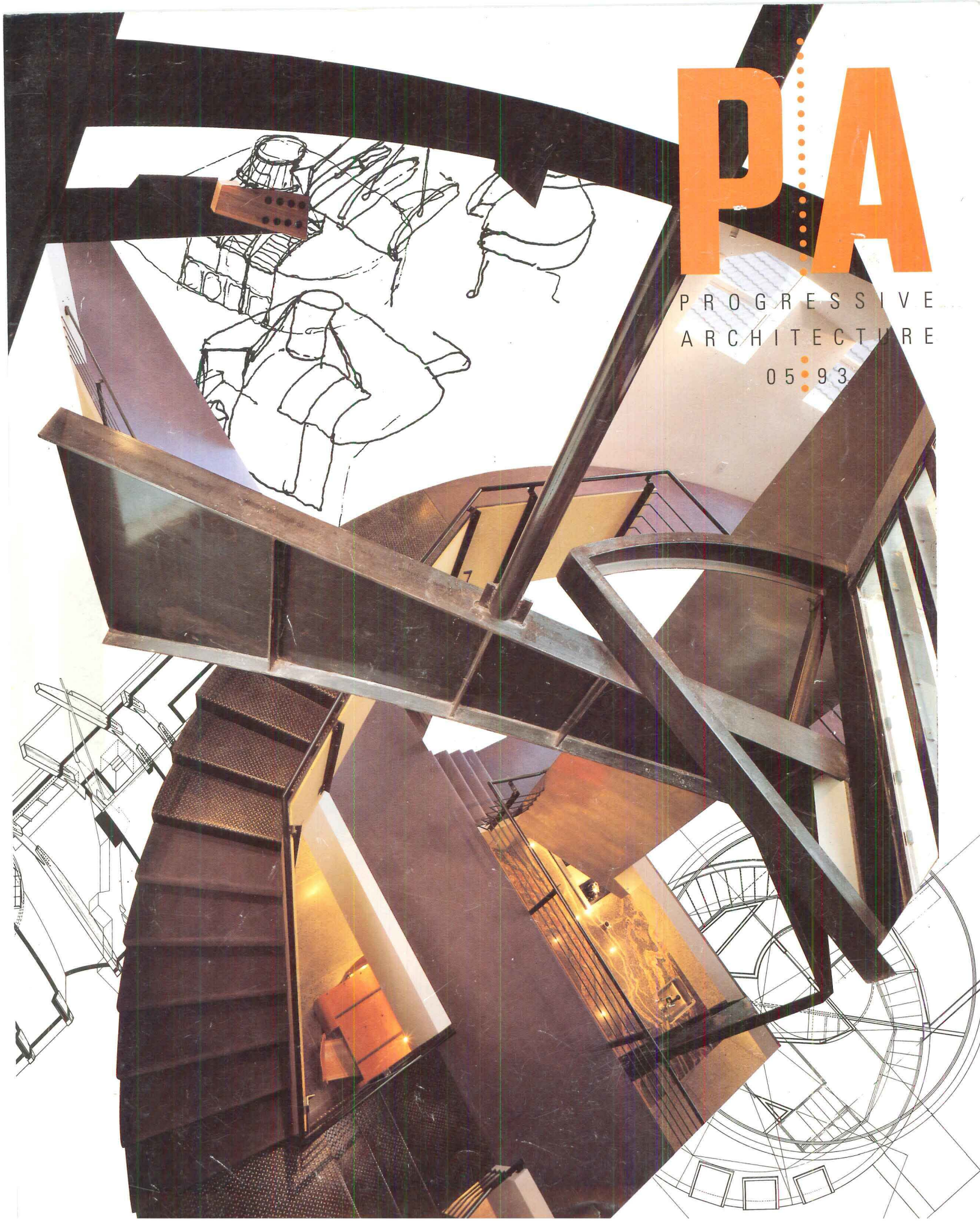

P/A

PROGRESSIVE ARCHITECTURE

05:93

JoAnne McDowell On Reuse

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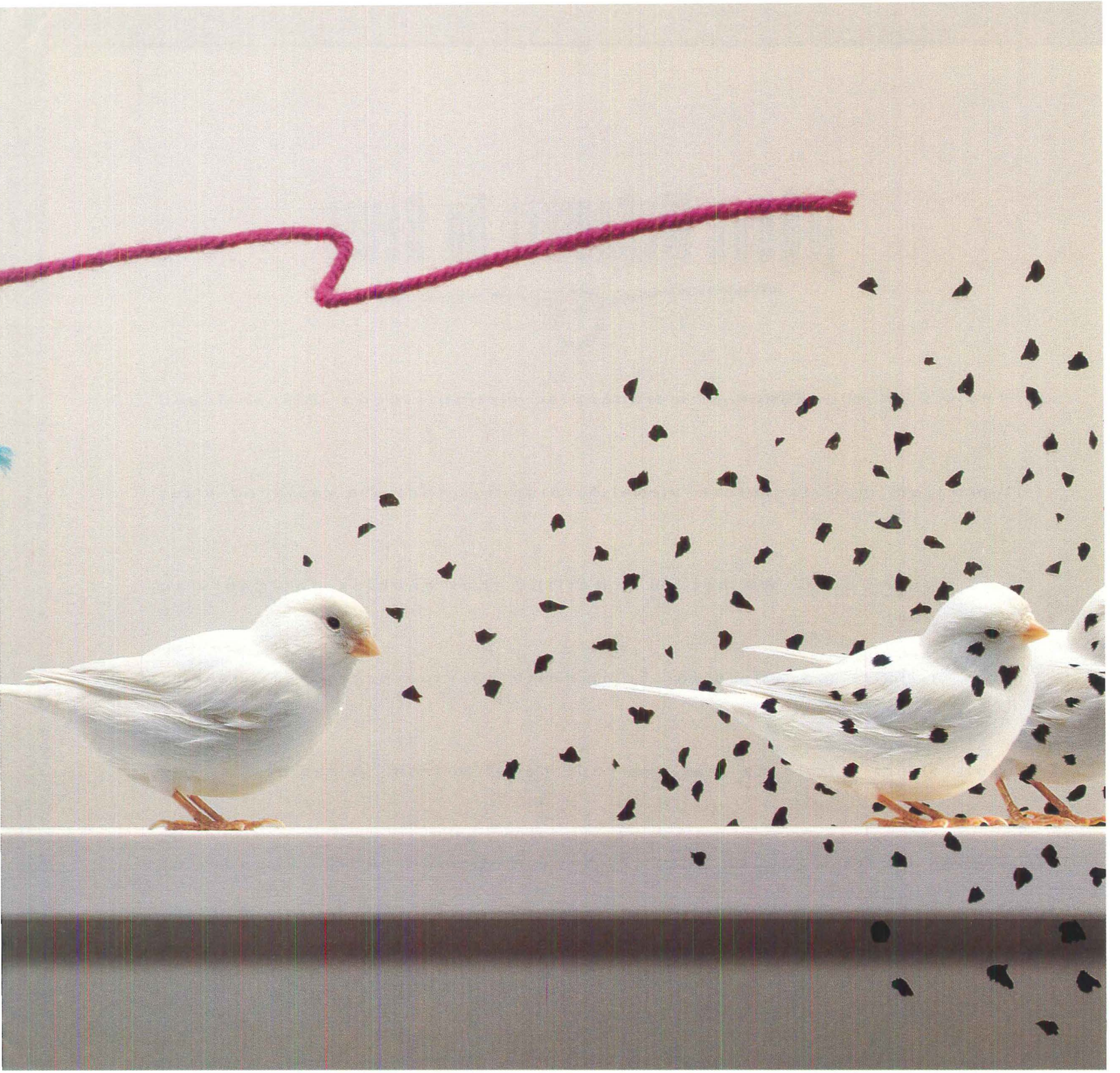

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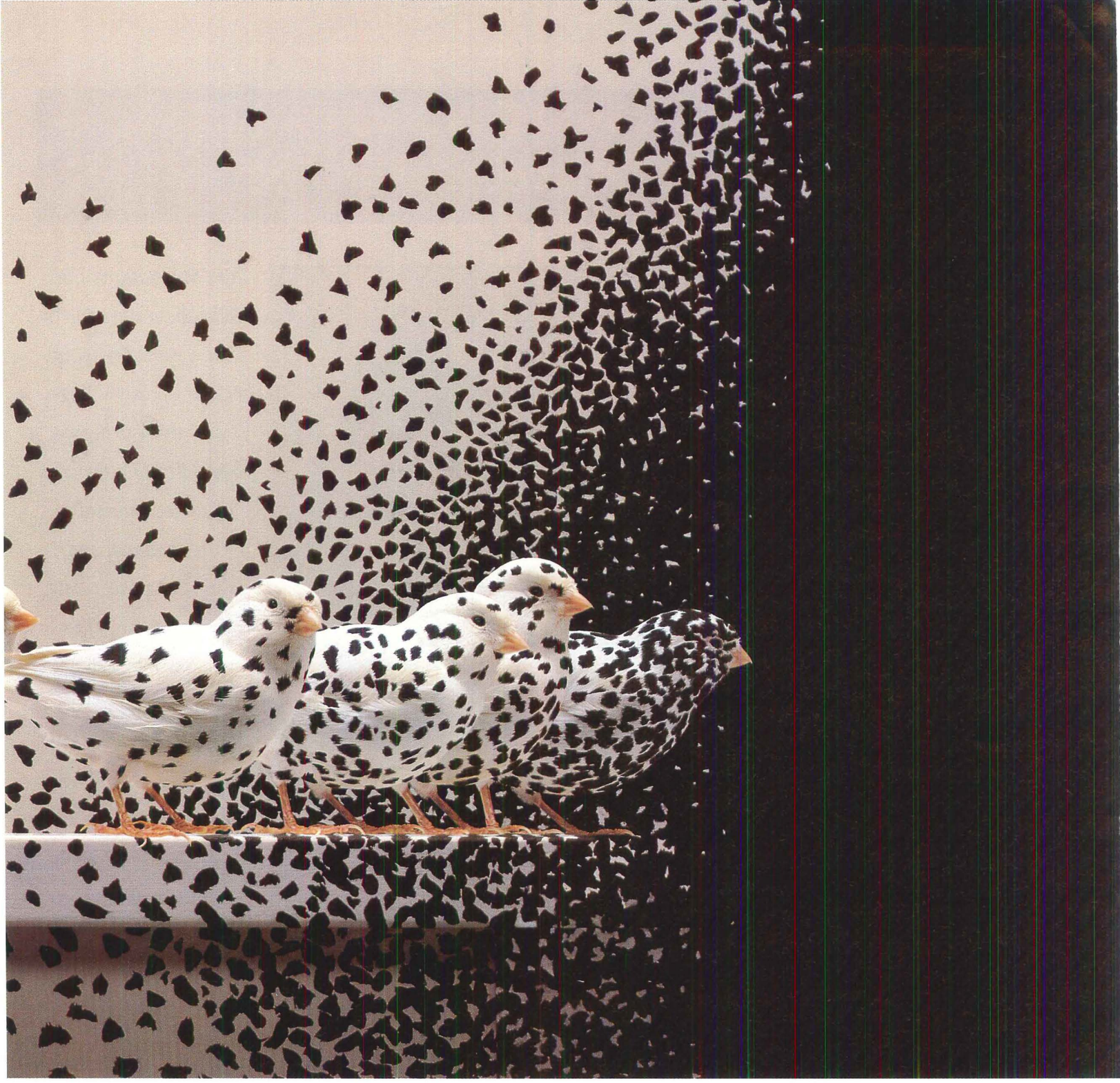

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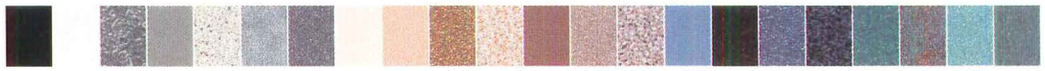

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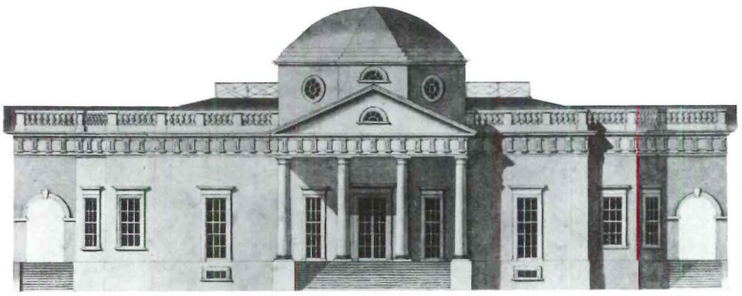
Cover: *Lawson-Westen House, Los Angeles, Eric Owen Moss Architects, (p. 68). Photo by Tom Bonner. Cover design by Kristin Reid.*

Progressive Architecture May 1993

P/A

Design

Editor in charge: John Morris Dixon



Architect's own house, Virginia, by Gold Medal winner Thomas Jefferson, p. 132.

Computer Focus

Practice

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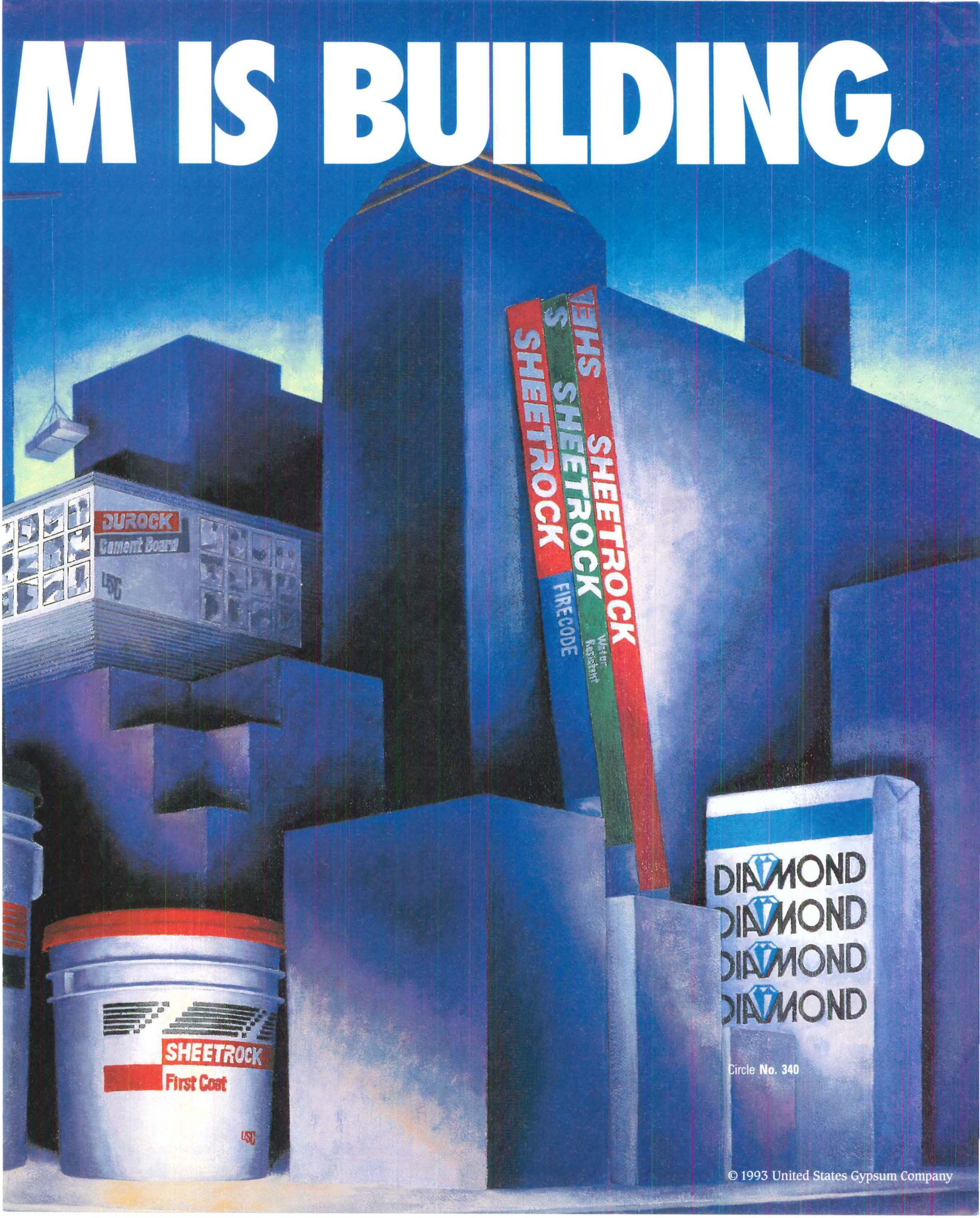
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Elegance and the elements . . .

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Now, reconsider the umbrella, as we have.

Stationary, ample, taking tables and chairs under its protective wing, offering comfort to the sunstruck or rain-chased, the umbrella as public amenity -- a grace note where a grace note is most needed -- requires the standards of fine architecture. And though we wouldn't be so foolish as to try making fundamental changes in something so quintessentially right, we don't mind pointing out some of the refinements that set our Skiá umbrella apart. A classic round finial, for instance. All wood and brass construction. And a separate wind vent hood that turns gusts into zephyrs. With penetrating wood stains, you can customize umbrellas in a proper post-modernist's mix-or-match style (this is *not* your father's umbrella!), and if none of the ten colors of double-stitched acrylic fabric we offer are quite right, just call and tell us about it. Even if you happen to be the Doge of Venice.

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Editorial | The Virtual Profession

When it comes to the delivery of services, the architectural profession may have something to teach the rest of the world.

A number of recent articles in the business press have speculated on the "virtual corporation" of the future. Unlike the large, hierarchical companies of today, virtual corporations would contain clusters of small, ad hoc teams of people, representing a variety of disciplines and even a variety of companies, who would come together to work on particular projects and then disband. The computer, with its ability to link people and data quickly and over long distances, would enable such corporations to operate. And at least two forces seem to be driving this trend: consumer demand for more customized goods and services, and a competitive need for more rapid product development.

To the architect, all of this talk has a familiar ring. Having long confronted the problem of producing customized buildings on rapid schedules, architectural firms, since at least the early part of this century, have operated as virtual corporations. Whether they be large firms organizing employees from various disciplines into project studios or small firms bringing together consultants of various sorts to work as a project team, architects probably have more experience running virtual corporations than any other single group.

This fact puts some peculiarities of the profession in a new light. It may be, for example, that architectural firms embraced computers rather late not because of insufficient capital or fear of the technology, as some have suggested, but because computers, in their early development, were not well suited to the small-scale, ad hoc nature of architectural practice. A virtual organization needs distributed networks of microcomputers, not a central main frame.

It may also be that architectural firms have, for the most part, remained small not because of inadequate management skills or an unwillingness to forsake their individuality, but because smallness allows the most rapid and flexible deployment of consultants to meet the demands of fast-paced, customized projects. Corporate clients would do well to start studying their architects' practices.

Not that the architectural community can rest assured with this thought. Although most firms operate as a virtual corporation, few have explored its real potential. For example, a virtual corporation could, at least in theory, make any product or offer any service, since it would bring together whatever skills and equipment are needed to get a particular job done. Much like today's conglomerates, which contain a number of often unrelated companies making a wide range of products, such corporations would have no fixed identity and would belong to no one industry.

In that context, architectural firms are virtual corporations in practice, but not in belief. Most still provide a fairly narrow range of design services leading to the construction or renovation of buildings. While there is nothing wrong with that, there is also no reason why firms must remain so limited. The architect who puts together teams of consultants to provide design services for particular clients could expand that same effort (as some firms now do) to include such things as facility and financial analyses at the front end of a project and the construction and facility management at the back end. Likewise, the architect who has ample experience forming interdisciplinary teams to produce buildings could use those same skills to create virtual corporations of all types, able to make any product or offer any service.

Some have argued that the time has not yet come for such virtual corporations, that fragmentation and specialization remain the dominant forces in our economy. Still, there is growing evidence that people want integrated solutions to their problems, rather than discrete goods and services available from many different sources. In the early years of the computer industry, for example, companies frustrated users with hardware and software incompatible with that of their competitors. That changed when the computer companies realized that they were in the business of helping people with their information needs, rather than in the business of selling products. Compatibility increased and the numbers of people using computers rose accordingly. Would the results be much different if architects offered clients integrated, single-source services, whether a market analysis, a site survey, a financial pro forma, a maintenance plan, an insurance review, a marketing strategy, or perhaps a building design, all handled by an interdisciplinary team, a virtual corporation?

I think the answer is not long in coming. But in the meantime, enjoy the irony of a profession, mired in a deep recession, with not enough work to go around, finding that the methods it has long taken for granted are just now being discovered by the business community as key to our collective future. Relish, for just a moment, the thought of being so far behind the rest of the world that we're ahead.

Thomas Fisher ■

design

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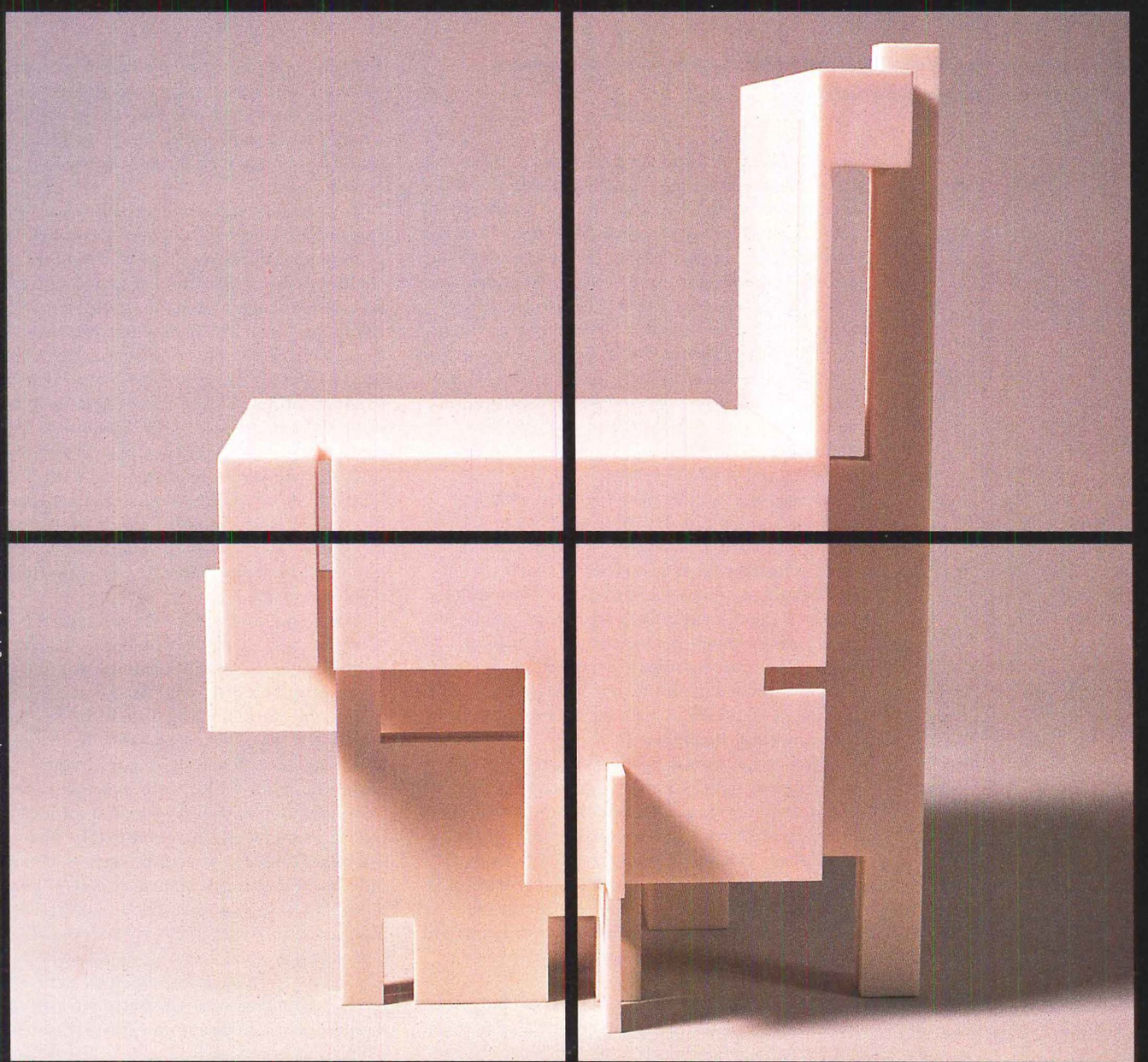

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Views

Sustainability

I very much enjoyed your current issue (March 1993) of P/A concerned with "Sustainable Design." I wish more issues of P/A would concern themselves with environmental design instead of what Serge Chermayeff used to call "Architectural Millinery." I am sorry you undermine "Green" architecture in your own editorial.

It's trivial – but significant I think – that P/A hasn't done much to reform its own environmentally wasteful practices. Certainly much of the magazine could be printed on recycled paper and sent in a brown paper wrapper (if any). Who are you kidding with the plastic bag wrapper marked "Recyclable Plastic"?

G. Mackenzie Gordon, AIA
Gordon & Gordon
Architecture & Landscape Design
Lakeville, CT

[The plastic we use is in fact recyclable, but we realize that few procedures are now in place for retrieval. –Editors]

Wal-Mart Green

Thank you for the story "Wal-Mart Goes Green for Kansas Store" in the News Report of my March P/A (p. 23). I have seen a few Wal-Mart stores in my travels. They are always in the outer reaches of suburbia, surrounded by acres of parking, miles away from any mass transit, urban core, or other place where people might be seen walking.

One aspect of the "Green Revolution" which assures that companies like Wal-Mart will use it as a public relations gimmick is that it is just economic good sense not to waste money on energy. Just get your customer to waste the energy driving to the store!

As Mark Alden Branch pointed out in the editorial essay, "The State of Sustainability" in the same issue, "... your car requires a massive industrial, political, and even military support system to keep it running." Perhaps if this support system were to be funded more directly through the sale of motor fuel, people would begin to understand the extent to which the "low prices" of such stores are really subsidies granted by all taxpayers to suburban and exurban businesses and residents.

Andreas von Foerster, AIA
Neskowin, OR

Credits: Hotel Auteur

Thank you very much for the critique on the Royalton and Paramount hotels in the February issue (p. 80) of *Progressive Architecture*. I thoroughly enjoyed reading what you had to say and, of course, it is a thrill for me to have my projects favorably reviewed by someone sensitive and knowledgeable about architecture.

However, I do wish to set the record straight about one fact in your article. Philippe Starck and Anda Andrei, together with a whole host of world-class talents, deserve the credit for designing and building Paramount. I have always prided myself on having the ability to work with very talented people and getting the best work from them.

One reason for this, I believe, is my desire to give credit where credit is due. Paul Haigh does not deserve any credit for the architectural design of the Paramount Lobby. That credit rightfully belongs to the people mentioned above. Mr. Haigh was the production architect. The public focus on Philippe Starck is justified because he deserves it, not because of some contrived public relations strategy.

In dealing with designers I am obliged to make sure credit is rightfully given. I have no ax to grind.

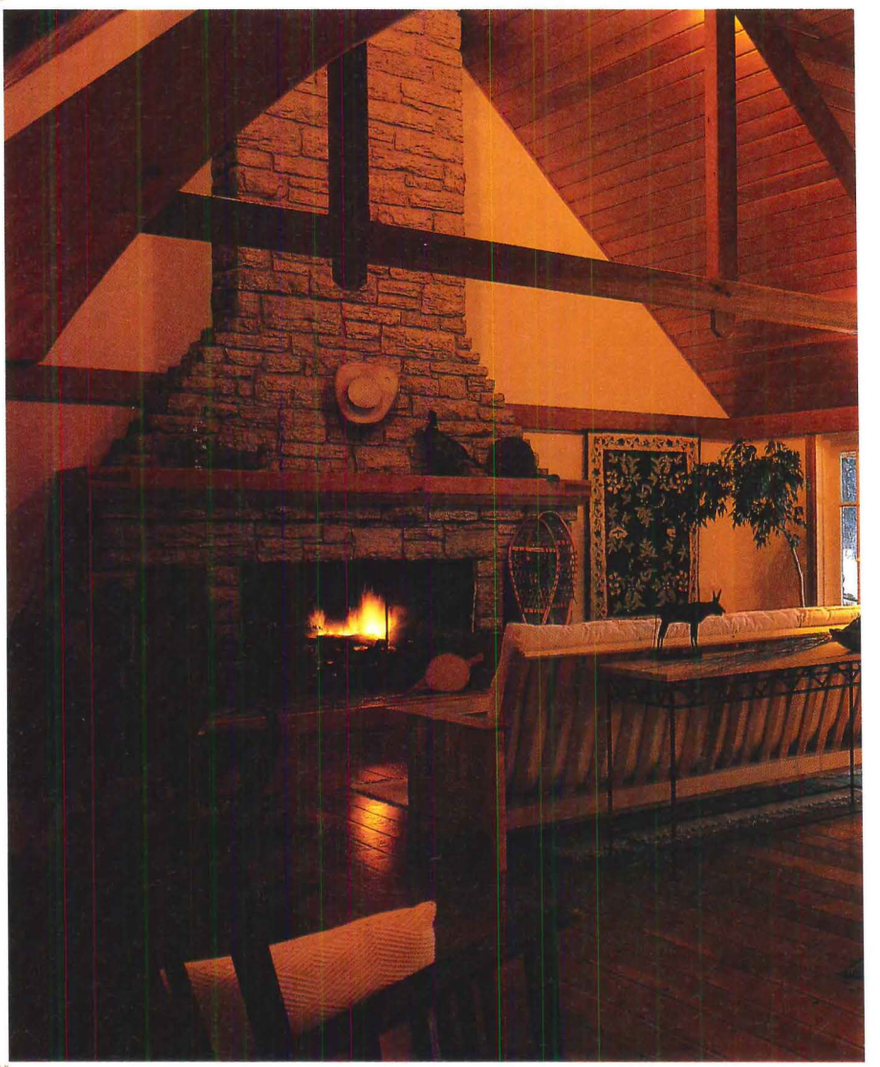
Ian Schrager
Morgan Hotel Group
New York

[For Paul Haigh's opinion, to which this letter responds, see P/A, Feb. 1993 , page 83.]

Pittsburgh Housing Credits

In the "New Urban Housing" Citation (P/A, January 1993, p. 68), the sponsor of the competition was the Community Design Center of Pittsburgh.

THE FIRST THING WE DID TO HELP REMODEL THIS OLD HUNTING LODGE WAS



This large, beautiful room is the centerpiece of what was once an exclusive hunting lodge. Built in 1930, the property was converted to a single family residence in the early Fifties. But 40 years of paint, plasterboard and paneling had all but hidden its original elegance.

So, when new owners began renovating it in 1991, they asked architect Katherine Cartrett of Mulfinger, Susanka and Mahady to recapture the original rustic charm of the place.

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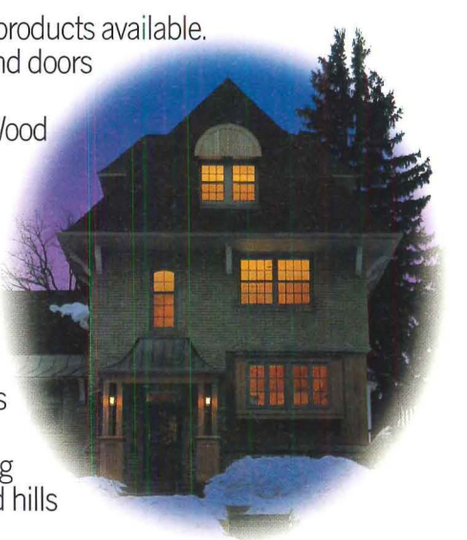
One by one, they inspected every opening in the home. Then the entire group sat down and planned the job out.

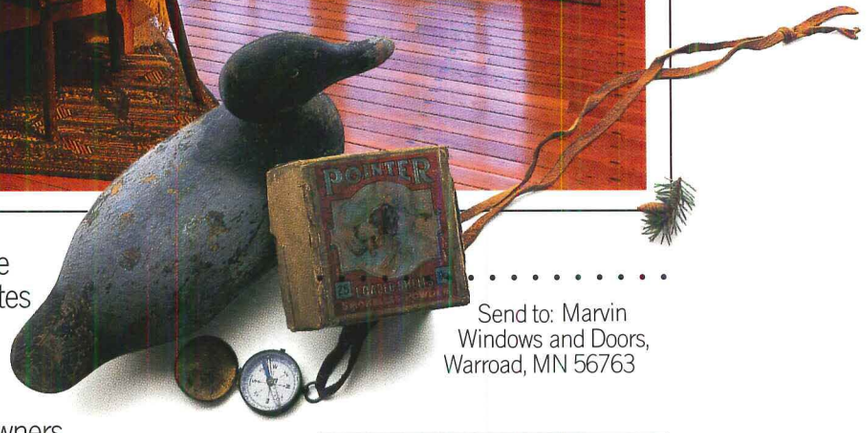
Sizes were discussed. So were shapes, styles, energy efficiency, maintenance and budgets.

By the end of the day, the plan called for a combination of new windows and replacement sash – 46 windows in all. There were eight sets of doors too.

The results of that meeting are pictured above. The Marvin Sliding French Doors add light and open the room to the panorama of woods and hills



START FIRING QUESTIONS.



beyond. And in keeping with the architectural style of the home, each door features custom divided lites and an exterior finish in a color mixed specifically for the project.

Today, this rustic home looks much like the hunting lodge it once was. And if you ask the owners, they'll tell you the key was tracking down the right window and door supplier in the first place.

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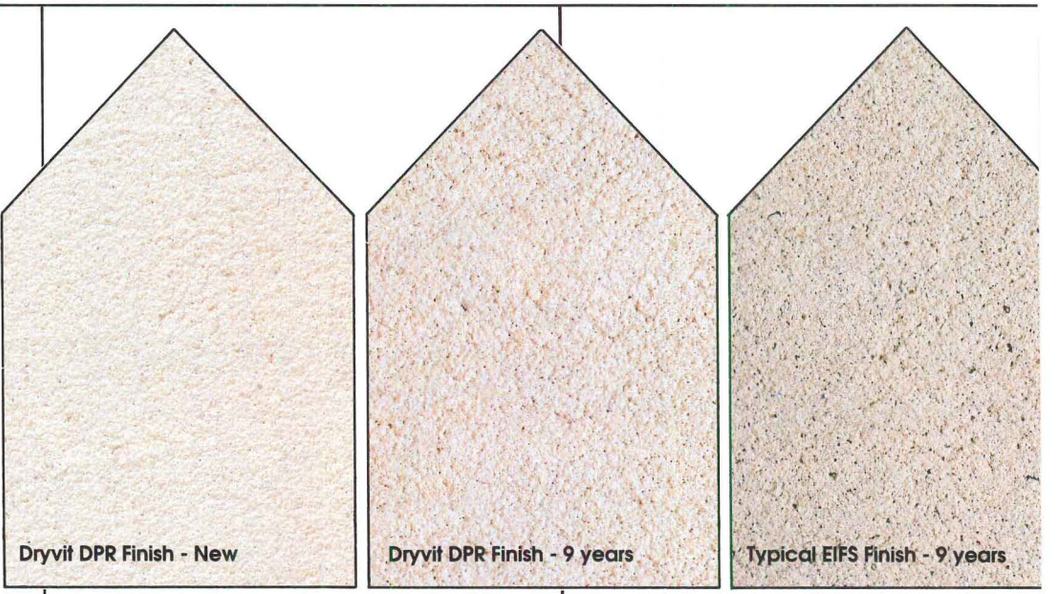

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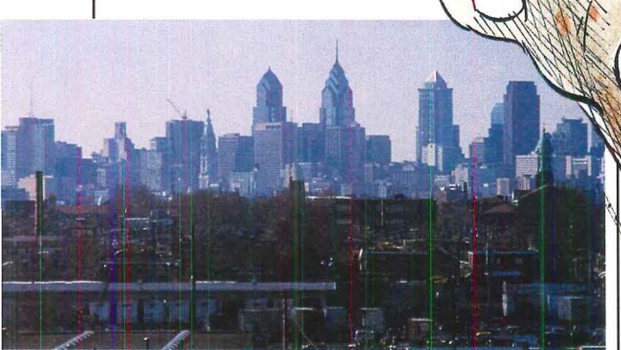

Test location: A major U.S. industrial area.

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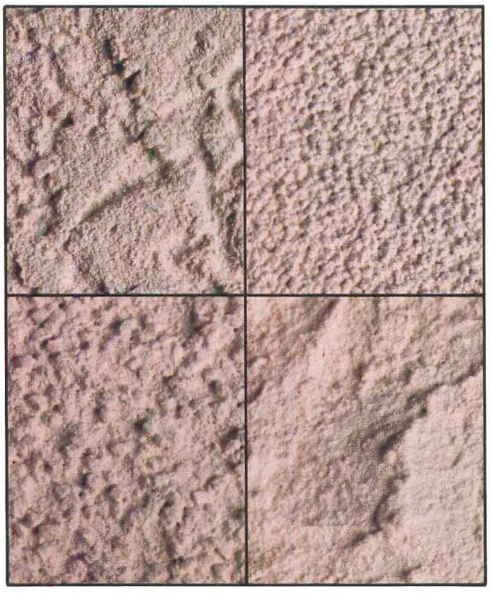

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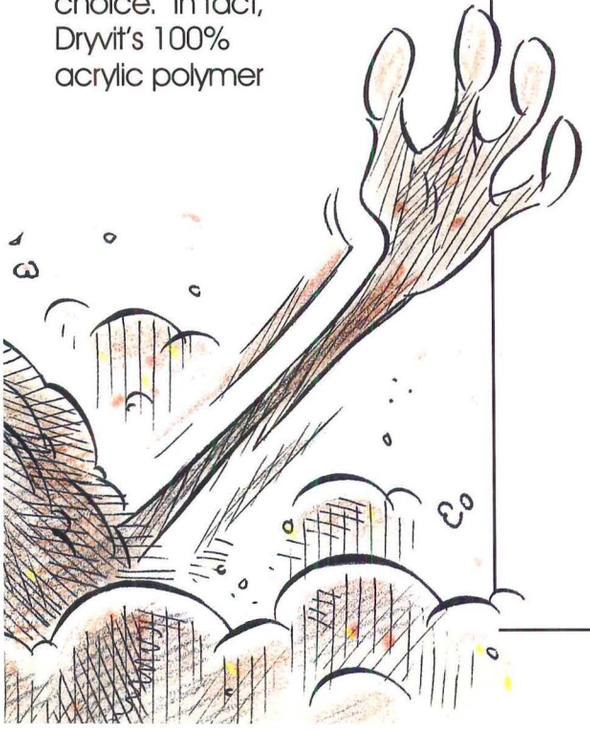

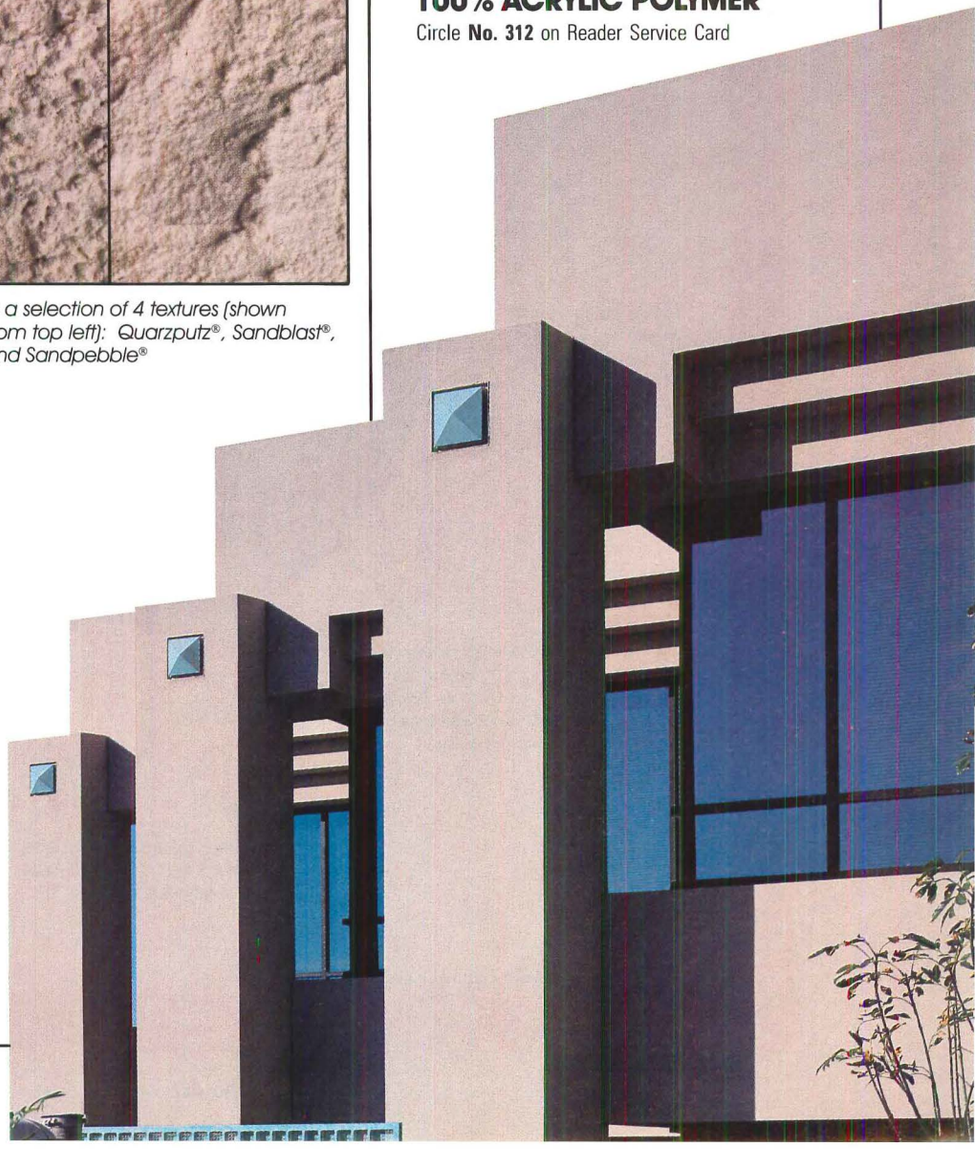

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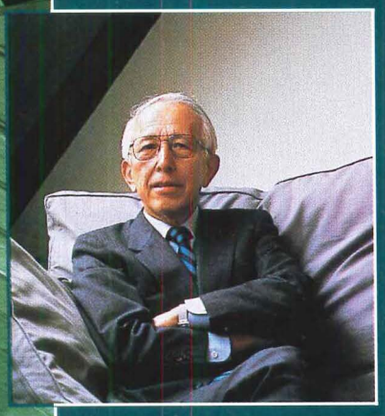


Maki & Associates

Fumihiko Maki and his Fujisawa Municipal Gymnasium.

Fumihiko Maki Wins Pritzker and UIA Prizes

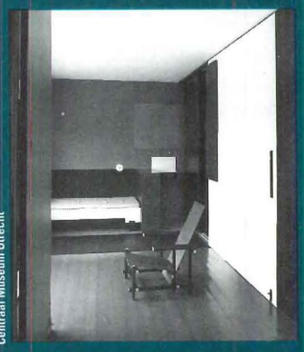
Fumihiko Maki of Tokyo has been named the 16th winner of the annual Pritzker Architecture Prize, which includes a $100,000 grant. Only a few weeks earlier, the Union Internationale des Architectes (UIA) announced that Maki would be the fourth recipient of the organization's Gold Medal, which is awarded every three years. He is scheduled to receive the Pritzker Prize in Prague on June 10, the UIA medal in Chicago on June 17.

Maki, 64, is the second Japanese architect to win the Pritzker, after Kenzo Tange, who received it in 1987. But Maki spent so many of his formative years in the United States that Americans, too, can take special pride in this award. After taking his B.Arch. in 1952 at Tokyo University, where he studied under Tange, Maki crossed the Pacific to earn master's degrees at both Cranbrook and Harvard (1953 and 1954). He then stayed on another 11 years, working for Skidmore, Owings & Merrill in New York and for Sert Jackson & Associates in Cambridge, teaching at Washington University in St. Louis and then at Harvard.

It was in St. Louis that Maki completed his first building, Washington U's Steinberg Hall art center; in 1958, he earned a P/A Awards citation for a chapel on the same campus, which was never realized. His second U.S. building, the Yerba Buena Gardens Visual Arts Center (P/A, Oct. 1989, p. 27), is only now nearing completion in San Francisco.

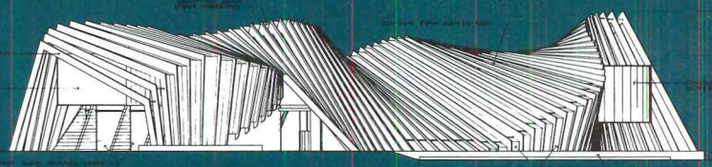
In 1960, while based mainly in the United States, Maki became one of the founding members of Japan's Metabolist group, which perceived buildings as mere parts of metropolitan-scaled complexes, and he is said to have coined the term "megastructure" for one of its visionary precepts. After he returned to Japan in 1965 to start his own prac-

5.93 News Report



Centraal Museum Utrecht

P.19 A Dutch retrospective traces the career of Gerrit Rietveld. (Left: Schröder House, 1924.)



P.24 "A-Frame on an Acid Trip:" the Hight House (above) is one of six works by Bart Prince in Projects.

Pencil Points

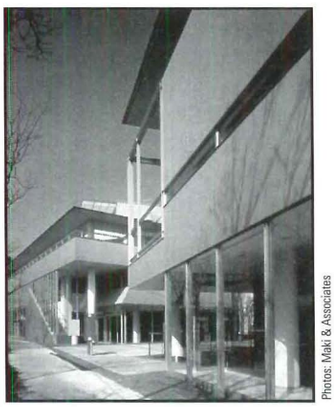
The American Academy in Rome has announced the winners of the 97th annual Rome Prize Competition; among them are Kevin Walz of New York, for interior design, and Sanda D. Iliescu of the University of North Carolina, for architecture. Rome Prize winners receive a stipend, travel benefits, and living and working accommodations in Rome for a term of six months to two years.

Richard Stacy of Tanner Leddy Maytum Stacy, San Francisco, is the sole American among the 20 finalists named by the Andrea Palladio International Architectural Prize jury. The prize, open to architects and designers under 40 years of age, has been awarded biennially since 1989. The winner, to be announced on October 1, receives 70 million lira ($42,000).

Education Through Architecture (Educare), a nonprofit organization established to increase public understanding of architecture, has announced the publication of a new newsletter. *Architectural Journeys* will provide information on architectural tours, travel programs, and guide books. Contact Jorge Espinel, *Architectural Journeys*, 555 N.E. 15th St., Ste. 16F, Miami, FL 33132.

The Mississippi State University School of Architecture recently announced that it will require second-year students to buy laptop computers for use in all their studies, including design studio. The school's library has been outfitted with "docking stations" so that students can have access to computer networks around the world.

A national ideas competition to design a center for civic activity in Blacksburg, Virginia, has been won by Shannon Taylor Scarlett and Timothy Scarlett of Boston (open category) and Joann Im, a graduate student at Virginia Tech's College of Architecture in Blacksburg (restricted category).



Photos: Maki & Associates

Maki's Tokyo Metropolitan Gymnasium (left) and Hillside Terrace complex (right).

tice, however, his buildings had little of the repetitive, superscaled character associated with that movement.

In 1969, he built the first phases of the Hillside Terrace in Tokyo, a lowrise, mixed-use contextual development that expanded in subtly evolving stages right up into the 1990s. Maki's firm grew to about 35 people – as large as he wants it to be – and often collaborates with one of Japan's huge design-build firms when greater forces are needed. Best known among Maki & Associates' many works are his guest house for the YKK company (P/A, May 1983, p. 142), his Fujisawa Municipal Gymnasium (P/A, June 1985, p. 71), his Museum of Modern Art in Kyoto (1986), his Spiral mixed-use building in Tokyo (P/A, April 1986, p. 87), his "Makuhari Messe" Convention Center near Tokyo (P/A, Aug. 1990, p. 74) and his Tokyo Metropolitan Gymnasium (P/A, Aug. 1990, p. 82).

Maki has continued to teach, with a decade-long professorship at Tokyo University and visiting critic stints at Berkeley, UCLA, Columbia, and Harvard. As a juror, he has been especially active in recent years, serving on the P/A Awards jury in 1987, the Aga Khan Award master jury in 1986 and 1992, and the Pritzker Prize jury from 1985 to 1987, and several major international design competition juries. His own previous honors include the Thomas Jefferson Medal, the Wolf Prize, the Reynolds Memorial Award, and Honorary Fellowship in the AIA.

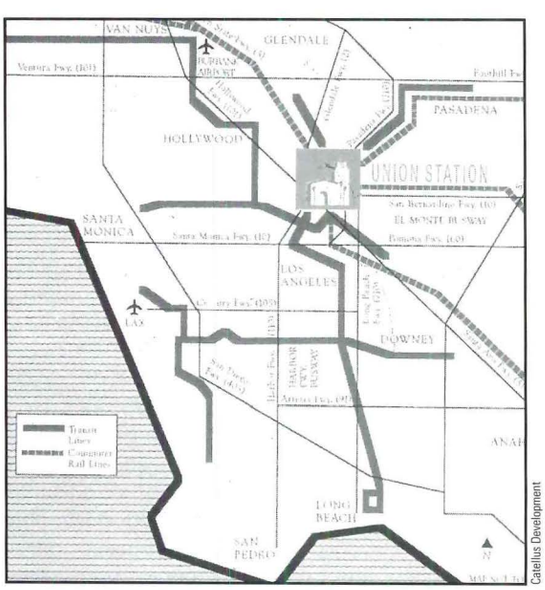
His impressive accomplishments aside, Maki's acquaintances around the world are likely to greet this news with a "couldn't happen to a nicer guy" reaction. For Maki is as kind, courteous, and conscientious as he is creative and incisive – somehow combining the qualities of an oriental monk with those of an international cultural force.

The jury for this year's Pritzker Prize was chaired by J. Carter Brown, director emeritus of the National Gallery in Washington, and included Giovanni Agnelli, chairman of Fiat; architect Charles Correa of Bombay; architect Frank Gehry of Los Angeles; critic Ada Louise Huxtable of New York; architect Ricardo Legorreta of Mexico City; editor Toshio Nakamura of A+U, Tokyo; and Lord Rothschild, chairman of the National Gallery, London. The UIA Gold Medal selection was made by a jury composed of seven UIA officers, including outgoing president Rod Hackney of London and first vice president Donald J. Hackl of Chicago. **John Morris Dixon** ■

L.A. Subway: Only the Beginning

The January opening of a 4.1-mile, $1.5-billion stretch of subway in Los Angeles might seem anticlimactic to some observers, particularly Easterners long accustomed to rail transit. And indeed, the western end of the Red Line is MacArthur Park, an area within an easy bus ride of downtown, prompting some cynics to say that the subway goes "from nowhere to nowhere." The real significance of the Red Line, however, lies in its promise to recreate a rail system in a region that has largely lacked rail transportation since the 1960s.

While the Red Line is already the second phase of the new commuter rail system to be completed, it is the first underground portion. (The above-ground Blue Line was completed in 1990 – see P/A, Oct. 1990, p. 22.) Los Angeles residents seem much more interested in subways, presumably because they are perceived to be less destructive of property values; consequently, above-ground routes remain controversial. Residents of the San Fernando Valley,



Catellus Development

L.A.'s transit plan: dotted lines are commuter rail routes.

the northern half of Los Angeles, voted in an advisory election to locate a portion of the Metro Rail underground, rather than use an existing, above-ground right-of-way.

The new subway connects with the Long Beach-Los Angeles Blue Line, as well as routes to the suburban whistle-stops in the north, northwest, and east that have recently been activated by the Los Angeles County Transportation Commission. Next year, the nascent network will be joined by the Green Line, which takes an east-west route between Los Angeles International Airport and Norwalk.

If nothing else, Metro Rail is creating a bountiful source of new work for architects in an otherwise listless economy. L.A.'s transportation commissioner is preparing to develop an undetermined number of stations throughout the rail system in joint development agreements with private developers. The Los Angeles office of Kaplan McLaughlin Diaz has fashioned a master plan for the MacArthur Park station that includes two levels of retail, two large pedestrian plazas, and even housing. Rail authorities are busy commissioning feasibility studies for rail stations in Hollywood, an effort that is intended to dovetail with that area's ongoing redevelopment efforts.

Perhaps the most dramatic example of rail-stimulated development is in Union Station, a 1939 structure that was recently renovated by Catellus Development Corp., which is also building a 500,000-square foot office building for the Regional Transit District, the local bus authority, immediately behind the train station. Developers envision an 11-million-square-foot office district springing up around the station, which is a mile east of L.A.'s existing financial district. The ten-acre master plan was prepared by Ehrenkrantz & Eckstut.

With at least eight million square feet of vacant office space in downtown Los Angeles, those plans appear visionary indeed. But there is no question that rail will eventually replace freeways as the rationale for new development in the Los Angeles area. **Morris Newman** ■

Rietveld Exhibition in the Netherlands

"Gerrit Rietveld 1888–1964," a retrospective exhibit organized by the Centraal Museum in Utrecht and the Netherlands Architectural Institute, presents the first overview of the work of the architect and designer whose name is generally associated with two canonical pieces of the De Stijl movement: the Red-Blue chair (1918) and the Schröder House (1924). The exhibition's backbone is a display of 60 original pieces of furniture arranged on glass plates over pages from the exhibition catalog. The 250 architectural and design sketches and 85 photos, framed in neutral cardboard panels, are chronologically presented and further structured by themes such as "Space," "Color," "Core," and others. Scale models complement the drawings, and one complete interior, the 1926-designed bedroom of the Harrestein-Schrader House, expressively demonstrates Rietveld's sense of space. The exhibit also includes the work of contemporaries from the De Stijl period.

The connection between the development of Rietveld's furniture and his architecture becomes apparent when the work is arranged chronologically. Evident is his preoccupation with standardization and mass production. After 1925, his work moved away from the elementalism of De Stijl, tending towards the International Functionalism movement.

Ernst Moritz/Centraal Museum/Utrecht

Rietveld furniture displayed atop exhibition catalog pages.

(Rietveld himself was one of the founding members of CIAM as the Dutch representative.) In his post-World War II work, Rietveld preserved the purity of the "heroic period" of Dutch architecture while simultaneously introducing the possibilities of new technology; curved planes replace the seats and backs of his chairs and the architecture poetically mirrors the technological innovations.

The exhibit will travel to the Centre Pompidou in Paris from June 23 to September 27. **Kelly Shannon** ■

The author is currently pursuing a Master of Architecture degree at the Berlage Institute in Amsterdam.

Ideas Floated for San Francisco's Embarcadero

From China Basin on the south to Fisherman's Wharf on the north, the stretch of San Francisco waterfront once occupied by the Embarcadero Freeway is a large and diverse area, perhaps too large and diverse to accept a unified vision. Questions and problems abound, but so do opportunities. Since the 1989 Loma Prieta earthquake struck a mortal blow to the freeway, leading to its demolition last year, debate has been growing over what the future of the waterfront should be.

In order to spur that debate, a coalition of local groups led by architecture think tank CfCA/2AES (Center for Critical Architecture/Art and Architecture Exhibition Space) last fall issued a "Call for Vision," an international ideas competition. Over 200 entrants heeded the call and shared their vision. Of these, some 80 schemes, including five first place winners and three citation recipients, were on public view during March and April at two prominent waterfront locations – Fort Mason Center and the

(continued on next page)

AIA Announces Institute Honors, Honorary Fellows

At its convention in Chicago next month, the AIA will award Institute Honors to 10 recipients – including a P/A correspondent – and will invest 13 foreign architects as honorary fellows.

Institute Honors are awarded to nonarchitects and to organizations "for significant contributions to the environment and the architectural profession." The jury was chaired this year by Denise Scott Brown, Philadelphia. Recipients are:

- **Architects/Designers/Planners for Social Responsibility (ADPSR) for "flying the banner of social concern;"**
- **filmmaker Michael Blackwood, New York, for his documentaries on architects and architecture;**
- **The Conservation Trust of Puerto Rico, San Juan, for its efforts to buy and restore landmarks on the island;**
- **Benjamin Forgey, architecture critic of the *Washington Post*;**
- **The Gamble House, Pasadena, California, for the work in research, preservation, and public education that has originated at the Greene & Greene house museum;**
- **The Philadelphia Zoological Society, for its 14-year effort to transform itself into a "world-class environment for people, animals, and other living species;"**
- **Princeton University Board of Trustees, Officers, and Office of Physical Planning, for commissioning works by important architects toward "the creation of architecture at an extremely high level;"**
- **designer Jane Thompson, Cambridge, Massachusetts, for her work at Benjamin Thompson & Associates and for "the enhancement of cities and public environments nationwide;"**
- **P/A correspondent and author Sally Woodbridge, Berkeley, California, for "helping the world recognize the important work on the West Coast";**

(continued on next page)

AIA Honors.
(continued from previous page)

- **The World Monuments Fund, New York, for its role as the "last resort for preservation of . . . the world's most treasured architecture."**

Honorary fellowships are awarded to foreign architects selected by the AIA Board of Directors. Those chosen are:

- **Oriol Bohigas, principal of MBM Arquitectos, Barcelona, and a leading planner of the facilities for the 1992 Olympic Games;**
- **Cesar X. Flores, president of the Federación de Colegios de Arquitectos de la Republica Mexicana, Mexico City;**
- **Jaime Lerner, mayor of Curatiba, Brazil, for his "creative urban design approaches;"**
- **Olufemi Majekodunmi, Lagos, Nigeria, president of the International Union of Architects (UIA) and a founder of the Africa Union of Architects;**
- **M. Peter Malefane, principal of Multidimensional Associates/Architects & Interior Designers, Johannesburg, who was once "the profession's only black leader in opposing apartheid;"**
- **J. Rafael Moneo, Madrid, architect and former chair man of architecture at the Harvard Graduate School of Design;**
- **Jean Nouvel, principal of Jean Nouvel, Emmanuel Cattani & Associés, Paris;**
- **Carl J.A. Nyren, principal of Nyrens Arkitektontor, Stockholm;**
- **Philippe Robert, partner in Reichen & Robert, Paris;**
- **Witold Rybczynski, architect, author, and professor at McGill University, Montreal;**
- **Minoru Takeyama, architect and chairman of architecture at Musashino Art University, Tokyo;**
- **Gino Valle, principal of Studio Valle Architetti Associati, Udine, Italy;**
- **Roy W. Willwerth, president of the Royal Architectural Institute of Canada.**

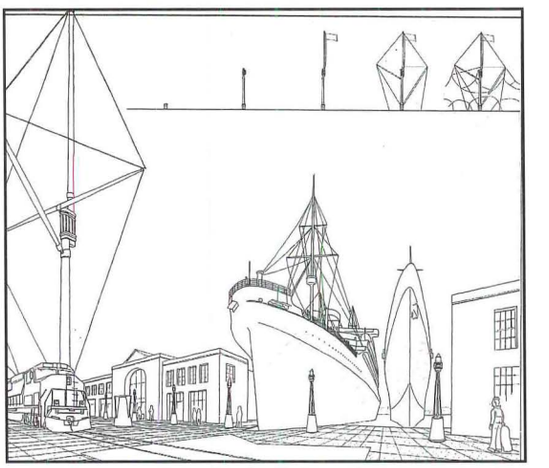
Embarcadero *(continued from previous page)*
Ferry Building. A series of public forums held in late March gave the public a chance to register reactions to issues raised by the competition.

Jurors were: author Harold Gilliam, landscape architect Mary Margaret Jones, environmental artist Mary Miss, and architects Alan Colquhoun, Fumihiko Maki, James Stewart Polshek, Stanley Saitowitz, and Jorge Silvetti.

First prize winners – each receiving $10,000 – were Evans Heintges Architects, New York; Keith G. Moskow, Architect, Boston; Jill Stoner, Architect, and Charles Duncan, Architect, of Bolinas, California; N.o (sic) Architecture, San Francisco; and Mark Topetcher Architect, San Francisco. Citations were awarded to Lisa J. Mulliken & Kevin A. Stevens, Ruston, Louisiana; Schwetye Luchini Architects and the Urban Research and Design Center, Washington University, St. Louis; and Francis Soler, Architecte, Paris.

The winning schemes propose flexible, open-ended development strategies that favor process over specific architectural solutions. Keith Moskow takes the finger pier concept, couples it with a linear waterfront park, and proposes a repeatable development pattern. In an effort to revive at least the image of shipping (albeit a static sanitized facsimile of a working port), Evan Heintges's Post-Industrial Port populates the existing pier infrastructure with decommissioned ships brought out of mothballs. For these two visions, waterfront uses are left flexible, whereas N.o Architects proposes that use become infrastructure: a matrix of five annual cultural and sporting events is proposed to link existing elements of the city with proposed facilities at the waterfront. Mark Topechter envisions a series of eight public squares, each with its own identity, around which development would cluster.

Jill Stoner's Bay Farms proposal is a blend of formal, ecological, and economic concerns. The Embarcadero right-of-way becomes the Grand Canal, complete with vaporettos and pedestrian bridges. Defying the fog, wind, and salt air, Stoner also proposes that working, floating farms on barges be docked at the piers for the production of food. (The wind generators that are also a part of this proposal may be better suited to this bayfront setting.)



Evan Heintges scheme for the Embarcadero.

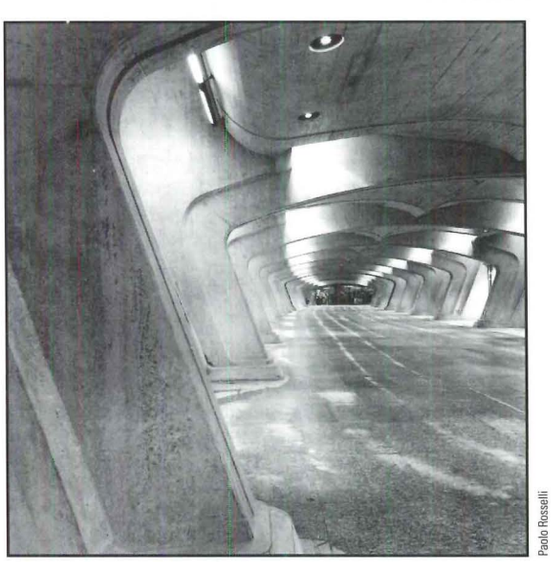
The minimal approach proposed in a nonwinning submission by Joran Schapp and Vangelis Lykos Architects of Amsterdam seemed to underscore the competition's interest in diverse solutions: "An urban task of this size is not asking for an overall plan. It is about the conditions on which free development can prosper .... Voids are a necessity for the modern metropolis. They contain the promise for the future." **Kyle Thayer** ■

The author, an architect living in Marin County, writes frequently about architecture.

Nine Calatrava Projects at MoMA

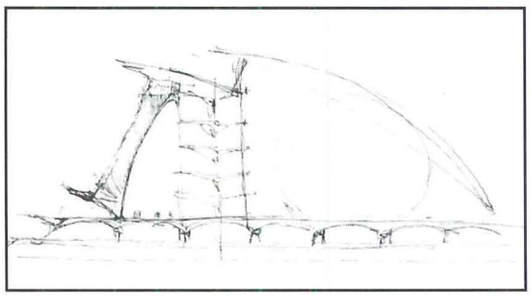
Some architects consider a generic structural solution the optimal one. Santiago Calatrava, the Spanish architect and engineer, works in the opposite direction: he accentuates the exceptional in his buildings and bridges, whether it be the site conditions he's given or his bravura in steel or reinforced concrete. In his best work, structure and form are integral, designed with an organic sensibility equally expressionist and rational.

Nine projects from Calatrava's ten years in practice are on display at the Museum of Modern Art in New York until May 18th. Curated by Matilda McQuaid, the show is testimony of the architect's enviable maturity, matched by few others in their early forties. Most of his buildings, like his bridges, are show pieces, distinct from the city fabric that surrounds them. But such organic nature can be surprisingly efficient as urban infill: the Stadelhofen Railway Station in Zurich (1983–1985), for example, traces the line of long-gone fortifications and provides a new tier on the sloped edge of a city park. Calatrava's preliminary sketches reveal his sense for pattern, both large- and small-scaled. But his drawings aren't doodles for filigree: many of the sketches are well-informed sections with annotations for structural loads.



Paolo Rosselli

Calatrava's Stadelhofen Railway Station in Zurich.



Sketch for Calatrava's Science Museum in Valencia.

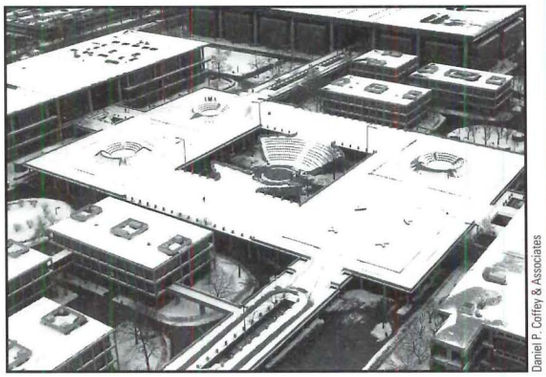
If you've sensed animal references in Calatrava's work, your intuitions are on the mark: sketches for a Science Museum in Valencia, Spain, show that he's not averse to translating an image from nature (a bull in this case) into a building with sinews of steel. The Science Museum is dominated by an array of branched columns and trusses, the most articulated structure on display. Is it more than enough? Perhaps. But it is structurally lucid, and lyrical as well. Few others make the bones of a building so delightful to behold. **Philip Arcidi** ■

Renovation for Brutalist Chicago Campus

Rumors still circulate saying the University of Illinois-Chicago campus was designed as a psychological experiment to see how much students could take before they would crack. That many continue to believe that tale and other similar ones cannot be written off entirely to gullibility. The megastructure campus, designed in the early 1960s by Skidmore, Owings & Merrill in Chicago, is a wholly conceived exercise in Brutalism that has fully lived up to the term.

Now 30 years after the UI-C campus was first planned, efforts to humanize it are under way in a $7-million renovation of the campus core, financed by the State of Illinois and designed by Chicago architects Daniel P. Coffey & Associates.

The new plan calls for selectively dismantling a construction at the center of the campus composed of six lecture halls united under one mammoth flat-top roof with an open-air courtyard amphitheater in the center. Coffey plans to remove the connecting roof, leaving the lecture halls as symmetrical free-standing buildings encircling a more conventionally collegiate quadrangle. The two-story walkways leading to the forum – which always leaked on the lower level – will be demolished, leaving simple sidewalks following the old circulation pattern.



Daniel P. Coffey & Associates

Central building at UIC, to be "debrutalized."

The four principal lecture hall structures will anchor the corners and will look like Modern buildings, with glass curtain walls enclosing them and encircling colonnades. Demolition begins in June, with completion scheduled for 1995.

Coffey's reasonable solution makes the best of a bad situation. Sadly, it can do little more than soften the edges of a very harsh environment. **Cheryl Kent** ■

Conference Spotlights Revived Social Activism

Like a phoenix, the issue of architecture and social responsibility has risen from the ashes of the "Me Generation." But this bird is somewhat different from the one that rose in the 1960s, as was evident at a conference on the subject at Polytechnic University in Brooklyn on March 20th, sponsored by Pratt Institute and Architects, Designers, and Planners for Social Responsibility.

Social activists have retained from the 1960s their antiestablishment stance; the four sessions at the conference, for example, were titled "Challenging Power Relations," "Challenging Eurocentrism," Challenging Aesthetics," and "Challenging the Design Studio." Indeed, the Left has been out of power for so long that criticism of the "dominant culture" has been honed to a fine art, as Thomas Dutton, of Miami University of Ohio, displayed in rapid-fire barbs at recent architecture in his keynote address. Activists also have retained the worthy goal of empowering building users, the poor, and various minorities.

What has changed is the emphasis. Gone is the rather naïve 1960s belief in a universal harmony attainable in some future state of nature. Now the talk is about cultural difference and the plurality of identities. This has the distinct advantage of offering a positive way of going, as Dutton said, "beyond the cynicism and despair of Post-Modernism."

But there are difficulties in so fragmenting the world in which architecture must operate. How does one design a public building in Brooklyn, for example, that adequately speaks to that borough's multiethnic composition? Indeed, one wishes the conference had addressed such difficult questions more directly. There was much discussion about what is wrong with architecture and culture, but very little said about what a new, more socially responsible architecture would be like.

It is amazing, really, that social activism in this profession has managed to stay alive over the last 20 years. But, with the change in the political winds in Washington, the time has come for social activists to leave behind the well-worded criticisms and to begin to grapple with the more difficult task of making socially responsible architecture. Otherwise, this long-awaited phoenix may not get off the ground. **Thomas Fisher** ■

Obituaries

Benjamin Baldwin

Architect and interior designer Benjamin Baldwin died on April 4 of heart complications after a long illness. Baldwin, who was 80 years old, was an important interior designer in the Modern movement. He was a graduate of Princeton University, with a B.A. in Architecture. After practicing in his native Montgomery, Alabama, and in Chicago, he settled in New York in 1963. In addition to the interiors, furniture, and textiles he designed on his own, he collaborated with architects such as I.M Pei, Louis Kahn, and Edward Larrabee Barnes.

Alfred M. Butts

Alfred M. Butts, who was better known as the creator of the board game Scrabble than as an architect, died on April 4 at the age of 93. Butts, who received an architecture degree from the University of Pennsylvania in 1924, invented the game while unemployed during the Depression. It finally attracted marketing interest in 1952, and sales have since approached 100 million games. Butts's architectural works include the Charles W. Berry housing project in Staten Island, New York, and a library in Stanfordville, New York.

Robin Evans

Robin Evans, a Visiting Professor at the Harvard Graduate School of Design, died suddenly on February 19 at the age of 48. Evans, who held a diploma in architecture from the Architectural Association in London, was known for his writings on architectural theory and history, which appeared in such journals as *Lotus*, *Casabella*, *Architectural Design*, and *AA Files*. His books include *The Fabrication of Virtue: English Prison Architecture 1750–1840*, and the forthcoming *Architecture and Its Three Geometries*. Evans divided his academic year between Harvard and the University of Westminster, where he was a Senior Lecturer.

Projects

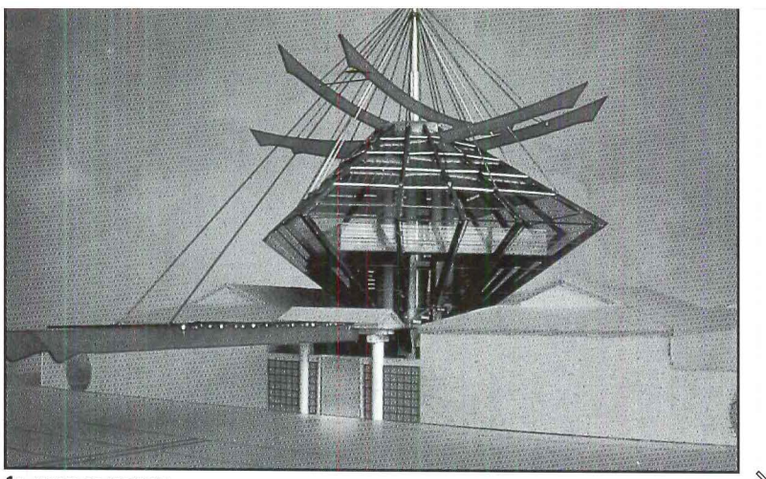
Bart's Art

The buildings of Bart Prince are often the architectural equivalents of a Rorschach test. What one sees depends on past experiences. But Prince's early apprenticeship with Bruce Goff, the late founder of the American Organic School, left an indelible mark on his work even 20 years later, as evidenced in these current projects.

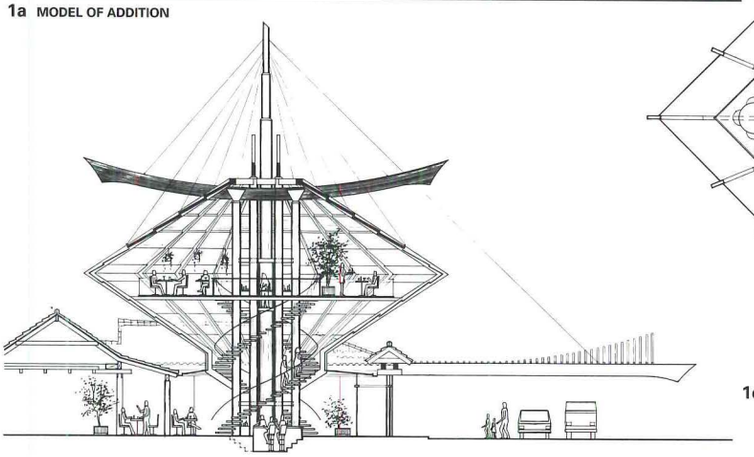
For the expansion of the New Chinatown Restaurant (1) in Albuquerque, New Mexico (where Prince is based), the architect fulfilled the client's request that the building be its own advertisement. The addition rises above the existing restaurant in the form of a Chinese lantern (1a), with a dining room reached by a double helix of spiral stairs. The dining room's steel structure of V-shaped members hangs from eight central columns, with guy-wires for added stability. The glulam beams at the building's top (1b) are reminiscent of a device that Prince employed in his completion of Goff's Shin'en-Kan Pavilion of Japanese Art at the Los Angeles County Museum of Art.

Another project in Albuquerque – a tower residence (2) with views of a nearby valley and distant mountains – has kitchen, living, and bedroom spaces in its trunk, while living areas and outdoor decks are found in the house's "cradle" form at the top (2a). The entry level has a small pool at its center, with circulation via a spiral stair extending up the core of the house.

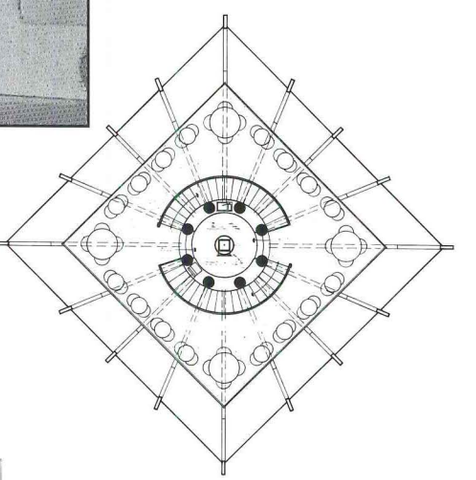
The tower's structure is a combination of glulam and steel. The cradle is supported by a sweeping, curved glulam



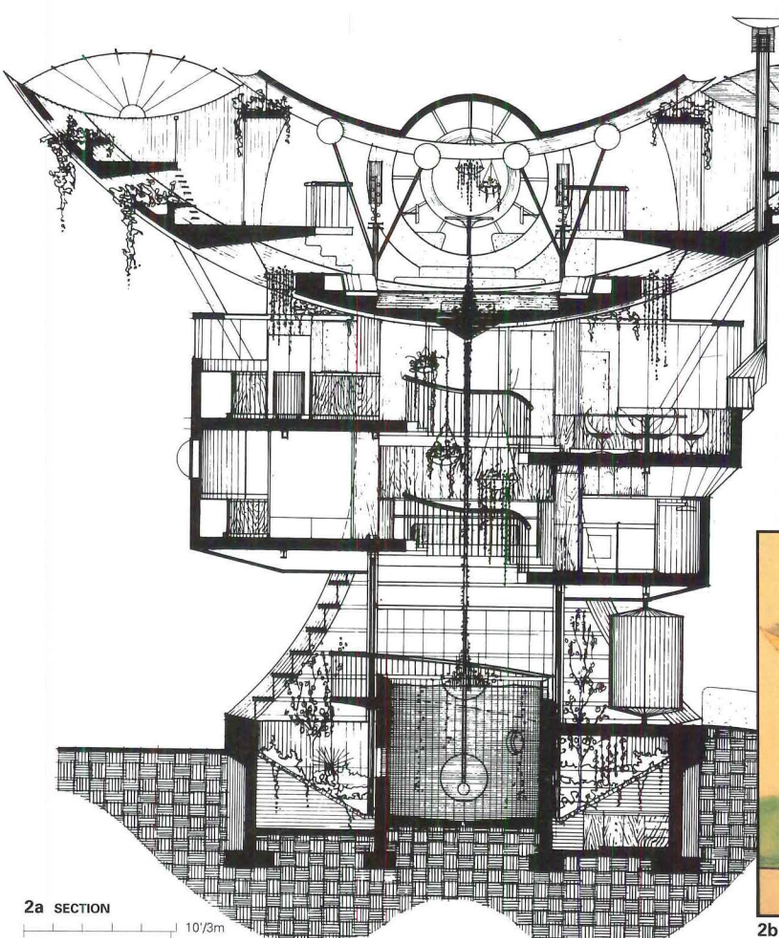
1a MODEL OF ADDITION



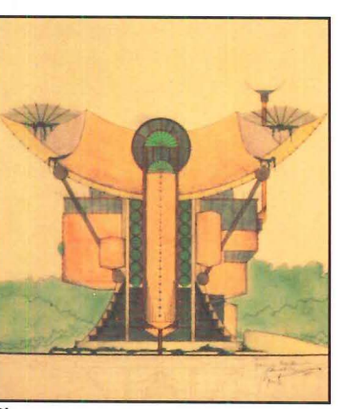
1b SECTION 20'/6m



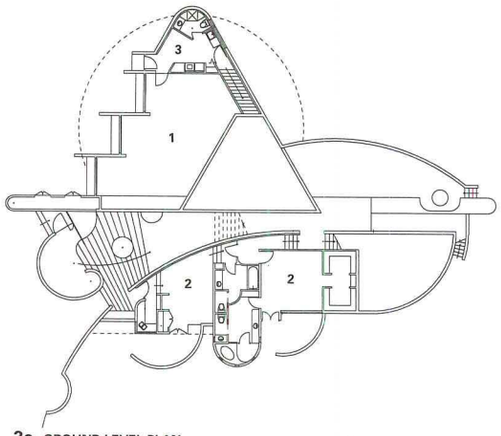
1c DINING LEVEL 20'/6m



2a SECTION 10'/3m

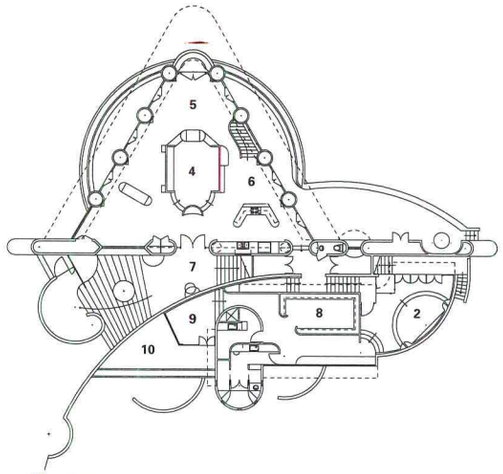


2b NORTHEAST ELEVATION



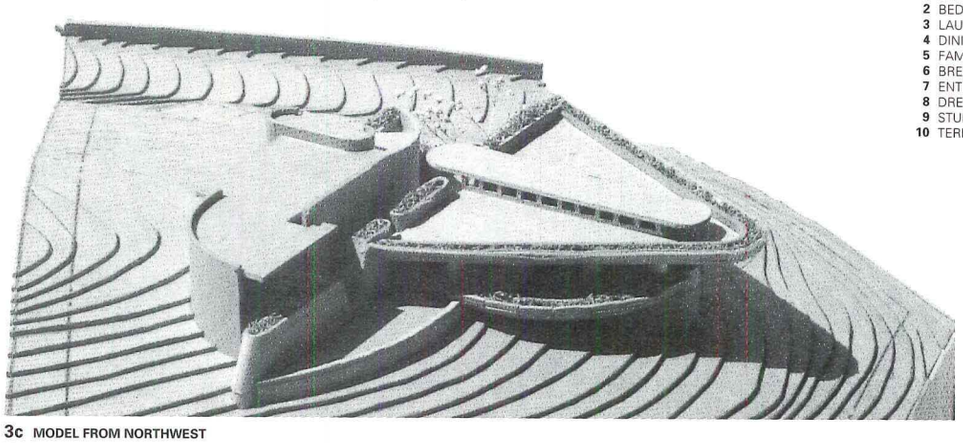
3a GROUND LEVEL PLAN

N 20'/6m

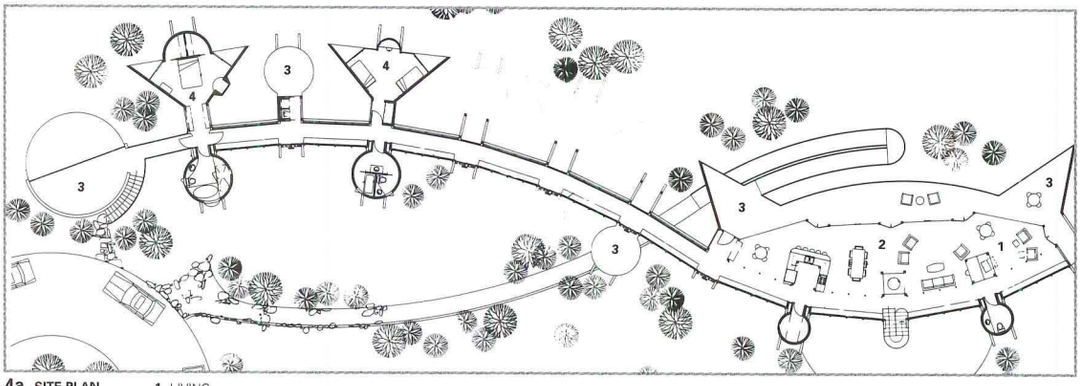


3b MAIN LEVEL PLAN

1 GARAGE
2 BEDROOM
3 LAUNDRY
4 DINING
5 FAMILY
6 BREAKFAST
7 ENTRY
8 DRESSING
9 STUDY
10 TERRACE



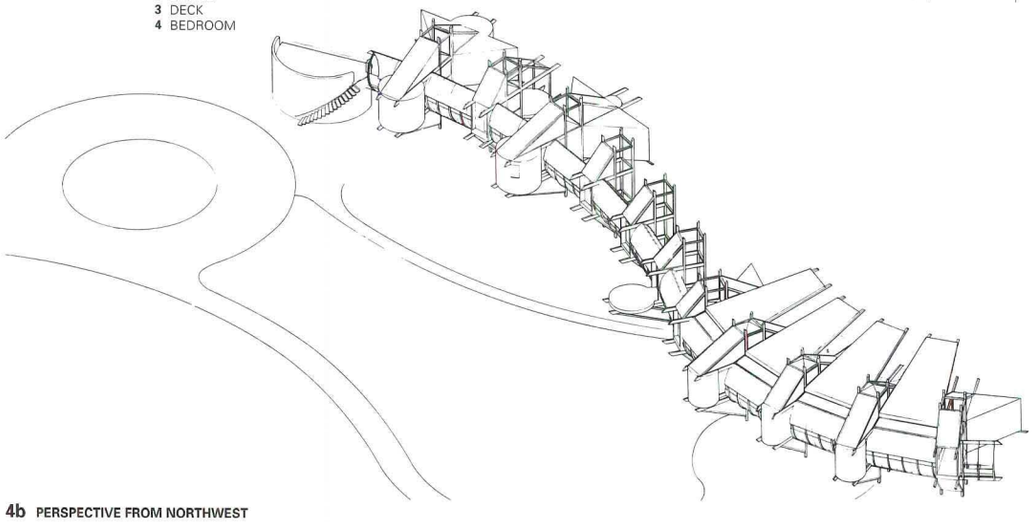
3c MODEL FROM NORTHWEST



4a SITE PLAN

1 LIVING
2 DINING
3 DECK
4 BEDROOM

N 20'/6m



4b PERSPECTIVE FROM NORTHWEST

beam that holds terraced levels for decks and a conversation pit. Exterior materials include stucco, metal, and ceramic tile (2b). As is true with most of Prince's work, the tower seems to grow from the landscape, and is populated with vegetation, reinforcing the architecture's organic, curvilinear forms.

For a house sited in Santa Fe, New Mexico (3), Prince displays a new interpretation of that city's stringent design guidelines promoting what has come to be known as the "Santa Fe Style": brown adobe walls and flat roofs.

"I wanted the house to fit into the contextual restrictions without resorting to literal quotations of the beautiful buildings built by the Indians for another time," says Prince.

The house has a massive four-foot-thick "wall" that bisects the plan (3b) and contains utility and service spaces, off which extend private areas to the northeast and living/entertainment spaces (contained in the plan's triangular element) to the southwest, offering views of Santa Fe.

A model of the house (3c) recalls the massing of traditional Pueblo architecture, yet creates a tension between the triangular and curved elements.

Not far from the house in Santa Fe, Prince has designed a vacation house (4) for a family in Taos, New Mexico. The site is mountainous, with views in virtually all directions and a vantage of Taos to the southeast. To the north and northeast are views of Taos Mountain with its famous pueblo at its base.

Juniper and piñon trees cover the site, so the house is lifted above them (4b) to preserve the vegetation. The client wants to build the house incrementally, so Prince's design takes the form of pods of space off a snake-like spine (4a) that connects them with covered bridges.

Plans call for initial construction of living and entertainment spaces on the spine's west end, two bedroom units, and all of the supporting towers and bridges. The structure is tubular

steel, with infill walls of galvanized metal on the exterior, and plywood inside.

Prince employs an extensive use of water for a house in Riyadh, Saudi Arabia (5), on a site overlooking the distant city. A fountain and a pool are glimpsed first as one approaches the house from an oval drive (5b). Water cascades toward the fountain and appears again in a pool in the house's central atrium. Interior pools meander through the ground level, and then extend out of the house to create a watercourse. A path stretches out from the house on its northeast side, culminating in an observation terrace and a pool.

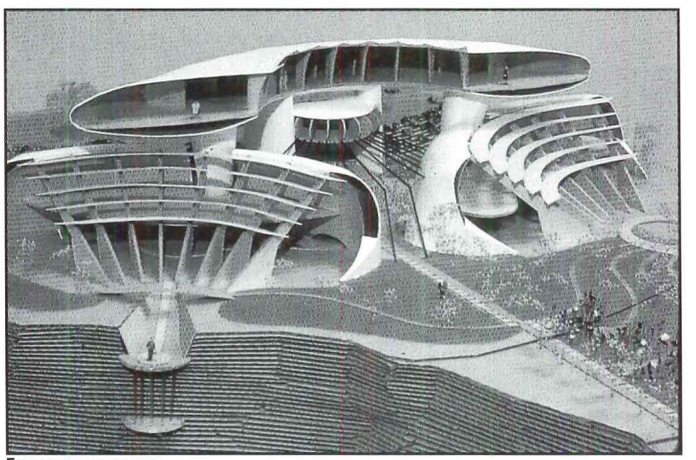
In form, most of the spaces are contained in two kidney-shaped elements that step down the site on five levels (5a). At the top two levels, contained in an elbow-shaped element, is a master bedroom. Materials are exposed concrete and ceramic tile, with glass areas shaded by concrete louvers.

The site for the Hight House (6) in Mendocino County, California, is a windswept cliff overlooking the Pacific Ocean. In plan (6a) the best views are to the south and southwest, with a virtually constant wind coming out of the north.

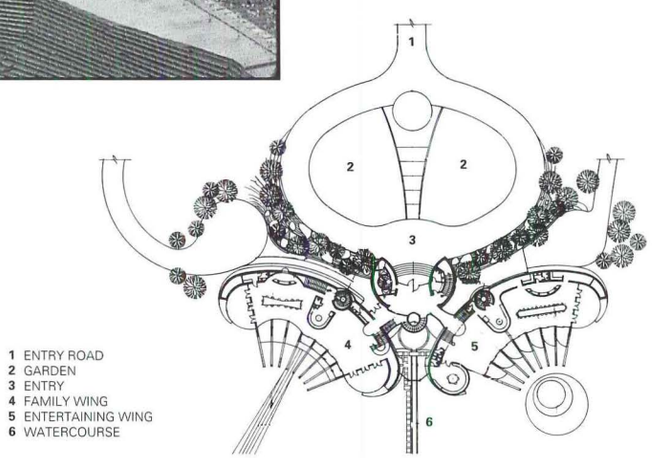
The house is an A-frame on an acid trip – its scores of angled glulam wooden members rolling across the site from east to west, each frame undulating a few degrees up or down from its neighbor (6b). On the north side the frame hunkers down to protect the house from the prevailing winds that sweep over it. To the south the frame opens up to glazed walls.

To the north the glulam members are covered with standing seam copper; on the south the copper ends and glass infills between the framing members. The glulam elements act as roof and walls simultaneously – another trademark of Prince's work, which often melds the building's roof, walls, floors, interior, and exterior into a seamless web of architecture.

Michael J. Crosbie ■

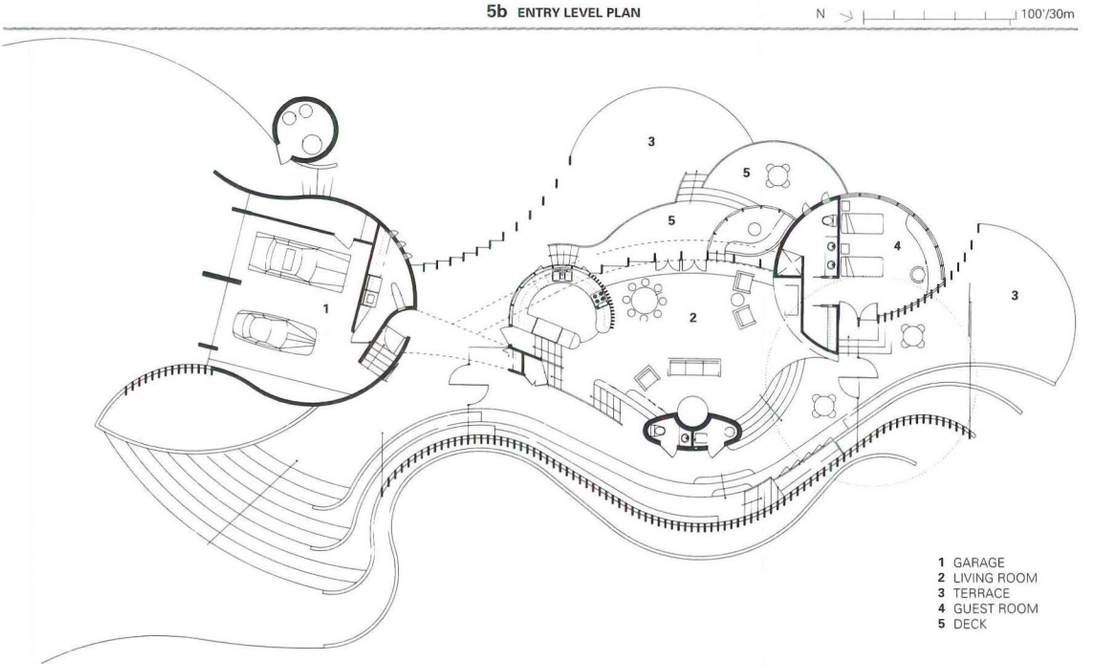


5a MODEL FROM EAST



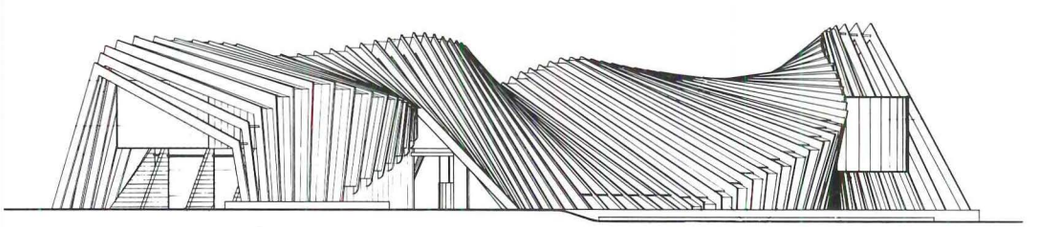
1 ENTRY ROAD
2 GARDEN
3 ENTRY
4 FAMILY WING
5 ENTERTAINING WING
6 WATERCOURSE

5b ENTRY LEVEL PLAN N 100'/30m



1 GARAGE
2 LIVING ROOM
3 TERRACE
4 GUEST ROOM
5 DECK

6a GROUND LEVEL N 20'/6m



6b NORTHEAST ELEVATION 20'/6m

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Calendar

Exhibitions

ANGST Cartography
Through May 22

Brooklyn. "ANGST Cartography (Field of Dreams) and Other Metaphorical Devices" is an exhibition of work by Baratloo-Balch Architects, New York, based on their conceptual/analytical study of the Gowanus Canal area of Brooklyn. Rotunda Gallery.

Tadao Ando
Through May 24

Paris. This traveling exhibition of work by the Japanese Modernist was organized by the Museum of Modern Art in New York (P/A, Dec. 1991, p. 22) Centre Pompidou.

Student Show
Through June 20

Washington, D.C. Work by students of architecture from Catholic University, Howard University, the University of Maryland, and VPI Washington-Alexandria Center Consortium are presented. National Building Museum.

Wendell Castle
Through June 25

New York. The furniture designer's work is on view. Peter Joseph Gallery.

Chicago's World's Fair Centennial
Through July 15

Chicago. The intention of "Grand Illusions: Chicago's World's Fair of 1893," with more than 500 objects from the fair, is to take stock of "how far we have come" and to think about "how far we still need to go" as a society. Historical Society.

Postwar Moscow
Through August 15

Chicago. "The Moscow Avant Garde in Architecture: 1955–1991" covers the work of ten architects, including state commissions for civic complexes, schools, offices, and housing. Art Institute.

Civic Visions, World's Fairs
Through August 1

Montreal. This show takes a look at the history of world's fairs, focusing on site planning issues. Canadian Centre for Architecture.

Smith-Miller + Hawkinson
May 8–June 5

New York. Four projects by Smith-Miller + Hawkinson Architects, New York, are on view. Storefront for Art and Architecture.

Laurie Olin
May 10–June 4

Cambridge, Massachusetts. "Transforming the common/place: the work of Laurie Olin" documents the landscape architect's work. Harvard University, Gund Hall Gallery.

Architects and Their Photographs
May 18–June 25

New York. Photographic work by Charles Eames, José Antonio Coderech, and Giuseppe Pagano is presented to study "the relationship of modern photography to modern architecture." National Institute for Architectural Education.

Donald Deskey
May 18–August 29

New York. "Donald Deskey: Merchandising Modern Design in America, 1926–1976" will feature an extensive selection of the industrial designer's work. Cooper-Hewitt.

Work by Black Architects
June 1–August 20

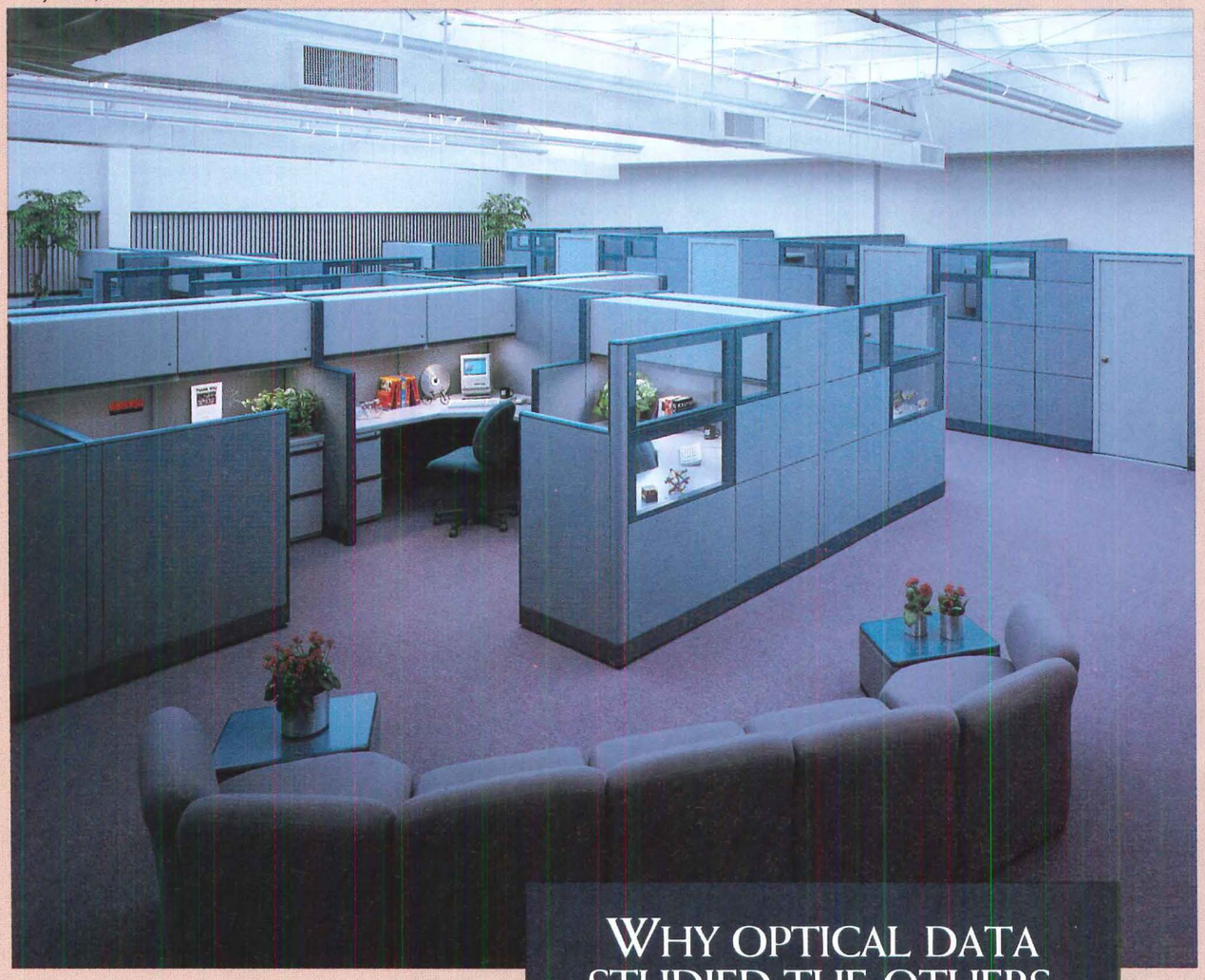
Chicago. "Design Diaspora: Black Architects and International Architecture 1970–1990" is a juried exhibition designed "to present an international perspective of architecture that examines current design trends and cross-cultural influences within the Black African Diaspora." A four- year tour is planned. Athenaeum.

Speculating on the Future
June 4–June 25

Chicago. With the belief that we are entering a new era of idealism, the Chicago Architectural Foundation posed a question to its members: "Can we suspend the forces that currently guide our designs (i.e., codes, ego, bottom-line programs, profit, zoning) to see a fresh architectural spirit that honors all living things?" Their answers can be examined in "Speculations: Visions from Chicago." Corporate Art Source and I-Space.

(continued on page 28)

Mary Petron, ASID



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C E T R A G O E S E V E R Y W H E R E

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Calendar *(continued from page 26)*

20th-Century Chicago
June 12–August 29

Chicago. An installation designed by eight young architects in conjunction with Stanley Tigerman, chronicles the city's evolution in "Chicago Architecture and Design, 1923–1993: Reconfiguration of an American Metropolis." Art Institute.

P/A's New Public Realm
Dates vary

Coral Gables, Florida and Chicago. This traveling exhibition of visionary public works proposals submitted to P/A's ideas competition (P/A, Oct. 1992, p. 73) is supplemented by photos of neglected spaces, substandard housing, and decrepit infrastructure. The show, cosponsored by the Miami Design Alliance, will be on view at the University of Miami School of Architecture from May 18 to June 3; a symposium is planned for May 20. Contact Rocco Ceo at the University of Miami (305) 284-3439 or Joe Minicozzi at (305) 372-5222. The show will travel next to the Chicago Architectural Foundation (June 14 to July 17).

Chicago Chapter AIA
Dates vary

Chicago. The Chicago Chapter of the AIA has organized several seminars and tours about the city during the AIA/UIA Convention in June (see Conferences). They have also published the *AIA Guide to Chicago.* Contact Alice Sinkevitch for more information (312) 670-7770.

Competitions

African Burial Ground Memorial
Registration deadline June 1,
Entry deadline August 6

New York. A memorial for an 18th-Century African Burial Ground in Downtown Manhattan is the subject of an ideas competition announced by the New York Coalition of Black Architects/National Organization of Minority Architects in association with other organizations. Proposals that commemorate both those who are buried there and the history of the African-American community are invited. Contact NYCOBA/NOMA, Box 5623, Manhattanville Sta., New York, NY 10027.

Waterfront Awards
Submission deadline June 11

Washington, DC. The Seventh Annual Excellence on the Waterfront awards program has been announced; completed projects and approved waterfront plans may be entered. Contact Waterfront Center, 1536 44th St., NW, Washington, DC 20007 (202) 337-0356 or FAX (202) 625-1654.

Religious Structures Awards
Registration deadline July 1,
Submission deadline August 2

Washington, DC. The Interfaith Forum on Religion, Art, and Architecture (IFRAA) has announced its annual design awards program. New construction, renovation, restoration, and interior design projects completed after 1988 by architects registered in North America may be entered. Contact IFRAA, Doris Justis, Executive Secretary, 1777 Church St., NW, Washington, DC 20036 (202) 387-8333 or FAX (202) 986-6447.

Mixed-Income Housing
First stage submission deadline July 6,
second stage deadline September 27

Rancho Cucamonga, California. This two-stage competition calls for a 200-unit family housing development, forty percent of which will be "affordable." Second-stage finalists must have California architectural licenses or be associated with architects who are licensed there. Contact Lynda Thompson, Rancho Cucamonga Affordable Housing Design Competition, P.O. Box 807, Rancho Cucamonga, CA 91729 (714) 989-1851 ext. 2153.

Landscape Architecture
Submission deadline July 12

Washington, DC. Taking up the President's challenge to Americans to "face hard truths and take strong steps," *Landscape Architecture* magazine asks entrants in its' annual Visionary and Unbuilt Landscapes awards program for projects that respond to this call for change. Contact Dept. UL, Landscape Architecture, 1101 Connecticut Ave., NW, Washington, DC 20008 (202) 686-2725.

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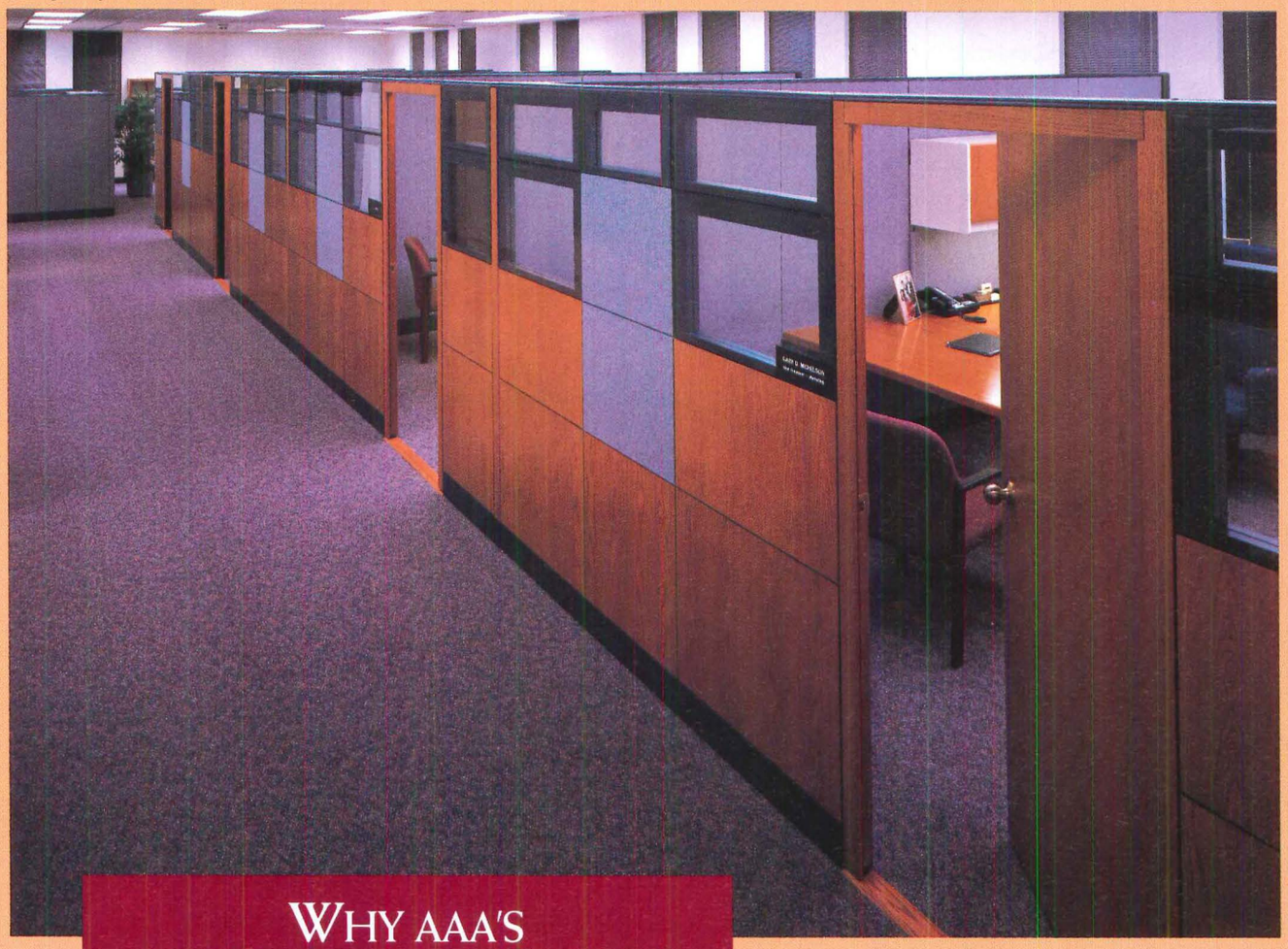

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C E T R A G O E S E V E R Y W H E R E

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Calendar *(continued from page 28).*

Conferences

International Furniture Fair
May 16–19

New York. Independent furniture designers, small companies, and contract furniture manufacturers will share the floor at this year's International Contemporary Furniture Fair. Contact Marianne McNamara, George Little Management, 2 Park Ave., Ste. 1100, New York, NY 10016-5748 (212) 686-6070 or (800) 272-SHOW.

A/E/C Systems '93
June 7–10

Anaheim. This exposition of computer equipment and software is held in conjunction with several subject-related conferences. Contact A/E/C Systems (203) 665-0153 or FAX (203) 666-4782.

Aspen Design Conference
June 13–18

Aspen. Organizers of the 43rd annual International Design Conference in Aspen have decided to make issues relating to Colorado's passage of anti-homosexual legislation (P/A, Apr. 1993, p. 22) a topic of discussion in this year's gathering. The theme is "Reconstruction Ahead." Contact IDCA, P.O. Box 664, Aspen, CO (303) 925-2257 or FAX (303) 925-8495.

Computer-Integrated Building Sciences
June 10–11

Anaheim. The Symposium on Computer-Integrated Building Sciences is designed "to improve interprofessional communications in the building industry, by encouraging integrated computer solutions for the building life-cycle process." Contact Dr. Harold Jones, SCIBS'93, 1700 Asp Ave., Norman, OK 73037-001 (405) 325-1947 or FAX (405) 325-7698.

NeoCon 93
June 14–17

Chicago. This year's contract furniture show at the Merchandise Mart is joined by two new events, the National Commercial Buildings Show and the Intelligent Buildings Conference. Contact NeoCon 93 Registration, 222 Merchandise Mart Plaza, Ste. 470, Chicago, IL 60654 (800) 677-6278 or FAX (312) 527-7782.

Architectural Administrators
June 16–20

Chicago. The 24th Annual Convention of the Society of Architectural Administrators includes a series of seminars designed to update business management techniques for architectural offices. This year's theme is "Teambuilding." Contact Wendy Rae, Martenson Clark Associates, Kirkland, WA 98034 (206) 823-2244 or FAX (206) 821-1715.

Rethinking the Suburbs
June 17

Baltimore. "Rethinking the Suburbs: Overcoming Impediments to Change" is the second conference held to examine the Baltimore/Washington Region. Contact Maryland Institute, College of Art (410) 225-2219.

AIA/UIA World Congress
June 18–21

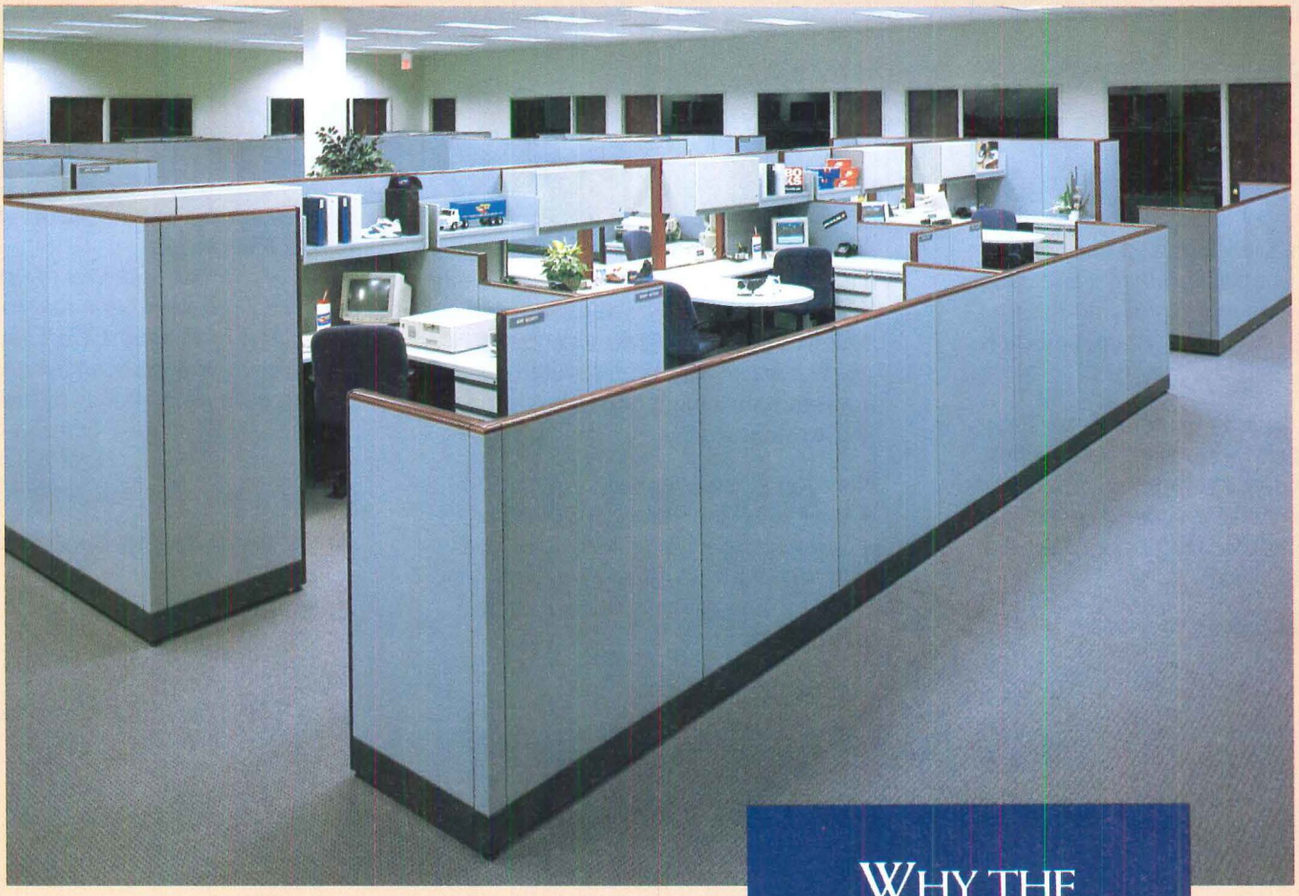
Chicago. The World Congress of Architects is a four day summit that combines the AIA's 125th annual convention and the XVIII Congress of the International Union of Architects. The theme is "Architecture at the Crossroads: Designing for a Sustainable Future." Contact World Congress Hotline (202) 626-7395 or FAX (202) 626-7518.

Architecture and Children
June 21–23

Albuquerque. "Architecture + Children: Learning Through the Natural, Built, and Cultural Environment" is being held to discuss ways to use the design disciplines to teach children how to learn from and about their environment. Contact UNM Architecture + Children Summit, UNM Architecture and Planning Bldg., 2414 Central Ave., SE, Albuquerque, NM 87131-1226 (505) 277-7422.

CSI Convention, Exhibit
June 25–27

Houston. The Construction Specifications Institute's 37th Annual Convention and Exhibit has been announced. Contact Sandy Humphries, CSI, Convention Services Dept., (703) 684-0300. ■



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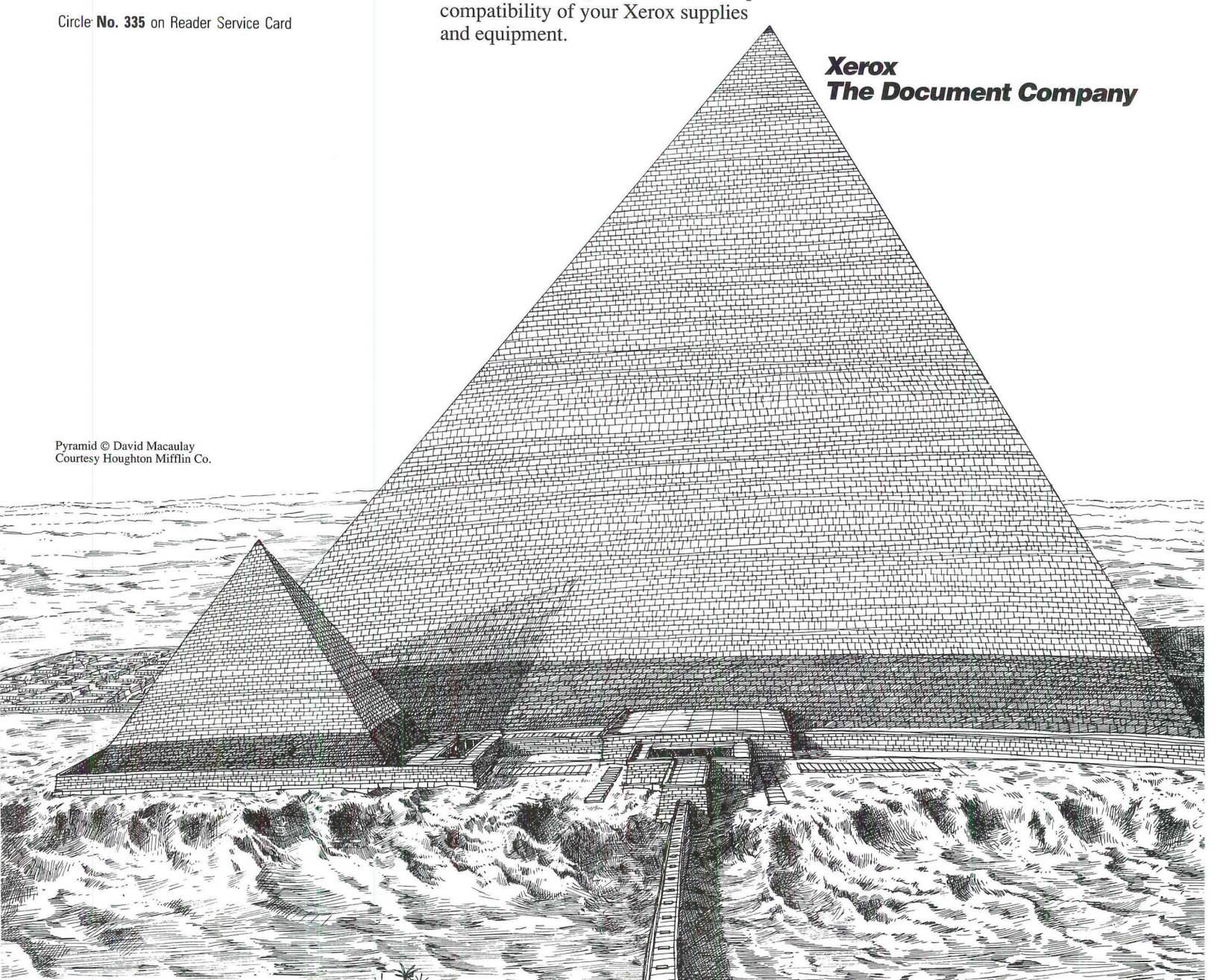

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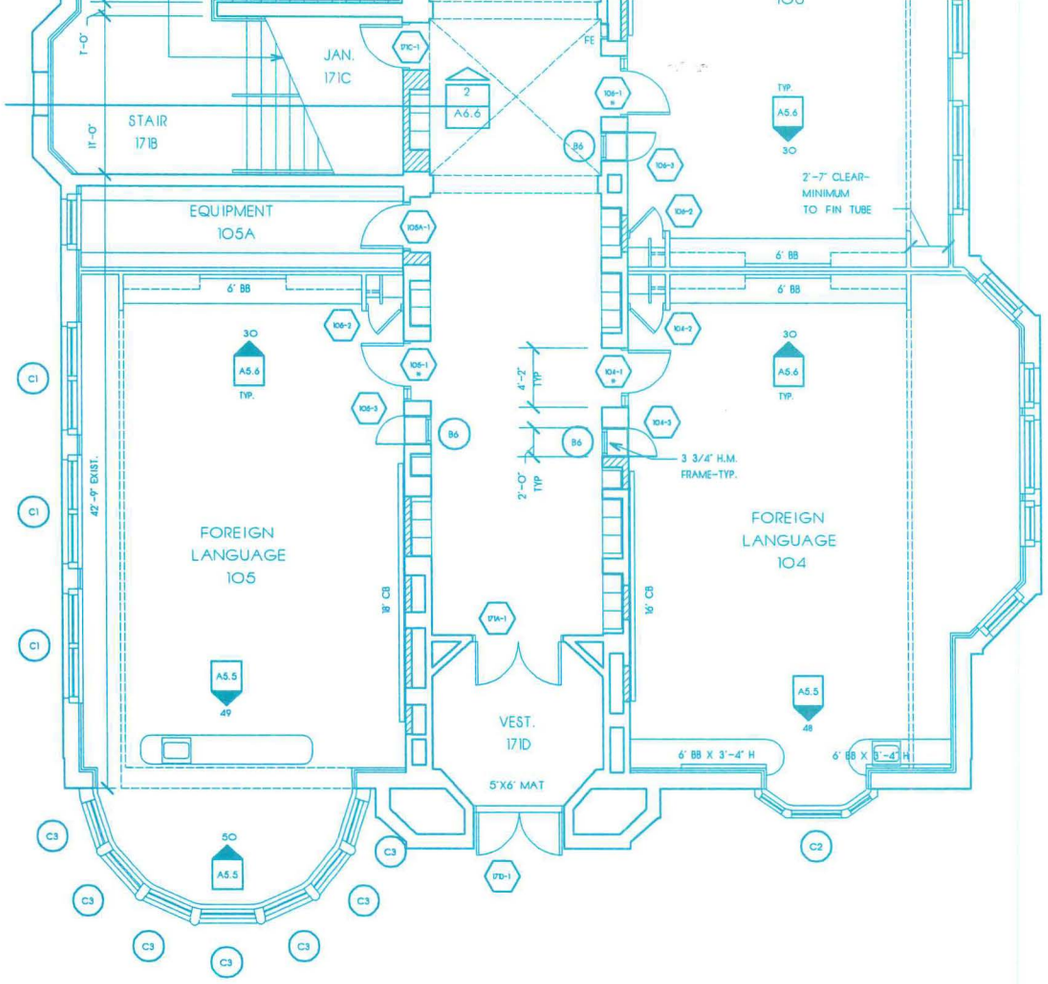
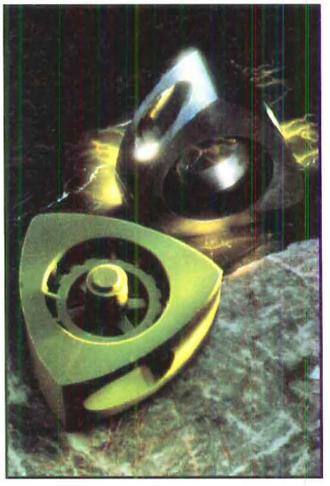




Architectural computing covers a broad spectrum – from 2-D drafting (top) to making custom parts with computer prototyping systems (above).

COMPUTER FOCUS

What is the future of computer technology in architecture? This is a question we at P/A are frequently asked. An analysis of sales trends over the last couple of years proves instructive.

According to Daratech, Inc., a Cambridge, Massachusetts-based market research firm, growth has been principally among small high-end system providers offering leading-edge specialty technologies, and among value-driven CAD providers. This analysis seems to indicate that the CAD industry is moving toward task-oriented products, and away from integrated "turn-key" systems. Sales of basic CAD "engines" depend on the availability of task-oriented third-party applications, which is why AutoCAD continues to dominate the market.

Yet as more offices invest in CAD, we continue to hear that many find it does not meet their productivity expectations. Using third-party applications judiciously is one part of the solution (see P/A, April 1993, p. 61); hardware and software performance are others. In this focus we offer a recent evaluation of the latter by Curtis Olson, a CAD manager.

If CAD is made effective and productive, is that the end of the story? Not according to P/A contributing editor Eric Teicholz, who believes that offices proficient in CAD can expand their services into facilities management. He offers a vision of how this may be done.

Finally, what does the future hold? Harvard Professor Erin Rae Hoffer thinks advances in technology will allow architects to simulate and model even at the detail level.

Whatever the task, virtually anything can already be done with computers. Next month's A/E/C SYSTEMS '93 show will have over 1,400 exhibitors (see preview p. 120). We are beginning to see artificial intelligence which, many believe, will bring the next phase of computerization to the architectural profession. Already there are 3D CAD programs that can automatically frame a house. There are structural, lighting, and HVAC analysis packages for 3D computer models. So, to answer the question posed at the outset: the future of computer technology in architecture involves changing practice itself. **David Gruber** ■

Shaping the Future

If CAD is indeed not only a sophisticated pencil, how will future changes in computer technology be integrated in architectural practice? Harvard GSD professor **Erin Rae Hoffer** speculates.

"The art of building has been able to evolve in time and to pass from one style to another while maintaining the general characteristics of architecture unaltered, because ... factors that cause profound changes in environmental conditions ... are very rare indeed .... Architecture is breaking free from tradition. It must perforce begin again from the beginning." –Antonio Sant'Elia, foreword to the catalog for an exhibit "New City" of 1914 in Milan.

Architectural design is an enterprise pointed toward the future. In making schematic design sketches or assembling weighty construction drawing sets, the architect creates alternative futures. During the next decade architectural practice will find itself dramatically altered by information technology. Computers will play a pivotal role as more and more firms apply CAD tools throughout the architectural process. A decade ago, architects debated the effectiveness of computer-based tools for 2D drafting. Current investigations focus on integrating 3D form-generation, visualization, and database techniques into design practice. But what of tomorrow? How will computer-based design tools evolve over the next decade? And how will their evolution affect our profession, and be shaped by it.

Influences for Change

The new Federal administration has recently released a document outlining technology initiatives, which emphasizes national networks and access to information sources, information technology applications in business, flexible manufacturing, and environmental technologies. Among new initiatives specifically enumerated in the Clinton/Gore document are two that will affect the construction industry and the architectural profession.

- Investment in a national information infrastructure
- Accelerated investment in advanced manufacturing technologies

Undoubtedly, technology-aware practices will be better positioned to move ahead and develop in concert with these initiatives.

Interest is growing in new communications structures and media types. "Virtual reality" is a technology that immerses the viewer in a 3D model displayed in stereo through goggles or 3D glasses (1). "Personal information managers" characterize a product category of portable electronic devices that store and communicate information.

Computers in Design and Construction

Historically, design firms bring computers into practice through localized experimentation, by taking an existing manual process and automating it, converting it to a computer-based one. As the firm expands its investment and commitment by converting more of its work in this way, it raises the skill level of its personnel, and gains valuable knowledge about the benefits and disadvantages of specific strategies. Eventually a process of reengineering is possible, whereby the organization modifies its structure and processes to take advantage of the ultimate capabilities of information technology.

Breakneck advances in hardware anticipate improvements in software. In fact, CAD software has already begun to move beyond the metaphor of paper-based drafting, and offers network awareness, relational database connectivity, and highly detailed rendering and animation. In the near future we can expect wider access to media – video, animation, sound – as well as more sophisticated network-based workgroup features, and intelligence about the construction process. A nationwide information infrastructure will prove useful in researching available products, developing specifications, and studying historical and regional precedents.

Construction will change to reflect new technologies in the manufacturing process. The inevitable deployment of computer-aided manufacturing (CAM) techniques in the service of building construction will gain impetus from the widespread use of computer systems in design. "I expect there will be an increasing awareness on the part of the entire profession – architects, product manufacturers, contractors – as to the value of the relationship between CAD and CAM processes," said Daniel Schodek, Professor of Architecture at Harvard University's Graduate School of Design. "Product manufacturing will change, and architects will exhibit an increased involvement in the product manufacturing process. Our current methods can be characterized as standardized fabrication methods where architects select products from catalogues. In the coming decade the degree of customization will increase. Professionals will seek improved market niches by offering customized services and products."

The Future of Practice

"Within ten years, designers will have 5,000 MIPS workstations on their desktops," said Brian Vandellyn Park, President of Flogiston corporation,

based in Webster, Texas. This represents two orders of magnitude over the performance of today's workstations. "This incredible power will liberate us from today's limitations. We'll be able to put on a set of high-resolution goggles and go to work in Cyberspace." Park has developed a chair design that combines a motion platform with an immersive virtual reality system to support such alternative work environments. The chair takes advantage of flexible manufacturing so that instead of buying "one size fits all, units are custom tailored to each user's body contours. Customers will be digitized at the purchase site. This data will be sent to the manufacturing machine at another location. Shortly after, you will receive your customized product."

Imagine the building design process of the future. Site information such as 3D context models, images and videos, applicable building codes and zoning regulations, will be accessible over the network, through a customized multimedia interface that links visual, text, and numeric information from diverse sources such as government agencies and educational institutions. Coordination of design and construction teams will take place electronically, by transmission of data and communiqués over regional and international networks.

CAD software, the mainstay of design technology, will offer more facile methods of manipulating 3D models. Voice recognition, pen-based input devices, and expert systems will augment CAD interfaces. A movement toward custom environments will make it possible for designers with diverse working styles and methods to apply CAD. Ultimately, virtual design environments will transform the architect into an artisan who interacts literally with a full-scale computer model, proposing sweeping design changes with a single gesture.

Information about materials and construction will be incorporated into the model database. Solids modeling, available on many platforms, will grow in significance. Architects and clients will experience synthesized spatial proposals with a high degree of realism through computer visualization and stereo viewing technology. Rendering and animation of 3D models will take us into new visualization territory, as we apply digital video editing, virtual reality, and interactive presentation techniques. The medium of exchange will be high-resolution video instead of airbrushed rendering. Situated in a remote location, the client will interact directly with the designers over the network, and will take a more active role in the design process.

Highly intelligent software will interpret our 3D designs and forward them to rapid model-building systems (2). Final product fabrication and assembly will take place with the aid of flexible manufacturing systems. "This will open up design options," said Schodek. "Current philosophy implies that the only way to build cost-effectively is to focus on standardized building systems and repetitive parts. These new technologies are saying that elements need not be identical, that we can offer parametric variations, say the design of an exterior window component with unlimited dimensional alternatives, and count on a new flexible manufacturing system to construct it."

The construction team will have immediate access to computer-based project information and instructions, and will be aided by personal information managers, improving communications and scheduling on-site. Videoconferencing, imaging technology, and 3D data exchange will augment direct electronic communications between architect and contractor, reducing the information-passing iterations required to complete construction, improving building quality, and reducing cost.

Response to Competition

In the future for many industries, including design, economic success will be predicated on the ability to respond rapidly and flexibly to individual customer requests, in other words, to customize the product. Technology will play a key role in this process. "Although there is always a danger in comparing methodologies from other industries, these paradigms are very common in shipbuilding or automotive industries," says Schodek. "As architects become more familiar with CAD and with its potential, they will develop a more sophisticated awareness of its capabilities and its limitations. This sophistication will translate into the ability to design custom building elements with construction awareness and accuracy, employing cost-effective techniques and alternatives."

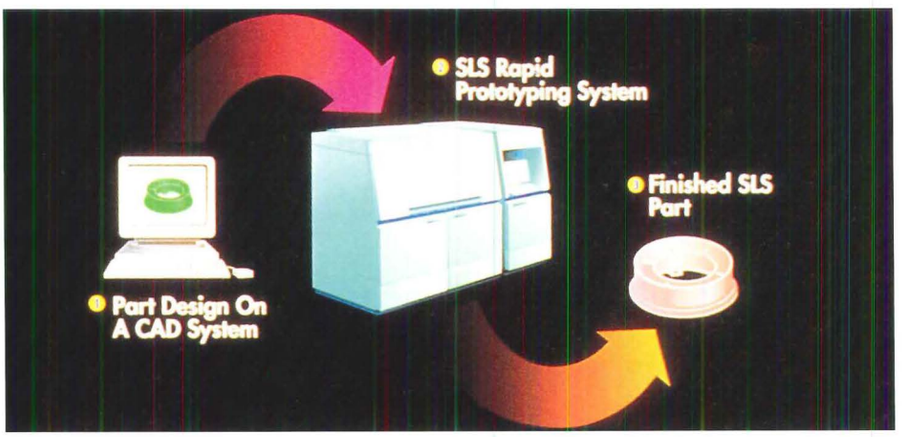
Many firms look to information technology to provide answers, to expand capabilities in the face of downsizing. Basic computer literacy is already necessary for full participation in our electronic culture; CAD literacy is fast becoming a professional requirement. In the future, electronic design environments will open up possibilities that would be inconceivable with traditional methods. A time of societal and professional change is ahead of us; architects will be called on to contribute in this new context. It is in the profession's best interest to shape it.

Erin Rae Hoffer ■

The author is Director of Computer Resources at the Harvard Graduate School of Design.

World Tool Kit by Sense8

1 VIRTUAL REALITY IMMERSION



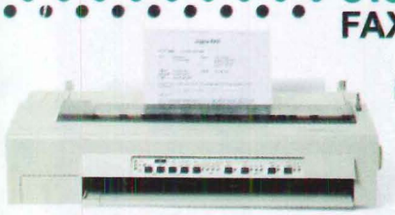
2 DIAGRAM OF A RAPID PROTOTYPING CAM SYSTEM

HI JetPro®. A day's work in under an hour.

9:00 AM
A- to C-Size CAD Plots

No more waiting for pen plotter check plots. HI JetPro Series V100 and V50 plotters create HP-GL™/2, HP-GL and DM/PL™ CAD "review plots" at 360 dpi in under five minutes! No options needed. Includes real and protected mode ADI® drivers.

9:05 AM
FAX Output



HI JetPro V100 outputs FAX/modem files directly for high-resolution A- to C-size plain paper copies. Optional sheet feeder for A- and B-size output.

9:10 AM
Spreadsheets

C-size and rollfeed capability allow you to create large, readable spreadsheets. Drivers are available for Windows™ 3.0 and 3.1 compatibility.

9:15 AM
Multiple Review Copies

For meetings create A-size review copies in one minute; high-quality, C-size review copies in under five minutes.

9:30 AM
Documents

HI JetPro Series emulates the IBM® Proprinter™ XL24 to create high quality reports and letters from a wide range of word processing packages.

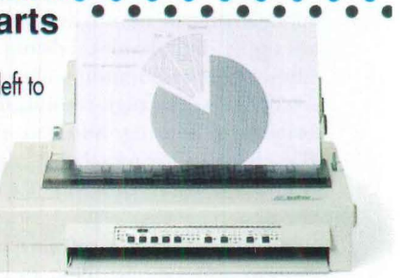
9:35 AM
Scanner Output

HI JetPro V100 automatically reads and outputs high-resolution, scanned, raster images from hand-held (PCX), desktop (TIFF) and large-format scanners (RLC and CALS). At a fraction of the cost of electrostatic plotters.

9:40 AM
Project Schedules

The rollfeed accessory allows long project management charts to be plotted from rolls of opaque or translucent bond paper.

9:50 AM
Presentation Charts



There's even time left to do large-scale charts for a 10:00 AM presentation. For information on HI JetPro Series plotters, or the name of your local dealer, call 1-800-444-3425.

New HI JetPro® Series Plotters.

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Communicating with Clients Electronically

Consultant **Eric Teicholz** argues that growth in Computer-Aided Facility Management offers new business opportunities for design consultants.

During the last ten years, many design firms have learned how to use CAD technology effectively for design and drafting. The use of computer graphics by corporations, on the other hand, is a relatively recent phenomenon. It is only within the last few years that CAD has been integrated with various types of corporate databases.

This area of automation has been fueled primarily by the ability to "link" graphics and databases, and secondarily by the widespread implementation of computer networking – enabling database and software sharing. There are also economic factors associated with the rise of Computer-Aided Facility Management (CAFM) in organizations. Facility management often accounts for about 10 percent of a corporate budget. As companies become more cash-strapped and efficiency conscious, facility managers are being held more accountable for their budgets.

With widespread use of available technology, facility managers can link real estate and facility data with financial data. For example, management can query databases as to the cost of an anticipated move or whether a construction project is over budget. Performing such tasks has enabled facility management departments to become more "strategic" in nature. Thus CAFM use has increased dramatically in recent years.

The results of CAFM use have thus far been mixed. There is confusion regarding how and where to best apply CAFM technology. Firms do not plan how various discrete applications will eventually be integrated, nor do corporations know what types of administrative and technical standards are necessary to best utilize technology. Mostly, firms do not streamline and reengineer procedures before applying technology. The result is that, as in the early days of PC CAD in design offices, vendors are finding that much of their software ends up unused on shelves.

Those firms who are experienced and confident in using CAD technology are therefore in a position to help corporations use CAFM efficiently; and in so doing to create a new market for their services.

Problems with the Client – the Architect Electronic Link

At least 50 percent of corporate life-cycle CAFM costs result from creating and maintaining databases. Whenever a design consultant is involved with a project, it behooves the facility manager to communicate electronically with that consultant. This means that the consultant must adhere to the client's CAFM standards (which involves much more than simply using the same CAD system), but it also offers the opportunity for the consultant to perform other types of client services by having access to the client's databases.

Archibus Inc.

Computer Aided Facilities Management programs combine graphics, text, and numeric databases.

However, these opportunities are currently limited by the lack of CAFM professional standards. Design firms must learn and implement a new set of standards for each client who demands an electronic database. This education process is time consuming and expensive. The result is that many corporations employ in-house design and architectural staffs and use design consultants only when they have to – currently for less than 5 percent of corporate renovation work.

Nevertheless, as standards evolve, if design consultants become familiar with the ways facility managers use technology, new client relationships will develop.

How Organizations Employ CAFM

CAD represents a small but essential component of integrated (as opposed to discrete) CAFM systems. Facility staffs worry a great deal about space inventory, corporate asset tracking, project management, preventive maintenance, and work order processing. These needs imply inventory and financial databases. It would be nice to be able to retrieve a CAD floor plan and see where vacant space is, or who occupies a particular workstation, but it is not a basic requirement for many facility manager func-

tions. The cost and time "overhead" associated with learning to use a CAD system, creating and maintaining graphic databases, and having to link relevant databases with graphic floor plans is high.

For the architect, the challenge is how best to support the client in the performance of these tasks. What graphic data are needed for these functions and how do they relate to the way the architect uses CAD? The architect usually produces a set of as-designed construction documents. Very few companies want to maintain CAD graphics of as-built construction because the detail of these drawings is not required (for example, to compute areas for calculating departmental chargebacks). The architect will often work in three dimensions for massing and design purposes, but almost no companies maintain 3-D databases for facility management. The architect cares about the most efficient way to draw a workstation or an office, while the facility manager wants to know if the workstation or office is occupied, and if so, by whom.

"Those firms who are experienced and confident in using CAD technology are in a position to help corporations use CAFM efficiently; and in so doing to create a new market for their services."

The Interface and the Opportunity

The facility management needs of the client provide the architect with new opportunities for service. Designers have the advantage over other service groups in performing facility management services in that they already know the client, and as designers of the facility, they have intimate knowledge of the building and perhaps a useful electronic database.

From the perspective of technology, the current client/consultant relationship is very inefficient. The facility manager must get more involved during the design phase of a project and the architect must better understand the ongoing facility management issues associated with a building. The architect must also stay more actively involved with a project during construction so that as-built rather than as-designed drawings can be delivered to the client.

The architect must be able to pass only that CAD information to the client that is useful for facility management (e.g., base building footprints, core information, departmental outlines, etc.) in a format that the client can maintain. It also means that the client must provide compensation to the consultant for creating the electronic database, training the design consultant on the required standards, and maintaining the database during the construction process.

New business services can take a number of forms. For example, the architect can develop space standards to reflect how that company currently is, and anticipates, doing business. Architects can also provide clients with additional information to reflect, for example, departmental organizational outlines, personnel, or equipment locations. Architects, too, can stay involved with the project by maintaining graphic databases of as-built conditions that take space and personnel turnover (churn) into account. There are a host of possibilities that will result from new facility management knowledge.

The Approach

There are two approaches to implementing this new client/consultant relationship. First, in companies where facility management is not yet considered a strategic resource, the FM staff has low technology budgets and will look to out-source FM activities. Out-sourcing can be accomplished with the corporation connected, via modem, to the architect's computer or with the architect providing staff at the client's facility.

Second, if the design firm is working with more senior corporate management (e.g., the VP for Corporate Real Estate or the VP of Administration), it is possible to offer services associated with the redefinition of various facility management processes (called reengineering) to take advantage of integrated CAFM. This will redefine the scope of the client/consultant relationship and the types of services that can be provided. For example, the consultant might become involved in maintaining occupancy and forecasting data for future churn management.

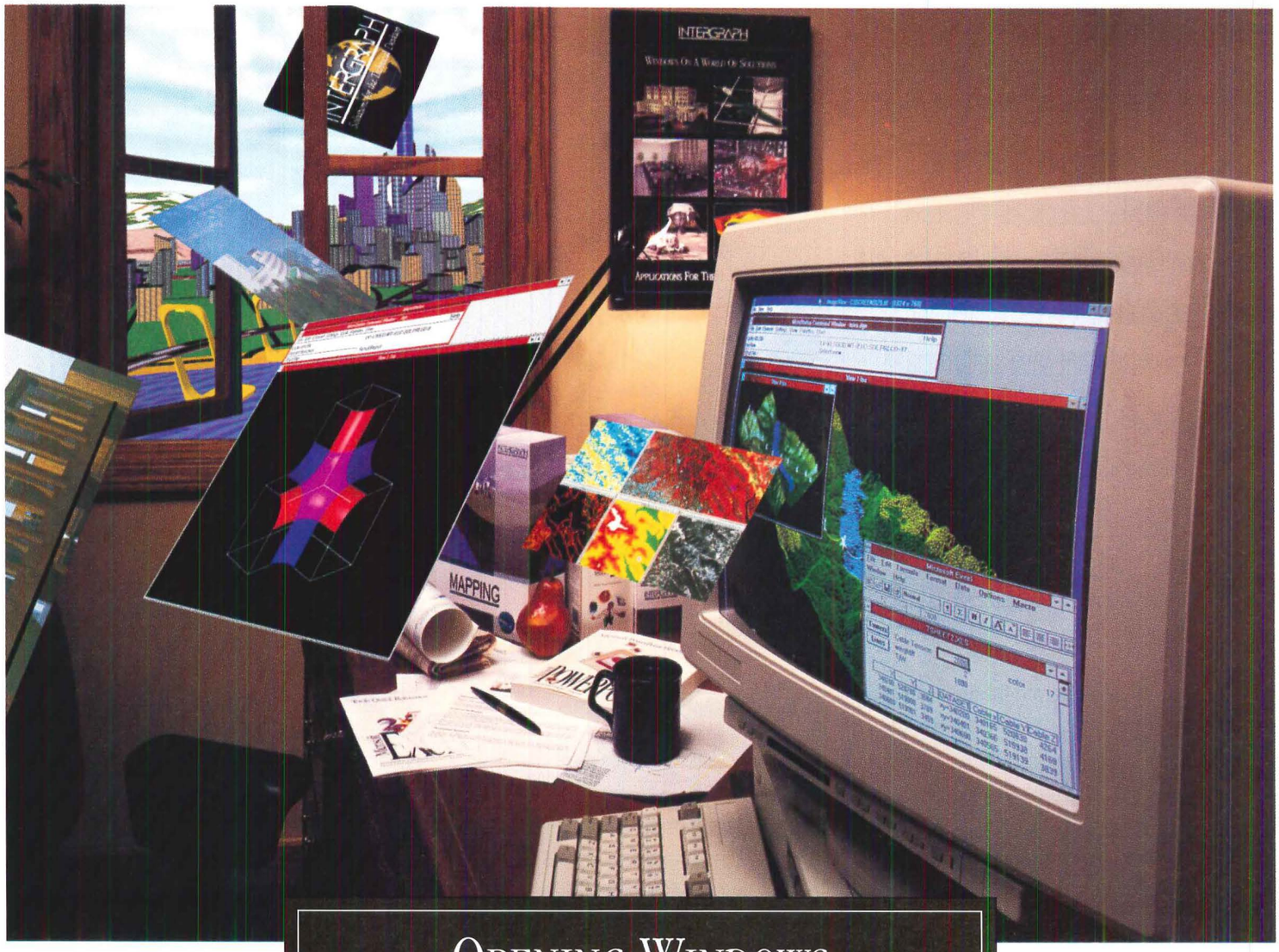
Larger design firms might actually perform and manage some facility management services by hiring members of the client's facility management staff – thereby allowing the client to reduce headcount. There are many components of facility management (e.g., space standards, construction management, design and space planning) that lend themselves to being out-sourced and to being managed with computers.

Hedging Your Technology Bets

There is a significant learning curve involved with understanding how the electronic databases can be best used by the client and in defining the client/consultant relationship. There are also significant benefits to communicating electronically.

In the absence of professionally accepted technical and administrative standards associated with CAFM, firms must work out these issues with their clients on an individual basis. Using "generally accepted" technology standards associated with graphic and non-graphic databases provides some protection of the databases and therefore a hedge against obsolescence. Understanding the issues (both problems and opportunities) of this new relationship will benefit both parties. **Eric Teicholz** ■

The author is P/A's contributing editor for Computers and is President of Graphic Systems, Inc., a CAFM consulting firm in Cambridge, MA. The company publishes several CAFM publications.



Opening Windows to a World of Solutions

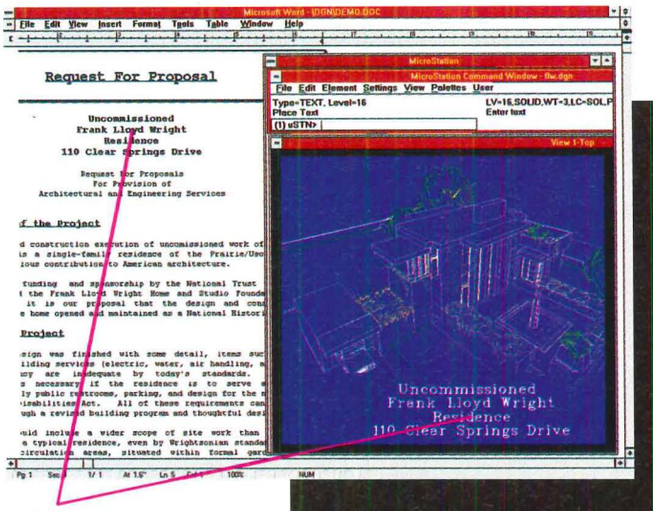
In the world of Windows NT, Intergraph's applications bring a new level of power and sophistication to the technical desktop.

The computer graphics industry has made another leap forward. Under Microsoft's New Technology operating system, popular business programs and Intergraph's technical applications can run alongside each other on the same computer. The same friendly Windows environment appears throughout the applications – word processing, spreadsheets, architecture, civil engineering, mapping, and all the rest. CAD users can now spend time designing and drafting, not navigating through the operating system.

"The Microsoft-Intergraph alliance provides a full range of technical applications, as well as a wealth of personal productivity tools – complete solutions for the technical desktop."

Paul Maritz, Microsoft
Senior Vice President of Systems

MicroStation is general-purpose CAD software that runs on PCs, Macs, and UNIX workstations. It is a primary tool in Intergraph's solutions for the technical desktop. If you appreciate the economy of PCs but need sophisticated design power, take a look at MicroStation. It means a more productive, more profitable future for you and your company.



LINK TEXT

MicroStation integrates with your favorite Windows business applications.

engineers who need to run in the Microsoft Windows business environment – Windows, Windows for Workgroups, and Windows NT.

"MicroStation PC is an exceptionally usable, powerful package with such rare and exotic features as nonuniform rational B-splines."
PC Magazine

PC MAGAZINE EDITORS' CHOICE
February 23, 1993
MicroStation PC, 4.0.3

CAD should give you the productivity edge you need to be competitive in today's business environment. You need a tool that streamlines the process of drafting, as well as a modeler that helps you create virtually any object – fast. You should be able to store design data in relational databases without programming. Your future depends on the ability to share data with your design team and other operations. MicroStation software gives its users this level of proficiency. And keeps them in tune with the best in applications solutions.

"MicroStation includes a robust set of 3D capabilities and gives you a variety of ways to render models."
Infoworld

Intergraph introduces MicroStation Version 5. It refines a product that is considered the state of the art in CAD graphical user interfaces (GUI). In doing so it boosts CAD to a higher level of usability.

MicroStation Version 5 brings renowned integration advantages to designers and

Software that puts you in charge.

Today, *user friendly* means more than easy – it means software that empowers you. You control MicroStation through a graphical command center featuring icon command buttons ... pull-down menus ... tear-away palettes ... multiple, resizable overlapping views. The display is sleek. With no perceptible repaint, Version 5's graphical user interface seems to float over your drafting and design area.

MicroStation runs as an extension of the way you work. Choose from unique *Workspaces* designed for your profession. They configure the graphical CAD desktop for you and manage the computing environment to your needs. Even discipline-specific drafting *styles* are provided. And it's all tailorable: Graphically build your own pull-down menus and palettes. Rearrange fields in dialog boxes. Disengage commands. You've got the power to create the interface that best meets the needs of the task at hand.

CAD software should accommodate the way you think, work, learn – even change your mind. You should be able to select a different dimensioning system right in the middle of a command. Or modify a shape and have all of the dimensions automatically change. Simple actions – like grabbing a line or object – should be so fast that they require no conscious effort. MicroStation performs functions like these as a matter of course. Other CAD software simply can't.

Store information in popular relational databases – without programming!

A powerhouse of features gives you the productivity edge!

MicroStation offers more functionality in one package than any other CAD software. New *dimension-driven design* options help you design intelligently using geometric and dimensional constraints. Apply variables to the constraints and save your design for reuse with different parameters when creating similar objects or parts. These and more new capabilities – like user-defined linestyles and associative patterning and hatching – provide the most complete drafting environment available.

Powerful tools help you create freeform, mathematically precise surface models. Model virtually any object, no matter how complex. Perform trim, blend, fillet, and Boolean operations between surfaces. You've got the simplicity of solid modeling without the overhead.

Visualizing your designs is easy and cost-effective with MicroStation's new photorealistic rendering capabilities. Light sources, shadows, transparencies, depth cueing, anti-aliasing, and bump and pattern mapping help you market your designs. You can even create flythrough animations and play them onscreen for your clients. MicroStation is a powerhouse of features in one package.

The best tool for the '90s production environment.

Users value the way MicroStation performs in the production environment. On large projects, it's a clean-running, fast performer. One user said, "MicroStation is an all-encompassing system ... capable of covering all facets of project management, not just design and drafting."

MicroStation users enhance productivity through real-time data sharing. True file referencing allows each member of a workgroup to easily and safely share files concurrently with others. It's peer-to-peer sharing of design information while everyone continues working – across multiple hardware platforms and networks.

Run MicroStation with other Windows applications. Cut and paste graphics in a Word proposal. Link document text with your MicroStation design file. Drive MicroStation graphics with an Excel spreadsheet. Embed sounds and messages in your design file.

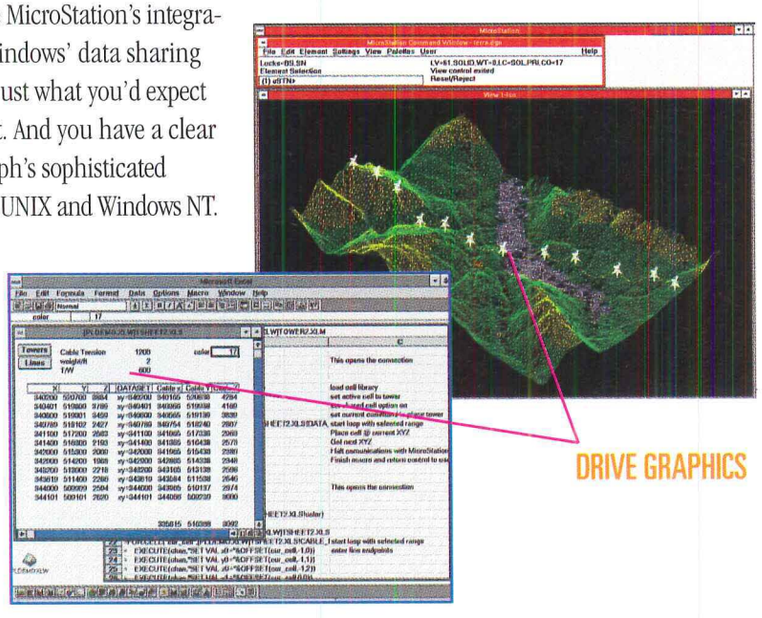
MicroStation Version 5 reads and writes to AutoCAD .dwg format.

"Compared to DataCAD, AutoCAD, and VersaCAD, MicroStation is much faster ..."

Computer-Aided Engineering

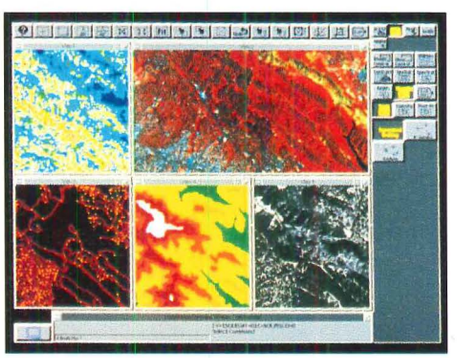
MicroStation

All in all, if you combine MicroStation's integration capabilities with Windows' data sharing capabilities, you've got just what you'd expect from a '90s CAD product. And you have a clear growth path to Intergraph's sophisticated application solutions for UNIX and Windows NT.



Beyond the immediate benefits, there are advantages that come from Intergraph's years of experience. In some industries, 25 years is not much. In computer graphics, 25 years is the lifetime of the industry. For almost a quarter of a century, Intergraph has developed computer graphics systems — hardware, software, and support — for industries that rely heavily on maps, engineering drawings, and models to convey information.

Climb the Statue of Liberty, ride Swiss Rail through the Alps, use the 1993 Rand McNally Road Atlas, or take a break with the world's most popular soft drink. In these unexpected places – and hundreds of others – you'll find the results of combining Intergraph's computer graphics experience with users' ingenuity.



With Intergraph's MGE geographic information system, California's Division of Mines and Geology will provide digital maps to enable Californians to determine if they live in risky earthquake or landslide zones.

Gobbell Hays Partners Inc., a 32-person firm, uses MicroStation and ModelView from Intergraph to design laboratories for corporations and universities. Says firm president Ronald Gobbell, "Three-dimensional modeling shows the scientist exactly how his lab is going to look." With MicroStation, Gobbell Hays can customize and reuse cells with symbols of equipment, cabinets, and other basic lab features.

Intergraph users range from small offices or departments to large multinational firms, and their projects run the gamut from single drawings to complex aircraft carriers.

The Intergraph advantage.

The arrival of a powerful new Windows operating environment means that for the first time, hundreds of thousands of microCAD users will have access to the functionality and technical sophistication of Intergraph applications.

Long-term partnerships with customers worldwide.

Intergraph's reputation for top-notch customer service follows the company around the globe as international business steadily increases. Intergraph's extensive customer support network continues to earn top ratings in customer satisfaction surveys. The most recent Daratech *Industry Update* quotes a wide range of Intergraph users satisfied with their systems. Intergraph's track record of technological stability and continuity is important:

"Intergraph has given me a competitive advantage for a number of years."

...

"No other vendor could have given us total binary file compatibility for all these years."

...

"I'm a firm believer that they have the best CAD product on the market."

Daratech Industry Update
November 1992

Olé OLE

Integrate CAD processing with other Windows applications such as Word and Excel by taking advantage of complete support for Microsoft's Object Linking and Embedding (OLE) technology.

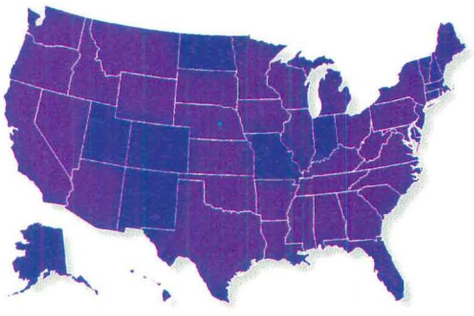
Linvatec Corporation uses the high-performance solid modeling technology in Intergraph's Engineering Modeling System (EMS) to design products for least invasive surgery. The process of identifying and developing new and innovative products is fundamental for growth in the health care industry, and Linvatec credits Intergraph systems for providing a strong competitive edge.

Intergraph is the world's largest independent development site for Windows NT applications.

Technical leadership.

The list of disciplines addressed with Intergraph software is one of the longest in the industry – and continues to grow.

• Aeronautical charting • Architecture • Cartography • Civil engineering • Dispatch management • Document management • Electronics design • Energy exploration • Environmental resource management • Facilities management • Geographic information systems • Image processing • Industrial design • Manufacturing • Mechanical engineering • Photogrammetry • Plant design • Publishing • Ship design • Surveying • Telecommunications • Urban planning • Utilities – gas, electric, water



In 39 of the 50 departments of transportation in the United States, Intergraph applications for surveying, civil engineering, and GIS enable the DOTs to design and maintain the nation's transportation infrastructure.

New opportunities arise when you go with the CAD standard.

MicroStation can give you a foot in the door on major projects around the world. For example, the U.S. Army Corps of Engineers and their subcontractors use MicroStation-based applications. On the massive Hong Kong airport project, Intergraph has been named CAD supplier in the four contracts announced so far. Through numerous contractors and subcontractors, Intergraph applications will play a major role in designing and building the new airport and township, as well as the railway that connects them to Kowloon and Hong Kong.

Designed for Windows NT – the new Technical Desktop Series workstations.

Intergraph has traditionally supplied complete software and hardware solutions. In keeping with this tradition, Intergraph offers its own systems designed for Windows NT. They're optimized for CAD immediately out of the box, with full networking capabilities built-in. So it's simply plug-and-play. And with an Intergraph workstation, display clarity, high resolution, and graphics performance make viewing your work a pleasure.

These fast, affordable systems are perfect for running the new technical applications from Intergraph, along with thousands of other applications that run under Windows. And workstations in the Technical Desktop Series are fully interoperable with other systems on your network.

Low-cost suite of AEC applications

Feature-packed and available at a low cost, Intergraph's MasterWorks applications for architects and civil engineers bring a new level of power and value to the technical desktop. Intergraph brings to the Windows world functions formerly available only in high-end CAD systems. The MasterWorks series includes these applications:

RoadWorks – transportation engineering
DesignWorks – architectural design
CogoWorks – coordinate geometry
FrameWorks – structural modeling
SiteWorks – site design

Whatever your project, MasterWorks will empower you to master your design challenges.

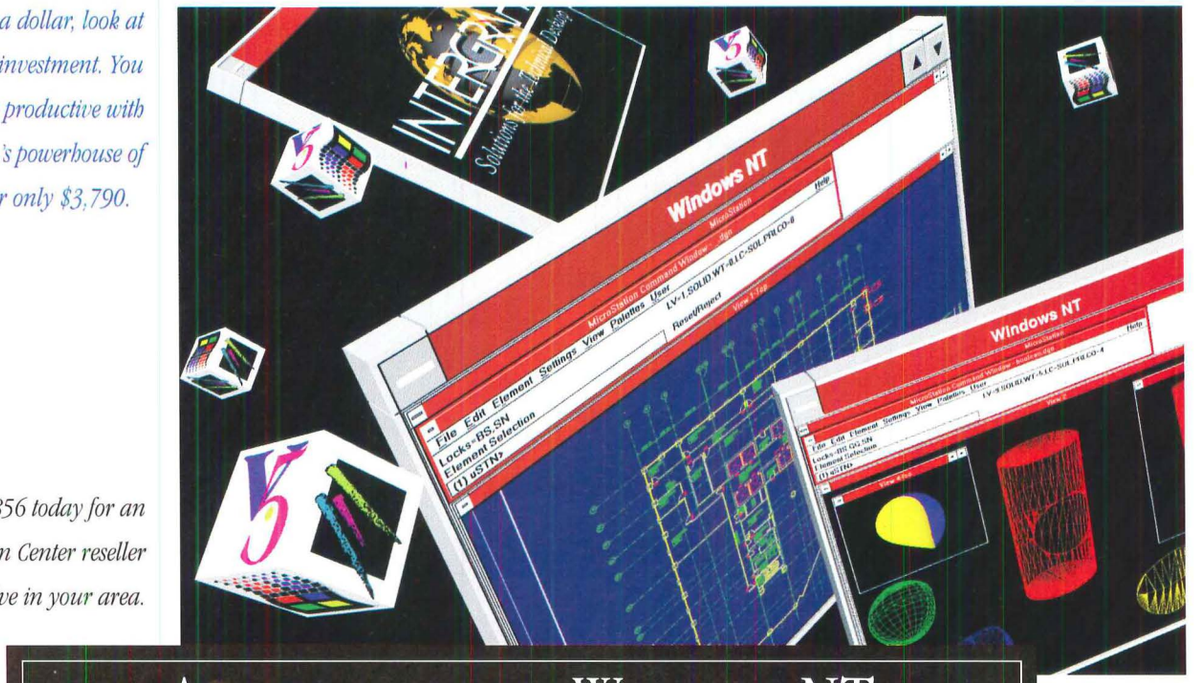
Affordable, expandable geographic information systems (GIS)

With the Modular GIS Environment (MGE) solutions for the PC, Intergraph gives you the best of both worlds – the power of the world's leading GIS on the world's most popular computing platform. Using MGE PC solutions, you can build an integrated, powerful GIS without investing large amounts of time, money, or resources. Start with a single PC and add workstations and sophisticated software as your needs grow. Or expand your existing MGE network with cost-effective PC seats. MGE PC solutions include:

MGE PC-1 – database creation and project management
MGE Grid Analyst PC – spatial modeling and analysis
MapInfo for Windows – desktop thematic mapping
MGE Project Viewer – read-only database display and query

Before you spend a dollar, look at the value of your investment. You can be highly productive with MicroStation's powerhouse of features for only $3,790.

CALL 800-345-4856 today for an Intergraph Solution Center reseller or sales representative in your area.



APPLICATIONS FOR WINDOWS NT

Innovative technology – once the domain of high-end systems – is now available on the technical desktop. For a more productive future, this is what you need . . .

Workgroup integration.

Intergraph pioneered reference files, the technology that enables each member of a workgroup to easily share designs with others. And, since .dwg files can also be referenced, you can work with AutoCAD-created data in MicroStation. In the Intergraph distributed computing environment, you share information, printers, plotters, and storage devices – and see dramatic savings in time and money.

Integrated applications.

Intergraph's integrated data management architecture provides access to technical information within applications and across disciplines. This means that Intergraph's applications can address an entire project workflow from end to end. Access to information across disciplines is made even easier by the fact that all applications feature the same easy-to-learn-and-use graphical user interface.

Smooth operation between operating systems.

Many of Intergraph's customers operate on networks that include a mixture of workstations and PCs, so interoperability is essential. Because Intergraph application file formats are common across hardware platforms, there are no problems of data incompatibility or translation, and sharing data is easy. Also, basic Windows NT includes all the tools needed for TCP/IP communication with our UNIX-based systems, so users can mix UNIX-based and Windows NT-based workstations in their networks and enjoy smooth interoperability.

Relational database support.

Intergraph data management tools feature built-in interfaces to Oracle, Informix, and other database management products. This support of leading databases in multiple environments enables you to create links to them without programming.

Growth path.

If you choose to upgrade your hardware or add other high-end technical applications, Intergraph gives you a growth path. You can upgrade your system and continue to share files.

Open systems and industry standards.

Your investment in hardware and software is protected by Intergraph's continuing support of major standards for computing, networking, drafting, and design.

Value-added services.

Intergraph also provides support in the form of project implementation, customization, systems integration, training, and worldwide service and maintenance.

Call 800-345-4856 for an Intergraph representative in your area.

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INTERGRAPH

Solutions for the Technical Desktop

CAD Performance: The Issue of Speed

Architect **Curtis J.S. Olson** shares the results of speed testing of popular PC CAD programs and discusses why software speed is important.

The problems of choosing and implementing Computer Aided Design (CAD) are many, but making CAD a success requires five essential ingredients:

1. Enthusiastic support from management and staff.
2. An initial and ongoing commitment to training and development.
3. Functional, easy to use, and feature-rich software.
4. Fast hardware with the resources to match the drawings and jobs.
5. Fast software.

Speed is among the most important aspects of successful CAD implementation. Without speed and proper response from a CAD system, you cannot gain access to the power of that software product, and without that access, all the other goals of successful CAD implementation will suffer.

In 1985, long before the advent of Intel's 386 and 486 chips, our firm, Bahr Vermeer & Haecker, Architects, purchased GDS from McDonnell Douglas. The software ran on a Digital Equipment Corporation Micro-Vax I. The combined software and hardware speed of GDS allowed us to produce whole jobs with CAD, not just a portion of a sheet to be finished later by hand on a drawing board.

In 1990 we were enticed by the increasing speed and sophistication of PC-based CAD and by the low prices. We chose to take a serious look at moving away from the Vax to a PC-based system. We knew from experience with GDS, that even where we had a mixture of fast and slower machines in the same office, the same person did more work on the faster machines. Architects' productivity with CAD is linked to the number of keystrokes and mouse picks they can enter into the machine. Accordingly our firm developed, as part of our investigation of PC CAD software, a performance model to test the speed of the various programs we considered. What follows is a description of the operations included in each test, and the results of our evaluation of several popular CAD programs.

Performance Model

From our GDS data, we identified several operations that accounted for half of all the entries. From our studies of other CAD products, we knew that in some fashion these operations were universal to those CAD products; they were not instantaneous and typically forced the user to wait.

The GDS "monitor" file allowed us to count the number of times in an eight-hour period each task was performed, and we could establish a statistical model (task and quantity) of those typical CAD functions.

Our performance model creates a set of parameters that reflects a typical CAD user's day in our office. This overcomes the shortcomings of benchmarks, in that they are not placed in the context of a production day.

DXFIN/DWGIN and DXFOUT. Translations are a fact of life. Even AutoCAD has to move drawings between different versions of the program. Translating may be done only several times during a project, but it is essential to know it can be done and will not take forever. Because translation is not a daily project task it is not a part of our performance model. However, we did test this aspect of the programs in order to determine how translation time might affect performance over the course of an entire project (1).

First Display. This measure is of the time it takes to open up a drawing and display the entire drawing on the screen. As this time decreases, the user will be more likely to switch drawings to make changes as they occur, reducing the potential for mistakes.

Zooms. An important feature for working within a drawing, this measure refers to the fast display and zoom feature. As an example, the drawings used in this test are 30" x 42", but only 9" x 12" on the screen. Without fast zooming response, working on the drawings becomes absurdly slow. We designed this test around the idea that a person needs to get close in the first (medium) zoom and can perform a lot of work from that zoom. At some point, more detail is needed and a closer (tight) zoom is required. With named views, it is typical to return to the medium zoom, but at some point one returns to the overall view. There are work-arounds for CAD software packages that support multiple windows on the screen. However, for the purposes of this test only one window was used.

Select Object. This simple function is probably the most overlooked productivity item, yet it is among the most important because it is the most often used. Think of trying to type a letter and being forced to wait half a second or more before you could type another keystroke. The direct corollary is the object search function. For example, running a string of dimensions requires multiple object hits to locate points, querying existing data for level, and snapping a line to an intersection of existing lines. All of these elements of the function require speed.

Optimum Wait Times

Officials from Autodesk state that they consider an eight-second wait the point where the user thinks something is wrong with the computer. This is why we see so many programs with progress indicators. It illustrates the fact that users become impatient with computer-enforced wait.

IBM uses similar claims in their sales presentations, although their figure is one second. Our CAD staff perceive they work twice as fast on a machine that has a total wait time of three hours as opposed to a machine with four hours in a given work day.

From our experience, the following information suggests wait times and their effect.

Translation In or Out

Many times there are ways to translate drawings in batch mode. If the process for one drawing takes longer than three minutes, people will do something else, or become distracted.

Object Selection

Because this is the most repeated function, people expect very snappy results. People cannot respond with mouse picks in much less than one-fourth of a second. If they need to repeat something frequently, they begin to feel the delay of one-half second. One-half to one second becomes distracting. In one second to two seconds, people can still tolerate the wait, but at two seconds and above it becomes distracting enough to hamper productivity.

(continued on next page)

Translation File Data

Software	File Size DXFOUT (bytes)	File Size Drawing File Format (bytes)	Translate in DXFIN or DWGIN (seconds)	Translate OUT DXFOUT (seconds)
Drawing P1C				
Autocad DOS	1,472,790	533,575	76.15	45.47
Autocad Windows	1,388,446	642,560	79.31	45.77
Datacad	1,277,855	1,187,840	126.51	305.50
Fastcad	1,137,277	266,557	32.63	18.26
Microstation DOS	1,388,446	642,560	59.06	80.22
Microstation Windows	1,388,446	642,560	76.38	103.21
Versacad	1,408,714	1,493,504	272.07	182.48
Drawing P1O				
Autocad DOS	8,184,306	2,724,134	349.44	247.26
Autocad Windows	6,044,805	2,669,568	356.91	285.25
Datacad	6,402,932	6,041,600	820.36	1,521.95
Fastcad	5,910,479	1,365,198	89.95	40.22
Microstation DOS	6,044,805	2,669,568	1,592.38	557.71
Microstation Windows	6,044,805	2,669,568	1,592.38	557.71
Versacad	N/A	N/A	1,545.81	N/A

1 TRANSLATION WAIT TIME CHART

Optimum Wait Times

(continued from previous page)

First Display

Because the image is painting itself on the screen, the user feels that something is being accomplished, and can tolerate longer wait times. Anything up to eight seconds is easily tolerated and with that time as an upper limit, people feel free to switch drawings without much problem.

Zooms and Redraws

These functions are important because they are "in-between" steps. A speed of up to two seconds is highly desirable, while two to four seconds is usually acceptable, and four to eight seconds is tolerable. Above eight seconds is distracting.

Total Wait Time

When the times all come together, there can be some give and take between some slow and fast functions. However, if a CAD system is slow in one respect it is usually slow in most other respects.

Redraw. This function cleans up screen clutter and refreshes the screen after the creation or deletion of graphics.

The Test

For the purpose of this performance model we took a quantity of these operations that we felt approximated their use in a full work day. The frequency of use was approximately 11 operations per minute (5,250 operations/480 minutes in 8 hours). Since these four operations represent only half the operations of typical CAD use, the total frequency would be 22 operations per minute. This may sound like a lot, but it is not; run a string of dimensions and track the entries and the time, and you will see.

The machine used for testing was a DELL 486 D/33mhz with 16mb of RAM, 320mb IDE 15ms hard disk drive, 16" DELL color monitor, and SVGA graphics controller on the mother board. This is a fast and very capable machine for performing CAD tests.

The test drawings are the floor plans from a $9.28 million remodeling and expansion of a Junior High School in Lincoln, Nebraska designed by our firm (figs. 2, 3). The drawings were split into four "matchline" areas so they could fit on a 30" x 42" sheet at 1/8 = 1'-0" scale. The object of this testing is to time the performance of several different sizes of drawings. The smallest of the floor plans was drawing P1C. The largest of the drawings was P1O. Using these two drawings made for a very good test because they are real life drawings and offer two sizes to see how the size difference affects wait time in the performance model.

With most systems, nobody would consider working on a drawing as big as P1O. It is the overall building floor plan. For our use, we split the drawing into four files. When we combined the drawings, the system was too slow to work in an efficient manner. Splitting drawings is not an uncommon practice to maintain speed and it illustrates the problem associated with slow performance. If we could have practically worked on the entire drawing without splitting, we would have.

All software was installed according to instructions. Each vendor was contacted for recommendations in fine tuning their software for optimum speed. Memory management was provided by Quarterdeck's QEMM version 6.02. Disk caching was provided by Symantec's Norton Disk Cache from Norton Utilities version 6.0.

The drawings were produced with GDS. They were translated to AutoCAD's DXF format and then translated into the drawing file format for each CAD system. After that they were translated back to DXF format to evaluate the differences in file size and to assure that they could be translated back.

The zoom areas were defined with graphic outlines in the drawings to maintain consistency in zoom areas. Each product supported saved views and each view was defined and saved around these outlines. The named views also helped maintain consistency.

MicroStation was the only product that could directly read (DWGIN) an AutoCAD drawing (except if you count AutoCAD reading its own files). In each case the DWGIN was faster. For testing purposes, the DXF generated file was used to maintain consistency with the other products.

Each drawing file was compressed with either a built-in function, or a procedure supplied from the vendor.

After all of the software was loaded and the drawings translated, the hard disk was optimized with Norton Speed disk from Norton Utilities version 6.0. The computer was cold booted before each round of tests to eliminate any lingering memory conflicts from the other CAD software.

Each drawing was timed with the following procedure:

1. first display
2. zoom medium
3. perform the search tests
4. add 20 random rectangles
5. delete 20 random rectangles
6. redraw
7. zoom tight
8. zoom all
9. proceed to the next drawing

The procedure was performed five times on each drawing. In addition, the object search was performed a minimum of twenty times. If the time was instantaneous, then it was considered to be zero.

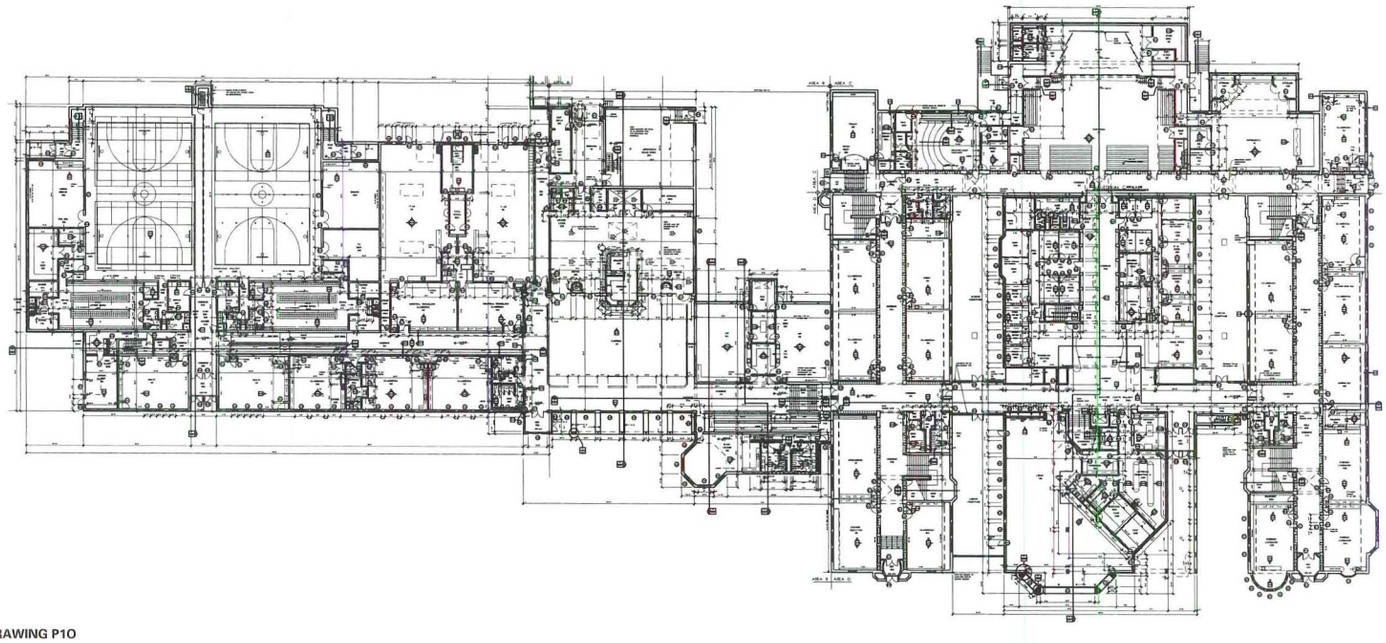
Observations

All the CAD software was easy to install. An experienced computer user could ignore the documentation all together.

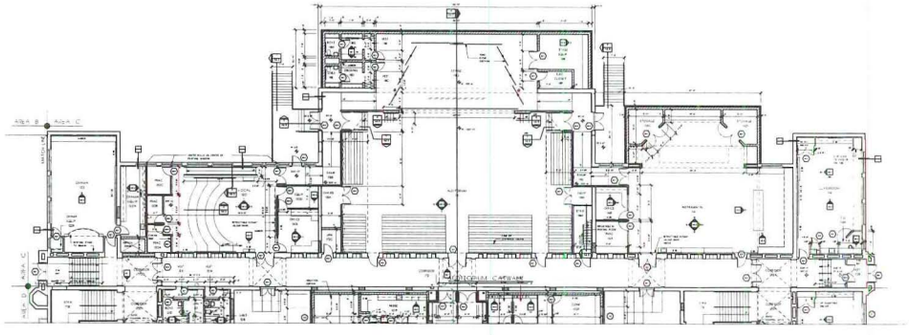
Even though our test machine had ample memory, it took some parameter adjustments to optimize performance. Although some vendors recommend against a large disk cache, setting a large disk cache is the easiest non technical way to improve performance. Regardless of settings, none of the products had excessive paging to the hard disk.

Some vendors suggested using a RAM disk for some of the important files. A disk cache performed just as well if not a bit better. (4, 5)

FastCAD. FastCAD was very easy to install and configure. It runs just as fast as a DOS application under



2 DRAWING P1O



3 DRAWING P1C

Windows as it does in DOS. It did not require any fine-tuning of memory, or disk caches.

In addition, optimized versions for 286, 386, and 486 machines are included in every package so the user can take full advantage of the computer already purchased. FastCAD lives up to its name and turns in a very impressive result for all three drawings. Its time on the largest drawing was competitive with some of the times other systems spent on the smallest drawings. Its main speed drawback is its front to back search of the drawing file. If the object being located is towards the end of the drawing file, FastCAD's response is slow.

FastCAD's file size is very small compared to the other systems. Running out of disk space is a common problem for any computer user. FastCAD's drawing file sizes would help maximize the usable disk space available to the user.

FastCAD's main drawback is that it has very little third-party support. In lieu of a variety of ready-made architectural applications and libraries it would take a user quite some time to build up her or his set of common routines and objects.

MicroStation - DOS. MicroStation clearly has the best-looking user interface. Compared with DataCAD, AutoCAD, and VersaCAD, MicroStation is much faster, but when compared with FastCAD, it is significantly slower. On the smaller drawing, MicroStation takes 51 percent more time than FastCAD to complete the same tasks. As the drawings increase in size the time differential grows almost twofold.

MicroStation took some adjusting to optimize performance. The element cache was set to 4mb and the disk cache was set to 6mb.

MicroStation has a good amount of third-party support, though not nearly as much as AutoCAD.

MicroStation - Windows. MicroStation Nexus's release gives the product the functionality to operate as an almost full Windows product. It does not have to run full screen, but it retains its Motif user interface that is different from Microsoft's Windows interface. For drawing P1C, The Windows version pays a 50 percent penalty over the DOS version. However, when it comes to the largest drawing P1O, the performance penalty is reduced significantly to 5 percent. Without the need to operate under Windows, MicroStation users would be advised to launch their program from DOS.

DataCAD. DataCAD holds it own, just edging out AutoCAD on the smaller two drawings. When it comes to the largest drawing, DataCAD's performance suffers. Compared with FastCAD and MicroStation, DataCAD imposes quite a bit of wait time. DataCAD's performance was helped most by using a 12mb disk cache. Without the high setting, the hard disk thrashed to the point of ruining performance.

AutoCAD - DOS. Autodesk recommended using a one-half megabyte disk cache, but one megabyte helped performance slightly. Since we had ample memory the increase caused no problems.

Object snaps under AutoCAD release 12 are much faster than in previous versions. Any AutoCAD user wanting better performance would be well advised to upgrade. However, AutoCAD is very slow compared with FastCAD and MicroStation. FastCAD

Software	Display		Zoom							Select		Redraw		Total		
	First display (seconds)	Total (hh:mm:ss)	Zoom tight (seconds)	Total (seconds)	Zoom medium (seconds)	Total (seconds)	Zoom all (seconds)	Total (seconds)	Grand total (hh:mm:ss)	Select object (seconds)	Total (hh:mm:ss)	Redraw (seconds)	Grand total (hh:mm:ss)	Total wait time (seconds)	Total wait time (hh:mm:ss)	Percent greater than fastest
Number of operations	**50**		**300**		**300**		**600**			**3500**		**500**				
Drawing P1C																
Fastcad	1.33	0:01:07	0.60	181.20	0.71	212.40	0.74	446.40	0:14:00	0.40	0:23:03	0.75	0:06:24	2675.33	0:44:35	100.00
Microstation DOS	6.52	0:05:26	0.87	260.40	1.51	453.60	3.41	2048.40	0:46:02	0.00	0:00:00	1.53	0:12:47	3984.07	1:06:24	148.92
Microstation Windows	10.45	0:08:42	1.26	378.00	2.61	783.00	6.39	3836.40	1:23:17	0.00	0:00:00	2.52	0:20:58	6917.67	1:55:18	258.57
Datacad	21.94	0:18:17	1.34	402.60	2.04	612.00	4.48	2685.60	1:01:40	0.69	0:40:07	1.77	0:14:46	8117.54	2:15:18	303.42
Autocad DOS	31.95	0:26:37	1.31	394.20	2.10	631.20	7.52	4514.40	1:32:20	0.07	0:04:08	2.11	0:17:36	8583.12	2:23:03	320.82
Autocad DOS App/Windows	37.60	0:31:20	1.42	426.00	2.42	724.80	8.19	4912.80	1:41:04	0.09	0:05:25	2.38	0:19:51	9599.88	2:39:60	358.83
Verscad	27.45	0:22:53	14.16	4248.00	15.55	4666.20	22.88	13725.60	6:17:20	0.35	0:20:18	2.35	0:19:32	26457.90	7:20:58	988.96
Drawing P1O																
Fastcad	6.35	0:05:18	3.07	921.60	3.15	945.00	3.52	2109.60	1:06:16	0.98	0:57:22	5.41	0:45:04	10452.43	2:54:12	100.00
Microstation DOS	43.38	0:36:09	2.78	832.80	5.36	1606.80	18.00	10797.60	3:40:37	0.00	0:00:00	5.41	0:45:04	18239.07	5:03:59	174.50
Microstation Windows	44.38	0:36:59	2.57	772.20	5.08	1522.80	24.37	14623.20	4:41:58	0.00	0:00:00	4.64	0:38:41	21597.97	5:59:58	206.63
Autocad DOS	113.13	1:34:17	5.42	1625.25	6.85	2054.40	17.04	10225.20	3:51:45	16.77	16:18:15	6.93	0:57:47	81865.87	22:44:26	783.22
Autocad DOS App/Windows	151.17	2:05:59	6.01	1803.60	7.78	2334.60	19.19	11512.80	4:20:51	18.13	17:37:43	7.78	1:04:50	90703.08	25:11:43	867.77
Datacad	134.23	1:51:51	74.26	22279.20	6.22	1865.40	119.41	71644.80	26:36:29	1.97	1:55:00	6.01	0:50:06	112434.24	31:13:54	1075.68

4 CAD SYSTEM WAIT TIMES

Software	Software start from DOS (seconds)	Total software start from DOS (seconds)
Number of operations		8
Fastcad	1.52	12.13
Datacad	3.43	27.44
Versacad	6.89	55.10
Microstation DOS	16.10	128.77
Microstation Windows	17.50	139.97
Autocad DOS App/Windows	17.51	140.08
Autocad DOS	17.80	142.42

5 SOFTWARE START TIMES

Acknowledgments

My appreciation is extended to those supplying materials for the research for this article: Denise McLaughlin and DELL Computer Corporation for supplying the computer and monitor and a hard disk large enough to contain all of the software and data.

Mark Huettner, Architect, Bahr Vermeer & Haecker, Architects, and Larry Hennings, Lincoln Public Schools, for the use of the drawings.

Quarterdeck's QEMM.

Symntec's Norton Speed Disk.

The various CAD Software vendors for supplying their software for testing.

handled the largest drawing, P1O, in 2 hours and 56 minutes while AutoCAD handled the smallest drawing in 2 hours and 25 minutes.

When it comes to the largest drawing, AutoCAD's performance suffers a wait time of 22 hours and 54 minutes for the test procedure. There is a threshold in drawing size between 1.5 and 2.7 megabytes when AutoCAD's ability to perform drops considerably. To maintain acceptable performance, AutoCAD drawings need to be small.

There are options available to speed up performance, such as more powerful graphics boards and display list drivers, but these will increase cost.

Offsetting the relative slowness of the program is the large number of third-party architectural applications, which can speed drawing time by reducing the number of inputs necessary to perform the same common tasks.

AutoCAD - DOS Application for Windows. As a DOS application under windows, AutoCAD release 12 pays a performance penalty of 6 percent to 10 percent over the DOS application, increasing with the size of the drawing. Unless there are other features of Windows that are needed, operating under Windows would slow performance. Autodesk will soon announce a true Windows AutoCAD application that it claims is faster than the DOS application.

VersaCAD. VersaCAD had the distinction of being able to translate all three drawings without much trouble. However, because of a limit of 31967 objects in the drawing, it could work on only the smallest of the three drawings. While VersaCAD is one of the most venerable CAD products, and has a fair amount of third-party support, it is not well suited to large drawings under our performance model.

Conclusion

CAD users thrive on fast systems. Slow systems are frustrating and become an obstacle to productivity. This keeps users focused on grappling with the CAD system instead of concentrating on their projects.

Our performance model represents a reasonably productive day and should apply to most situations. If your work habits differ significantly from ours you may want to perform your own test, or to weight our results differently. If you intend to use a third-party add-on to any of these CAD engines you should be aware that the speed of your system will depend on the speed of both the engine and the add-on.

Keep in mind that the CAD vendor's flashy demonstrations seldom use large drawings. Make sure the types and sizes of drawings you plan to use on the system will perform to your expectations.

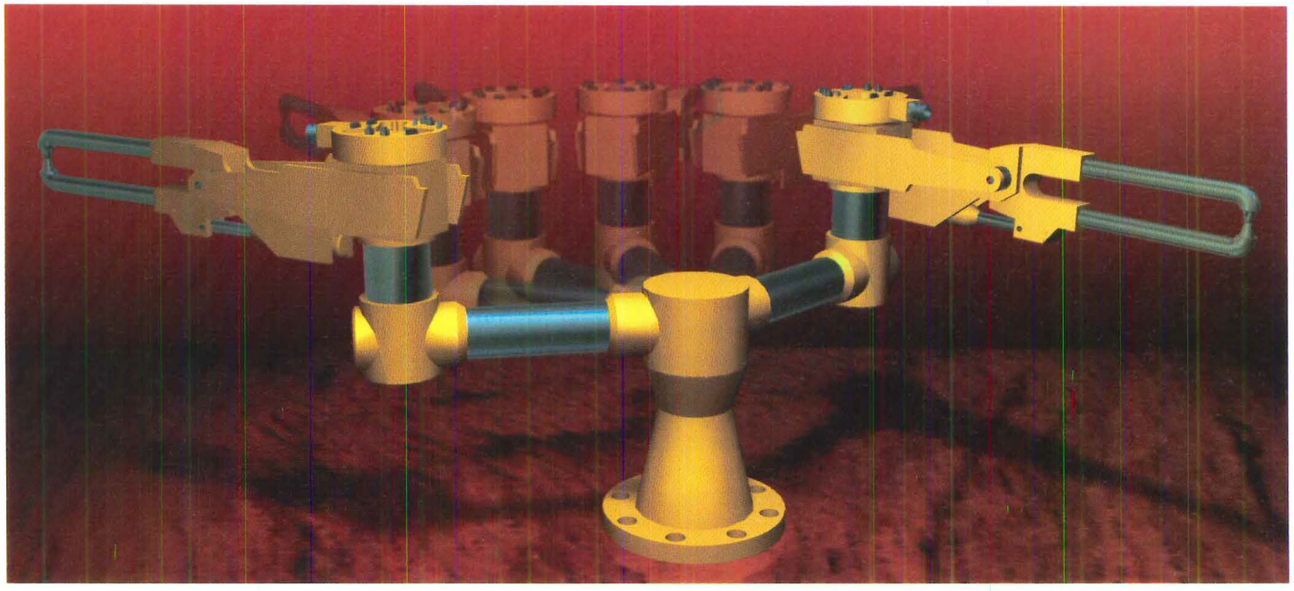
Next time you consider upgrading or buying new equipment, compare the cost of the investment to the number of work-hours you will gain with the same number of employees. You will probably find that faster hardware and software pays for itself in very short order.

When choosing CAD systems, make sure all of the five ingredients for success are addressed. Speed is the first problem to tackle. You do not necessarily need the fastest system, but you do need to make sure your system will not stand in the way of effective CAD implementation. If the system's performance is too slow for your needs, you will never have access to the powerful features of the CAD product.

Curtis J.S. Olson ■

The author is an architect and CAD manager at Bahr Vermeer & Haecker architects in Lincoln, Nebraska.

These are typical AutoCAD drawings.



(In 3D Studio.)

3D Studio® Release 2 transforms your AutoCAD® drawings into captivating presentations. You can add photorealistic textures, reflections, light and shadows. Or add motion for product demonstrations and architectural walk-throughs. Now, for a limited time, your purchase of 3D Studio includes free Visual Link™ software, an AutoCAD extension that lets you easily combine the precision of AutoCAD with the modeling and animation tools of 3D Studio. Curious? Call 1-800-879-4233, ext. 245 and we'll send you more information. Outside the U.S. and Canada, fax 415-491-8311.

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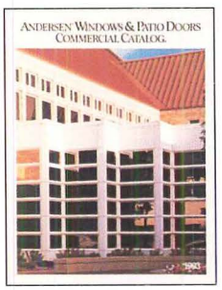

Detail drawings, color photographs, specifications, size tables, tecnical data, and descriptions of all Andersen windows and patio doors for nonresidential applications are included in this 92-page catalog. To create large Andersen Feature Windows for nonresidential applications, information on Andersen Reinforced Joining Material is also included in the catalog.
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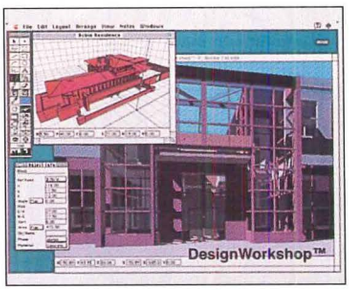

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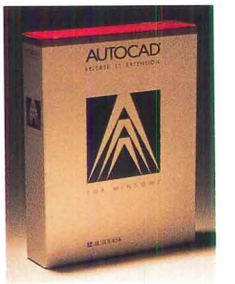
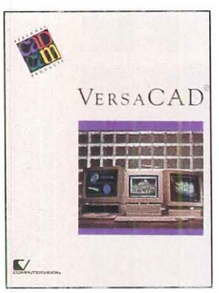
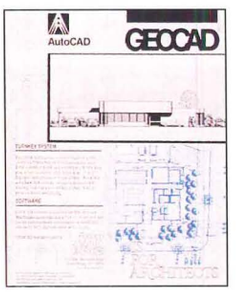


AutoCAD, the world's most popular design software, is now available for the Windows operating environment thanks to the new Extension for Windows, a $99 product. The Windows interface and inter-application features add substantial productivity and ease-of-use advantages to a program that is already uniquely flexible and versatile for nearly every design application.
Autodesk. Circle No. 362



VersaCAD software from Computervision is one of the most popular drafting packages on the market; it is used by more than 80,000 people worldwide. This full-color, eight-page brochure describes the wide-ranging capabilities of VersaCAD. It is lavishly illustrated with real examples submitted by VersaCAD users.
Computervision. Circle No. 364



GEOCAD is an architectural application to AutoCAD. It contains symbol libraries and routines that create complete presentation and working drawings, including plans, details, schedules, architectural fonts, and much more. GEOCAD has a uniquely friendly interface that builds on architects' skills instead of forcing them to learn new ones. **GEOCAD Inc.** Circle No. 365

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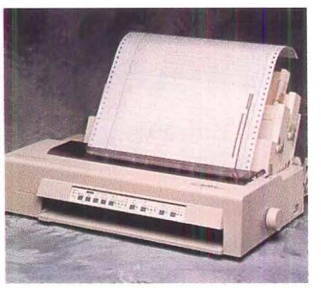

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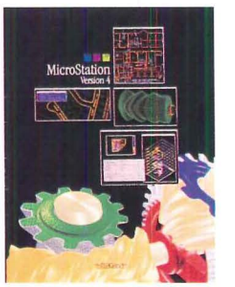

From conceptual design to production drawings to facilities management, MicroStation is the architect's CAD software of choice. With more than 500 commands and features, including configurability tools to tailor user interface to your needs, MicroStation automates the workflow for efficient and easy production. It also has Windows capabilities using DOS, built-in rendering, and multi-line element.**Intergraph Corp.** Circle No. 369
(continued on page 52)

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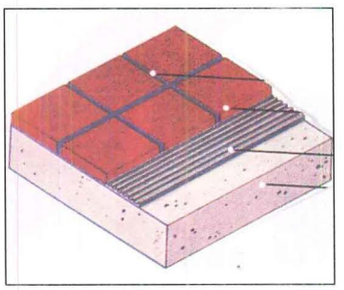
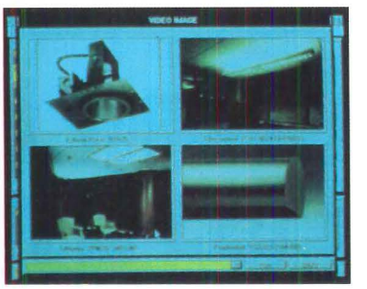
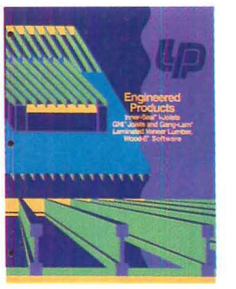


LATICRETE International, the leading manufacturer of ceramic tile, brick paver, marble, and stone installtion materials and systems, has developed an innovative computerized program designed to offer answers to the question: 'How much mortar is needed to install ceramic tile or stone for a specific project.' Complimentary copies of the program are available.
Laticrete International. Circle No. 370



Lumen-Specifier is a Microsoft Windows-based lighting design and specification tool. It is a time-saving program that allows users to search an extensive equipment database, evaluate video images, line drawings and complete specifications, perform photometric and economic calculations, and generate architectural renderings, schedules, and cut-sheets.
Lighting Technologies, Inc. Circle No. 371



Engineered wood products are designed to eliminate the problems with solid sawn lumber. Our catalog for Gang-Lam LVL, LPI-Joists, and GNI Joists (all designed to be stronger, more stable, and easier to handle than solid sawn lumber) includes span and uniform load charts and information about two new CAD engineering software products called Wood-E® Cut and Wood-E®.
Louisiana-Pacific. Circle No. 372

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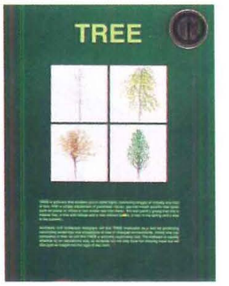
Marvin Windows & Doors. Circle No. 373



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Onyx Computing. Circle No. 374

This new catalog, *How ARRIS helps you win more business and be more productive on the business you win*, documents the many features – photorealistic three-dimensional models, among them – of the ARRIS AEC CAD system. No project is too complicated for ARRIS.
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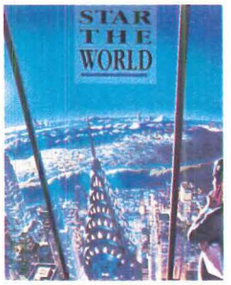

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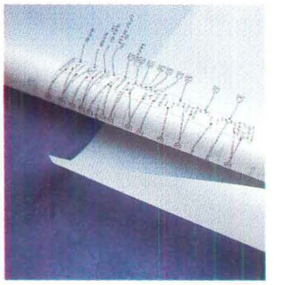

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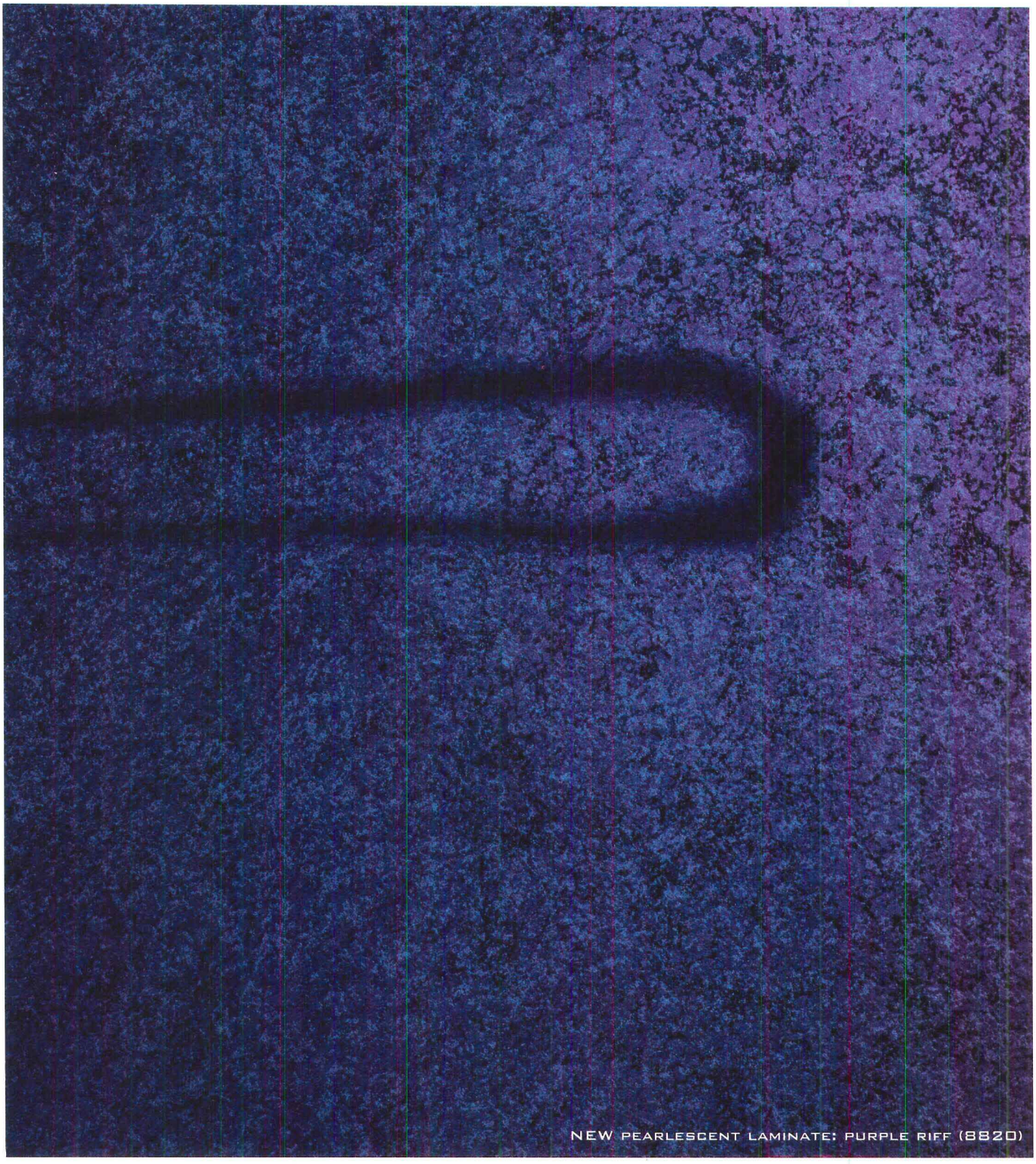

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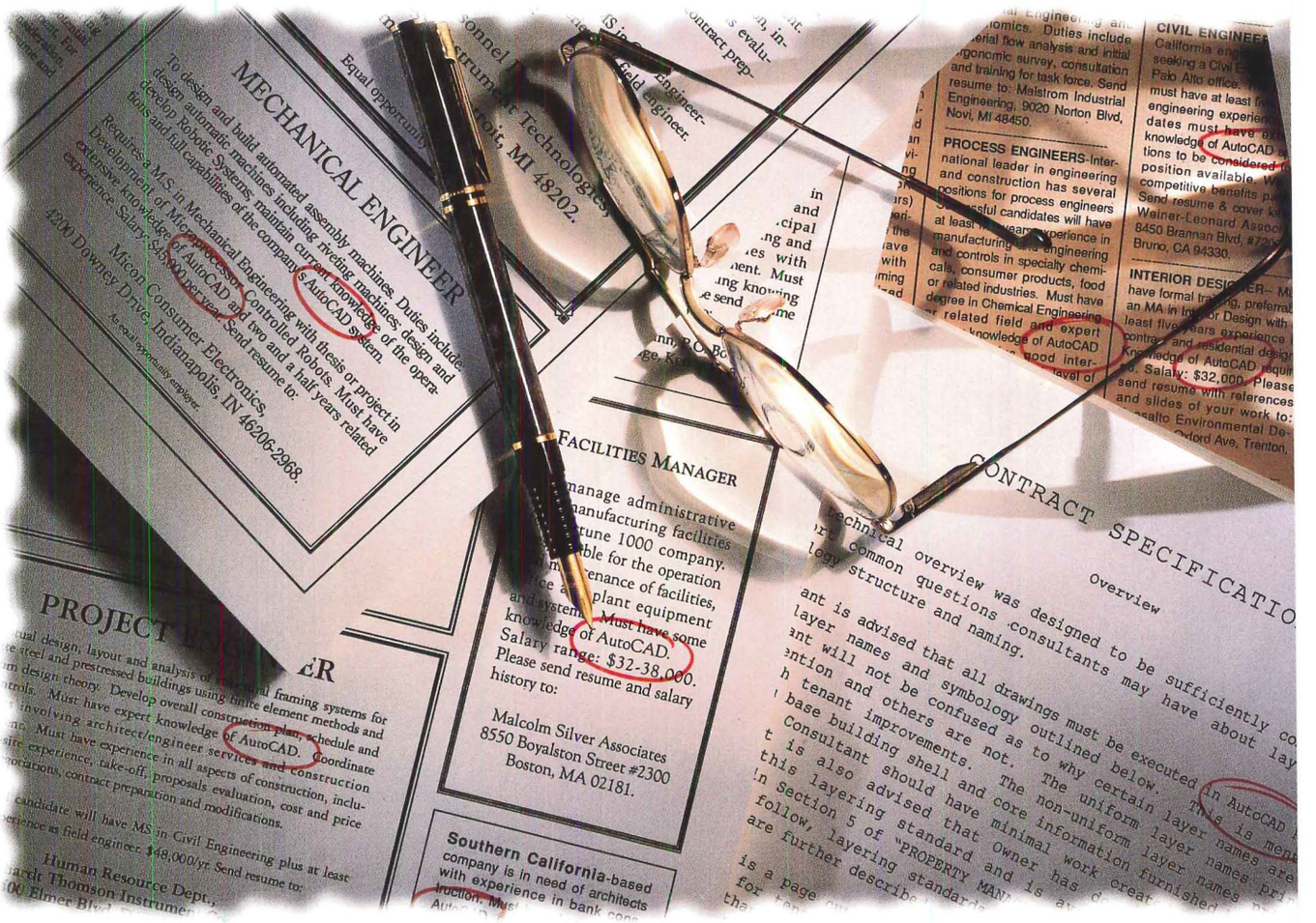

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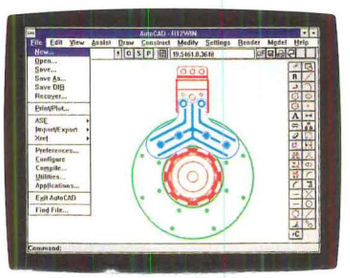

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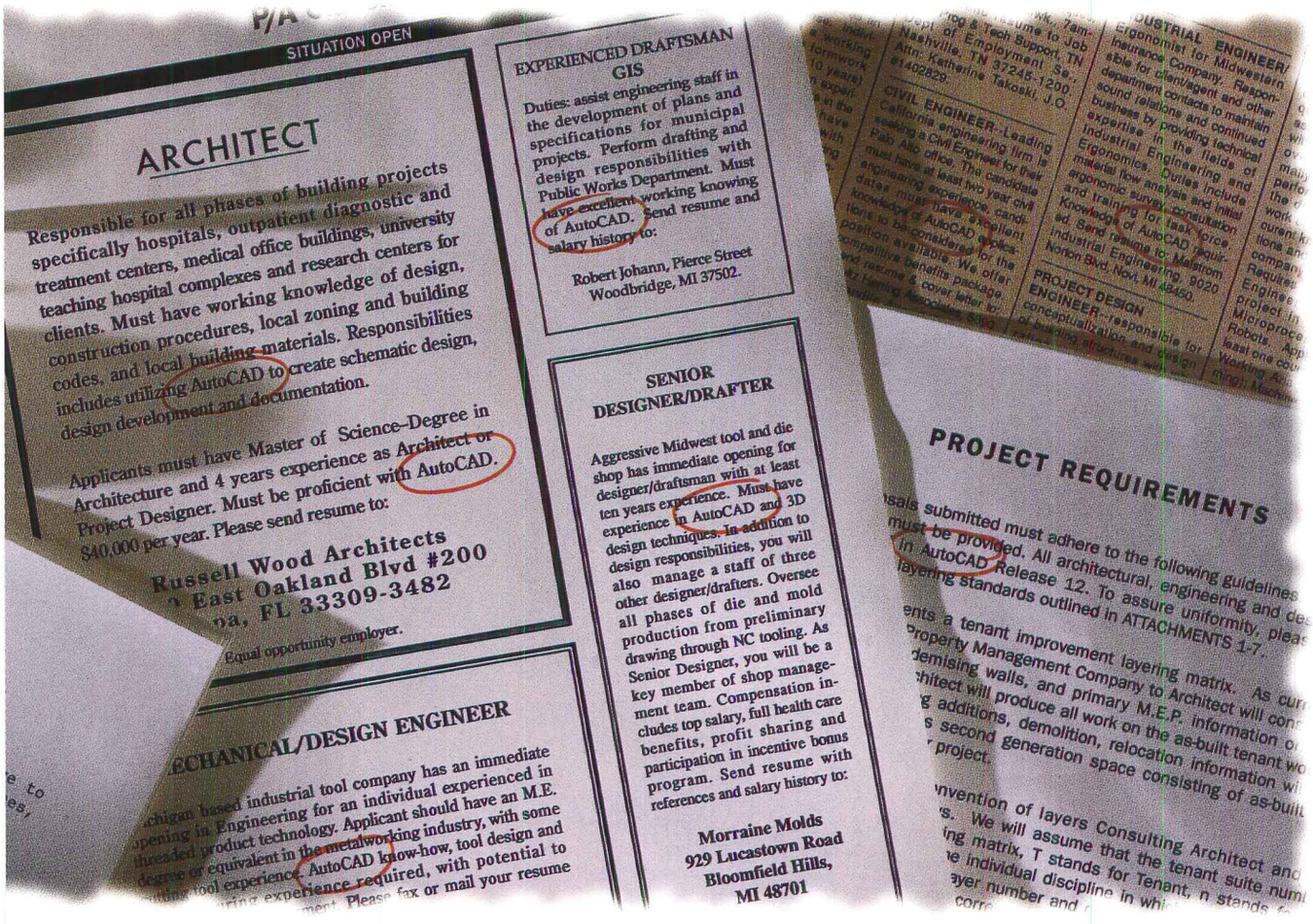

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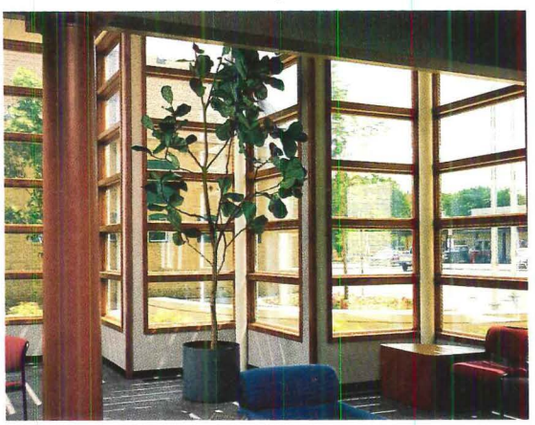

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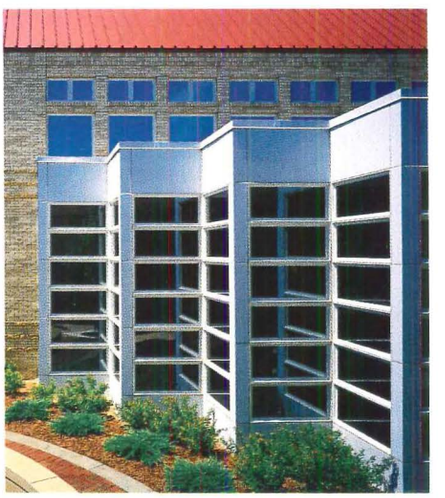
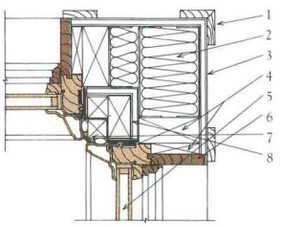
PROJECT ARCHITECT: JON THORSTENSON. HICKEY, THORSTENSON, GROVER, LTD. EDINA, MN.



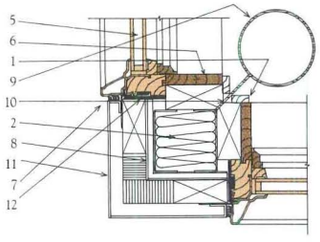


INSIDE CORNER DETAIL

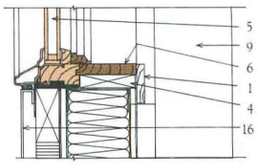
STANDARD

OPTIONAL

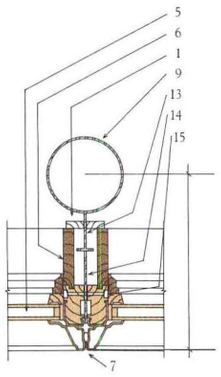
CAPTURE TWO DIFFERENT ERAS.



OUTSIDE CORNER DETAIL



SILL DETAIL



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15. THROUGH BOLT
16. METAL PANEL/METAL STUD WALL

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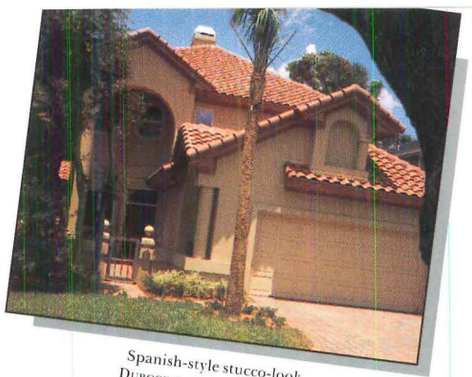
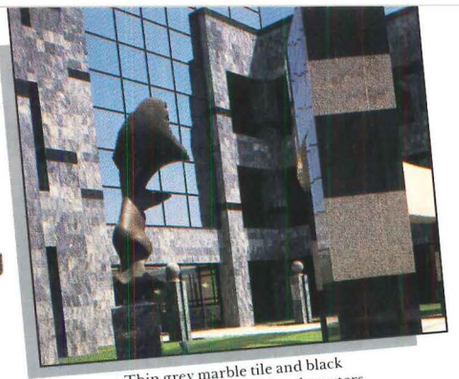
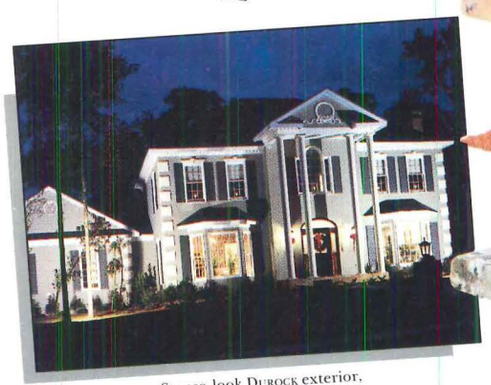


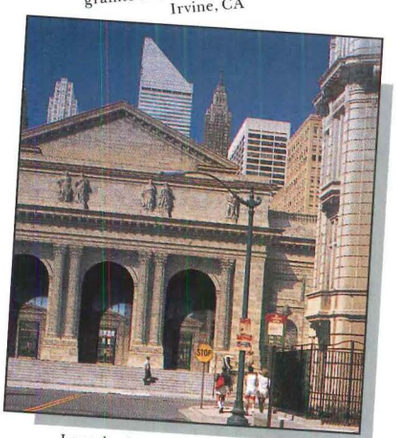
Spanish-style stucco-look DUROCK exterior, residence, Jacksonville, FL



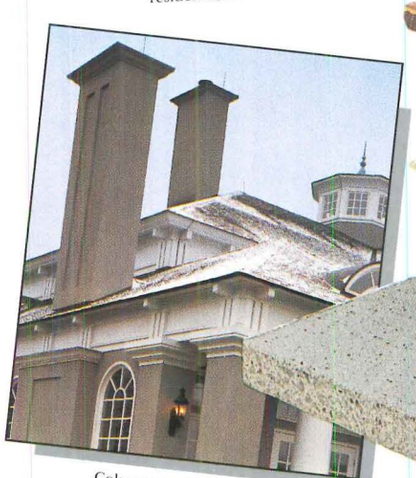
Thin grey marble tile and black granite tile, corporate headquarters, Irvine, CA



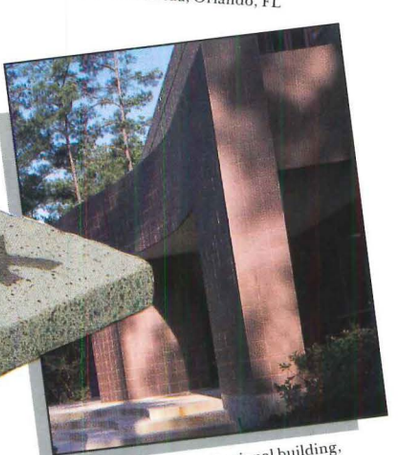
Stucco-look DUROCK exterior, residence, Mobile, AL



Long-lasting movie set of DUROCK Exterior Cement Board, Universal Studios Florida, Orlando, FL



Columns, walls and chimneys of DUROCK Exterior Cement Board with stucco finish, residence, Goose Pimple Junction, VA



Ceramic tile, professional building, Conroe, TX

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Practice

Engineer **Peter Kogan** evaluates the two ways typically used in defining the scope of mechanical engineering services.

Management: Scope of Work

How should architects determine the scope of work of their engineers, especially their mechanical engineers? There are essentially two routes architects can take: design/build or full engineering services.

Some architects think mechanical engineering consultants can save them from possible future troubles, and so opt for full services. Others feel just the opposite: dispensing with the services of an engineering consultant will keep them away from troubles on the assumption (just an assumption!) that mechanical problems are not a part of the architect's responsibility. Both viewpoints have strengths and weaknesses.

Design/Build

The design/build approach to mechanical engineering involves setting the minimum standards for the contractor's performance and expected "deliverables." Performance specifications are used to prescribe the type of required systems and loads, to provide basic design criteria, and to establish an acceptable quality of materials and workmanship. It then becomes the primary responsibility of the contractor to build the mechanical system using the construction documents (if any), prepared internally or by an outside consultant.

Proponents of this approach point out that it is less expensive to have contractors do their own engineering than to have it done by a professional consultant. I have not yet met an architect who prefers this design/build approach over full engineering services, although many architects have completed design/build projects with a minimum of problems. Often these are office improvement projects with open floor plans, pre-determined mechanical systems, and straightforward engineering. The contractor builds and "designs" along the way with the construction.

An experienced contractor, the proponents say, does not need a lot of engineering knowledge to build a simple mechanical system. That is true. But what about a slightly more complicated system, a system that falls outside the standard boundary? What about a system that cannot be designed and built by rule of thumb? What about a lack of thorough construction drawings?

One unwelcome result of such design/build projects is that they are often underdesigned. A shopping center we were recently asked to investigate required twice as much air conditioning capacity as that provided by the design/build contractor.

Another thing that is sometimes lost in such projects is quality. It is difficult to demand from a design/build contractor good workmanship and a quality product .

Finally, there is the matter of cost. I find it difficult to believe that a contractor will charge less than a professional engineer for performing comparable work. If the total cost of the contractor's engineering work looks modest, portions of it may be hidden in the total cost of the construction. Also many building departments require fully engineered drawings to be presented for review and plan check, so verify with the local building officials before committing yourself to a design/build approach.

Full Engineering Services

Full engineering services involve the preparation of complete construction documents, drawings, and specifications by a consulting engineer. Usually, construction administration is provided by the design engineer as well.

One of the important benefits of a fully engineered project is the constant contact, coordination, and interaction between the architect and the engineer during the design process. Many issues, large and small, are solved because of this collaboration, something that the design/build approach does not allow.

Recently, an architectural office requested from us a proposal for a project with full engineering services, insisting to the owner that it was in his best interest to have a complete design package. The architect's arguments were very simple. "For one," he said, "I do not believe that an accurate and detailed proposal can be put together based just on design/build performance specs. Second, I do not want to deal with numerous change-order requests, once the contract is awarded. Third, I want a competitive, thorough bid proposal based on a full set of design drawings and specifications."

Full engineering services may seem more costly, at least in the short run, but they raise the level of completeness and correctness of a project, and also raise the quality of work. In the end, the owner gets a much better product for the money. **Peter Kogan** ■

The author is a principal of Peter Kogan Associates, a consulting engineering firm in San Francisco.

Practice Points

Those firms looking to market services to large corporations may want to buy the *ONE LIST*, a directory of facility and real estate executives from over 600 companies. The publication is available for $545, or $1,295 in electronic format, from MRH Associates, 232 N. Kings Highway #607, St. Louis, MO 63108; 1-800-727-5478.

The 1992 Mark Zweig & Associates *Satellite Office Survey of A/E/P & Environmental Science Firms* is now available. The survey explores the organizations of various branch offices, and their respective success and failure. The survey is available for $175 from Mark Zweig & Associates, One Apple Hill, Box 8325, Nantick, MA 01760; (508) 651-1559.

According to a recent *Professional Services Management Journal* survey, billing rates for design firms have not changed in the last two years. According to PSMJ Director of Research, Bill Fanning, "In markets where fee cutting predominates, the scope of services is being cut. In markets where fee cutting is not as predominant, firms are providing more services for the same fees." The journal attributes this situation to client expectations formed during the recession.

"How to Start and Manage the Small Architectural Office" is a series of two audio workshops from *Guidelines* newsletter. The audiotapes are available for $75 each from Guidelines, Box 456, Orinda, CA 94563; 1-800-634-7779.

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PAC-CLAD Metal Roofing Panels figure prominently on the recently completed Saddlewood Retail Center in Naperville, Illinois. The Architect, Healy Snyder Bender & Associates, selected Colonial Red PAC-CLAD for the roofing panels and Forest Green for the adjacent metal trim. Both colors serve to complement the extensive use of rough-hewn cedar on the project.

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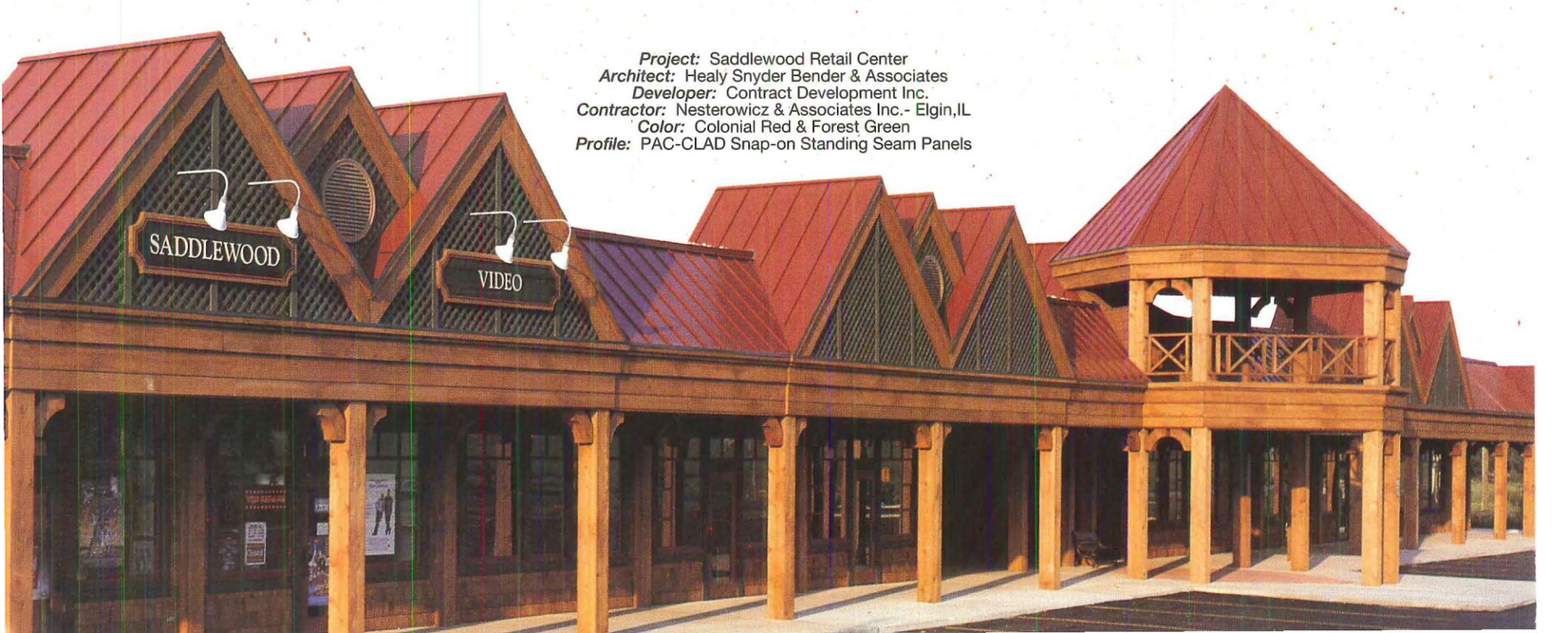
Project: Saddlewood Retail Center
Architect: Healy Snyder Bender & Associates
Developer: Contract Development Inc.
Contractor: Nesterowicz & Associates Inc.- Elgin,IL
Color: Colonial Red & Forest Green
Profile: PAC-CLAD Snap-on Standing Seam Panels



Norman Coplan discusses a case where Federal racketeering law was used against people wrongfully claiming to be architects.

Law: Designing Dons

The Racketeer Influenced and Corrupt Organizations Act, commonly known as RICO, was originally adopted by Congress as a tool to be used against organized crime when there is a pattern involving at least two related illegal acts that pose a threat of continued criminal activity. Could this act be applied to a claim relating to the unlawful practice of architecture? In a novel action in the Federal Court, the owner of a residence has asserted a RICO claim against the principals of a remodeling company, alleging that the defendants' fraudulent actions constituted racketeering activity.

The plaintiffs in this case wanted to construct an addition to their single-family home and to remodel their kitchen. In 1985 they received, as part of a broad mailing to the general public, promotional brochures from a remodeling company advertising their specialization and expertise in home improvements. In a series of telephone conversations the plaintiffs were assured that their home improvements would be designed and supervised by architects. A contract was then executed between the parties.

When plans were prepared they were initialed by one of the principals of the company who, again, allegedly represented to the plaintiffs that he was a licensed architect. The plaintiffs also received business cards describing defendants as "architectural consultants."

After construction commenced many problems arose relating to the quality of the work being done, and eventually the plaintiffs stopped construction. They were reassured, however, by various representatives of the remodeling company that theirs was a professional firm and that licensed architects designs had produced the plans and had also supervised the actual construction. Trusting in these representations the plaintiffs allowed the remodeling company to resume construction, and continued to make payments.

The work on the plaintiffs' home continued in a shoddy manner: the foundation was sinking and the addition was in danger of collapse. The town refused to issue a certificate of occupancy and required that the area be sealed off until substantial repairs were made. The plaintiffs spent $50,000 to repair and rebuild the addition that had just been constructed by the remodeling company.

In December of 1986 the plaintiffs commenced a state action against the company for damages, alleging fraudulent inducement and breach of contract. Even after the suit had commenced, they continued to receive promotional brochures in the mail stating that the company staff included architects and further stating that "architectural consultants" with years of experience would design the project. In January of 1991, while preparing for trial in the State Court, the plaintiffs' attorney, at the suggestion of an architect retained by the plaintiffs as an expert witness, contacted licensing officials in the State and learned that none of the principals of the remodeling company was then or had ever been a licensed architect. Shortly afterward, the remodeling company filed for bankruptcy protection in the Federal Court.

The plaintiffs then filed suit against the individual principals of the firm in Federal Court alleging that defendants' fraudulent actions constituted a pattern of racketeering activity in violation of RICO. The defendants moved to dismiss the RICO complaint on the ground that it did not state a claim upon which relief could be granted. The defendants argued that the plaintiffs had failed to plead the essential element of a "pattern" to support a RICO claim. There is only one allegedly fraudulent scheme, stated the defendants, which induced the plaintiffs to enter into a contract, and the alleged numerous acts of telephone and mail fraud alleged by the plaintiffs all relate to a single isolated scheme relating to a single victim.

The plaintiffs, on the other hand, argued that the defendants perpetrated at least two acts of mail fraud in 1985 by sending fraudulent brochures to the plaintiffs and to the general public, and additionally engaged in 23 acts of wire fraud consisting of interstate telephone calls to plaintiffs, fraudulently promising that the work would be performed by licensed architects. Moreover, contended the plaintiffs, the fraudulent brochures they received were part of a broad mailing to potential customers over the course of several years, and thus the Court could infer the threat of a recurring fraud addressed to the public at large, in which the scheme to defraud the plaintiffs played only a part.

The Federal Court rejected the defendants' argument, pointing out that the brochures the plaintiffs received were part of a mass mailing to the general public, and the receipt of alleged fraudulent brochures as late as December of 1989 evidenced a threat of continuing fraud on the public that satisfies the RICO's pattern requirement. The Court concluded that it could not, as a matter of law, find the alleged facts insufficient to support a RICO claim.

The defendants also sought to dismiss the complaint on the ground that it was barred by the applicable four-year statute of limitations under which a cause of action accrues at the time that an injury resulting from a RICO violation is discovered or should have been discovered. Accordingly, contended the defendants, the claim asserted by the plaintiffs accrued in August of 1985, when the remodeling contract was signed, more than four years pri or to the institution of the Federal suit. In further support of its position, the defendants pointed out that whether or not someone is a licensed architect is a matter of public record, and a simple phone call to the State Licensing Board would have answered the question. The discovery of the alleged fraud should therefore have been discovered at a much earlier date. The Court concluded that whether the complaint was timely is a question of fact to be determined at a later stage in the litigation.

If the Appellate Courts uphold the application of RICO as a basis of liability arising out of the unlawful practice of architecture, a potent weapon would become available to support the integrity of licensing and registration laws governing professional practice. **Norman Coplan** ■

The author is a partner in the New York law firm of Bernstein, Weiss, Coplan, Weinstein & Lake.

William Lohmann describes some essential information sources for architects.

Specifications: Information Resources

Professional expertise based solely on experience is a thing of the past. Today no practitioner can safely rely on knowledge acquired in the past without constantly validating it against current information. Change is occurring too rapidly. Besides, the work force is more mobile than ever, and a source of personal experience leaves with every departing employee.

Sensitive to the need for keeping up, many firms are now reviewing their information resources. Although most in-house information is still on paper, today's resources are appearing in many new forms, including photographic, audio, video, digital, and optical media. They are at once more versatile and expressive than traditional forms and more readily and economically updated. As technological information becomes increasingly voluminous and complex, firms are also depending more on reliable outside resources.

Many office resources are generated in actual practice and are retained for future reference – usually for phased work and for litigation. These include project documents, correspondence files, and accounting records, which are infrequently used. Complete project files, from design sketches to closeout documents, can be archived concisely on diskettes. No more collapsing storage boxes or illegible file tabs.

Other materials are needed more frequently, such as information relating to a firm's special practice or the construction industry at large. Call it the area of professional context. Notices of current events and articles on economic, legal, and social issues may be of only short-term interest. A display board may suffice. But background information on clients, contractors, manufacturers, and potential consultants should be kept current and tailored to the firm's areas of interest. Quick reference publications such as P/A's Information Sources issue, Archimedia's Profile, Thomas Register of American Manufacturers, and those of the National Trade and Professional Associations of the United States, are useful for addresses and phone numbers. So are directories from selected trade and professional organizations.

Resources for firm management fall into several categories: business planning, financial and legal management, insurance, office property, personnel, marketing, information management, and office automation. Books, newsletters, government publications, operating manuals, and computer diskettes compete for shelf space as viable management materials and tools. As new philosophies, legislation, and marketing techniques appear, they also change rapidly. Newsletters like Victor O. Schinnerer's Liability Update help a firm keep current. Other basic resources include dictionaries, periodicals, periodical and holdings indexes, publication catalogs, telephone directories, a thesaurus, and maps.

Project management resources are important to efficient administration of the design and construction process. The Architect's Handbook of Professional Practice and standard AIA contract forms are good examples. Others are the CSI Manual of Practice, Architectural Graphics Standards and Time-Saver Standards, David K. Ballast's Guide to Quality Control for Design Professionals, and Contract Administration Manual for the Design Professions by Alan Culbertson and Donald Kenney.

Design resources close to the heart of architecture, should cover topics like design context, aesthetics, use, environmental design, and physical design. Design cannot proceed beyond the tablecloth stage without current cost information, working guides for site environmental conditions, and applicable regulations and standards. A firm's holdings should include the major building codes and ADA and OSHA requirements as well as NFPA and UL standards for life safety and fire-rated building components. The ACI Building Code Requirements for Reinforced Concrete and AISC Manual of Steel Construction are mandatory. The ASCE Minimum Design Loads for Buildings and Other Structures and other recognized references on structural design, durability, and weathertightness also come to mind. If applicable to its practice, a firm should have access to the publications of the Chicago Committee on High Rise Buildings and the Council on Tall Buildings and Urban Habitat. Architectural design classics, from Vitruvius to Venturi, also belong on the shelf (or computer).

The design process may also require extensive reference materials on the built environment. These can range from historical documentation (such as Bannister Fletcher's History of Architecture and Mumford's The Culture of Cities) of settlements, infrastructure, landscapes, and buildings to the building components described in the CSI format documents and numerous association publications. Current product catalogs, brochures, and samples are essential. Sweet's green books are a good beginning.

Such resources may also include extensive remote databases of reference material, some available via modem (such as "Dialog") and others on inexpensive CD-ROM disks. Demographic and geographic data, construction cost data, business and product information, reference standards, encyclopedias, and bibliographies are marketed by H. W. Wilson Co., R. S. Means Co., the National Institute of Building Sciences, and others. With proper equipment, CD-ROMs can display audio and video images as well as text and graphics.

To identify a core of essential information for professional practice, the Chicago Chapter of the Association of Architectural Librarians has produced a guide entitled Design Professional Information Resources. It was compiled as a bibliography of basic and supplementary reference documents, office and project management guidelines, and commonly used design manuals. The list is organized under the headings and subheadings of an office information filing system originally prepared for publication by the American Institute of Architects. Perhaps this is one resource that you should have in your library. (For information on the Design Professional Information Resources document, contact the author at (312)-427-7300.)

William T. Lohmann ■

The author is Vice President, Specifications, for Murphy Jahn in Chicago.

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Engineer	Behrent Engineering Company
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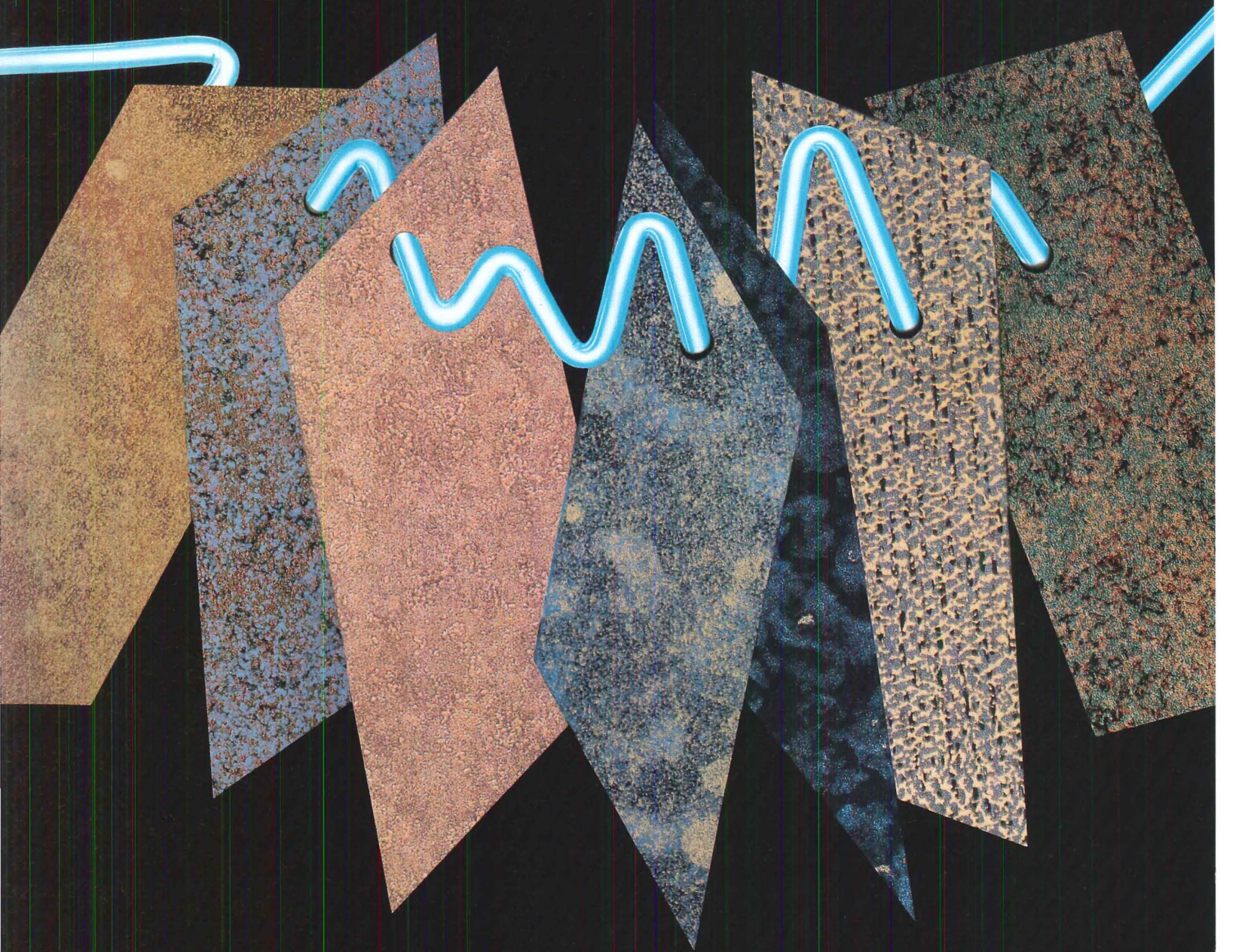

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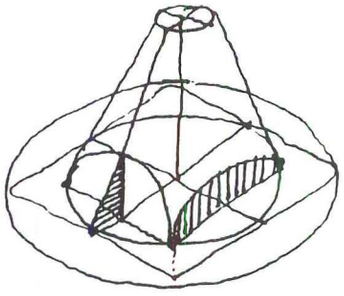
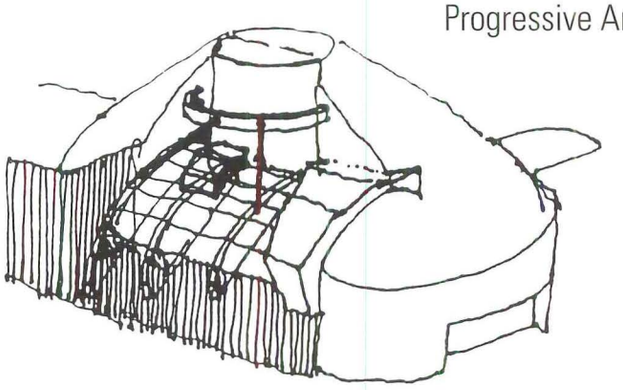
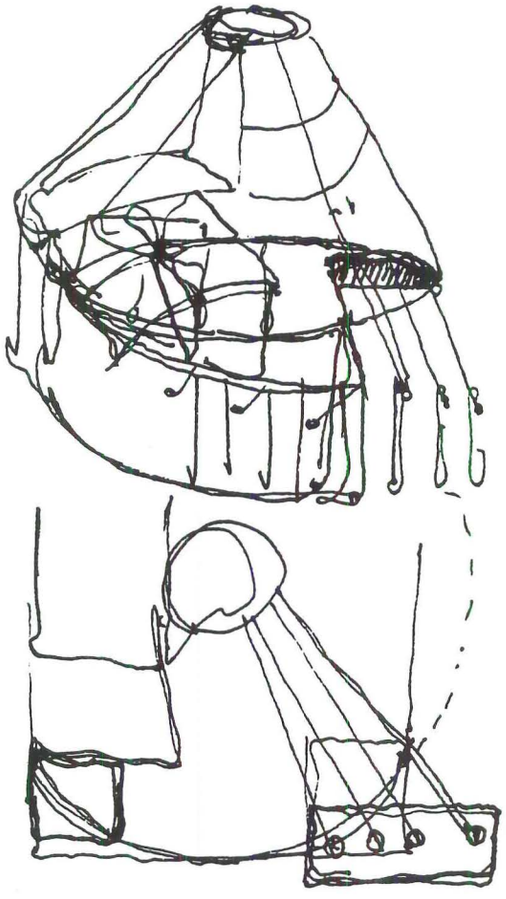




IMAGINATIVE RESPONSES TO DIVERSE DESIGN CHALLENGES are examined on the following pages.



Sketches show the evolving geometry of the conical core of Eric Owen Moss's Lawson-Westen House (next page).

ERIC MOSS HAS CREATED A HOUSE WITH INTERNAL VISTAS FOR A CONFINED LOT IN LOS ANGELES.

In Barcelona, architects Amadó & Domènech have converted a commercial building into a museum for the works of Antoni Tàpies, with a highly visible contribution from the artist himself.

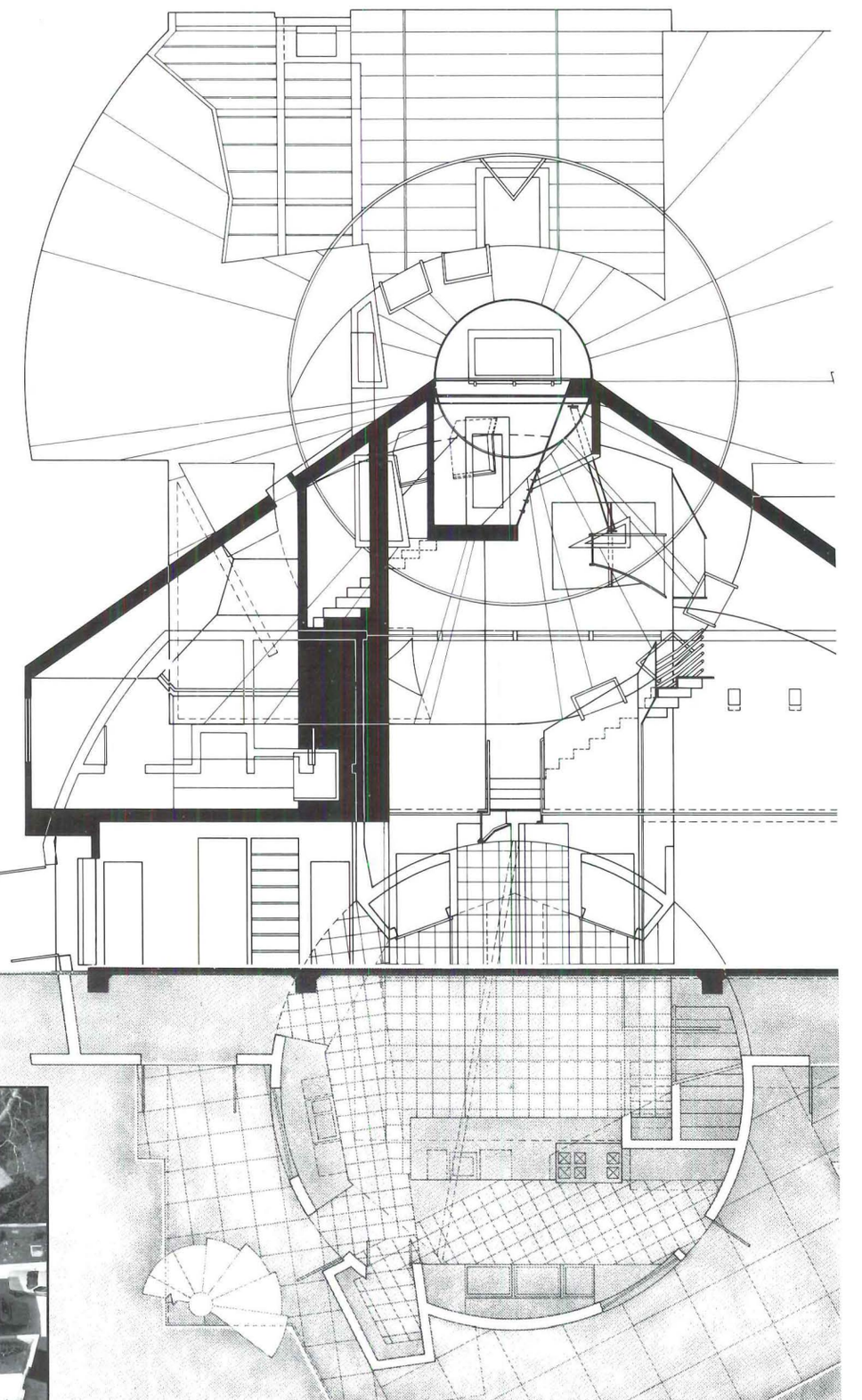
Our Emerging Talent subjects, Sheila Kennedy and Frano Violich of Boston, have launched a practice based on temporary and sometimes self-initiated commissions.

This issue's Critique feature examines Cleveland's Society Center office tower by Cesar Pelli and its relationship to the urban fabric.

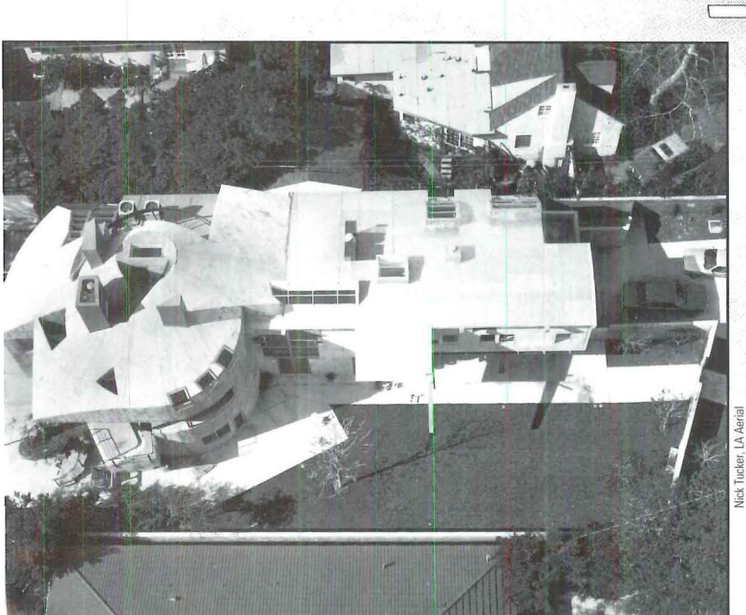
Architects Krueck & Sexton of Chicago have reinterpreted the design dictums of Mies van der Rohe in an apartment in one of his landmark buildings.

Into the Uncharted*

The exploratory architecture of the Lawson-Westen House by Eric Owen Moss elicits a heady response from barely mapped reaches of the psyche.



* from the poem "In Sight of the Invisible" by Moss Herbert



Nick Tucker, LA Aerial

AERIAL VIEW OF SOUTHEAST ENTRANCE FAÇADE (LEFT)

COMPOSITE GROUND FLOOR PLAN, LONGITUDINAL SECTION, NORTHWEST ELEVATION (ABOVE), DOOR/WINDOW ASSEMBLAGE, SOUTHEAST FAÇADE (TOP)

For an architect who delights in the incongruous, Eric Moss remains paradoxically consistent in wanting no part of our century's cult of science, or of the conceit that all will be explained. In the face of such cosmic complacency, Moss strives to undermine the certitudes engendered by our culture's elevation of the rational over the incomprehensible. "We're in the habit of claiming, 'We know now,' but we don't," he asserts. "We're as far from the truth as anybody ever was."

Moss's compulsion to refute tidy, empirical "truths" has manifested itself in the "confounding" architecture of many of his built works of the past decade, and such enigmatic, "exploratory architecture" is very much a part of the recently completed Lawson-Westen House in Los Angeles. Although the building, comprising a cone-roofed rotunda intersected by a vaulted bar, is derived from recognizable geometries,

the spatial impact of its 35-foot-high drum is so forceful it defies purely figural analysis. Housing the kitchen, the drum was conceived as the literal and figurative core of the house. In the towering volume above the countertops, a vertiginous stair, interspersed with flying steel girders, bridges, and columnar braces, winds around and across the drum, creating a well of Piranesian fantasy.

The rest of the house is organized quite rationally around the kitchen: on the ground floor, the double-height living room, a guest room, and a garage extend to the east; the dining room and playroom radiate from the hub to the north and west. A parabolic vault, derived from a vertical slice through the cone, spans the living room and the second-floor children's bedrooms; the master suite's ceiling follows the slope of the cone, which was cut away in certain areas to create cascading skylights.

Certainly, Moss's unusual fenestration – the play of light flooding through "fissures" in the roofs, or shafting through angled, butt-glazed windows cut out at the building's seams – has something to do with the house's gripping spatial qualities; so does the literally elusive structure supporting the vault: weaving in and out of view, the composite glulam and steel beams are "swallowed" at intervals by the plaster walls, emerging on the periphery of the rooms in fragments of wood and steel, before disappearing again.

Still, the thrill of the interiors remains a mystery. Oddly enough, a conceivable explanation occurred to me on the heels of a characteristic comment by the architect: in contrast to his own approach, which was "to question" every element and aspect of building, "Wright's is the architecture of the smug," Moss said. His dismissal brought to mind Grant Hildebrand's psychobiological premise in *The Wright Space: Pattern and Meaning in Frank Lloyd Wright's Houses* (University of Washington Press, 1991). In an effort to understand the enduring appeal Wright's houses held for their inhabitants, notwithstanding the buildings' often faulty function, Hildebrand drew on theories suggesting a biological foundation for aesthetic experience. First proposed by John Dewey, these were subsequently developed by geographer Jay Appleton to explain human predilections for certain landscape settings. Chief among these are the dualities of prospect and refuge, complexity and order. Appleton posited that the ability to command a view over some distance is innately pleasurable to our species; the sense of well-being is heightened in sheltered circumstances where one cannot be seen. The pleasure of the experience, Appleton suggests, is nature's way of promoting behavior conducive to survival. To explain the predilection for order and complexity, Hildebrand mentions the work of theorists such as Nicholas Humphrey, Peter F. Smith, and Daniel Berlyne, who noted the pleasure humans take in "diversity, structural complexity, novelty, incongruity, or surprisingness." Put simplistically, our enjoyment of these arises from an instinctual inclination to categorize all aspects of our environment, differentiating between the familiar (life sustaining, safe) and the unknown (and potentially hazardous).

On the most rudimentary level, it seems that the psychobiological premise can be applied to Moss's "pleasure dome," without imposing unduly on the architect's aversion to doctrine. (What better territory for exploration than the barely charted genetic reaches of our psyches?) In the Lawson-Westen House, both prospect and refuge are internalized, an apt response to a mundane residential lot that offered little in the way of true prospects. The stair commands views of various parts of the house and grounds; the far vista of the ocean, available at roof level, is exploited to the full with the strong prospect/refuge qualities of a crow's nest, perched close to the truncated peak of the cone, which is open to the sky, yet enclosed by tall walls on three sides. The pleasures of complexity and order, "incongruity and surprisingness" arise from the coincidence of the building's underlying geometry with the stairwell's irrational extravagance.

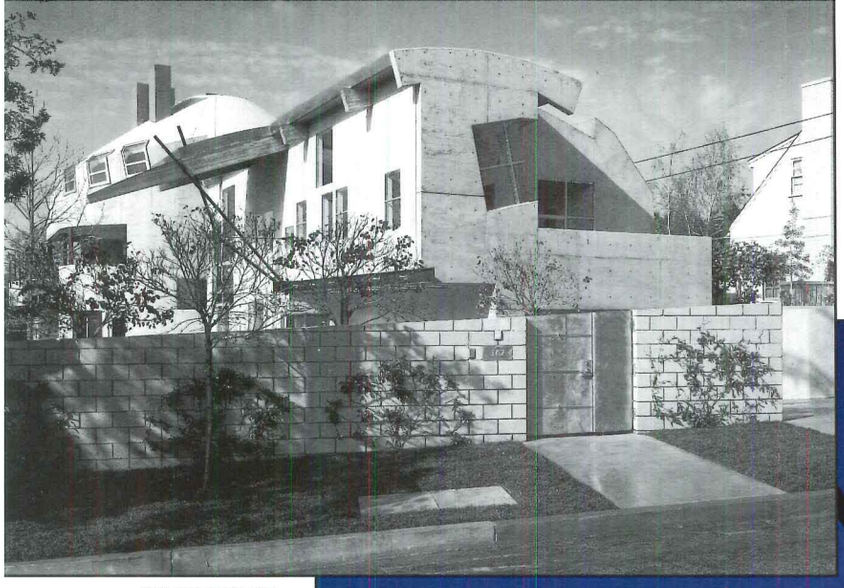
The dizzying quality of the stair structure also represents simulated danger – a familiar component of Moss's architecture, and one that jibes with the survival/pleasure hypothesis. Scads of children's books and movies, not to mention adult entertainment and sport, are based on the peculiar pleasure we take in being scared witless – providing our fear is generated under closely controlled conditions.

Unhappily, the exterior of the house pales by comparison with the interiors. In part this has to do with an unsatisfactory transition from outdoors in; the short loggia leading to the front door and the canopy marking its location seem perfunctory in that they don't really provide "intermediate" spaces of much value. The placement of the aluminum frame windows flush with the exterior wall plane further diminishes the tectonic "substantiality" (or "shelter cue") otherwise associated with cement plaster walls.

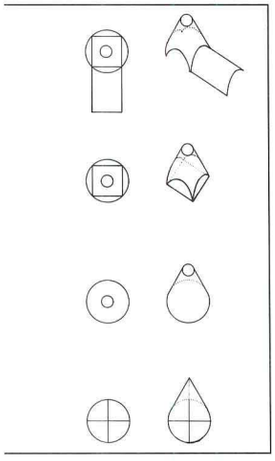
SOUTHWEST ELEVATION 10'/3m

Hildebrand allows that Wright was probably not consciously aware of the psychobiological pattern in his houses; the same can be said with some certainty of Moss. Another architect worth mentioning in this context is John Lautner, who in a sense represents the "missing link" between Wright and Moss. Creating spaces in many ways more poetic than the bulk of those built by his mentor, Lautner has in turn provided memorable precedents (in emotional impact – not style) for what Moss is attempting to do. Whether in his uncompromised breaking of the box, the commingling of interior and exterior spaces in the Arango House in Acapulco, or the head-reeling vistas afforded by the uptilted roof, utterly transparent walls, and precipitous pool deck of the Goldstein/Sheats House (P/A Nov. 91, p. 88), Lautner is a virtuoso of the prospect/refuge experience. His masterful shaping of deeply affecting volumes has gone hand in hand with significant innovations in both building technique and material application.

There can be little doubt that Moss is ready to bring forth public spaces of undeniable power; one hopes that he is allowed to build on a scale that would encourage his own refinements of technique. Practice is the one thing an architect cannot do solely by dint of imagination. **Ziva Freiman** ■

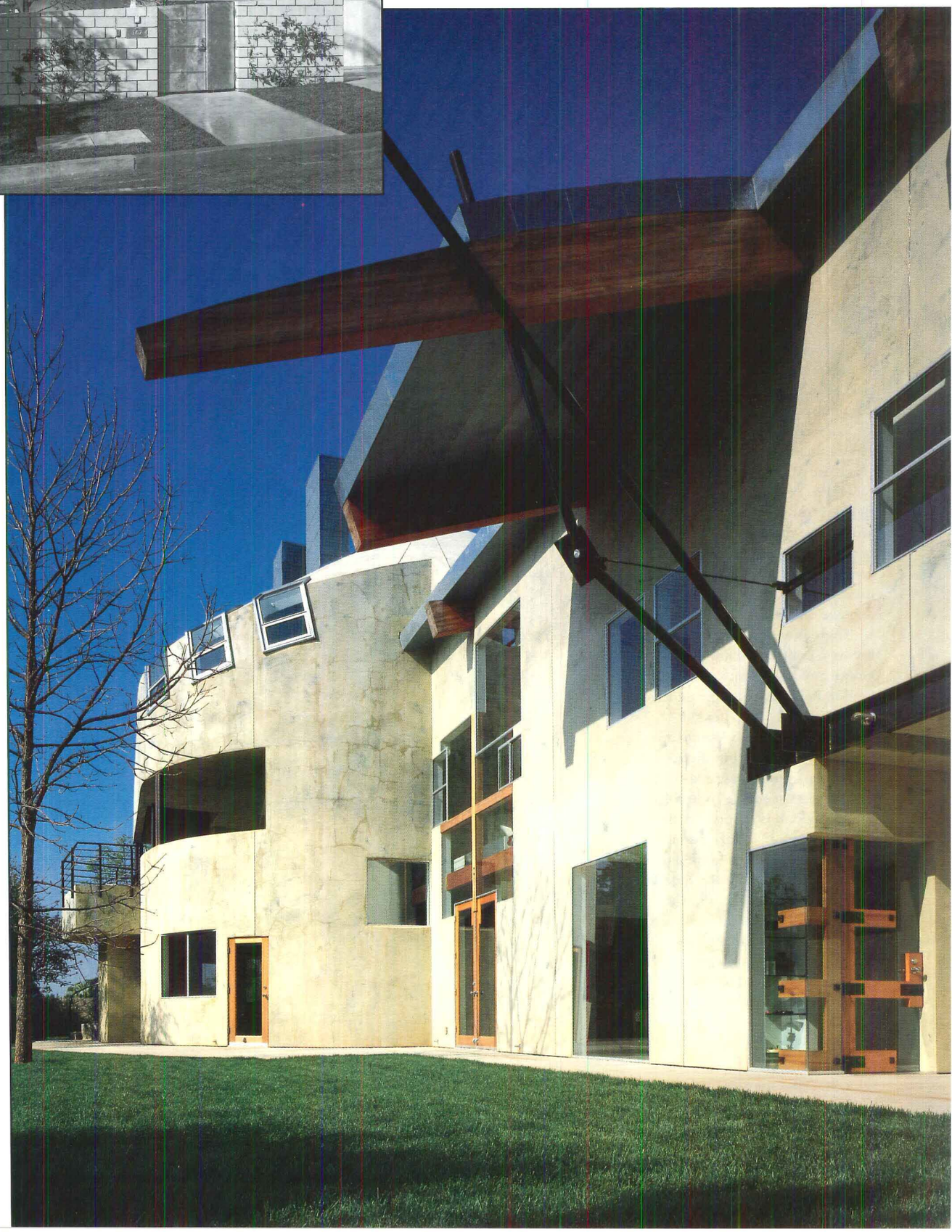


NORTHEAST FAÇADE WITH CAST-IN-PLACE CONCRETE WALL



GEOMETRIC COMPONENTS OF BUILDING

OBLIQUE VIEW OF SOUTHEAST FAÇADE WITH FRONT DOOR ON THE RIGHT (BELOW)



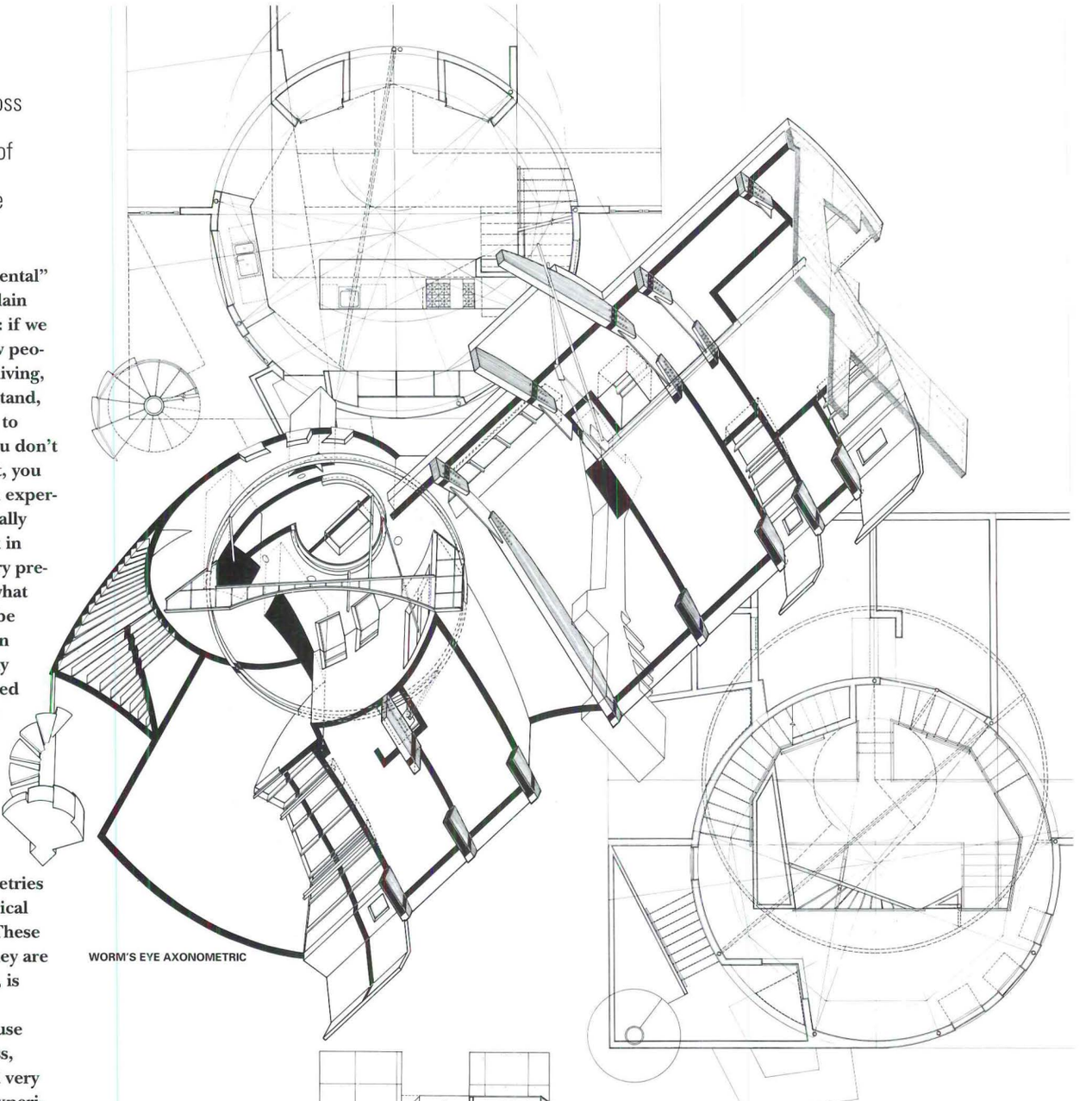
Architect Eric Owen Moss offers his construction of exploratory architecture

Using the term "experimental" is the only way I have to explain what I'm interested in doing: if we say architecture is about how people understand the issue of living, life is about trying to understand, failing to understand, trying to understand why and what you don't understand. If you're honest, you recognize that your life is an experiment. Life is about perpetually opening things up. The trick in architecture is to make it very precise; to try to acknowledge what can't be refined, what can't be explained, and put it down in some way. This is not to deny that anything has been learned in the world; architecture is part of history, part of a continuity.

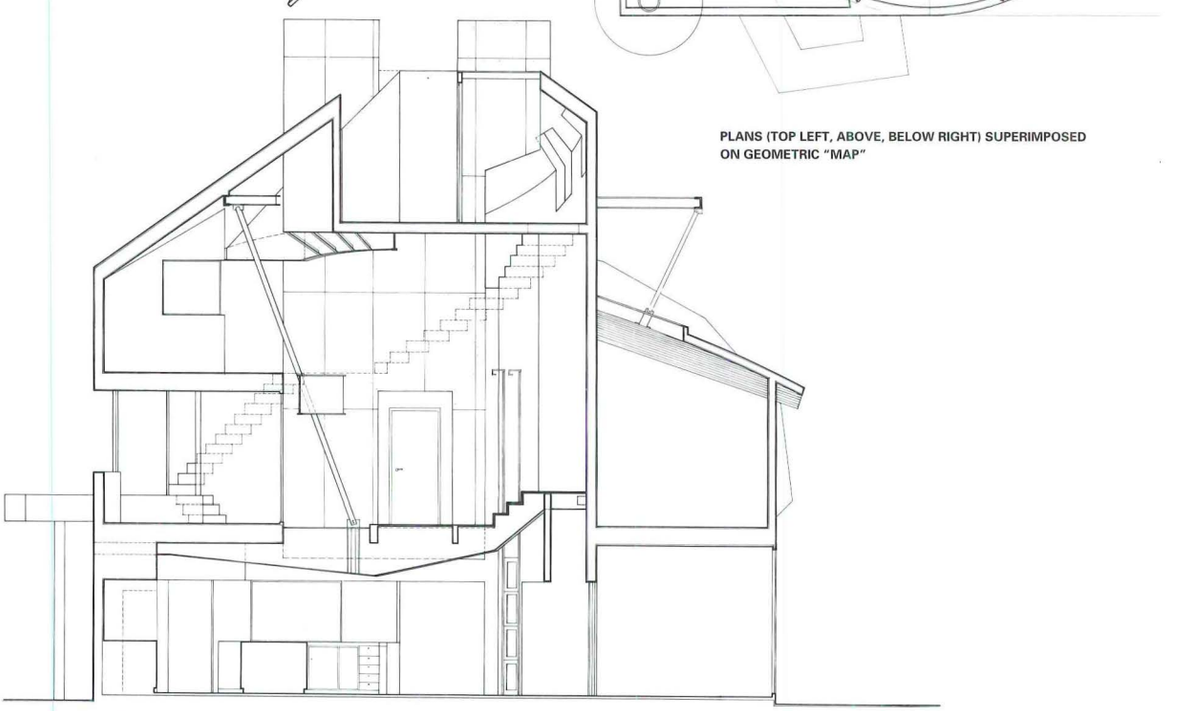
In the Lawson-Westen House there's an effort to make use of things that are quite old. For instance, it is derived from very old geometries and forms: there is a cylindrical order and a vaulted order. These are elemental things; how they are used, abused, reinterpreted, is another discussion.

There is a split in the house between limited and limitless, known and unknown. I tried very hard to build that into the experience of the building. I could explain every point based on an organizational idea, but there's something in the experience of the building that seems to contradict all this logic. It is rational in the way it is oriented toward certain views, for instance, or in its separation between areas for the parents and those for the kids; yet, what sounds very logical and reasonable is experienced as something very illogical and unreasonable.

Other respects in which the house is experimental have to do with the question of how you put things together, for instance, a door or a window. You could consider the front door as experimental in a small way; it's about questioning what a door means, and then how you make that.



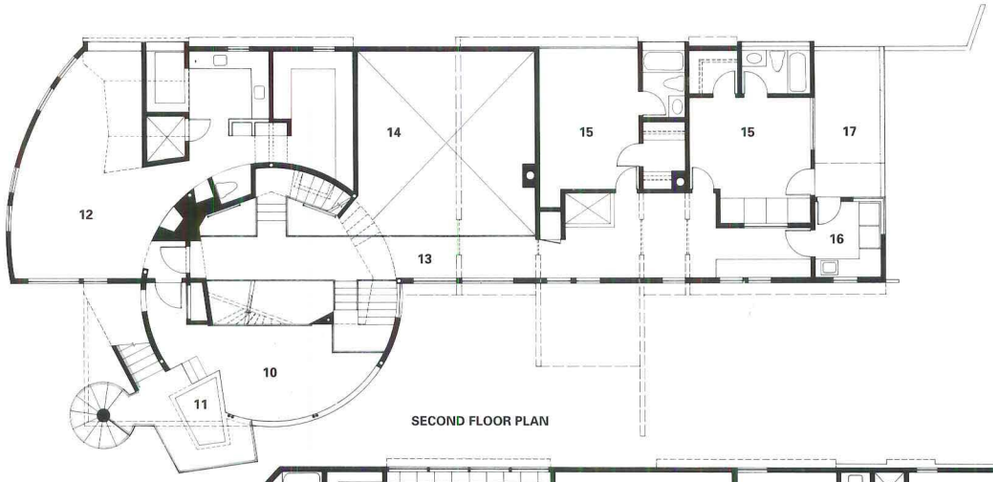
WORM'S EYE AXONOMETRIC



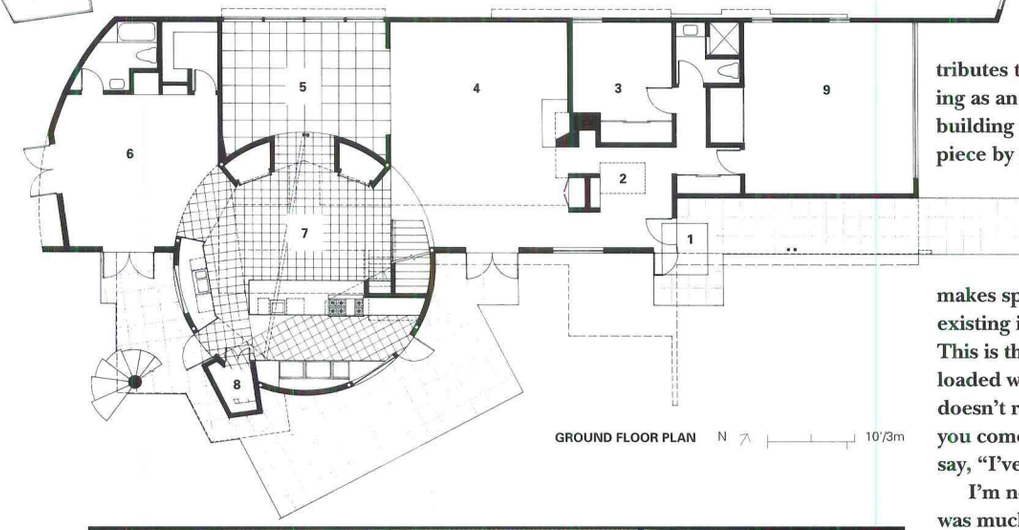
PLANS (TOP LEFT, ABOVE, BELOW RIGHT) SUPERIMPOSED ON GEOMETRIC "MAP"

CROSS SECTION THROUGH DRUM LOOKING WEST

10'/3m



SECOND FLOOR PLAN



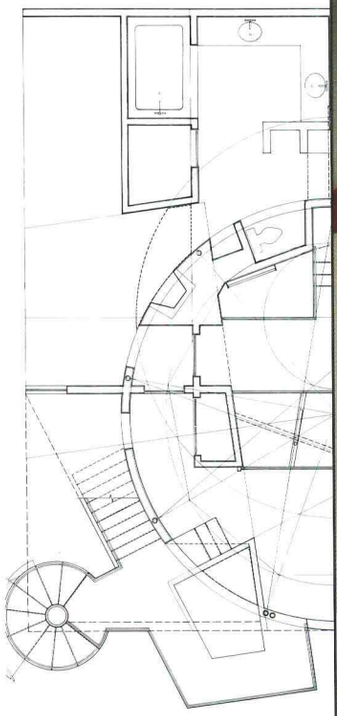
1 ENTRY
2 FOYER
3 OFFICE/GUEST ROOM
4 LIVING ROOM
5 DINING ROOM
6 PLAYROOM
7 KITCHEN
8 PANTRY
9 GARAGE
10 DECK
11 HOT TUB
12 MASTER SUITE
13 BRIDGE
14 OPEN TO BELOW
15 BEDROOMS
16 LAUNDRY
17 DECK

GROUND FLOOR PLAN N 10'/3m

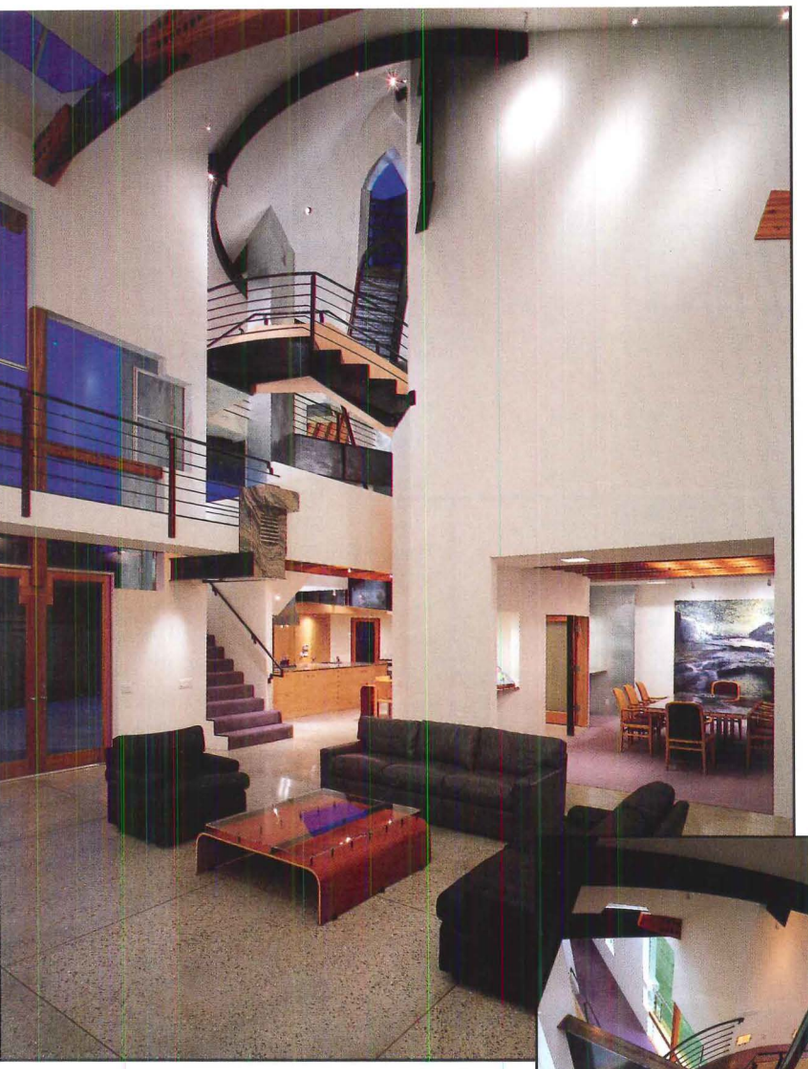
It's not the first priority, but the house does have to do with a certain hedonism of assembly. In this case, combining pieces of wood door and glass door gives you aspects of both; it gives you something else. The door is not a Venturi joke; it raises the possibility that things can be understood in a different way. Other examples are: the windows that wrap over the edge of the roof, or the fact that the roof and the wall are exactly the same material. This contributes to the reading of the building as an entity, as opposed to a building that can be identified piece by piece as catalogued in the history of architecture. The language of architecture makes space. You experiment with existing ideas, and invent others. This is the hedonism of the space, loaded with new prospects one doesn't recognize, so that each time you come into the space you could say, "I've never been here before."

I'm not sure that initially there was much pushing from the clients for any particular design, except that they wanted an enormous internal spatial event that would "wring your breath out." They talked about having a lot of close friends and that those relationships were developed and extended in the process of preparing and eating food. This was the origin of the space that we're calling the kitchen – the origin of the building, literally and figuratively.

I believe the architect should give people what they want, but also lead them to want more; it's a perpetual investigation of what might make you happy, but also of what might make you sad. The goal is to do exploratory buildings; that is the obligation of architecture. The on-time, on-budget criteria of performance are necessary but not sufficient. We have to find a way to build into the process of designing a possibility for a content in architecture. It requires a commitment to uncertainty on the part of architect and client, and a resilience to deal with that uncertainty. Columbus went to the wrong place also: you head for India and wind up in Havana ... ■

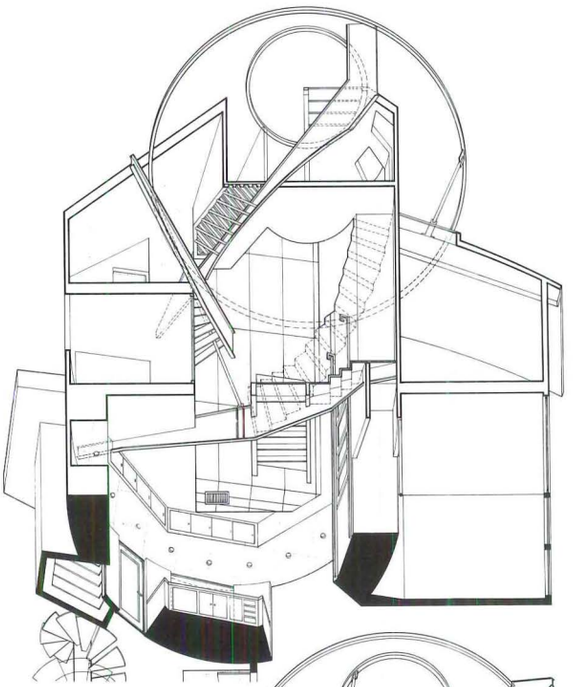


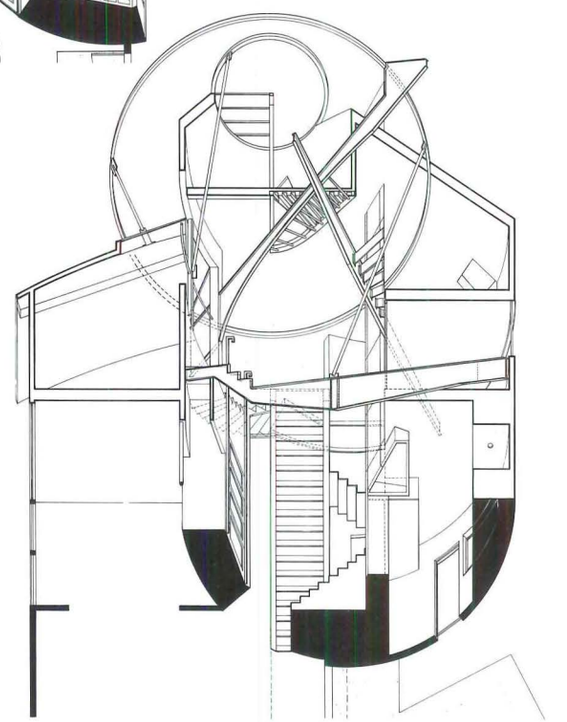
VIEW OF LIVING ROOM WITH STEEL PLATE FIREPLACE



VIEW FROM LIVING ROOM TOWARD KITCHEN/STAIRWELL

VIEW FROM STAIR DOWN TO KITCHEN





WORM'S EYE AXONOMETRICS OF DRUM LOOKING WEST (TOP) AND EAST (ABOVE)

Owners Linda Lawson and Tracy Westen look back on the process of design – and self-discovery.

Linda Lawson: For us the kitchen is the center of the house. At one point we mentioned this to Eric. What I enjoyed most was watching the translation of this fairly ordinary concept into a work of art: now it's a 35-foot-high cylinder, 30 feet in diameter, with spaces radiating from it and amazing architectural elements flying through it.

All my life I have had a fear of heights and precipices. Throughout the construction I frequently had nightmares about our little boy falling off and getting killed. I think that in the two and a half years the house was being built I worked through that fear, being on the site every day, supervising the job, and having to deal with it every day. One time I called Eric and I was crying because of the heights. He said, "Let's go to a park and talk about it." I said to him then, "I love some of your work and despise some of it, and I don't know which I'm getting!" What we undertook was even scarier than we had realized: what brought us through the emotional rollercoaster was Eric's ability to reassure us.

Tracy Westen: When you look at a wonderful painting or a sculpture it enlivens your consciousness and spirit. We've enjoyed that experience with many things – music, art, dance – but rarely with architecture. We had a sense that we wanted the house itself to be stimulating. Some houses, when you get used to them, become invisible. We wanted a house that wouldn't disappear. I must say we got that. There is no place you can turn without being filled with a sense of wonder. You can't look up at the ceiling and not be astonished ... I love the danger of the house.

Eric changed our aesthetic. We probably had expected something tamer. Now, we pull out paintings we'd planned to hang in the house and see that we've changed our minds. I'd often read about the power of art to transform a person and it didn't mean anything until this house. We are different people from what we were four years ago; we're going to be different four years from now – and it's the house that is doing it. ■

ASSEMBLAGE OF PHOTOGRAPHS APPROXIMATING SPATIAL EXPERIENCE IN DRUM

On Aspects of the Construction

The drumlike form of the Lawson-Westen House has a monolithic exterior, with an intricate, expressive structural frame inside. Early in the design, Moss had considered making the drum entirely of cast-in-place concrete, but the budget did not allow it.

Instead, the drum was framed with steel and wood. Two concentric rings of steel (6), six inches and nine inches deep, are supported by four-inch pipe columns.

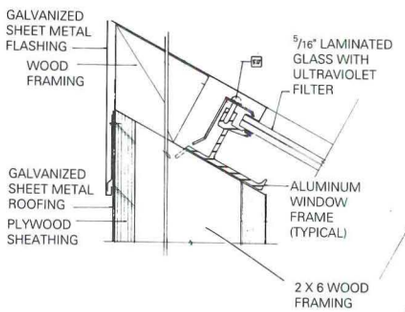
A deep plate-steel section spans across the lower, larger ring, and supports a diamond plate steel bridge. Two-by-ten rafters (5) frame between the rings to receive the roof's plywood sheathing. The interior is enclosed with $^{5}/_{8}$-inch gypsum board. By selectively cladding the steel structure, the architects allowed this support system to become a sculpture integral with the interior.

The original impulse for a concrete element of monolithic appearance led to the choice of an exterior cladding of smooth troweled portland cement plaster covering the entire house, roof, and walls, except for the northeast wall. On the roof the cement plaster is $^{7}/_{8}$ of an inch thick over expanded metal lath, two layers of asphaltic paper and two layers of Bituthene, over two layers of $^{1}/_{2}$-inch plywood.

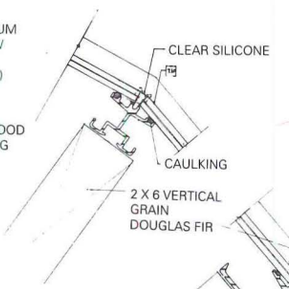
Since the house's completion, water has penetrated the cement plaster and migrated across the Bituthene, which has a surface consistency of plastic wrap. During some downpours this migrating water has backed up over the flashing of the angled, butt-glazed windows that straddle the wall and roof. Three coats of a clear finish elastomeric acrylic have been applied over the cladding to stop water from penetrating the cement plaster coating.

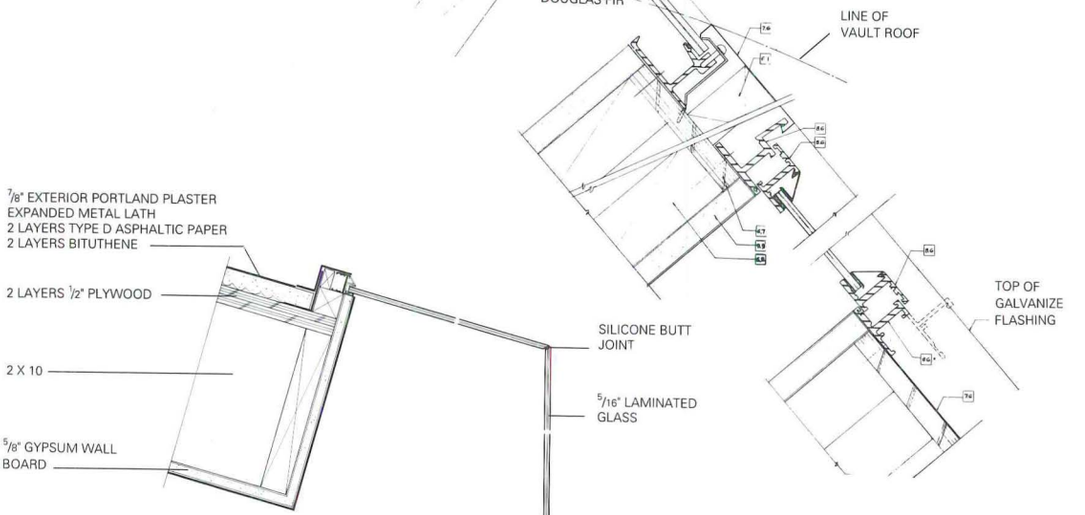
Various specially built windows are found in the house. Over the top on the drum are two faceted skylights (3) with angled glass at varying depths, held in place by aluminum sections (1).

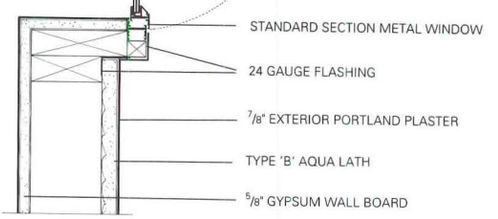
The angled windows (4) are con-



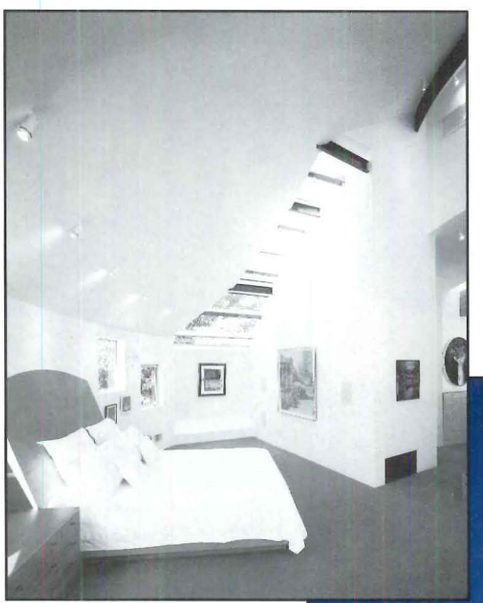
1 DETAIL OF FACETED SKYLIGHT IN CHILD'S BEDROOM



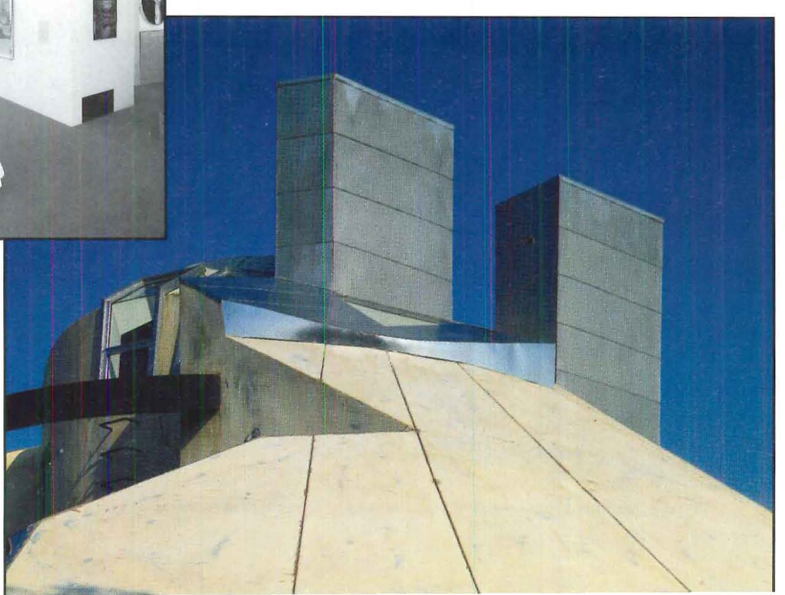




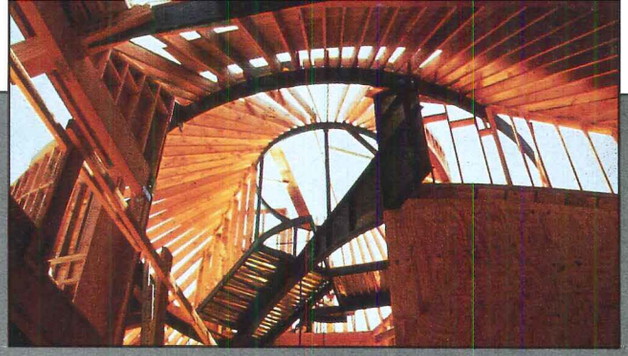
2 ANGLED WINDOW DETAIL



3 FACETED SKYLIGHT IN MASTER BEDROOM



4 ANGLED WINDOW



5 WOOD FRAMING

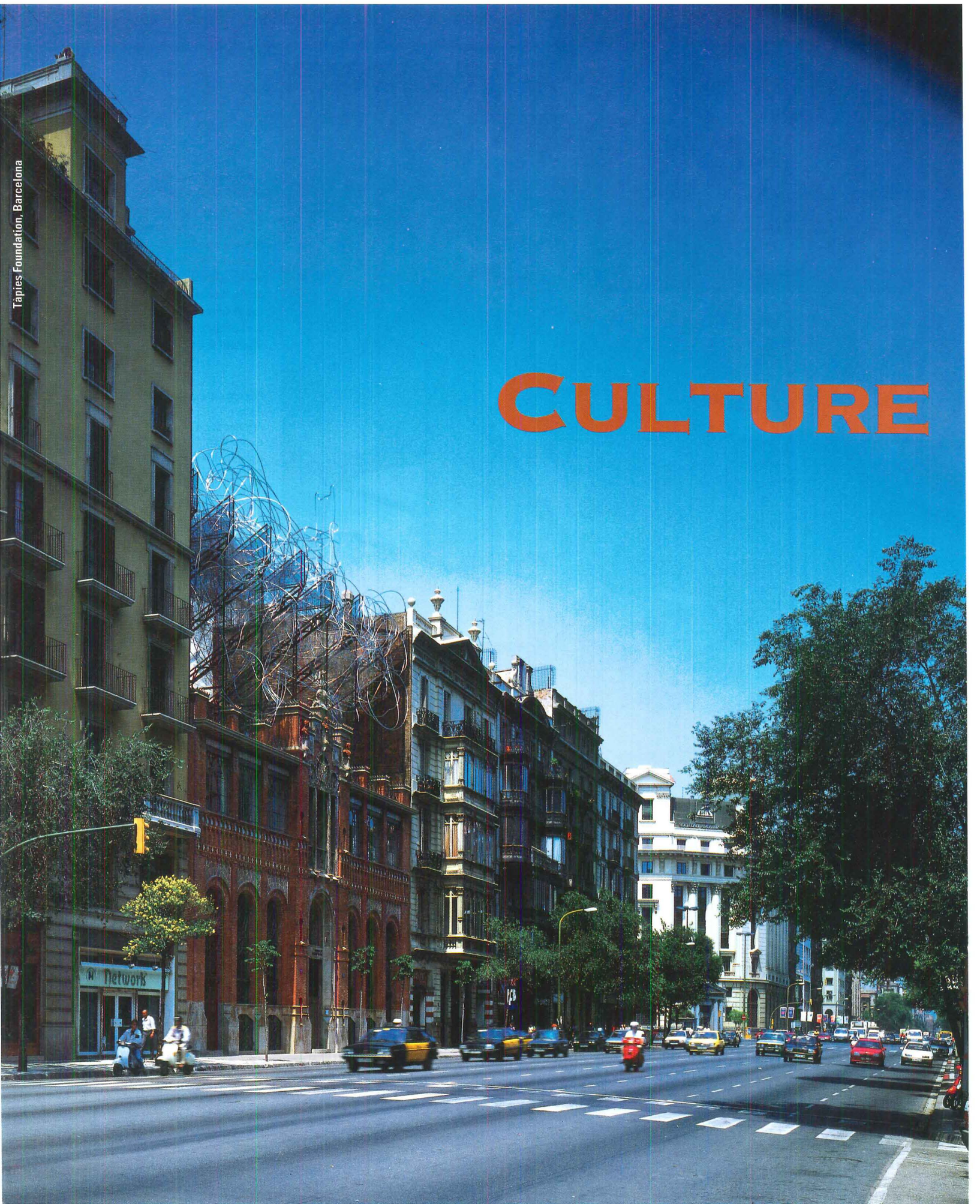
6 STEEL FRAMING

Photos this page, Todd Conversano

ventional frames that have been cut in half and welded at an angle, with the glass siliconed together (2). The windows are positioned to follow the curve of the drum's intersection of wall and roof. This means that the sills are not level, and water tends to pond in the sills' lower corners. Luckily, this has not yet resulted in any serious leaks.
Michael J. Crosbie ■

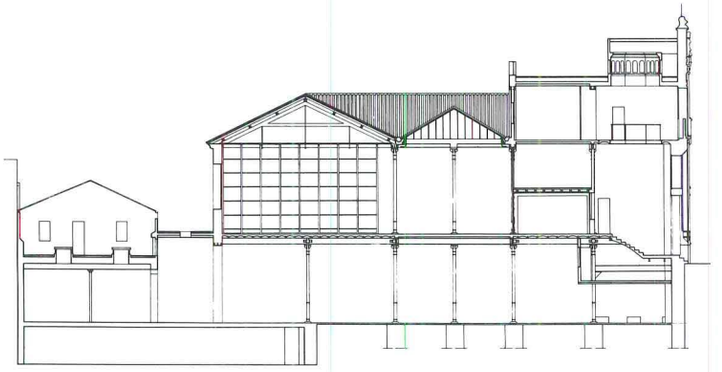
. . . . . .

Project: *Lawson-Westen House, Los Angeles.*
Architects: *Eric Owen Moss Architects, Culver City, CA (Eric Owen Moss, architect; Jay Vanos, project associate; Todd Conversano, Jae Lim, Jennifer Rakow, Sheng-yuan Hwang, Scott M. Nakao, Dana Swinsky Cantelmo, Amanda Hyde, Elissa Scrafano, Augis Gedgaudas, Mark Lehman, Eric Holmquist, Sophie Harvey, Christine Lawson, Andreas Aug, Urs Padrun, Christoph Lueder, project team).*
Client: *Linda Lawson and Tracy Westen.*
Site: *Level, rhomboid-shaped residential lot 70ft. wide, 180 ft. deep.*
Program: *Living room, kitchen, dining, study/guest room, master bedroom suite, two bedrooms with bathrooms, laundry room, playroom, wine storage; total 6,500 sq ft, including 1,000 sq ft for decks.*
Structural system: *Cast-in-place concrete foundation; combination of load-bearing wood frame and steel frame primary structure.*
Major materials: *Exteriors: cement plaster, galvanized sheet metal, cast-in-place concrete for street-facing wall; interiors: birch veneer plywood, galvanized sheet metal, gypsum wallboard, polished concrete floors with granite aggregate, plate steel (see Building Materials, p. 126).*
Mechanical system: *Four-zone, gas/electric, forced air heating and cooling units with supplementary system of hydronic radiant floor heating at ground level.*
Consultants: *Davis Design Group (Gary Davis), structural; AEC Systems (Greg Tchamitichian) mechanical; Saul Goldin & Associates (Saul Goldin), lighting; Rolla J. White, with Linda Lawson, landscape; HTS Architectural Interiors (Tracy Sonka Stultz), interiors; Farrage & Co. (Tom Farrage), furniture/fixture fabrication; Weiss Kitchens (David Weiss), kitchen.*
General contractor: *Admiral Construction (John Blackley).*
Costs: *Not available.*
Photos: *Tom Bonner, except as noted.*



Culture

Art, architecture, and preservation battle it out in Amadó & Domènech's Tàpies Foundation.



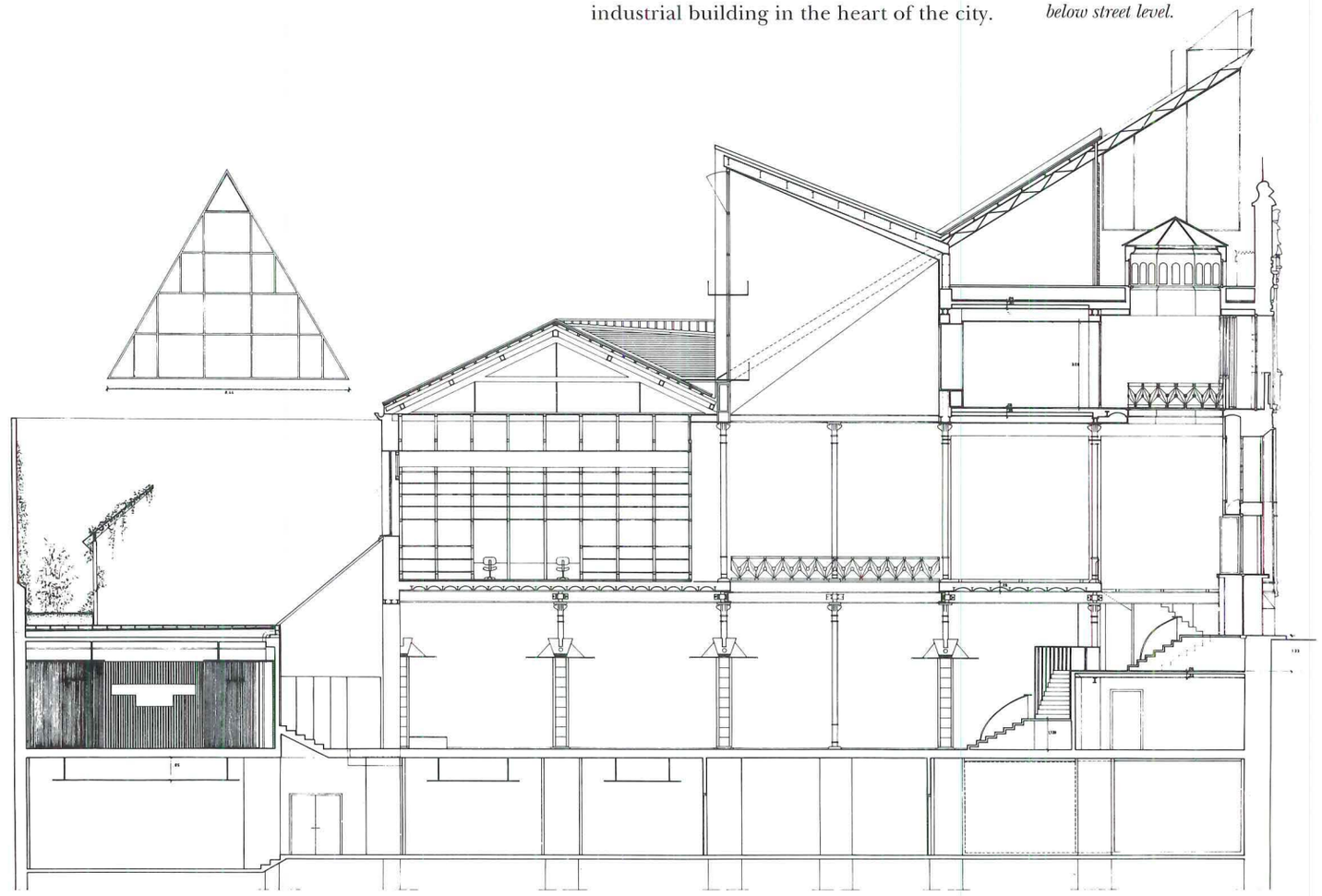
SECTION BEFORE RENOVATION

20'/6m

CLASH

Barcelona is a city that treats its native artists well. The city has fine museums dedicated to the works of Picasso and Miró, the former in three connected, centuries-old houses, the latter in a more isolated 1975 building by Josep Lluís Sert. The city's latest cultural addition, a museum and library for the works of painter-sculptor Antoni Tàpies, falls somewhere in between Picasso's and Miró's museums: it is in a renovated proto-Modern industrial building in the heart of the city.

The Tàpies Foundation occupies a historic building in Eixample, the gridded 19th-Century precinct of Barcelona. Artist Antoni Tàpies added the wire sculpture to the top of the building (1) as part of the renovation by Amadó and Domènech. A new revolving door was the only other change to the façade. Before and after sections show how the architects added a new basement, reconfigured the building's central skylight, and rerouted incoming traffic to the floor below street level.



1

SECTION AFTER RENOVATION

10'/3m

Unlike the other two museums, this one was created with the active participation of the artist himself. The 69-year-old Tàpies, who is known both for abstract paintings and for eccentric representational sculpture (his proposal to put a 60-foot sculpture of a sock in the rotunda of the Palau Nacional caused a local uproar), donated his works, set up the foundation with funding from the Catalan government, and chose the site, the 1885 Montaner i Simon publishing house, a Catalan Modernist landmark by Lluís Domènech i Montaner. The project's architects, Roser Amadó and Lluís Domènech (great-grandson of the original architect), worked directly with the artist in creating his monument, and the result has been as controversial as Tàpies's work.

In explaining the project, Domènech says that they had to respond to three sets of needs: those of the original building, which had been compromised over the years; those of Tàpies, the client; and those of Amadó and Domènech, who wanted to employ their own architectural language in some way. Fulfilling this last set of needs has led to grumblings around Barcelona that the architects went too far, and indeed, some of the interventions are gratuitous and even oppressive.

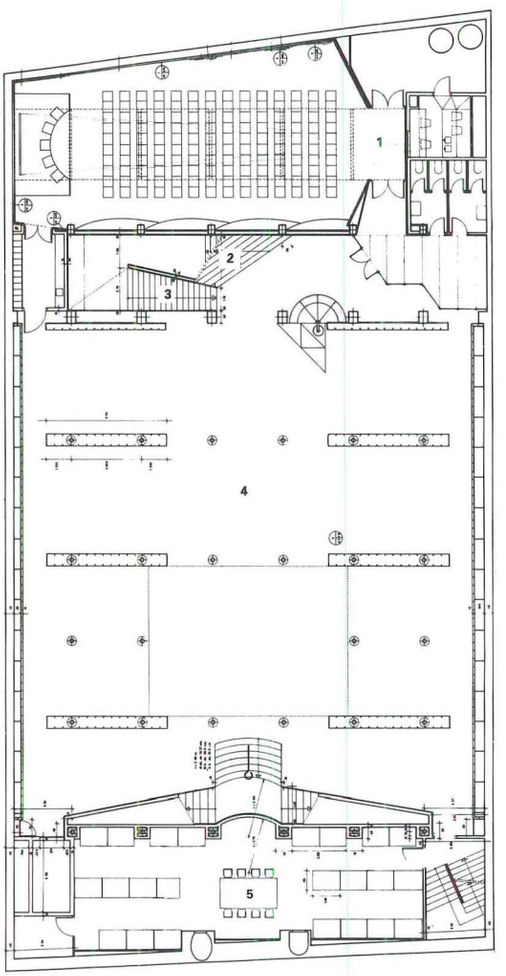
The elder Domènech built the original building in the same year as Gaudí's first house – on the cusp of the Catalan Modernist movement and 20 years before Domènech's greatest masterpiece, the Palau de Musica Catalana (P/A, June 1990, p. 84). Its façade (which evolved from a straight Classical scheme in early sketches) dealt with the building's role as an industrial interloper in a previously all-residential area. It was suitably grand, but rendered in humble brick. The ornament included busts of poets, but also machine cogs.

Inside, the building's plan followed a grid of cast iron columns. The printing presses were on the bottom level, below the street; the first floor was reserved for storage, and offices were on the top floor. The entire building was lighted by a central skylight that was later removed. Amadó and Domènech left this basic parti unchanged, although they routed visitors down to the expansive bottom level – where temporary exhibitions are held – upon entrance.

The most costly and complicated aspect of the renovation was the addition of a basement, which was needed to house the foundation's permanent collection. Workers drilled beneath the bases of the existing cast iron columns and injected concrete to create "micropilings" that held the columns in place during excavation.

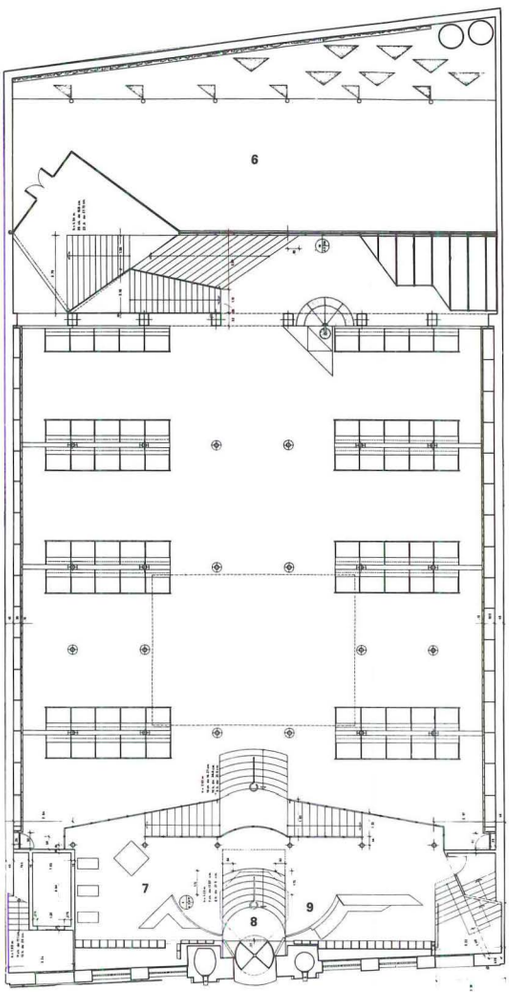
It was in the process of meeting the building's new functional needs that Amadó and Domènech began to assert their own design vocabulary. To satisfy Tàpies's desire that his art be displayed in a space "like a temple with chapels" rather than in free space, the archi-

(continued on page 82)

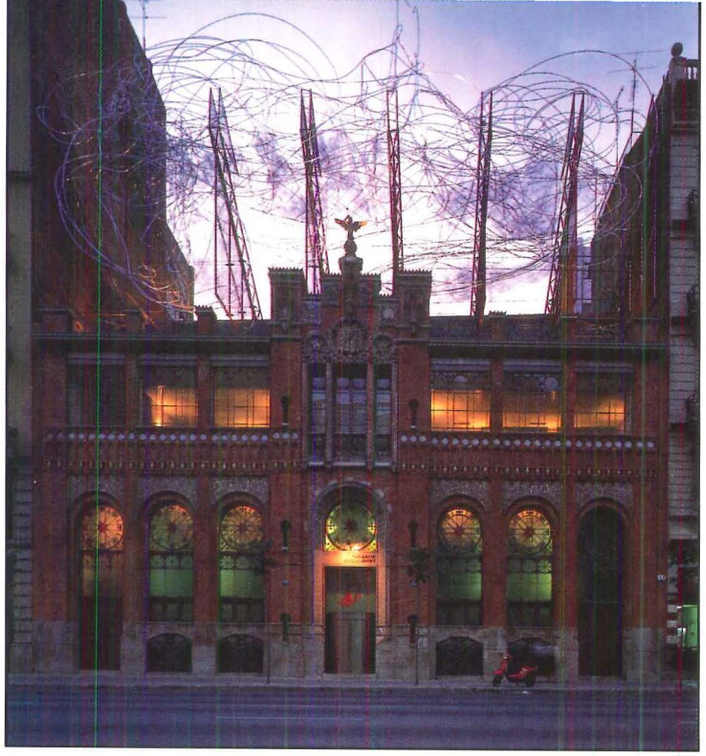


BASEMENT PLAN

20'/6m



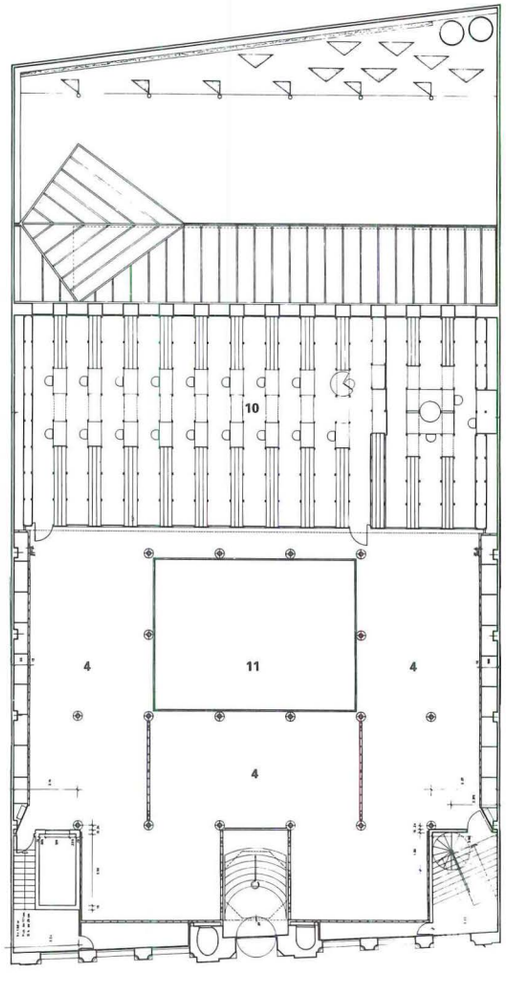
STREET LEVEL PLAN



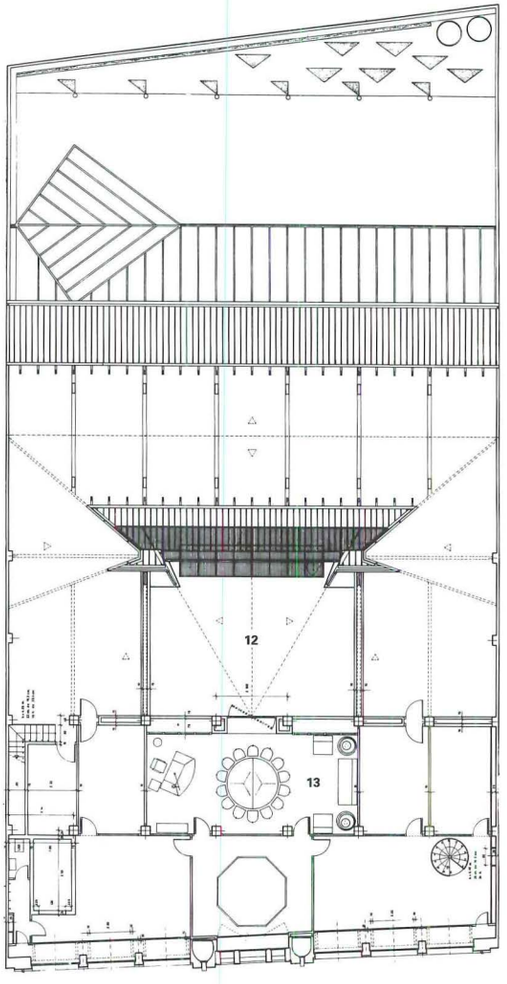
2

1 AUDITORIUM
2 STAIR UP TO TERRACE
3 STAIR DOWN TO EXHIBITS
4 EXHIBIT SPACE
5 RESTORATION
6 TERRACE
7 MUSEUM SHOP
8 ENTRANCE
9 RECEPTION
10 LIBRARY
11 OPEN TO BELOW
12 SKYLIGHT
13 OFFICES

Lluís Domènech's façade for the building (2) is a prime example of early Catalan Modernism, with its eccentric ornament and subtle expression of the columnar structure.



FIRST FLOOR PLAN



SECOND FLOOR PLAN

(continued from page 80)

tects broke up the main exhibition floor with wing walls that also act as acoustical panels and carry wiring, ventilation, and lighting. They replaced the old hip-roofed skylight with a triangular one that captured only north light. And at the back, they added a terrace reached by an oddly angled stone stair of their design.

Some of these interventions work well; the wing walls help make a fine space of the old machine hall. But other interventions, like the stair, are distracting and disconcerting. By contrast, what is left of the original building always looks good. The most compelling space in the museum (and the favorite of Amadó and Domènech) is the library, which occupies a space that Montaner i Simon used for paper storage. The elder Domènech designed the space as a grid of wood shelves; Amadó and Domènech simply removed a few members to make room for reading areas and a librarian's office.

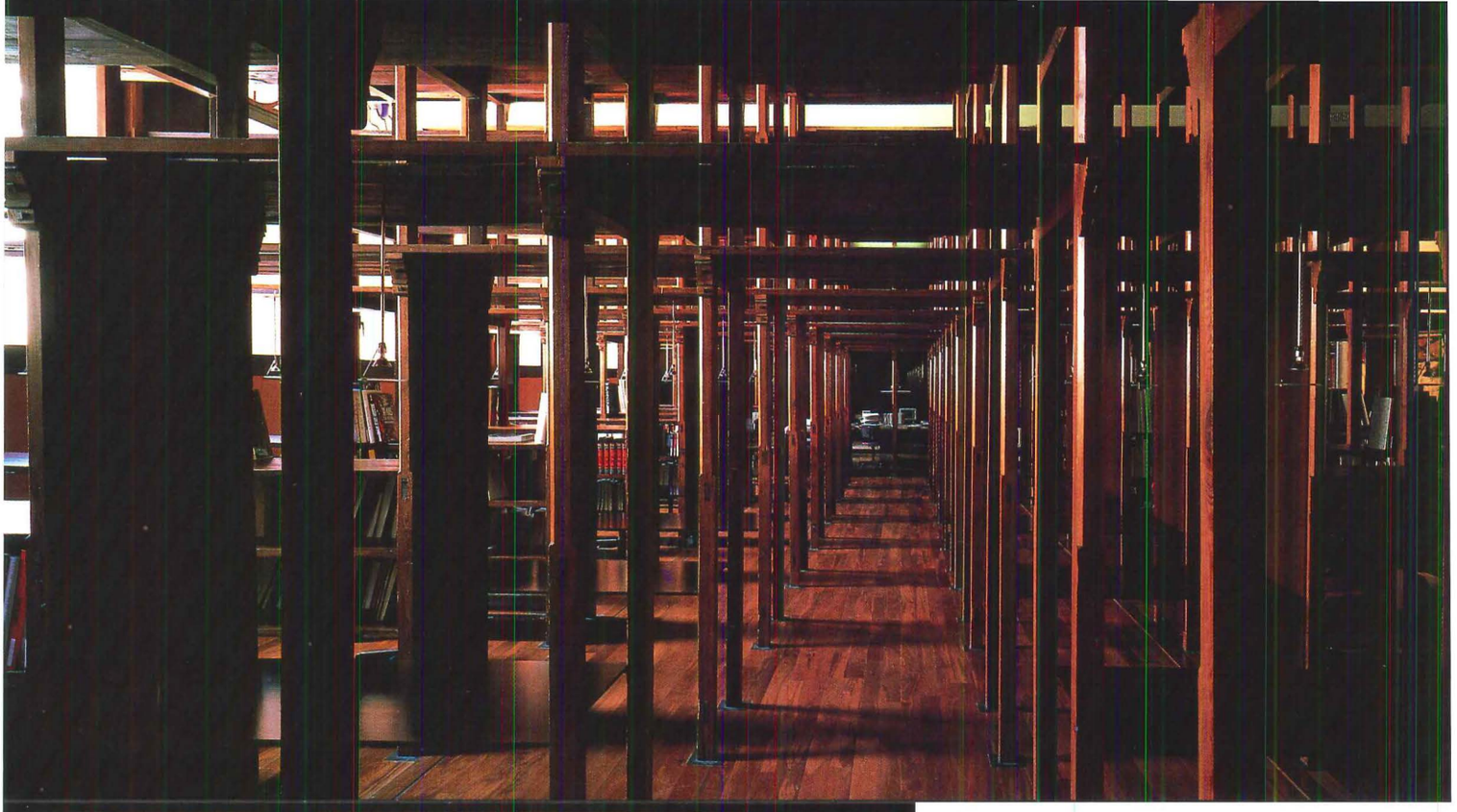
For all that was done to the interior of this building, the greatest point of controversy quite naturally had to do with the façade, with its frenzied wire sculpture by Tàpies. Amadó and Domènech explain that in order to relate their three-story façade to the prevailing five-story ones in the area, they designed a set of mesh-covered fins that extend the geometry of the skylight and fill in the gap of the "missing" upper stories. They suggested to Tàpies that the fins might be a place for an original work of art. He responded with "Núvol i Cadira" ("cloud and chair"), a tangle of wire that indeed fills the space but in the process overshadows the architecture. (A more subtle signal on the façade that something is new is the cylinder housing a revolving door within the larger entrance opening.) A lot of hands have been at work in making and altering this building, and it is tempting to proclaim the result a mess. But even if some of the artist's and architects' interventions are failures themselves, the audacity of this approach to a historic building is a refreshing alternative to the blind reverence that too often characterizes adaptive reuse. **Mark Alden Branch** ■

The temporary exhibition space (3,4) is on the lower level once occupied by printing presses, and is immediately visible from the entrance (3, center). Amadó and Domènech added acoustical walls along the grid of the columns (4) to break up the space and provide hanging area. At the back of the building, a new, oddly angled stair (5) topped by a skylight leads to a sculpture terrace.

3

4

5



6

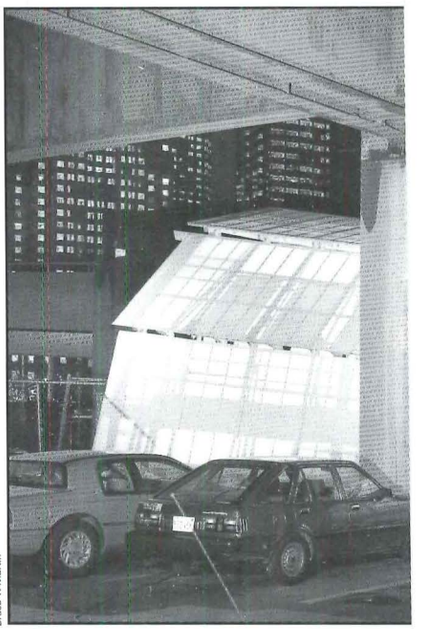
7

The most compelling space in the building is the library (6), a forest of wooden shelves to which the architects made only minimal changes. It opens onto the first floor, which in the renovation has become a kind of mezzanine with the additional exhibit space (7). A new wall was placed along the inside of the street wall to cut down on the light emanating from the windows. Star-shaped cutouts in the walls (7, far left) reveal the similarly shaped windows outside.

Project: *Tàpies Foundation, Barcelona.*
Original architect: *Lluís Domènech i Montaner (1850–1923).*
Renovation architects: *Roser Amadó and Lluís Domènech, Barcelona.*
Clients: *Antoni Tàpies, Tàpies Foundation; Catalan Autonomous Government.*
Site: *urban block in Eixample, the 19th-Century gridded precinct of Barcelona, near the Paseo de Gracia.*
Program: *rehabilitation of 40,000-sq-ft publishing house (built in 1885) as a museum and library for the work of artist Antoni Tàpies.*
Structural system: *original cast-iron structure, reinforced.*
Major materials: *brick, stone, terra cotta (existing façade); wood, stucco (existing interior); new aluminum roof, new plaster, wood agglomerates, and sound-absorbing fabric.*
Mechanical system: *individual "energy pack" electrical air-conditioning units with separate controls for different zones.*
Consultants: *BOMA S.A., structural; J.B. Associates, mechanical; Ton Alsina, consulting architect; R. Domènech, technical architect.*
Cost: *700 million pesetas ($6.7 million).*
Photos: *Hisao Suzuki.*

Emerging Talent: Kennedy & Violich Architecture

This young Boston firm has designed, built, and even raised funds for a series of low-budget public projects.



Bruce T. Martin

In the prototype bridge, the resin-coated fiberglass is translucent at night.

Under Boston's elevated Central Artery, you may still find, at the edge of a parking lot, a pile of lumber – all that is left of the most recent project of Kennedy & Violich Architecture. Seeing their buildings being dismantled is nothing unusual for Sheila Kennedy and Frano Violich. More than one of their projects have been put up and taken down in a matter of months. Indeed, much of their practice, which they founded in Boston in 1988, involves designing (as well as sometimes raising funds for and helping construct) temporary, low-budget, grant-supported, exhibition-related public projects.

There is much to admire in what these two architects do: their commitment to public work, their proactive practice, and their challenge to the boundaries separating architecture, art, and engineering. But in exploring the margins of the profession, Kennedy & Violich also confront the prospect of being marginalized by those in power.

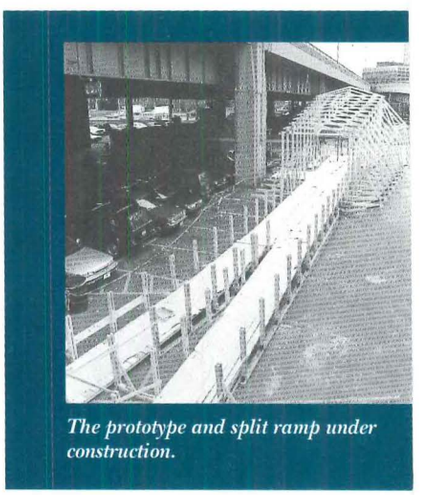
Ironically, one way that temporary work such as this can resist being marginalized is by being published. Some of the structures shown here exist only in these photographs, and they will live on mainly through the pages of magazines. In that sense, Kennedy and Violich are like archaeologists, who also temporarily occupy sites and maintain the memory of their work mostly through photos.

The architects seem well aware of this archaeological metaphor, sometimes applying it quite literally by exposing things that are usually kept buried. In the three projects featured here, for example, they have peeled away surface materials to reveal the structures' pipes, studs, and conduits, which are carefully organized and located on the drawings like potsherds unearthed at a dig. There are also other, less literal interpretations of archaeology evident in this work: a recognition that utilitarian objects can reveal as much about a culture as its high art, that the function and meaning of structures are never fixed, and that the boundaries observed by one group of people are often meaningless to another. Archaeology, in other words, serves Kennedy & Violich as a way of connecting architecture and culture.

For example, Kennedy & Violich's Interim Bridges Project, which won a Special Citation in the P/A Awards Program (January 1992, p. 85), offers a telling critique of our overly bureaucratized public realm. The now-dismantled exhibition bridge was unrecognizable to officials because it fit no single category within the code and because, standing in a parking lot, it had no address. (City officials eventually called the bridge a place of assembly, requiring the installation of exit signs on this open-air structure; and they insisted on giving it a permanent address so that it would "exist.") Likewise this small structure – part construction shelter/part art installation – confused the carpenters' union; its members initially picketed (and vandalized) the structure, and later ended up working on it without pay. One group who immediately accepted the bridge was the homeless, people who also don't have an address and so don't officially exist. They never vandalized it.

Kennedy & Violich explored the relativity of function and meaning in other ways in their design for the Science Playground at Boston's Children's Museum. Here, almost every element invites a different response, depending on a person's size. A hollow pipe rail for adults becomes a speaking tube for children; a gap between a column and a wall becomes a kid's pass through; a bench for parents becomes a work table for their children. Along one side of the space is a yellow wall marked off like a giant ruler, bringing to mind Kennedy & Violich's archaeological urge to locate objects, like a grid of strings laid over an excavation.

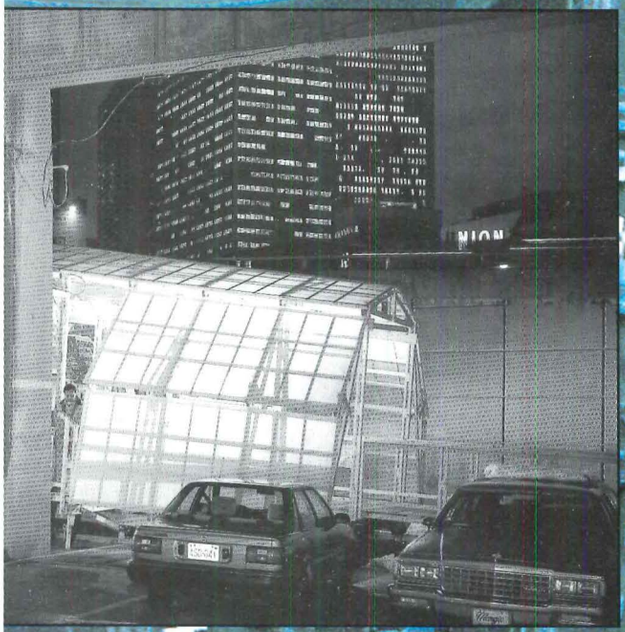
Not that the world coincides with our Cartesian attempts to order it. If anything, projects such as the Temporary Museum for the Boston Center for the Arts, remind us that both people and things rarely respect the boundaries created for them. In this project, the divisions between artist, architect, and contractor blurred: Kennedy & Violich and 17 artists designed and helped build spaces for their installations, often constructing elements directly from small models. Likewise, traditional architectural distinctions became blurred. Located in a circular space built to hold a panorama painting viewed from the center, the two wood-framed structures comprising this temporary museum had no front and no back and no inside or outside. The wiring and mechanical equipment were as much on display as the art they served.

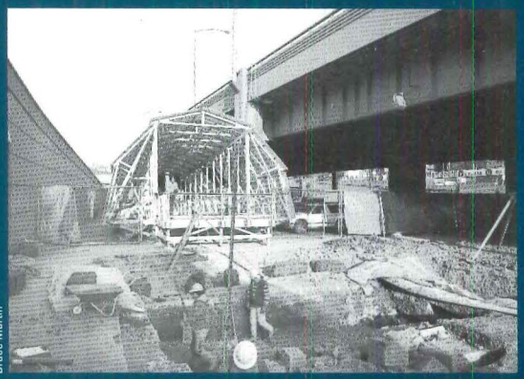


The prototype and split ramp under construction.

The issue lurking behind all of Kennedy & Violich's work is that of the architect's role. By focusing on extremely low-budget and mainly temporary structures, they question the profession's stake in designing expensive, "permanent" buildings, engineered and built by others. Kennedy & Violich's work suggests that architects could become the organizers and interpreters of the built environment rather than just the shapers of a few, high-profile buildings. Whether that would lead to an expansion of the profession's margins or to the final marginalization of the profession remains a question. **Thomas Fisher** ■

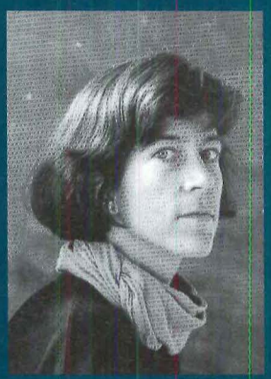
The Interim Bridges Project



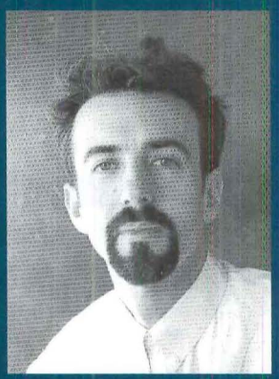


Bruce Martin

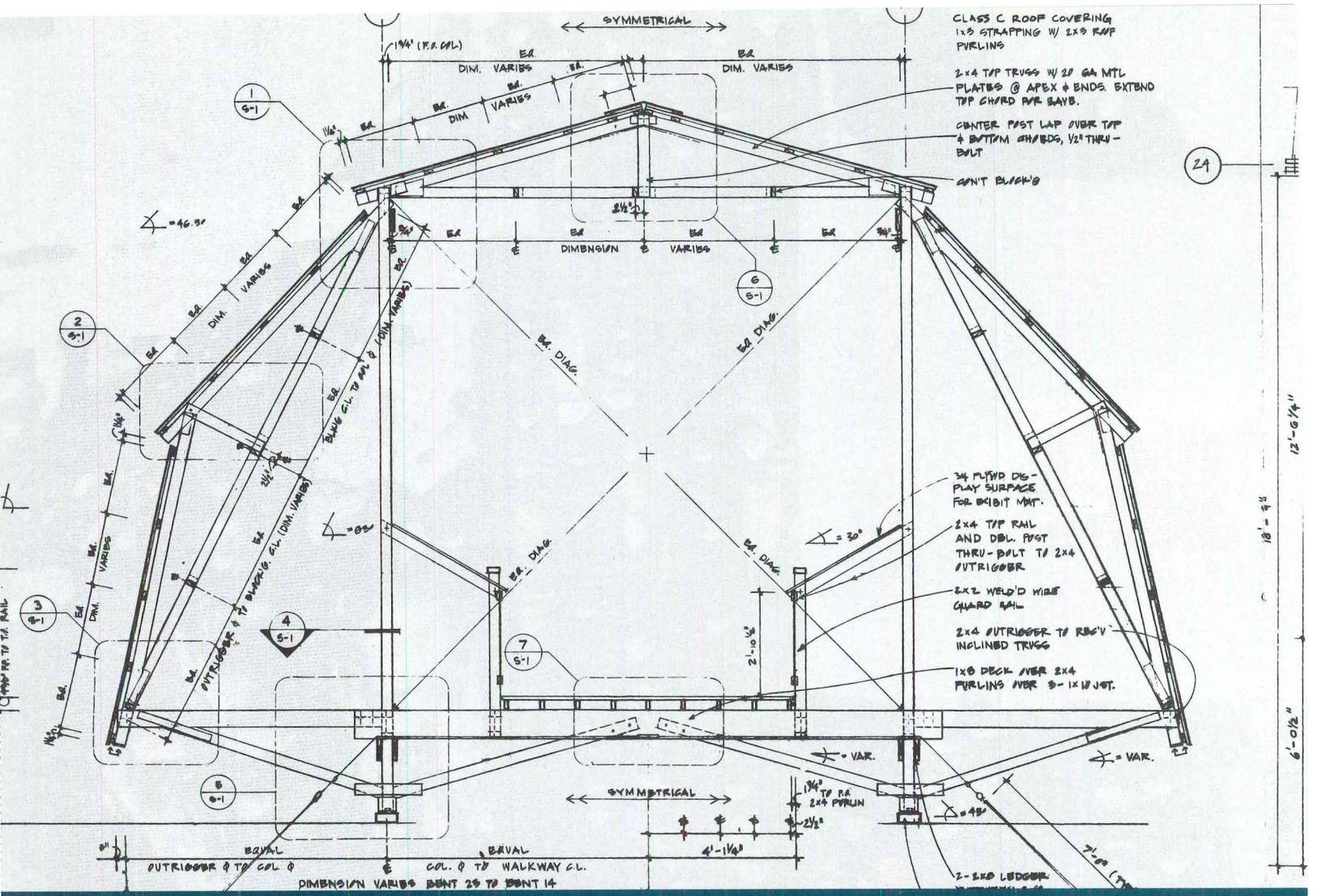
A platform provided a view of the archaeological dig.

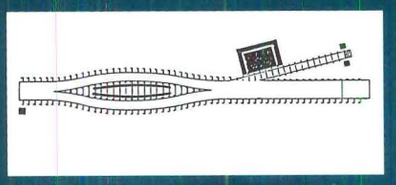


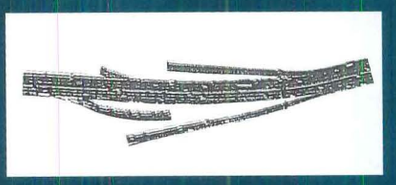
Sheila Kennedy



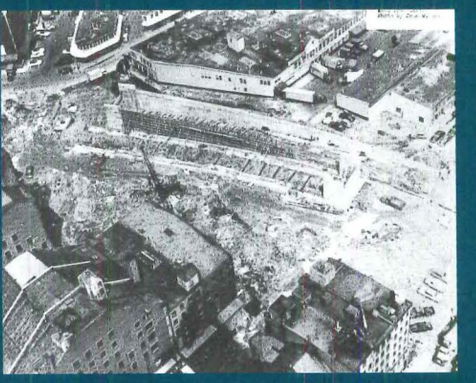
Frano Violich



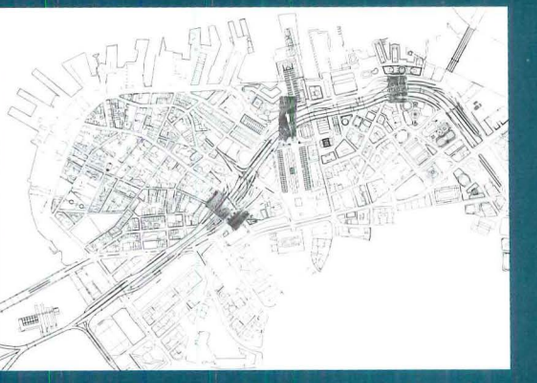




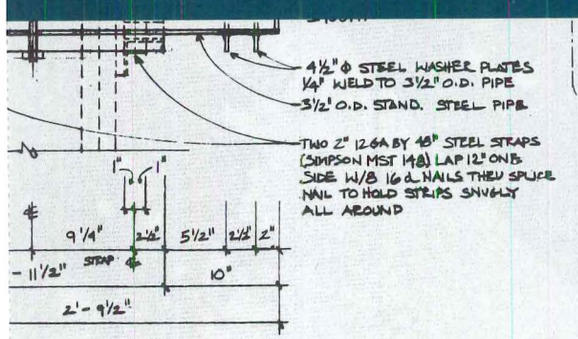
The bridges' forms echo those of the highway.

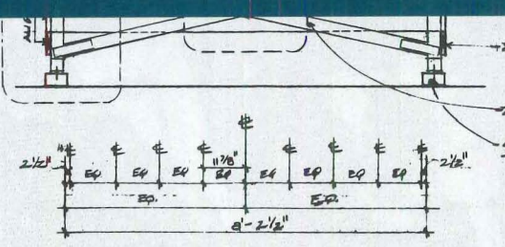


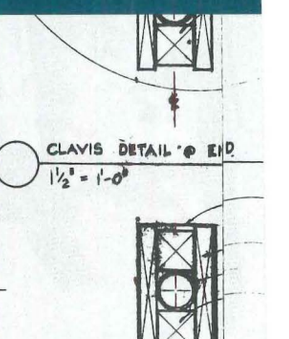
The stick construction recalled that of the concrete formwork used in building the highway.



There are to be three bridge locations along the Central Artery project.

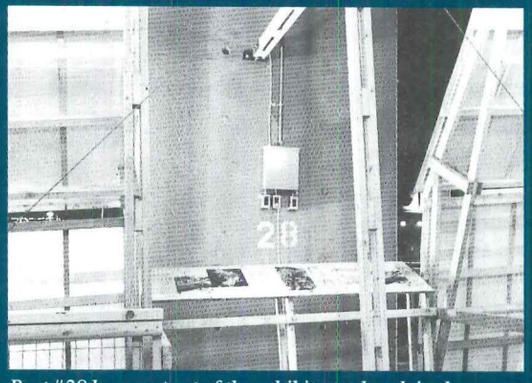






Bruce T. Martin

The Temporary City exhibit was installed along both sides of the walkway.



Bent #28 became part of the exhibit at a break in the cladding.

The Interim Bridges Prototype Project

The prototype of the Interim Bridges Project was constructed in a parking lot adjacent to the elevated Central Artery, bordering an archaeological excavation. The process of construction and excavation overlapped and provided a context for The Temporary City, an exhibition that used the history of the Central Artery, the construction of the prototype, and images of the artifacts found at the excavation site to address the economic, political, and legal infrastructure of the city.

The frame structure of the prototype presented its construction as a visible part of the exhibition's matter. The highway, which interrupted the prototype's envelope at Bent #28, was also isolated and framed by the architecture as an artifact. This reframing was paralleled in the exhibition by the selection of photographs, working drawings, contract documents, and newspaper articles from the 1950s, specific portions of which are edited and enlarged to bring forward less visible aspects of their contents.

The prototype, itself, challenges the definition of architectural "scope" as it is currently understood by the profession. The project was conceived, initiated, and realized by its architects, and the scope of work included the definition of its program, the selection of its site, the structuring of its own forms of capital, and the implementation of its construction in a place that it reclaims as a public site and for which it makes a public address.

The prototype is no more and no less than a provisional architecture: it *provides*, its necessity is not permanent. It also reexamines received notions of the value of architecture and its public objectives by engaging the geography of events and time to enlarge our conception of urban public space and to expand the possibilities for when, where, and how an architecture can come to be. **Sheila Kennedy**■

Project: *2,500-square-foot prototype structure for The Interim Bridges Project, Boston.*
Architects: *Kennedy & Violich Architecture (Sheila Kennedy, Frano Violich, principals; Matthew VanderBorgh, Interim Bridges project assistant).*
Client: *The Public.*
Site: *Archaeological excavation site between the south-bound on-ramp and Bent #28 of the Central Artery.*
Program: *A public walkway with an exhibition, The Temporary City, open 24 hours.*
Funding: *The Interim Bridges Project was funded by the National Endowment for the Arts. The prototype was funded by the Massachusetts Cultural Council, the New England Foundation for the Arts, the William F. Milton Fund, and the Tozier Fund.*
Materials: *2x4 wood framing, resin-coated fiberglass, spruce planks, galvanized cable, steel plates.*
Consultants: *Michael Ishler, Ove Arup, and Edward Moll, Lee Lim Associates, structural.*
Volunteer construction crew: *Joel Bennet, Robert Brazo, Kent Collard, Jeffrey Colon, Todd Dykshorn, Katie Faulkner, Louis Favreau, Yuyang Liu, Thomas Mahler, Melanie McArtor, Brian McNealy, Vincent Nestor, Lori Noto, Aliza Shapiro, Heather Renihan, Armando Rodriguez, Donald Roe, Warren Techentin, John Wentworth.*
Special Thanks to: *Curtis Davis, Beth Bower of the Central Artery Project; Georgess McHargue, Timelines, Inc.; the archaeologists.*

The Science Playground

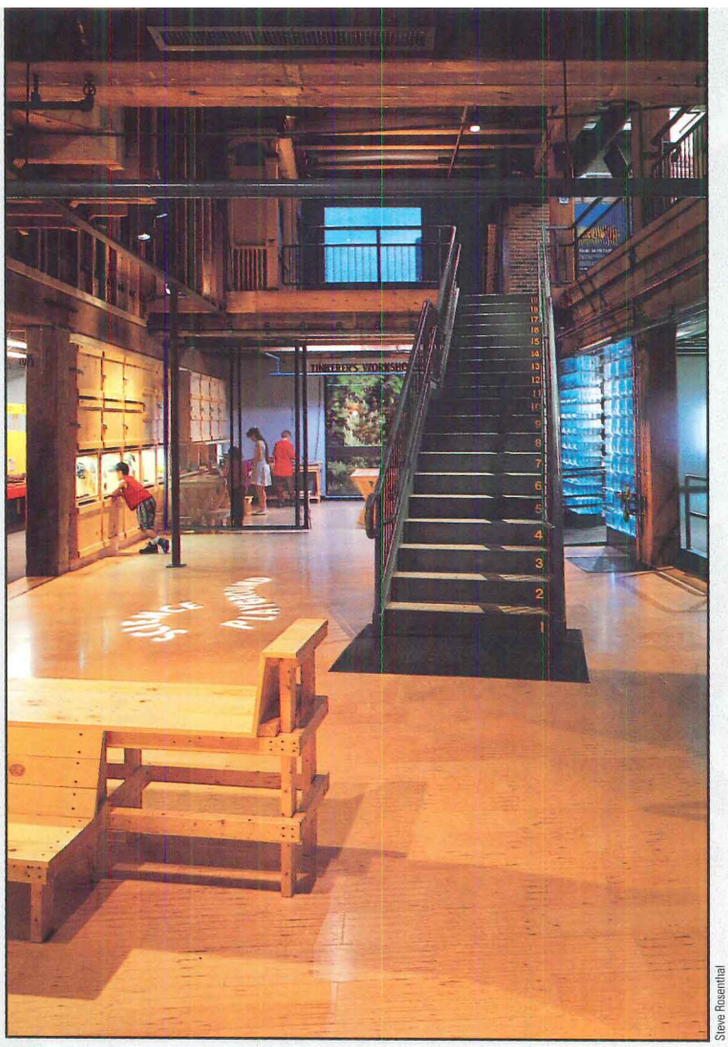
The idea of "playground", a term used by The Children's Museum, was the beginning point for the design of the Science Playground. That idea suggested the possibility of opening the space to natural light and of creating a ground made out of different material surfaces where children could play with the science exhibits. We wanted the architecture to reinforce the educational philosophy of Dr. Bernard Zubrowski, who has developed new approaches to science education at The Children's Museum. These approaches use the kinesthetic motion of young children at play to engage them in observing the physical properties of their environment. Every exhibit is also an activity of play, which uses common household objects – straws, milk bottles, soap bubbles – that every child can easily find to continue to learn through play at home.

The existing post-and-beam structure of the museum's reused-warehouse structure was uncovered to form an armature for the electrical and plumbing infrastructure needed to support the "wet" and "dry" exhibit activity areas. The surfaces of the Science Playground are constructed of accumulations of everyday materials and objects assembled to form three distinct territories separated by three working walls: a crate wall, a bottle wall, and a ruler wall.

Pine boards, plastic water bottles, electrical BX cable, and copper plumbing lines: the possibility of transforming these ordinary materials through their aggregation and their relation to water and electricity is integral to the architecture of the Science Playground. Through circulation, play, and observation, visitors to the Science Playground may find clues that reveal the phenomena at work in the science exhibits and throughout the built and natural environments.

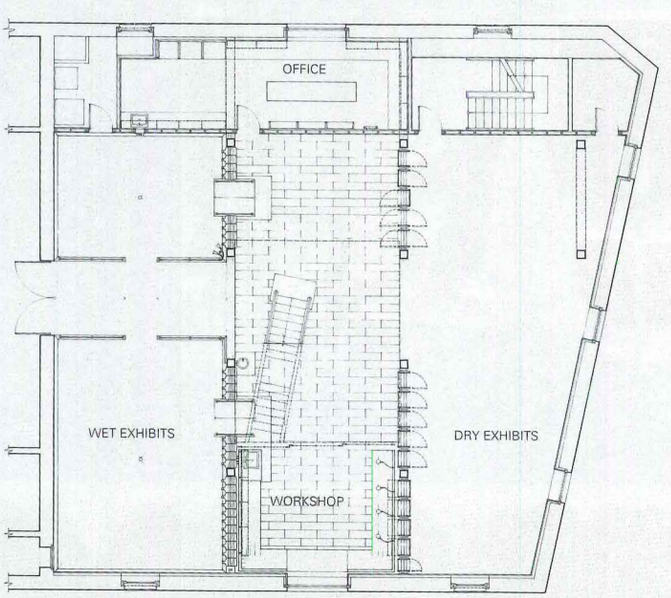
These small architectural interventions evolved from the process of working with the given material of the program and emerged as unexpected opportunities that could be extracted from and added to the brief. These opportunities refer to the architecture itself and how it is made. They also suggest how the infrastructure – plumbing, electrical, and structural systems – can lead to the imaginative reinterpretation of relationships between the content of the science exhibits, the physical environment of the museum, and phenomena in the world outside. **Sheila Kennedy** ■

Project: *The Science Playground, The Children's Museum, Boston.*
Architects: *Kennedy & Violich Architecture (Sheila Kennedy, Frano Violich, principals; Wayne Adams, Susan Budd, and Markus Frohlin, project assistants, with Inger Staggs and Lester Yuen).*
Client: *The Children's Museum.*
Site: *Former warehouse on Fort Point Channel in Boston.*
Program: *4,000-square-foot exhibition space for interactive wet and dry science exhibits plus children's workshop and staff offices.*
Materials: *2x3 wood framing, pine planks, six-gallon water bottles, rubber and wood flooring.*
Consultants: *VAV International, mechanical.*
Contractor: *CSR Corporation.*
Special Thanks to: *Karen Snider, Project Director; Bernie Zubrowski, Science Exhibit Developer; Signe Hansen, Director; Ken Brecker, Director; of The Children's Museum.*

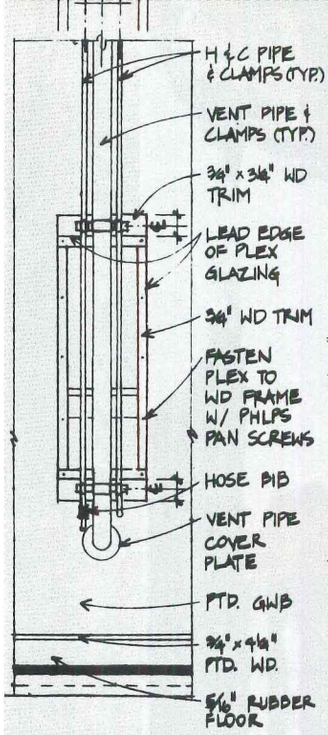


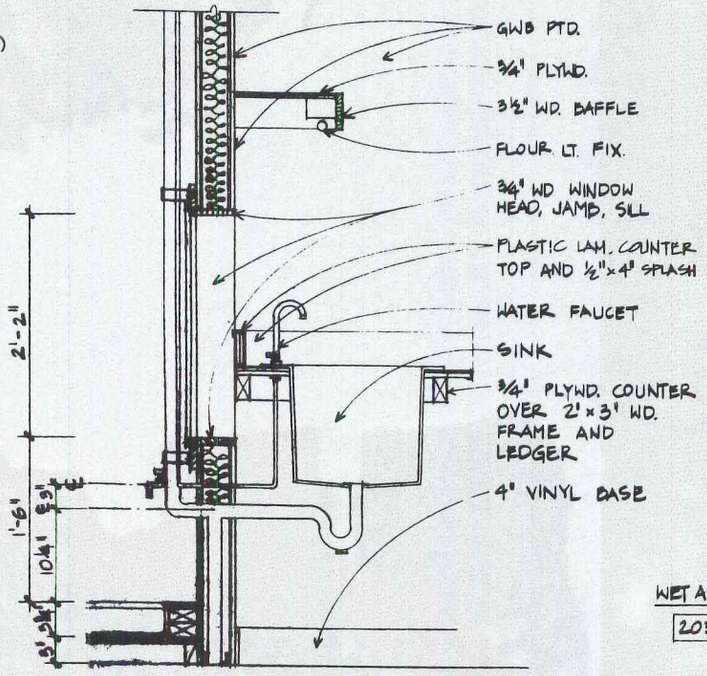
Steve Rosenthal

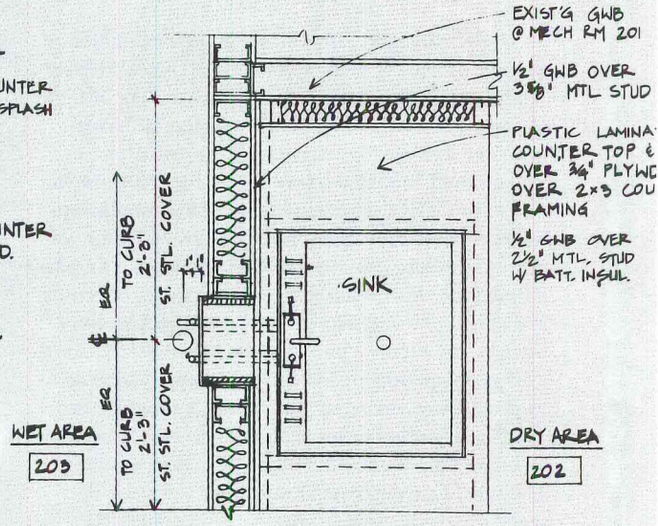
Central space has a dry wall on the left, a wet wall on the right, and a children's workshop at the rear.



MAIN FLOOR PLAN



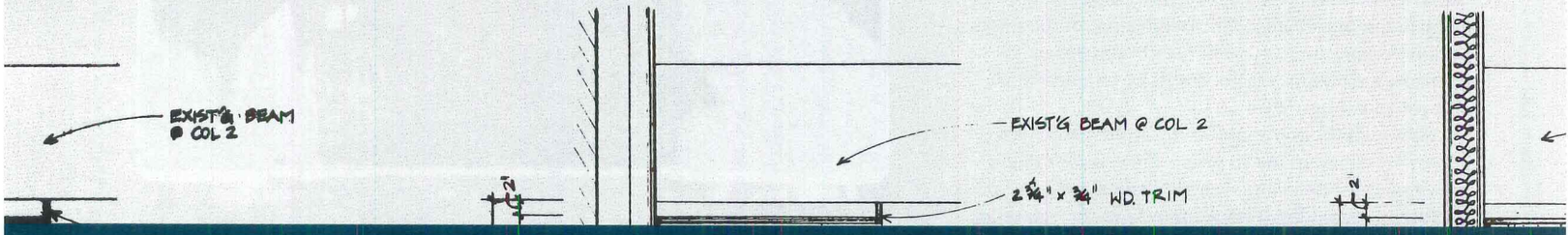


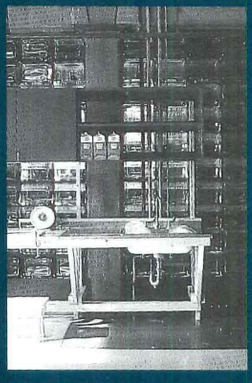


EV. @ WET AREA WIND.
1'-0"

3 SECTION @ WIND./SINK
1" = 1'-0"

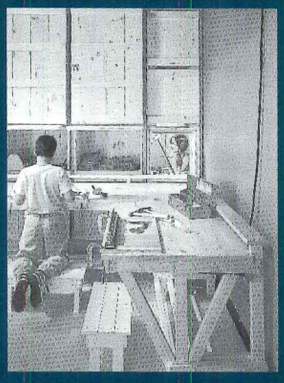
4 PLAN @ WINDOW/SINK
1" = 1'-0"





Steve Rosenthal

The drinking fountain and bottle wall show how water moves and is contained.

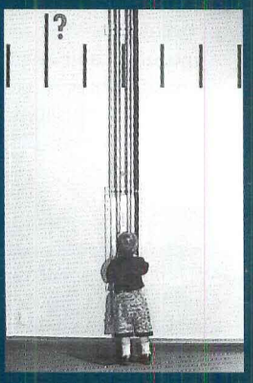


Steve Rosenthal

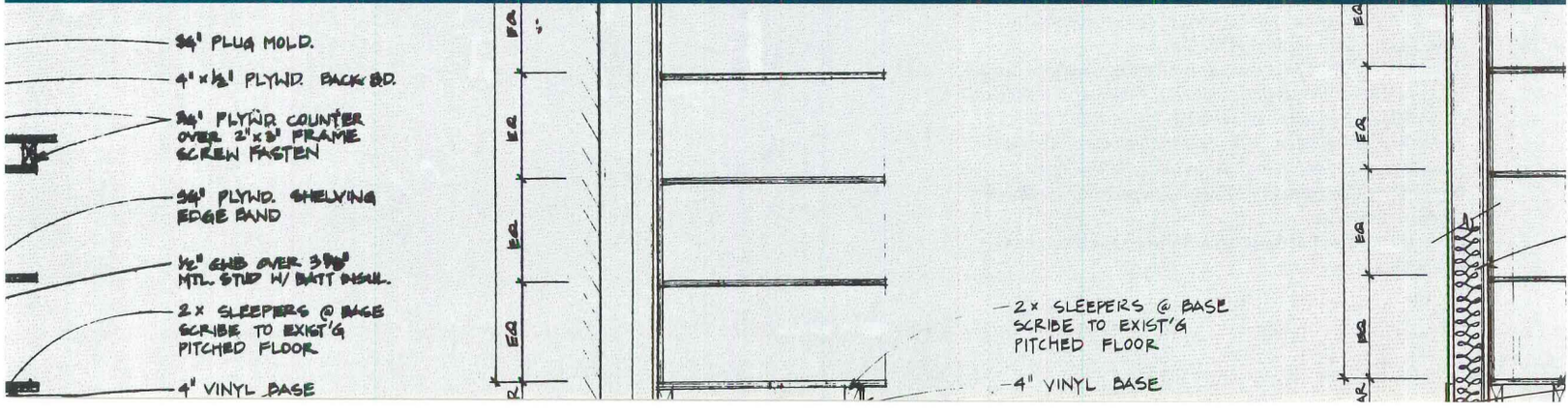
The crate wall contains tools and provides display space for what the children make.

Steve Rosenthal

The custom-designed furniture serves different functions for adults and children.



The sink window gives children a view of the back-stage area of the museum.



Temporary Museum, Boston Center for the Arts

"Installation and Place" was a curated exhibition of new work from selected artists who had received Artist Foundation Fellowships in the 1980s. We were invited to participate and to design an architectural "armature," a temporary museum for all the artists' spaces, which would be itself a large-scale, site-specific installation in the 1884 Cyclorama Building. Because the artworks encompassed different directions and points of view, the architecture needed to challenge the singular, dominant order established by the geometry of center and periphery. The siting and plan configurations of the two structures we built and the locations of the artworks were all developed by mapping the spatial, structural, and mechanical requirements that each artist needed for his or her installations: access to light, views, water, and power, and the necessity of floors, ceilings, and walls. To stretch the limited budget, we used salvaged wood and standard construction materials.

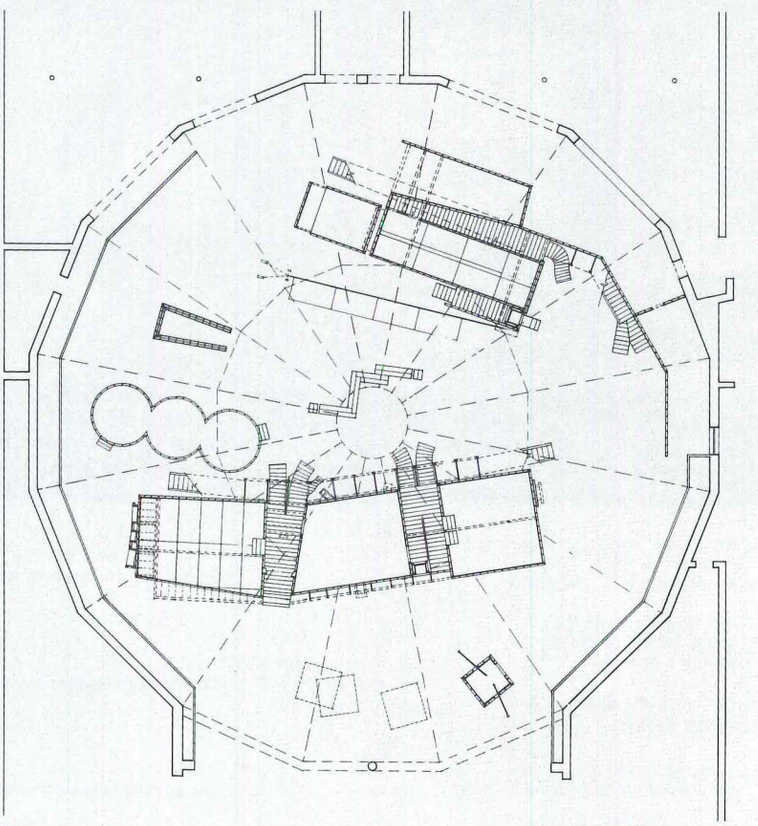
The material presence of the wood-frame structure – and the exposure of the plumbing and electrical infrastructure through the display of visible cords, conduits, pipes, and ducts – challenged the notion of a neutral, "autonomous" architecture cultivated in traditional museum settings. The architecture of the installation became an instrument for viewing the art. Its apertures, walkways, cracks, levels, and frames were sites of conscious viewing.

Although the continuity of the architecture gave a necessary cohesion to this group show, we felt that it was important to heighten the individual presence of the artist' spaces. Each installation's entrance ramp or stair was visible from the exterior and offered a choice of circulation. Within the topography of this landscape, order and orientation were temporary and they changed from each point of view according to distance, relative position, and the memories and associations of the viewer. **Sheila Kennedy** ■

Project: *Temporary Museum: Apparatus for Viewing; Installation and Place exhibit, Boston Center for the Arts, Boston.*
Architects: *Kennedy & Violich Architecture (Sheila Kennedy, Frano Violich, principals; Nicholas Storck, Kevin Alter, project assistants).*
Client: *Boston Center for the Arts.*
Exhibition curator: Marjorie Jacobson.
Site: *The BCA's Cyclorama Building, built in 1884.*
Program: *6,800-square-feet of temporary exhibit space for 17 installation artists funded by the Massachusetts Artist Foundation Program.*
Materials: *New and used 2x4 framing, plywood, pressboard sheets, electric cable, gypsum wallboard.*
Collaborating artists: *Jerry Beck, Joan Brigham, Geraldine Erman, Lillian Hsu-Flanders, Beth Galston, Eric Gould, Denise Marika, Ralph Paquin and Ann Stoddard, Wellington Reiter, Ellen Rothenberg, Jo Sandman, Jeffrey Schiff, Jill Slosberg-Ackerman, Doug Starn and Mike Starn, Michael Van Valkenburgh.*
Construction: *Constructed in 17 days by carpenters and volunteers headed by Chris Fox.*
Special thanks to: *Paul Neseth, Bill Nicholas, Ross Levy, and Robert Barnstone.*

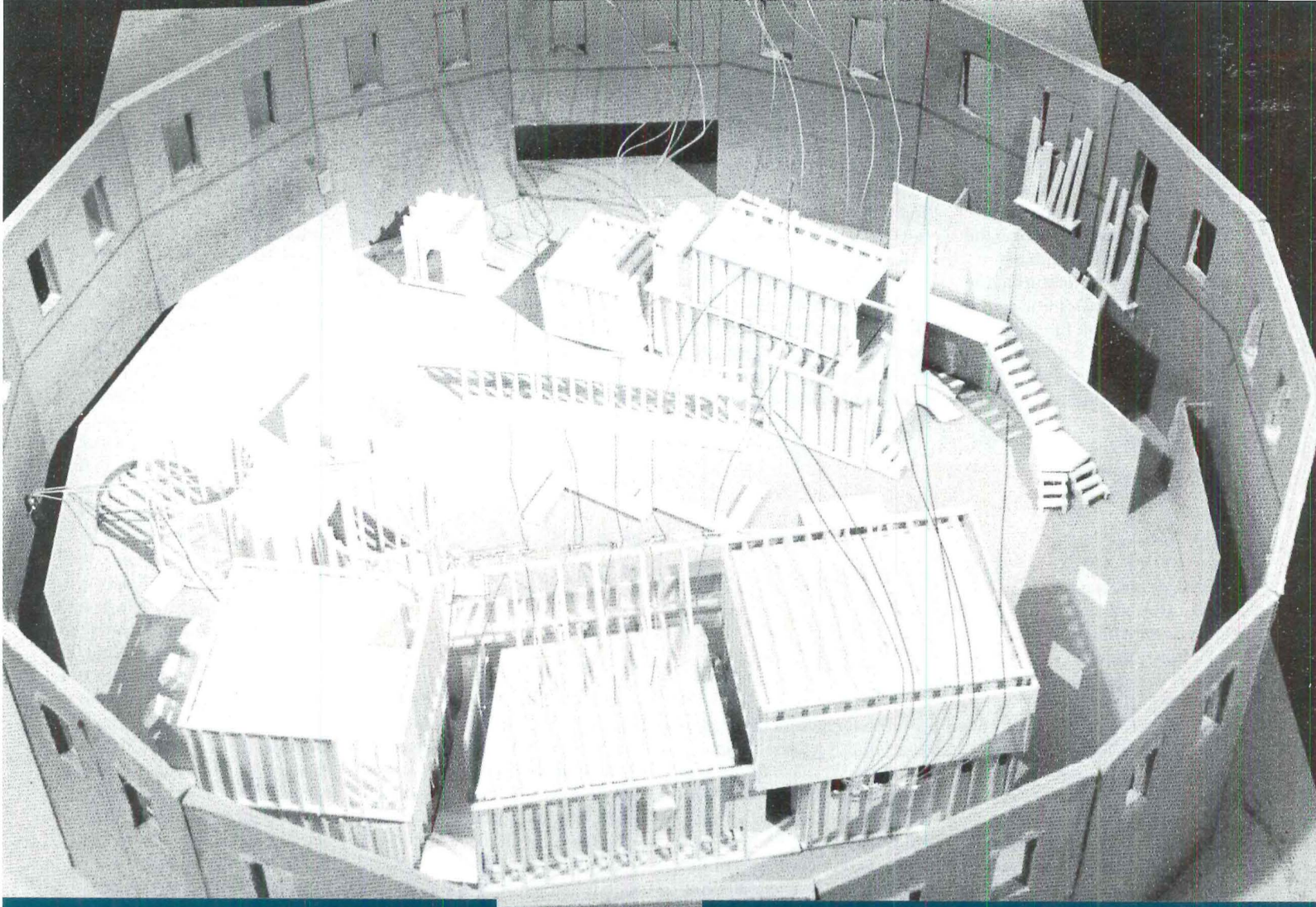
Bruce T. Martin

Each of the artist's spaces had its own entrance, whether a stair or half a split ramp.

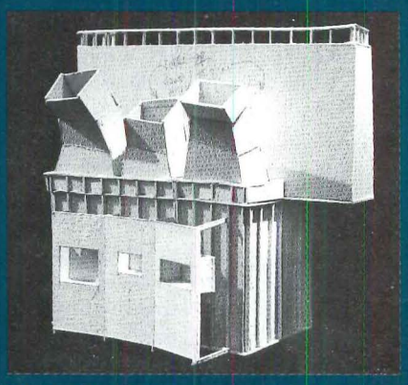


FIRST FLOOR PLAN

20'/6m

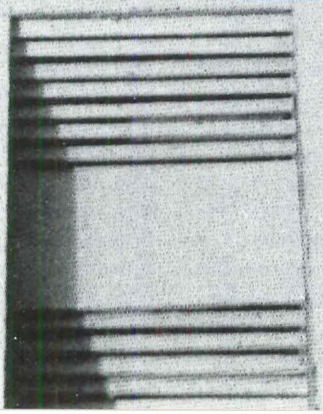


The two structures, broken along "view corridors," embraced a common space.



Much of the design was worked out in models and then built directly from them. The vents serve Joan Brigham's installation "Beckett's Last Tape."

The faceted wall houses Ellen Rothenberg's "The Comfort Machine."



C R I T I Q U E

HIGH SOCIETY

THE EPITOME OF A 1980S DEVELOPMENT: CESAR PELLI'S SOCIETY CENTER IN CLEVELAND

Thomas Fisher

What will future historians say about the many office buildings constructed in the 1980s? And what lessons might we learn from them now that the construction boom is over? Society Center in Cleveland, Ohio, was among the last batch of large downtown office buildings begun during the 1980s boom, and by some accounts it is among the best. But it also raises a number of important political, economic, social, and architectural questions about this building type.

What strikes the visitor first about Society Center is its visibility on the Cleveland skyline. Over 948 feet tall, the 55-story building, designed by Cesar Pelli & Associates in conjunction with Balmori Associates and Kendall/Heaton Associates, is the tallest in the city by more than 150 feet. Because its sloped, stainless steel crown tends to catch the sun's reflection, the building also serves as a kind of beacon that is visible from miles away. Steven Litt, the architectural critic for the *Cleveland Plain Dealer*, likens the building to a campanile in the city, and feels that the reflection of light on its surface "celebrates changes in the atmosphere."

But the tower at Society Center reflects more than the light. It also reflects the yearning of Clevelanders for a symbol of hope in a city that has had too little of that in recent years. Several people I talked to about the building saw it – or at least wanted to see it – as a sign of Cleveland's renewal after decades of declining population and deindustrialization. There seems to be some evidence supporting that hope. The city is building a large sports complex downtown (P/A, January 1992, p. 88) and its night life is improving. But for many people in such a sprawling metropolitan area, I suspect Society Center is more symbolic than real, representing to some of the suburbanites I talked to new vitality in the urban core where they hadn't set foot for years.

But let us set foot there, and look at the more immediate context of Society Center. The complex acts, Cesar Pelli notes, as "a hinge" between Public Square, the traditional heart of the city, and The Mall, which is part of a Neoclassical ensemble of public buildings following a 1903 plan developed by Daniel Burnham, John Carrère, and Arnold Brunner. On the southwest corner of the site stands the old Society Bank Building, designed by Burnham & Root and restored as part of this project by Van Dijk, Pace, Westlake & Partners. North of the main office tower is a hotel, also designed by Pelli, with Glover-Smith-Bode as the architects of record. East of the complex, under The Mall, the developers built a parking garage and a new plaza designed by Richard H. Kaplan Architects.

In the design of the tower, Pelli says that he wanted to visually integrate the old bank building into the new complex and to gesture to the 1930 Terminal Tower diagonally across Public Square. (A less-than-inspired tower for BP America also faces the Square, completing the troika of the city's tallest buildings.) Given his intentions, I think Pelli's design succeeds. Although clad in granite rather than the red sandstone of the Burnham & Root bank, the office tower does continue the latter's cornice height and massing with a projecting base. And the cascading form, vertical fenestration, and pointed top of the main tower do recall the stepped massing, narrow windows, and distinctive pinnacle of the Terminal Tower, without ever mimicking it. Not that Society Tower entirely benefits from the comparison. The solidity of the Terminal Tower's limestone walls and Classical ornament draws attention to the thinness of Society Tower's cladding and the shininess of its stainless steel mullions. Society Tower is one of the most contextual office buildings he has ever designed, admits Pelli, arguing (correctly, I think) that its location at the historic center of the city required that response.

Still, the tower does not respond to its entire context, which is telling. For example, although the office building obeys the setback along The Mall, it makes few other gestures to the Beaux-Arts buildings that surround that space. Pelli argues that it is difficult to accommodate such a tall tower to the low, horizontal massing of those Classical buildings. But the conflict here is as much philosophical as it is compositional. The City Beautiful Movement, which Burnham helped spearhead and which he partly realized in Cleveland, envisioned the modern city as regular blocks of buildings with uniform heights and low cornice lines. Behind that vision was a Progressive Era belief in government and public institutions as necessary to counter the exploitative aspects of big business.

The 1980s, of course, offered us the opposite view. We were told that government was the problem, not the solution; that regulation hurt rather than helped us; that the entrepreneur, not the civil servant, should be our hero. It is no wonder, then, that Society Center, a 1980s building if there ever was one, with its audacious size and conservative image, stands somewhat uncomfortably next to its Progressive-Era neighbors. It's like Ronald Reagan speaking to a gathering of Theodore Roosevelt's Progressive Party.

Depending on whom you talk to in Cleveland, the developers of Society Center, the Jacobs Brothers, are either heros or villains. Richard Jacobs, owner the Cleveland Indians baseball team and active in civic affairs, represents, to some, the enlightened entrepreneur who has given a lot to the city, not the least of which is Society Center itself. To others, he seems to be, as one Cleveland writer put it, "above the law, with the city council at his beck and call, and with the mayor as his errand boy."

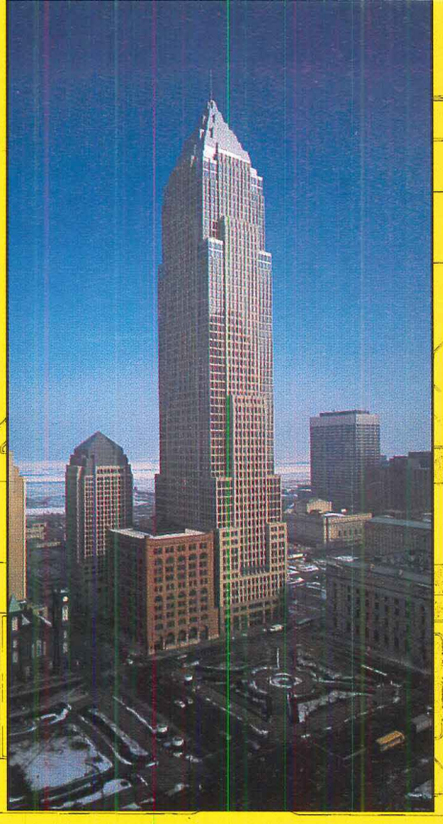
Architecture is at the heart of this debate. Some see the new baseball stadium as a bribe to keep Jacobs from moving the Indians to another city; others see it as good for Cleveland. Some criticize Jacobs's failure to build the Ameritrust Tower, leaving a large tract of cleared land right on Public Square; others say that, with the downtown's high vacancy rate (in part caused by the completion of Society Center), another tower is not needed. And some point to Society Center's $110 million tax abatement over 20 years as a giveaway by the city; others see such abatements as necessary to attract developers downtown.

Whichever side people take on such matters, there are a couple of things worth noting. First, this project makes it clear that architects, however organizationally separate they may be from developers, are associated with them in the public mind. People I talked to in Cleveland, for example, alternately described Society Tower as Jacobs's building and Pelli's building, as if the two were interchangeable and equally responsible for it. There are many in the architectural community who claim that architecture is nonpolitical and essentially a matter of functional accommodation and form-making. But how valid is that assertion if much of the public sees little difference between the architect and that most

THE ARCADE

BP AMERICA

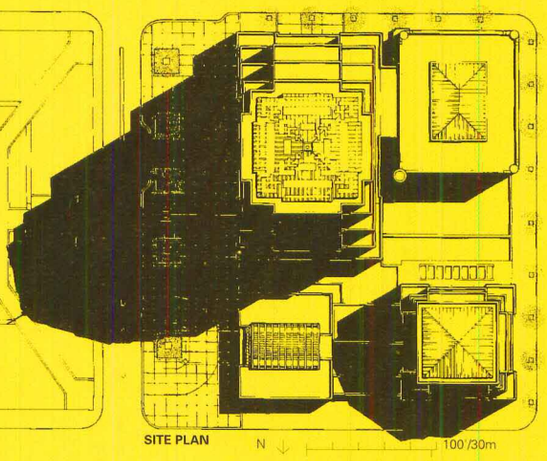
Society Center integrates the 1890 Society Bank Building by Burnham & Root, but makes only a passing gesture to the 1910 Federal Courthouse next door by Arnold Brunner.



TERMINAL TOWER

LIBRARY

FEDERAL COURTHOUSE



SITE PLAN

N

100'/30m

The Marriott hotel at the northern edge of the site offers a smaller scale more in keeping with neighboring buildings, but its interior is entirely predictable.

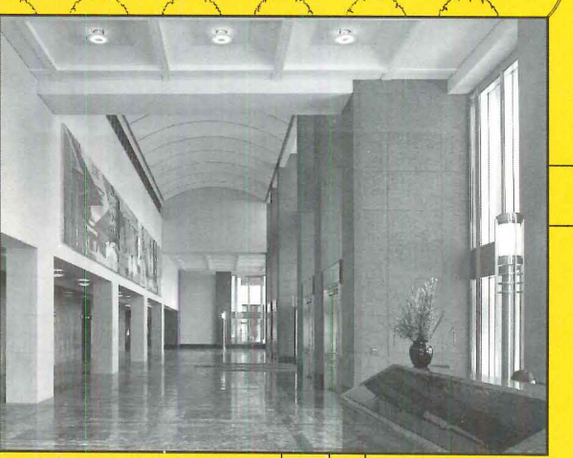
THE MALL

Society Tower, the Terminal Tower, and the BP America headquarters visually define Cleveland's Public Square and symbolize the concentration of economic power in the city.

The highly decorative banking hall of the old Society Bank Building was restored as part of the project. The upper-floor structure, however, was gutted and redesigned by Osborn Architects & Engineers.

The rich colors and the integration of art and architecture in the old banking hall have the effect of upstaging the cool neutrality of the Society Tower's lobby.

FIRST FLOOR PLAN



James Rosenquist's painting "F111," owned by developer Richard Jacobs, hangs in the lobby. Though suitably sized for such a tall building, the lobby needs more retail activity.

political of animals, the developer?

Second, this project raises questions about the power of developers like Richard Jacobs, especially in development-starved cities such as Cleveland. While there are many (some would say far too many) public hearings and review steps that large developments like Society Center must go through to get approved, it is rare that citizen objections actually stop such projects.

A case in point is the hotel tower at the northwest corner of the site. Cleveland needed more downtown hotel rooms if it was to attract more conventions to the city, and so a hotel was proposed as part of Society Center, on the site of a historically significant, terra cotta-clad structure called the Engineers Building. Because Society Center received a Federal UDAG grant, a "Section 106" review of the project was conducted, and the Cleveland Restoration Society, one of several "interested parties," mounted a campaign to save the Engineers Building from demolition.

The developers were required to commission an architect, Harry Weese & Associates, to prepare plans showing how the building, with its narrow floor plates and ample windows, could easily be converted into a hotel. However, Marriott, which was to operate the hotel, objected that the rooms would not fit their standards. "Marriott has a formula," says Kathleen Crowther, director of the Cleveland Restoration Society, "and it couldn't tolerate any quirks, even if those quirks would make the hotel more charming." Rather than lose Marriott, all parties eventually conceded that the Engineers Building had to go.

The resulting 25-story, 403-room hotel, with its granite cladding and pyramidal mechanical penthouse, visually fits the rest of the complex better than the Engineers Building would have. However, once inside the hotel, with its over-stuffed lobby, standard meeting rooms, and somewhat dreary corridors, you begin to wish that things had turned out differently. Cleveland gained hotel rooms, but lost the opportunity to have a hotel that would have been unique.

Fortunately, not all such opportunities were lost. The old Society Bank Building on the southwest corner of the site had a spectacular – and largely intact – banking room on its first floor. Although the upper floors of the building had been extensively altered (and required a new structure to handle modern office loads and to line up with the floor-to-floor heights of the adjacent tower), it was decided to restore the banking room and the oak-paneled offices on its mezzanine. The firm van Dijk, Pace, Westlake & Partners supervised the restoration work and Gensler & Associates designed the bank interiors. The results are spectacular. The banking room's walls, for example, are covered with the rich and complicated patterns that show how Ruskinian, Romanesque, and Byzantine influences still fired the imagination of architects and artists in the 1880s. And the new elements in the space – the uplighting, for example, or the tellers' back-of-counter enclosure – work well with the original.

The restored banking room, however, tends to upstage the adjacent office tower lobby, which looks spartan and seems empty much of the time. Some of that cannot be laid at Pelli's feet. The tower has many empty floors, so there is not much pedestrian traffic through the large, high-ceilinged space. Also, the empty west side of the lobby, which seems to lead nowhere, was designed for a restaurant that the bank apparently objected to. Still, there is a grayness to the lobby, with its stainless steel fittings, broad expanses of glass, and granite-clad walls, that does not play well in the overcast winter weather typical of Cleveland. Where the lobby does work is as a neutral backdrop for boldly colored paintings by Frank Stella and James Rosenquist. However, as you walk from the old banking room, with its carved ornament and painted surfaces, to the new lobby, it is striking to see how distinct art and architecture have become in the last 100 years.

The neutrality of the interiors continues on most of the occupied upper floors. One of the few memorable moments is the cafeteria on the top floor of the Burnham & Root building. You approach it from the new elevators via a bridge over a two-story space, through round-arched openings in the red sandstone walls, to a large eating area, whose central skylight provides a dramatic view of the tower.

"Representing the best and the worst of the 1980s, this complex is sophisticated in form, material, and detail, and brazen in its size, lavishness, and assertion of power."

But the view from the tower's top floors may be more thought provoking. To the west, you can see the remnants of Cleveland's 19th-Century downtown: rows of lowrise, brick commercial buildings whose narrow storefronts, now only partly filled, were once packed with diverse businesses. We may look down upon such districts from our modern office towers, but are we better off than their original occupants? Is the concentration of tremendous wealth and power in the hands of a few people such as Richard Jacobs preferable to the small-scale, localized economy that generated those 19th-Century buildings? And are our cities, with enormous developments such as Society Center at their centers, more livable than they were 100 years ago?

To the south and west, you can see over the adjacent downtown buildings to Cleveland's industrial valley, called the Flats, with many of its steel mills and factories closed or struggling. The office buildings we constructed in the 1980s may give the appearance of prosperity. But how secure is that prosperity as the industrial base of our country continues to erode and as investment continues to shift from the old factories in the Flats to new "white-collar" factories, such as Society Tower, full of bankers and lawyers?

To the east you can see, off in the distance, large tracts of cleared land whose grid of streets is all that remains of former inner-city neighborhoods. From the uppermost floors of Society Tower, it is easy to overlook such areas, which may be an apt metaphor for the entire 1980s. Wasn't the view of things during the last decade so fine, especially for those at the top of the heap, because we rendered so many problems and so many people invisible?

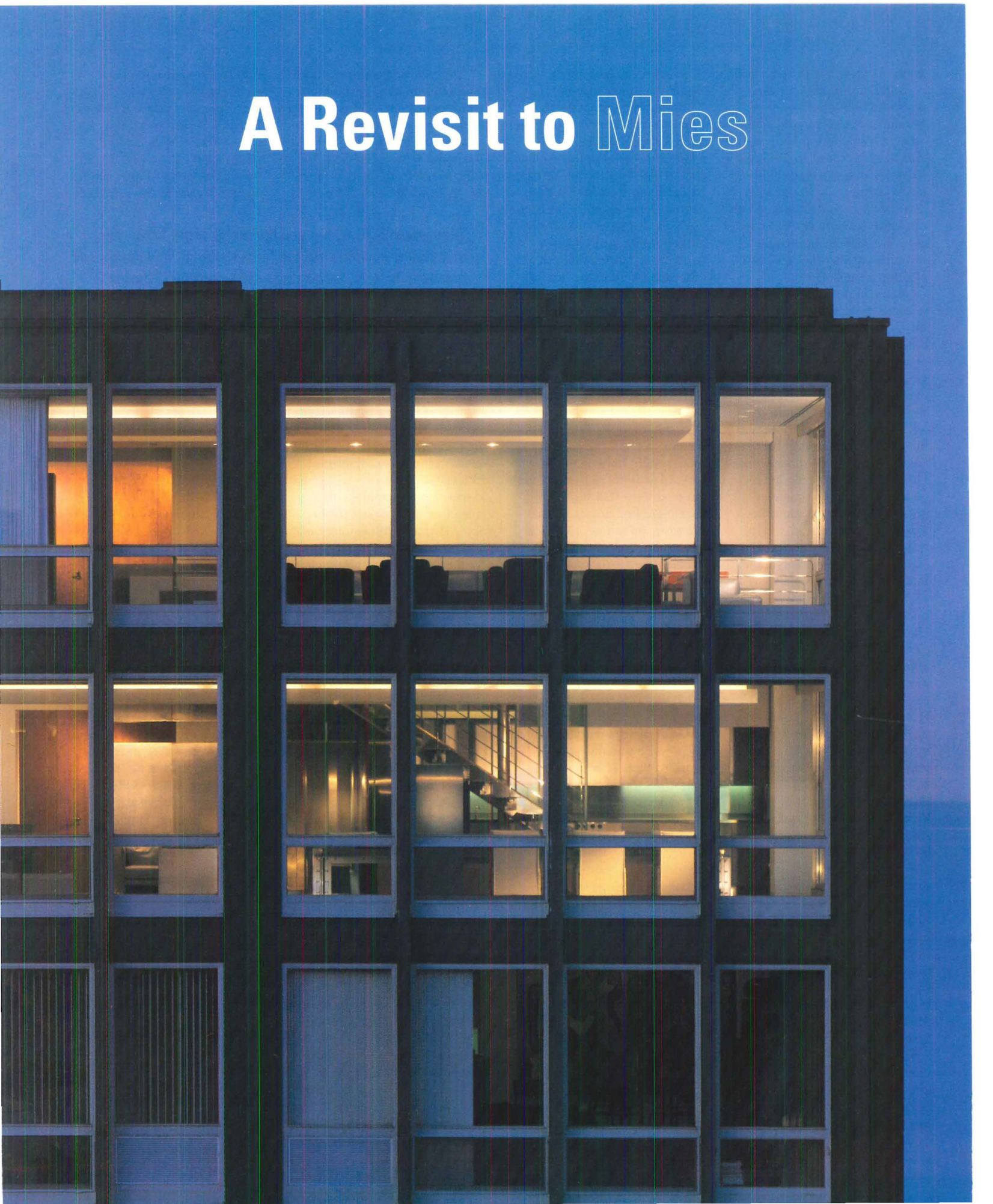
Cesar Pelli says he wanted to create, in Society Center, something that expressed its own time, and in this, he has certainly succeeded. Representing the best and the worst of the 1980s, this complex is sophisticated in form, material, and detail, and brazen in its size, lavishness, and assertion of power.

If there is such a thing as a post-1980s architecture, I think it must focus less on seductive objects such as Society Tower and more on all that is visible from it – the diversity of our cities, the plight of our industry, the relationship of our production and consumption, and the conditions of our fellow citizens, regardless of their color or class. We may end up designing smaller and less luxurious buildings, but we should seize this moment to enlarge the space and ambition of architecture and urban development.

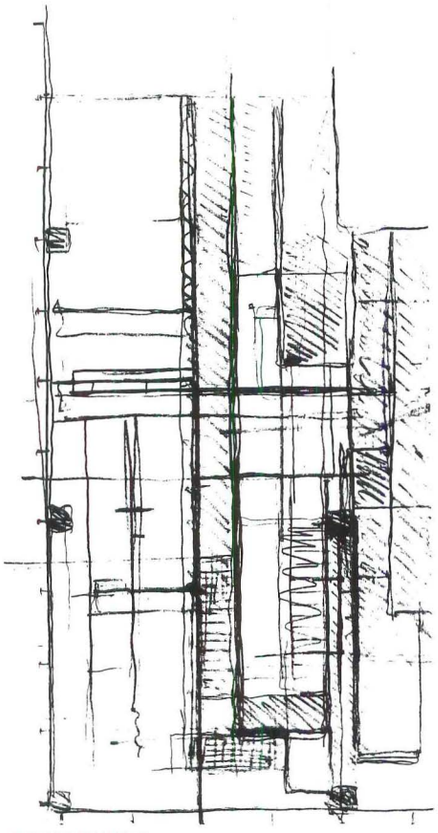
Thomas Fisher ■

Project: *Society Center, Cleveland, Ohio.*
Design architects: *Cesar Pelli & Associates.*
Production architects: *Kendall Heaton Associates.*
Restoration architects: *Van Dijk, Pace, Westlake & Partners.*
Landscape architects: *Balmori Associates.*
Society Bank interior architects: *Gensler Associates.*
Marriott Hotel architects of record: *Glover-Smith-Bode, Inc.*
Garage and plaza architect: *Richard H. Kaplan Architects.*
Photos: *Richard Payne.*

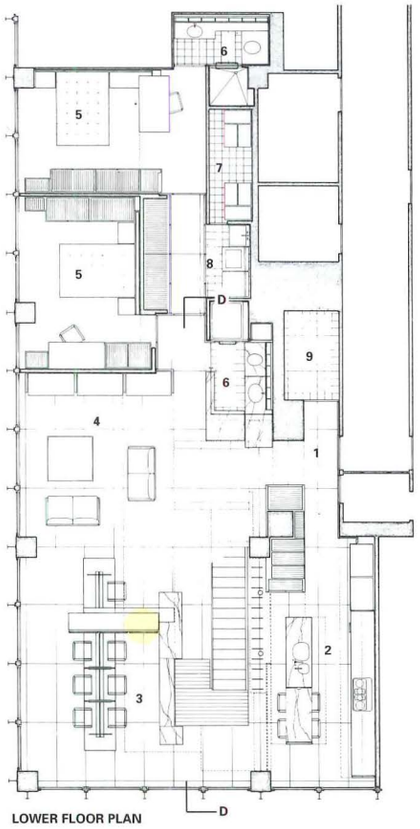
A Revisit to Mies



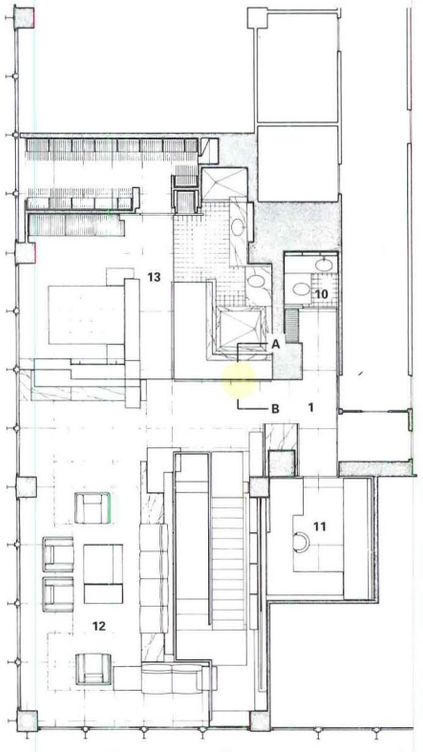
A Mies landmark accommodates a first, a highly sophisticated duplex apartment.



PRELIMINARY SKETCH



LOWER FLOOR PLAN



UPPER FLOOR PLAN

At dusk, the duplex glows (1) against the backdrop of Lake Michigan and the sky. An early sketch by Ron Krueck shows rudimentary elements of the plan, including the beginnings of the stair.

YELLOW CIRCLE INDICATES LOCATION OF DETAIL DRAWING ON THE FOLLOWING PAGE.

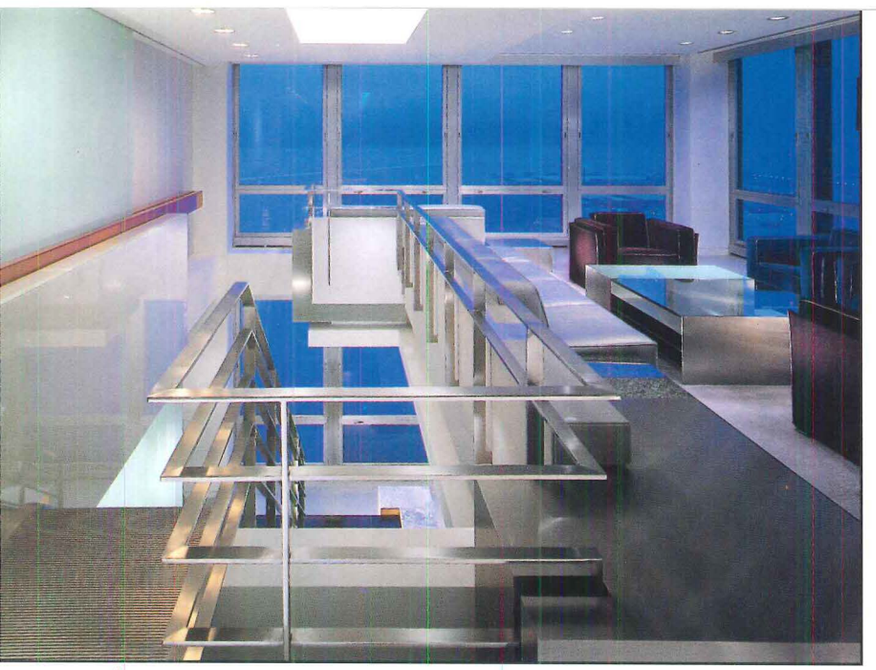
1 ENTRY/EXIT FOYER
2 KITCHEN
3 DINING
4 STUDY
5 CHILD'S BEDROOM
6 BATH
7 MECHANICAL
8 LAUNDRY
9 STORAGE
10 POWDER ROOM
11 OFFICE
12 LIVING
13 MASTER BEDROOM SUITE

Of the numerous Chicago apartments commanding views of the city and the lake, only a few have such an architecturally famous address as this one. It is in Mies van der Rohe's 860 Lake Shore Drive (1948–1951). At one point, the clients owned two adjacent apartments there, and architects Krueck & Sexton (formerly Krueck & Olson) did several studies of horizontally connected apartments. They wanted to create one that answered the seemingly contradictory requests of the owners: durable materials that appear delicate, hard ones that appear soft. The parents of a young family, they wanted the apartment to be minimally furnished and contemporary, require little to no maintenance yet impart a sense of intimacy. Because the two apartments were both on the long side of the rectangular building, there was a strong linearity in the resulting floor plate. Ron Krueck felt that his initial schemes had a very strong Miesian character, although they were perhaps questionable in the intimacy department.

It had been thought that breaking through vertically to connect two levels of this building was not structurally possible, so owners of these units tended to consider vertical expansion out of the question. But Krueck & Sexton and their clients challenged this when the apartment below their unit became available. After considerable structural analysis, forcing the engineers to go all the way to original shop drawings (miraculously saved by a former Mies employee) a duplex proved possible. Krueck's studies then took a new path. The clients felt the vertical arrangement might give them a better chance to achieve what they envisioned. But they wanted the floors joined by more than the standard spiral stair; they wanted a real connection. So by far the most important event in the new apartment was to be the stair, with its large opening. Krueck considers the zone between the top of the handrail around the opening and the ceiling of the lower level the magic dimension that makes the apartment all it is. The "slot" is a magnetic focal point, enabling space to flow.

Over a period of time – the project started in 1989 – the organization of the apartment took various directions, with constant interaction between Krueck and the clients. Sleeping, living, and kitchen/dining functions were tried in various configurations and on alternating levels until the final solution was reached. It was decided that the

(continued on page 100)



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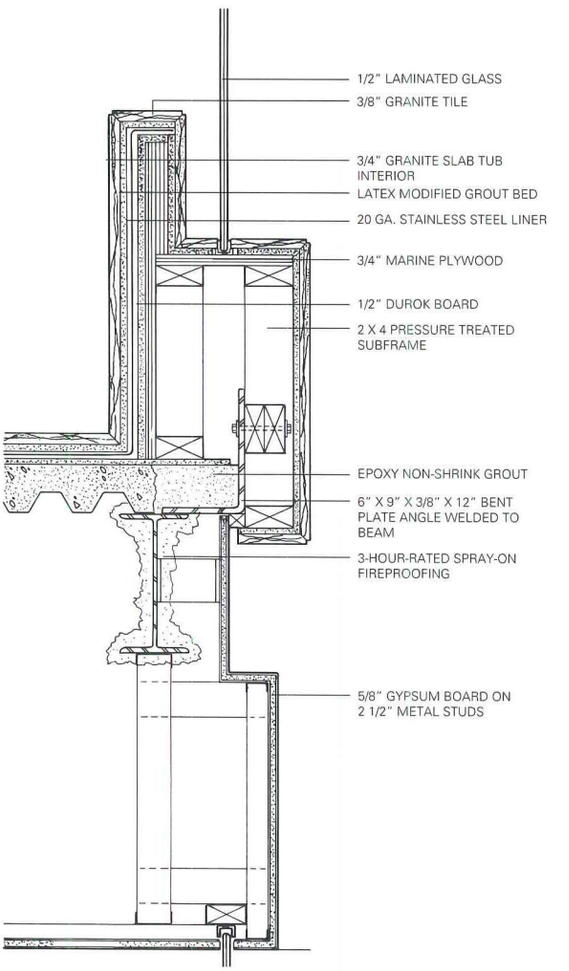
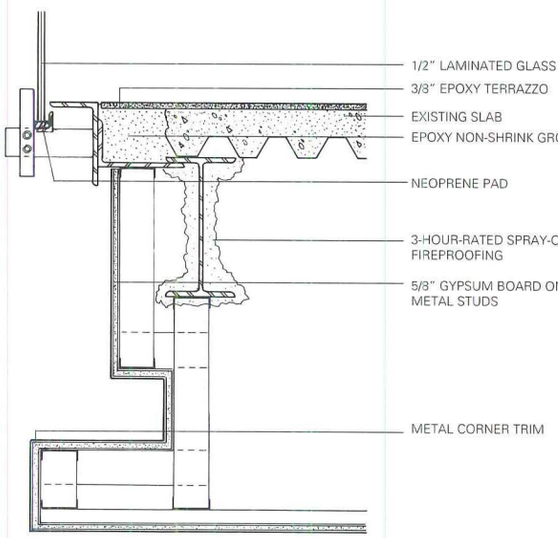


SOFFIT/FASCIA CONDITION DETAIL "A" AT MASTER BATH TUB

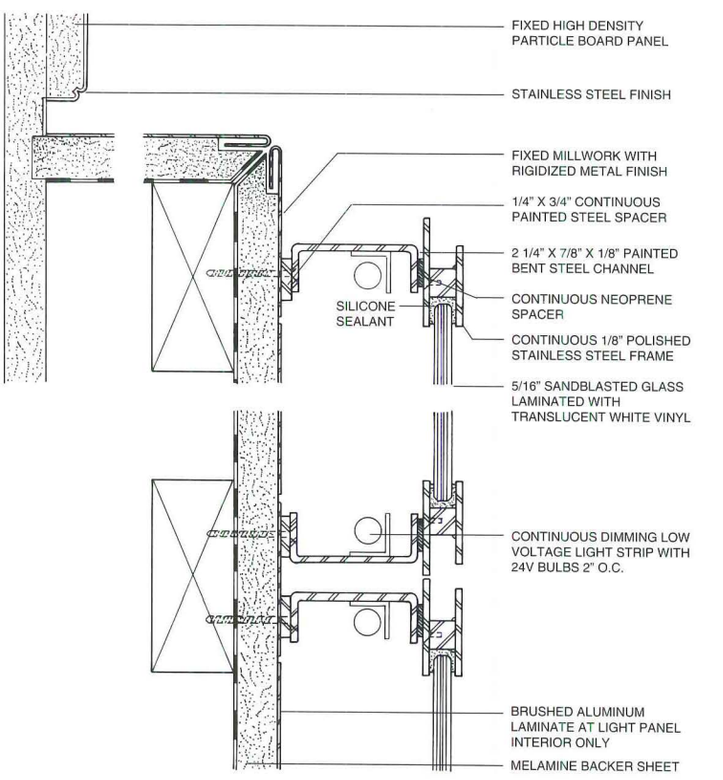
1'/30cm



SOFFIT/FASCIA DETAIL "B" AT ENTRY "BRIDGE"

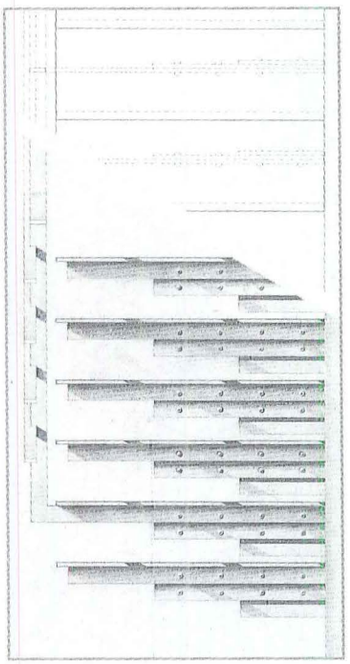
1'/30cm

The "slot" for the main stair provides spectacular lake views, forms a perimeter of the upper-level living area (2), and provides a spatial flow to and from the lower level (3). The apartment comprises a rich blend of stainless steel, glass, stone, and terrazzo. A touch of wood is added as the ending platform for the stair. Detail C (right) is of the end of the divider casework at left in (3).

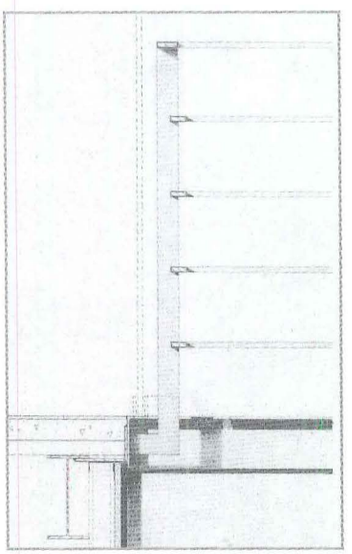


JAMB DETAIL "C" AT DINING ROOM DIVIDER

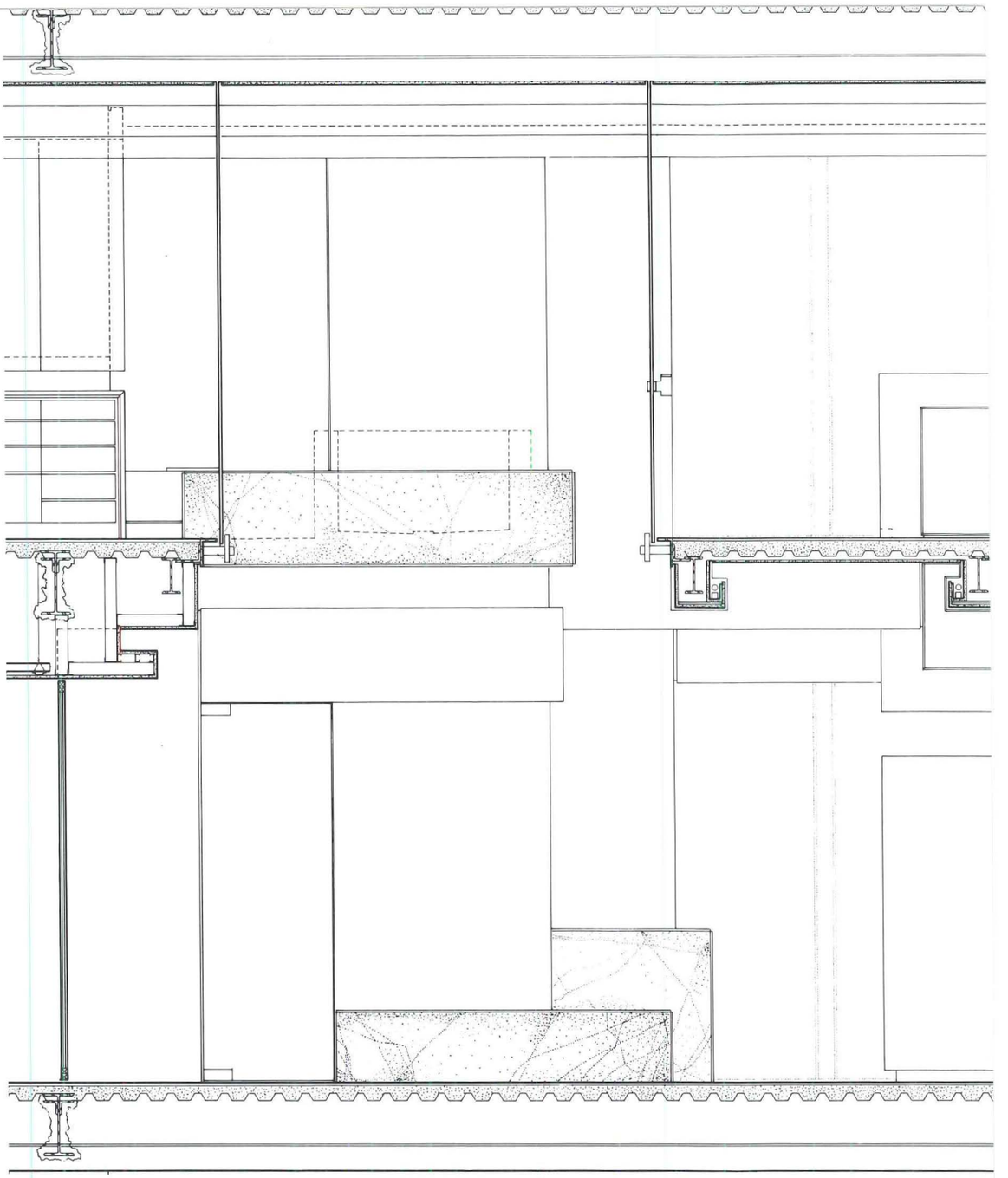
2'/5cm



STAIR ELEVATION



HANDRAIL SECTION/ELEVATION



LONGITUDINAL SECTION D-D

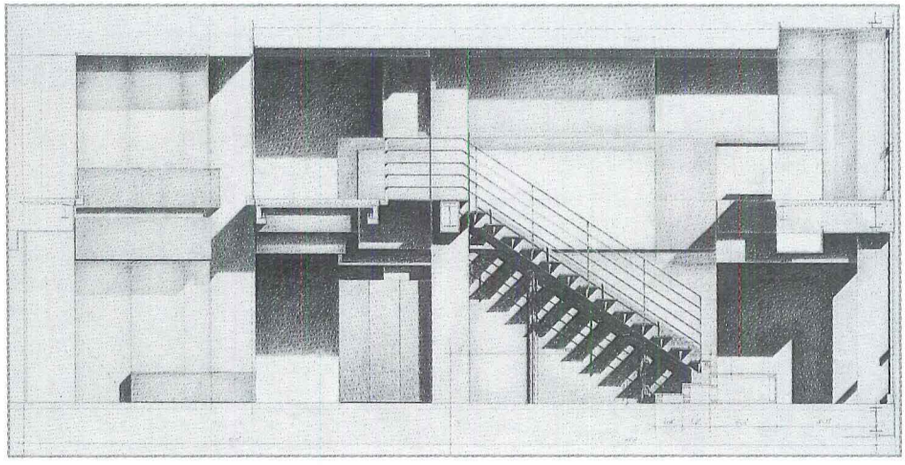
(continued from page 97) upper floor would include the main entrance, the living area, the master bedroom suite, an office space for one of the clients, and the first glimpse of the dramatic views of the city and, to the east, two stories worth of Lake Michigan. The journey down the elegant stair is memorable for its view of lake and sky, which change with the weather and the time of day. On the lower level are the kitchen, dining room, study, and childrens' bedroom suite.

Landmark that it is, 860 Lake Shore Drive was recently honored by a tenants' 40th birthday celebration. Numerous occupants hold firm to their love of the Mies buildings. Does this mean that any new construction has a mandate to embody the palette of black steel, white paint, and Calder-era tapestries and rugs carried through from 1948 into our time? The strength of the building's strict structure and bay spacing did indeed have a pronounced effect on Krueck & Sexton's result. Krueck says that initial approaches tried out some of the curvilinear verve of an earlier Chicago highrise apartment (P/A, December 1987, p. 74), but the spatial limitations of 860 did not allow for such extravagance; it would use too much valuable area.

Mies's limited color range would not have yielded the softness and intimacy desired by the clients, nor would it have reflected Krueck's skill at orchestrating subtle, near-neutral hues. Emphasis here is on stainless steel and glass, combined with terrazzo and stone. Custom dining and coffee tables blend these two materials with minimal detailing, and the craftsmanship in the stainless steel stair and handrails is part of what makes that area of the apartment so notable. In order to combine durability and a sense of delicacy, cabinetry is clad in stainless steel with raised patterns, embellished by painting or dyeing the steel with soft blue grays, then regrinding the outer face.

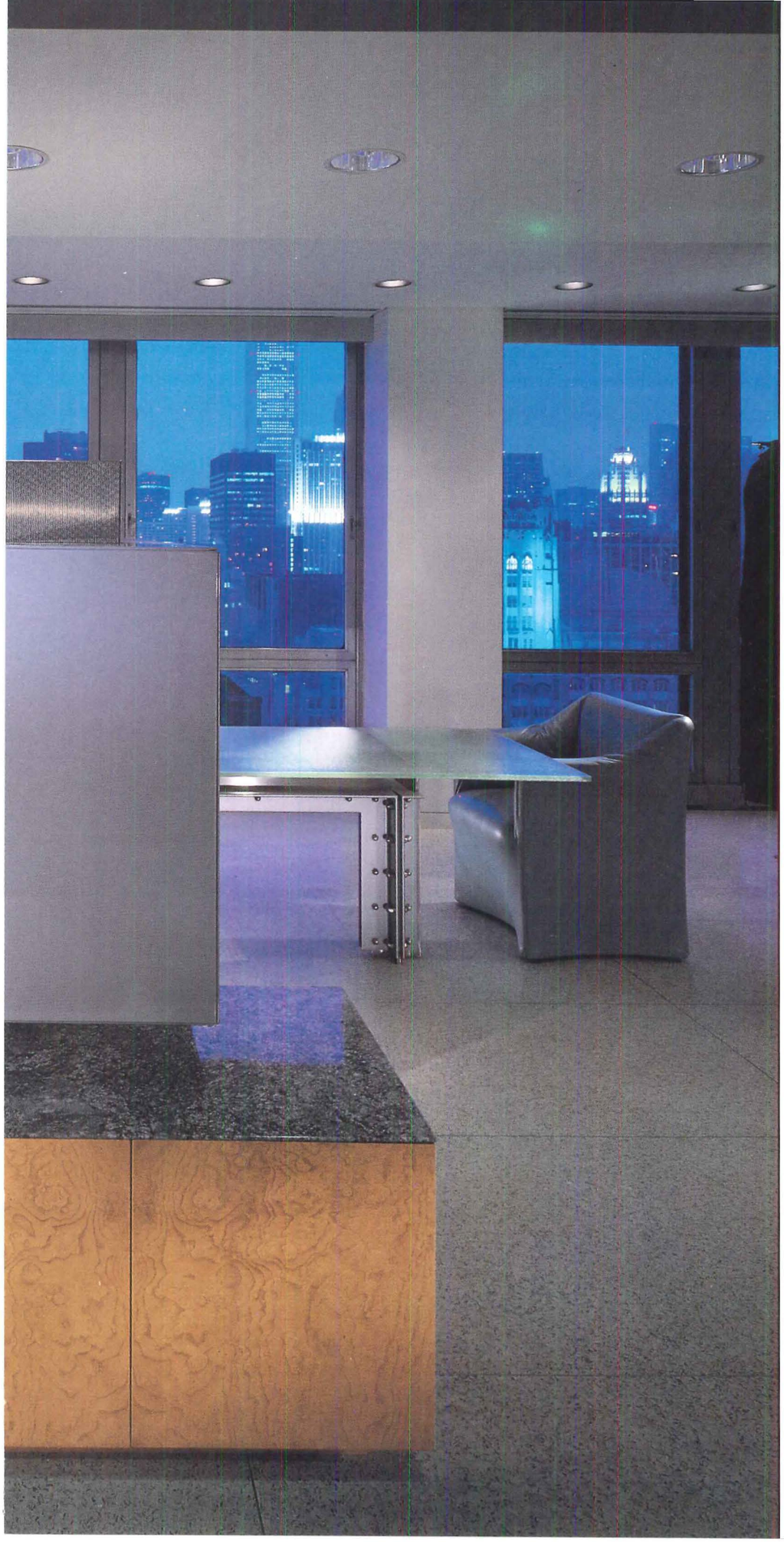
Though Ron Krueck considers his clients demanding, he has sincere respect for what the couple brought to the process, and for what they were all able to create, together. Mies's detailing was known to be rigorous; detailing in this apartment is no less rigorous, and may even go so far as to be obsessive. Nonetheless, it is beautiful, impressive, and successful. While this design may not respect Mies's dictum to the the letter, it accomplishes with beauty what the owners asked of their architect, without disrespect to its iconic building. **Jim Murphy** ■

2'/ 60cm



RENDERED SECTION

Rendered details and longitudinal section catch the essence of the elements of the stair, the spatial aspects of the duplex, and the effect of light and shadow on both. The detailed section through the "slot" covers the area from the bath and egress halls to the east exterior wall, and shows what is, in effect, a bridge at the head of the stairs.



4

Project: *The Stainless Steel Apartment, Chicago.*
Architects: *Krueck & Sexton (formerly Krueck & Olson), Chicago (Ronald Krueck, design principal; Mark Sexton, project principal; Miles Linblad, project architect; Ed Donley and Alex Sims, project team).*
Building architect: *Ludwig Mies van der Rohe.*
Client: *withheld by request.*
Program: *apartment of 3,400 square feet for a young family of four on the top floors of a steel and glass Mies van der Rohe highrise. Client required a minimally furnished, contemporary, and dynamic space constructed of durable materials that require a minimum of maintenance. It was to have living, study, office, dining, and kitchen areas, and three bedrooms.*
Structural system: *steel with composite deck.*
Major materials: *glass terrazzo floor, lacquer and stainless steel millwork, stainless steel stair, painted gypsum board walls and ceiling, recessed incandescent and indirect fluorescent light fixtures (see Building Materials, p. 126).*
Mechanical systems: *four-zone independent high-velocity "space pak" cooling system with steam humidification, all controlled by solid state panel with remote concealed sensors.*
Consultants: *Tylk Gustafson & Associates, engineering.*
Contractors: *Fraser Construction, Casework Ltd., Northern Weathermakers.*
Costs: *withheld at owners' request.*
Drawings: *Hans Thummel, plans, p. 97; John Carhart, all details, p. 98, and p. 100 - 101, section, top; W. Callahan, rendered section, p. 101, bottom (all from Krueck & Sexton).*
Photography: *Marco Lorenzetti, Hedrich Blessing.*

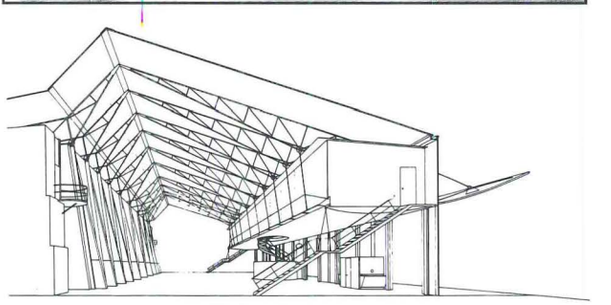
Just as the lake forms a dramatic backdrop to eastern views, the city provides the drama when looking south across the dining area (4) from under the stair. The dimensions of the rooms are deceptive, and photographs had to be taken from as far across any given space as possible to get any range in width of view. The expansive views from the window walls quite effectively expand the spaces, visually. While Ron Krueck is a graduate of IIT, his detailing is not literally Miesian. Where Mies's lexicon featured reveals and projecting edges, Krueck makes edge conditions seem to disappear, with minimal seams or joints showing only when they can in no way be avoided, or are intended for emphasis.

ALBUM

The Maria Rosa Soler Warehouse: front elevation (above) and interior view (below).

MARIA ROSA SOLER WAREHOUSE

Though best known for its design of lush architectural interiors (bars, restaurants, and nightclubs) that seduce their visitors through potent imagery, the office of Alfredo Arribas Arquitectos Asociados, Barcelona, is not a firm with a singular vision. Arribas has deployed his fine-tuned talent for the unexpected with appropriate understatement at the Maria Rosa Soler Warehouse in Barcelona. A building type typically given little architectural attention, this warehouse is the antithesis of a dark and dismal storage space. The 26,348-square-foot, double-height shed structure is light and airy thanks to a continuous skylight and generously proportioned entrance and loading dock openings. Its exposed trusswork suggests the workaday quality of the program, while elevating such industrial symbolism with carefully articulated elements. A spiral staircase leads to mezzanine-level offices above. A canopy hung below the office windows, running the length of the white concrete block front elevation, gives the building an elegant street presence while shading the trucks from view. **Abby Bussel** ■



PERSPECTIVE

Photos: Ken Kirkwood

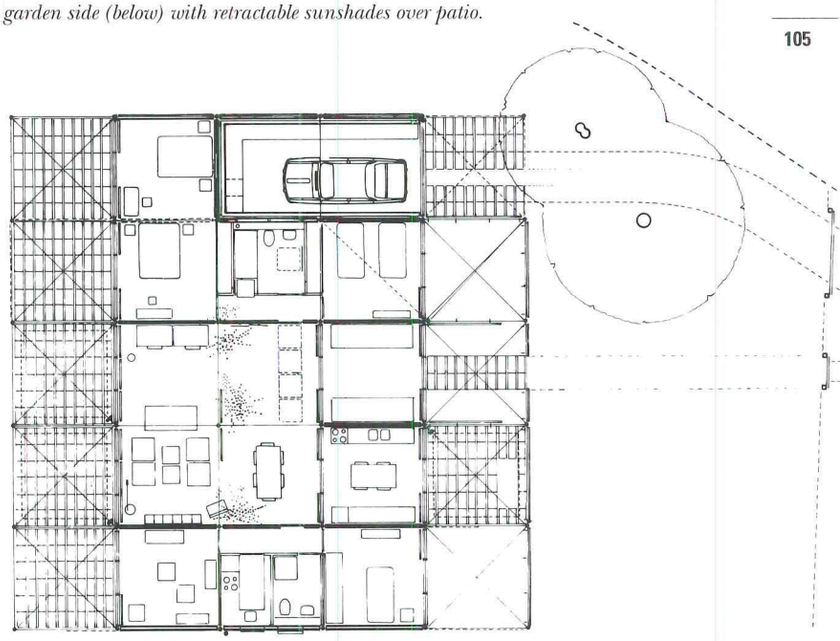
Front façade (top); garden side (below) with retractable sunshades over patio.

YACHT HOUSE

Brian Horden describes his London firm as a group of architects who would almost prefer sailing to designing buildings. Nautical technology is his inspiration. With a standard set of metal tubes, spars, and rigging, you can assemble a diversity of small boats, each adaptable to changing weather conditions. Why not do the same with a house? Horden's answer is a series of Yacht Houses, inaugurated by this one for his sister's family, who helped him build it.

Yacht House I bespeaks Horden's Miesian origins. (The country house he designed for his parents is a close interpretation of the Miesian tradition.) But the plan seems relentlessly modular, with modest rooms substituting for Mies's spatial largesse. Horden's detailing is also more extroverted. The essence of Mies is his reductiveness; Horden's design, while no less sophisticated, displays his fascination with the mechanics of assembly: tension cables for sail canopies and corner windbracing criss-cross the column-mast gridiron. The structure is expedient, the effect serene.

Philip Arcidi ■



FLOOR PLAN (GARAGE NOT YET BUILT)

N ↑ 10'/3m

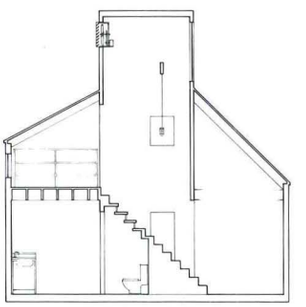
Album

Garage seen from backyard.

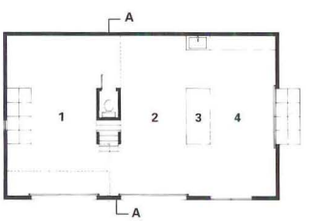
THE MACHINIST'S GARAGE

When David Guthrie finished architecture school three years ago, he thought he'd spend his last summer in Houston doing some freelance architectural work before driving out to Los Angeles. He never left: once he'd designed a new garage for Clyde and Susan Altemus, he stayed in town to build it with two other men (for less than $40 per square foot).

Believing that "you have to make it good before you make it interesting," he started with a straightforward spatial idea for this garage-cum-machine-shop: to make the bathroom and stairs an island in the space. Once Guthrie added a second island – a light tower – these gypsum-clad cores became shear walls, eliminating the need to interrupt the 19-foot-tall space with joists or trusses. The islands, positioned to suggest a tartan grid floor plan, align with the copper-clad doors on the gable end. Karl Jensen, a friend from architecture school, furnished a pattern for the copper doors from sketches he made in Africa – figure/ground swirls in a highly disciplined design. **Philip Arcidi** ■



SECTION A-A 10'/3m



1 PARKING BAY
2 PARKING/WORK BAY
3 WORK TABLE
4 WORK BAY

FLOOR PLAN N 20'/6m

Photos: Frank White

Interior looking toward gable end.

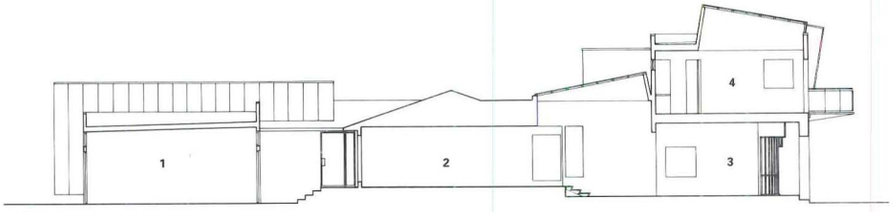
Photos: Tom Bonner

Kahn House addition seen from neighbor's yard.

KAHN HOUSE ADDITION

Annexed to a one-floor house that once matched its ranchburger neighbors, this CMU cube adapts European Rationalism to Pacific Palisades. Set on a densely settled hill, it gives an axial terminus to an otherwise asymmetrical house. One steps down from the dining room of the old structure to the new living room, whose door is centered in the colonnade, beneath the balcony for the bedroom. A galvanized light monitor, seemingly canted by Los Angeles's shifting tectonic plates, saves the composition from rampant orderliness.

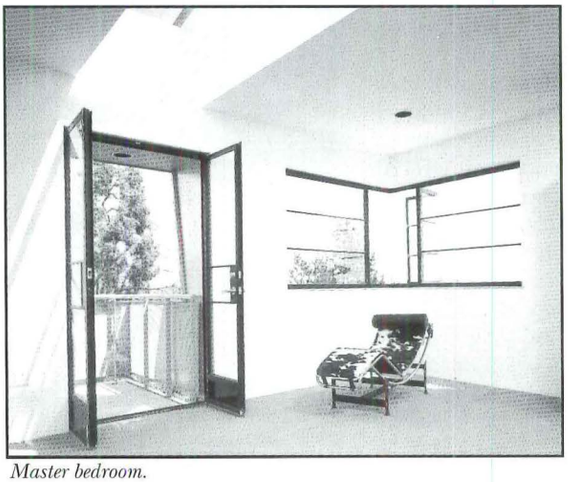
Designed by the Central Office of Architecture, a trio of Angelinos – Ron Golan, Eric A. Kahn, and Russell N. Thomsen – this addition is a counterpart to a fast-food restaurant they designed for the strip (see P/A, April 1992, p. 88). Both are the simplest of enclosures – industrial boxes free of sentiment, and of the splintered masses that many identify with Los Angeles these days. Its massive CMU walls notwithstanding, the inside of this house is surprisingly bright, even warm, a retreat from the fussy scale endemic to suburbia. **Philip Arcidi** ■



SECTION

20'/6m

1 GARAGE
2 DINING ROOM
3 NEW LIVING ROOM
4 NEW MASTER BEDROOM



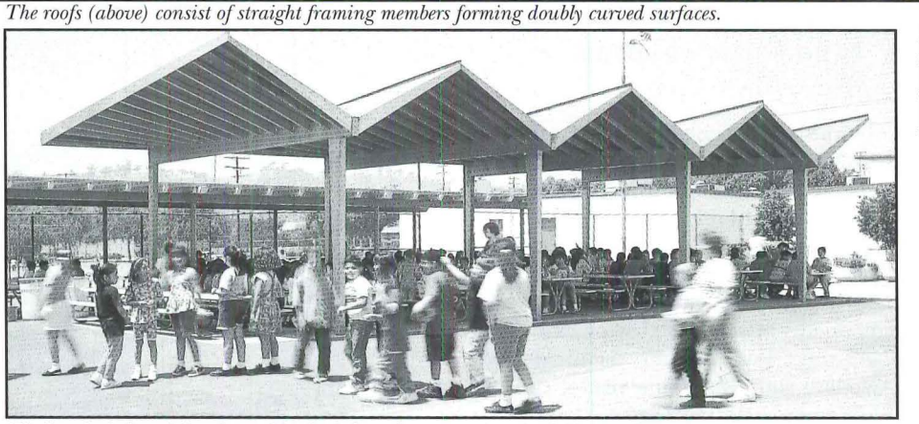
Master bedroom.

The roofs (above) consist of straight framing members forming doubly curved surfaces.

LOS ANGELES LUNCH SHELTERS

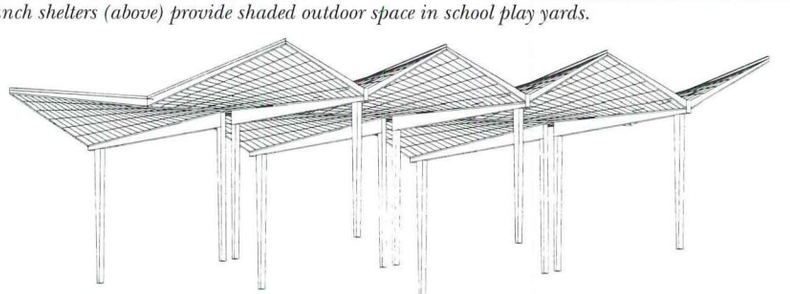
Our schools, once showcases of public investment and architectural achievement, have been sorely neglected in recent years. It is thus encouraging to see the Los Angeles school system invest in architectural quality, even if it is in something as simple as open-air lunch shelters for 50 schools. Designed by Marc Angelil and Sarah Graham, the shelters have a tectonic clarity and subtlety.

Standing on concrete bases that adapt to the various site conditions with ramps and steps, the lunch shelters consist of a series of two-legged galvanized-steel frames, each of which supports cantilevered, doubly curved, steel-framed roofs, whose upper surfaces are clad in flat-seam, galvanized steel sheets. Constructed of straight framing members, the warped, cantilevered roofs are light, strong, and efficient. In this, they recall the parabolic and folded-plate roofs of Eduardo Torroja and Felix Candela who, in the 1950s and early 1960s explored the expressive potential of structures and whose work, like many of our schools, has been largely neglected ever since. **Thomas Fisher** ■



Photos: Edward Hueber

The lunch shelters (above) provide shaded outdoor space in school play yards.



WORM'S EYE PROJECTION

Val Studio

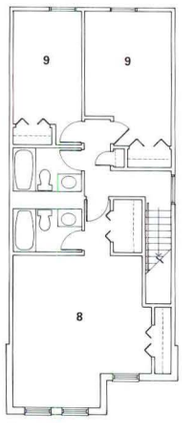
Street view of the townhouse; midblock alley provides secondary access.

PRAIRIE AVENUE TOWNHOUSE

The Gap, a historic district near the South Side of Chicago, is genteel yet frayed – and becoming gentrified. Most of the families moving in are from the suburbs and are black, like The Gap's established residents. Here, traditional architecture is more than a comfortable environment for born-again urbanites: it is a banner of pride for those who have always called The Gap home, a reminder of the neighborhood's glory days.

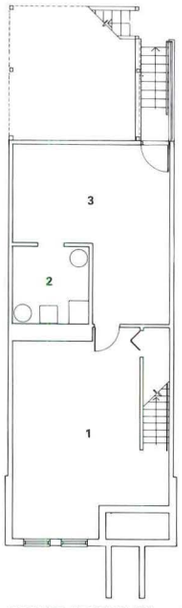
When Johnson & Lee, a Chicago architectural partnership, designed a prototype house for The Gap's new middle-class residents, they emulated the rowhouses of the turn of the century. Their design can be replicated as infill on the neighborhood's 25-foot by 125-foot lots. The architects pared the design to a cost of $58 per square foot, excluding land; the floor plan is generous, albeit conventional. Johnson & Lee gave special attention to the street façade: the headers, trim, base, and door frame are of cast stone; the wood cornice was built locally at great savings. It adds a sense of heft to the elevation, whose simplicity implies dignity more than economy.

Philip Arcidi ■



SECOND FLOOR PLAN

FIRST FLOOR PLAN



GROUND FLOOR PLAN N 10'/3m

1 FAMILY ROOM
2 MECHANICAL
3 BASEMENT
4 LIVING ROOM
5 KITCHEN
6 DINING ROOM
7 DECK
8 MASTER BEDROOM
9 BEDROOM

Perspectives | The Case Study Houses, Then and Now

John Entenza's 1945 housing initiative can be used as a tool to confront the current need for inventive solutions.

It is intriguing and sobering when the characteristics of one era closely mirror those of another. When such *déjà vu* occurs, it is clearly time to take stock of how far our society has progressed and how far we still need to go. The Post-War and Post-Cold-War eras present such a parallel. The Post-Cold-War era offers an opportunity to look inward to the domestic issues – economic disillusionment and polarized constituencies – that have long been ignored by global-minded administrations. President Clinton's arrival in Washington has the potential to rekindle the same kind of belief in the future and in the common good that was the essence of the Post-War era.

When John Entenza, the editor of *Arts & Architecture* magazine, announced the Case Study House program in 1945 he did so with the understanding that conditions at the time were both extremely restrictive and absolutely open to experimentation. The social and philosophical motivations behind the program beg analysis in light of the housing crisis we face today. Most discussion of Post-War housing was "nothing but speculation in the form of talk and reams of paper" wrote Entenza. "It might be a good idea to get down to cases and at least make a beginning in the gathering of that mass of material that must eventually result in what we know as 'house – Post-War.'"

Entenza saw a problem and proposed a solution. The demise of the 1980s building boom, and with it the end of American's sense of invincibility, demands that a change be made in our priorities. Today, the chasm widens daily between the haves and the have-nots and it can no longer be ignored. "The Case Study House was a social program," wrote Esther McCoy in *The Case Study Houses 1945 to 1962,* "It essentially ended when the house became a luxury." While the lack of sufficient housing in the Post-Cold-War era is the result of circumstances quite different from those of the Post-War era, the scope of the problems we now face is eerily reminiscent of 1945, when a social program was possible and necessary. What then, is the potential for a case study program today? How would it differ from its predecessor? The Post-War and Post-Cold-War eras will be explored here in an effort to extract the peculiarities of the Case Study Houses (which continued to be designed through 1964) and to determine their relevance to our own housing needs.

A Brief History

"During the 1930s the Great Depression severely curtailed building, and when practice wanes, theory flourishes," wrote McCoy in *Blueprints for Modern Living,* a catalog published in conjunction with the Museum of Contemporary Art's 1989 exhibition. "A major theme of study was low-cost housing, a critical need because of the antiquated and unsanitary quarters generally available to low and lower-middle income families. Architects who matured in the 1930s were dedicated to the ideal of architecture as a social art." World War II was nearing its end when the Case Study program was announced. Rationing and government restrictions on the use of raw materials meant that there was little opportunity to spend the vast savings that Americans had accumulated during the war years. Construction had been at a standstill and there was an urgent need for new housing: According to Joseph C. Goulden in *The Best Years 1945–1950,* about 15,000,000 Americans needed new housing. At the same time, the Post-War period was marked by an optimistic spirit. Women had a foothold in the workforce, veterans were going to college, and America's technological and industrial abilities stimulated new business opportunities. But most important, there was a belief in the common good and the feeling that anything was possible.

> "We can look to the Case Study program as an example of a new way to approach things, but we need something much wilder. We need guerrilla architecture."

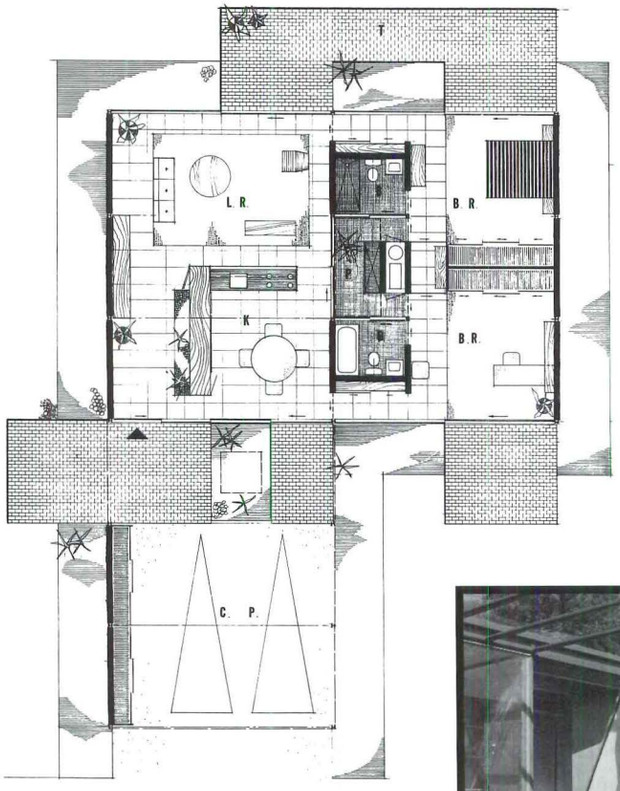
Life After the Cold War

As Cold War issues move from front-page news to the history books and attention is turned to neglected domestic issues, we must now face a housing crisis that crosses traditional lines. In addition to the millions of homeless people, the economic decline of the defense and the automotive industries has created a new class of needy. Professionals in traditionally low-paying jobs – school teachers, social workers – can no longer afford to live in the places they serve. Affordable housing is often more than 50 miles from employment opportunites. Housing programs, publicly or privately funded, are few and far between. The suburbs are no longer a haven from society's less appealing aspects. The VCR, PC, fax, and car phone have played a major role in dismantling the concept of community. We are, at once, hooked up to the world and living on individual islands.

The real differences between the Post-War and Post-Cold-War eras, argues UCLA professor Jacqueline Leavitt, "have to do with the global economy. Jobs have been shipped overseas and unemployment has crossed racial and ethnic lines." It is the reconfiguration of our economic base and the general fragmentation of society that present the most significant challenge today. Alternative households and nontraditional family structures are quickly becoming the majority, requiring different types of housing solutions.

The Legacy of the Case Studies

While the Case Study program was certainly not the only example



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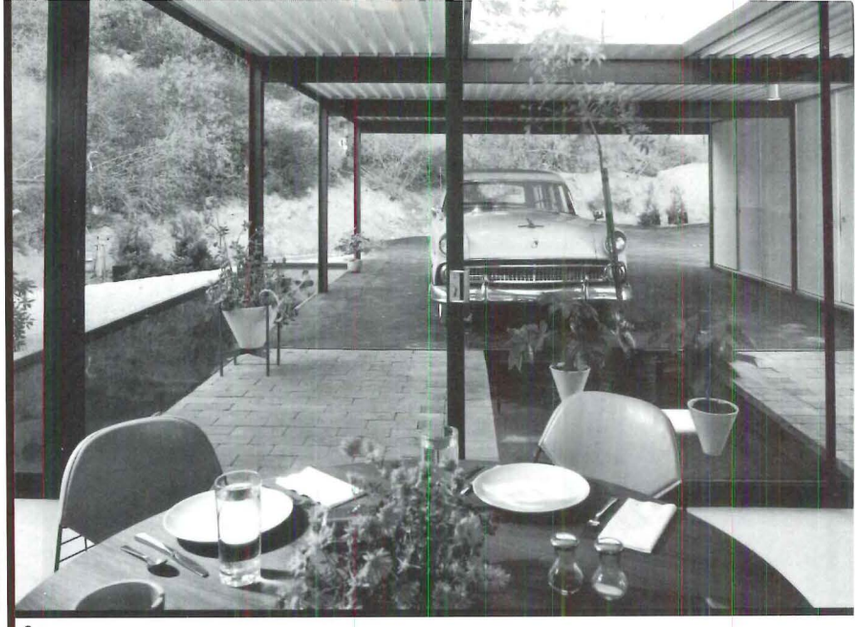

Julius Shulman

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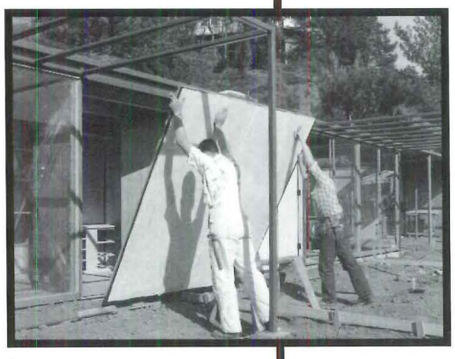

Marvin Rand

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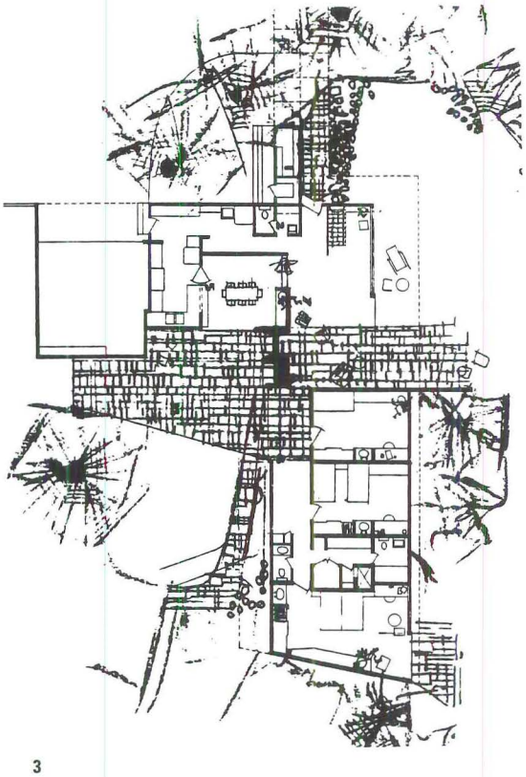

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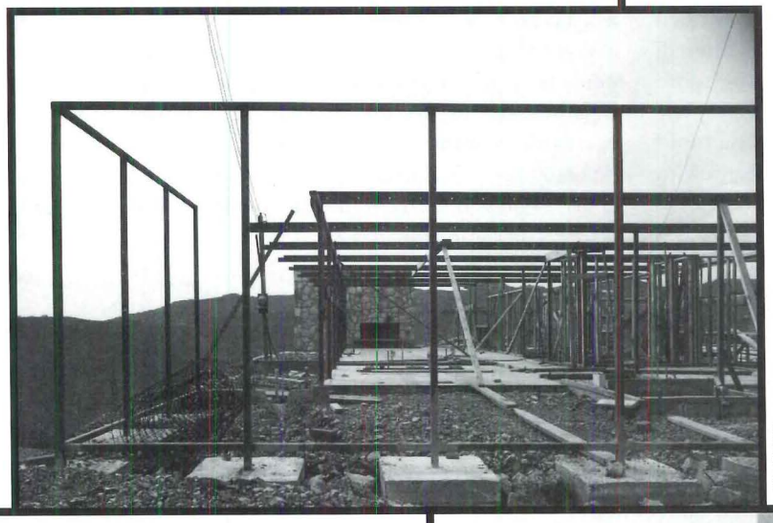

Julius Shulman

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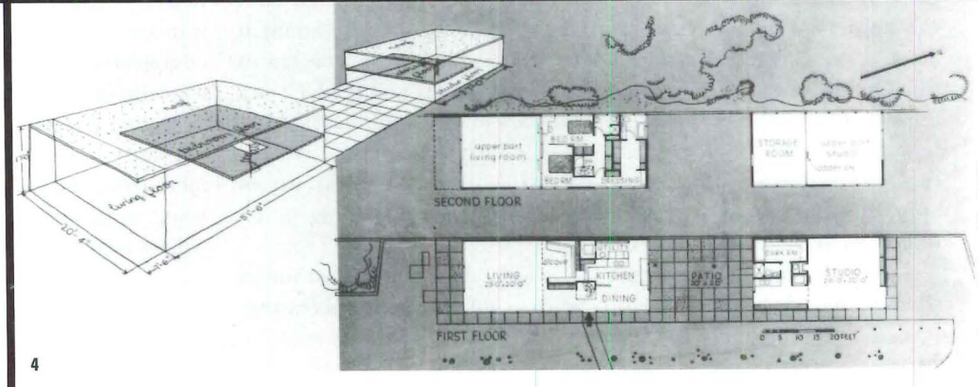


Courtesy of the Eames Office © 1993

4

Pierre Koenig's Case Study House #21 floor plan (1) and photo of outdoor dining area and carport shading photographer Julius Shulman's station wagon (2). Richard Neutra's house # 13 (3), an unbuilt design, divided public and private areas of the house with a continuous strip of coarse pavement. The house /studio by Charles Eames (4) is a model work/live space. Craig Ellwood's house #16 (5) and #18 (6), under construction, epitomized the architect's use of efficient framing components, minimizing site-work down to "two guys and a truck."

of midcentury experimentation (the Lustron house, constructed of porcelain-enameled steel panels, produced by entreprenuer Carl Strandlund, for example, and Buckminster Fuller's Dymaxion house were both highly publicized in 1946), it did push some ideas into the mainstream. The open plan, a relationship between indoors and outdoors, and the use of heating systems in the slab were popularized by the program. In attempting to accommodate alternative lifestyles, the most inventive of the Case Study architects were Richard Neutra and Ralph Rapson; Craig Ellwood must be noted for his elegant planning, economy of scale, and for pushing construction elements to their attenuated extreme; Pierre Koenig earned well-deserved praise for his experiments in industrialization and for producing two of the most functional floor plans in the program (see Koenig interview, p. 113); and the most flexible planning and the most successful employment of off-the-shelf components was achieved by Charles Eames in his own house and studio. Their architectural investigations were clearly informed by progressive social and philosophical ideals.

The Case Study program "demonstrated that architects can alter the way people think about housing," says Ann Tate of Abacus Architects, Boston, the winning firm in P/A's Affordable Housing Initiative (P/A, Aug. 1992, p. 44). She does, however, believe that the open plan is more limiting than liberating and that when space is limited, the separate spaces associated with traditional floor plans are more suitable to the needs of nontraditional households. Photographer Julius Shulman, whose documentation of the Case Studies captured the mood of the era, is also critical: "The public reacted negatively to the Case Study houses; they thought the houses looked naked. People saw all those quarter-inch plate glass windows; they didn't want to live in a fish bowl."

Ingredients for a New Case Study

For Leavitt, the national and international publicity given to the Case Study program and the fact that the houses were opened to the public before being turned over to owners are all useful ways to stimulate a dialogue about housing and educate the public. "New ideas must be disseminated on the broadest public level, be it through a traveling exhibition, film, video, or television program." Margaret Crawford, chair of the history and theory of architecture program at Sci-Arc, sees Entenza's challenge to reconsider housing design as something to emulate. The fragmentation of society and the lack of a unified belief in the common good suggests to Crawford that housing programs should address specific groups and specific needs. "We can look to the Case Study program as an example of a new way to approach things," says Crawford, "but we need something much wilder. We need guerrilla architecture."

Although Konig Eizenberg of Los Angeles is a firm known for its sensitive design of low-cost housing, partner Julie Eizenberg is frustrated by the system. "We need policy changes, densification, lower interest rates, a more straightforward entitlement process, zero-lot-line zoning; people should be able to rent out portions of houses." She believes that "the American people have to create an economic base for affordable living" and that "it is unfair to expect architects to be able to change everything." While disillusioned, Eizenberg also has an idea for simplifying the process: "I've always wanted to come up with standard plans that were pre-approved by the city." Barbara Goldstein, former editor of *Arts + Architecture's* short-lived revival in the 1980s, also believes the government needs to play a role in housing reform with an updated version of the WPA and PWA programs: "There is no reason why the government shouldn't sponsor innovative housing projects and competitions."

"It is unfair to expect architects to be able to change everything."

A new Case Study program "should come from outside the government, be it through a magazine or a collaboration of professional organizations," argues Deborah Berke, an architect who has designed affordable housing projects using industrialized construction techniques. "One thing architects should perhaps get back to, and which seems very much a part of the Case Study program, is a belief in architecture's power to ameliorate."

The Politics of Change

President Clinton's call for change, through tough decisions and more appropriately distributed economic and social responsibilities, is, for the architectural profession, a challenge to redirect its energies. The naming of Henry Cisneros, a politician known for his ability to effect real change, as Secretary of Housing and Urban Development, suggests that there is some potential for the establishment of new housing initiatives. Whether these initiatives come from government-sponsored programs or through the private sector, it is clear that the complexities of Post-Cold-War America require new ideas for alternative solutions. Many people argue that the housing crisis is a policy issue that must be resolved by the government, that it is so deeply entwined in economic and social issues that architects can be nothing more than bit players. But John Entenza believed that architects could bring to the table a vision and a crucial set of experiences, and I believe he was right. **Abby Bussel** ■

An Architect for Better Living

Pierre Koenig, an architect of two Case Study Houses of the 1950s, remains a forceful advocate for Modernism's social program and the benefits of industrialization.

Pierre Koenig's elegantly efficient designs for Arts & Architecture *magazine's Case Study House program embodied the visionary aspects of prefabrication in architecture. Now director of the undergraduate building science program at the University of Southern California, Koenig spoke with editor Abby Bussel in March.*

Pierre Koenig.

Abby Bussel: The Post-War era was a time of experimentation, of the exploration of Modernism's democratic ideals. Esther McCoy called *Arts & Architecture's* Case Study House program a "reflection of the idealism and puritanism of the Depression and Post-War years, when architecture was first of all a social art." Do you agree with this assessment?

Pierre Koenig: Yes. The idea was to be able to provide better housing for the common man at a better price. Nobody really liked the conventional house with its little windows. It was obnoxious to most of us. We wanted to produce something in a new idiom that was cheaper and mass produced. We were very idealistic. When I went to school, architecture was a social study. Today, it's an artistic endeavor.

Bussel: To what extent was industrialization employed in the Case Study program?

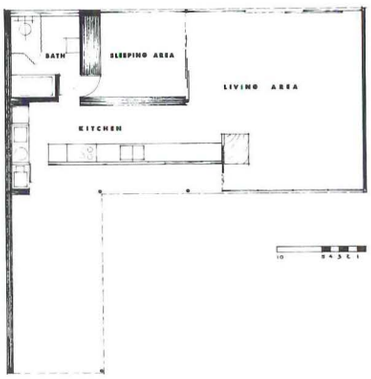
Koenig: I think that almost all of the Case Study architects were interested in industrialization. But the notion of mass production wasn't all that clear at the time, so what they were doing was really working the idea out in their minds more than in actual implementation.

Bussel: To what extent was industrialization an economic consideration?

Koenig: Economics dominated the whole scene because money was so scarce then. If you couldn't design a house at a very strict budget, it didn't get built in the Case Study program. There were a few large houses built for wealthy clients, but most of the houses were very small and modest.

Julius Shulman

Koenig designed and built his first house for himself in 1950. Floor plan is shown below.



Bussel: How cost-effective is industrialized housing?

Koenig: In a conventionally built tract house you don't start really saving any money until the twelfth or thirteenth unit. That's the rule of thumb. On a prefab job, you have a greater up-front investment, but as soon as you start to produce multiple units the savings increase very quickly. I can get a 40 percent saving on the second unit, and the price continues to drop, slowly, from there. Today, everything is industrialized to some extent; plumbing systems and precut lumber are two examples. The idea is to produce as many components as possible in the factory. You strive to have the biggest, fewest parts.

Bussel: You have focused your attention on industrialized housing for 40 years. Yet it has never been fully embraced by the architectural community. Why not?

Koenig: If you look at any of the really significant buildings in history, none of them ever became part of the mainstream. They are all exceptions to the rule. I suppose some people would call industrialized housing inhuman. It is up to the architectural community to change its attitude toward mass production techniques, to at least train a few people to attack some of the real problems we face today. I think we are long past the time when we could say, "This building looks pretty," or "interesting." The profession has been the most influential detractor of industrialization. We are just shooting along here on a path to suicide, without much care. The population in this country has increased, and housing starts have decreased. We are a crisis-oriented society. Eventually, the government will step in and they will give the work to contractors and builders.

> "The profession has been the most influential detractor of industrialization. We are just shooting along here on a path to suicide, without much care."

Bussel: President Clinton has been talking about making a major investment in infrastructure. Do you feel that industrialized housing should be part of his program?

Koenig: Yes, but I doubt he'd go to architects for it. And even if he did, they are not prepared to address this problem. And I don't think

they care. Industrialization is not the enemy. Architects are afraid they are going to lose control if they do something as big as industrialized housing. They feel that there is no room for creativity. They feel that the machinery will dictate the design and that's not true at all. I see industrialization as a freedom-giving device. If I had a new client for every day of the year I could come up with fantastic things that you couldn't do with handicraft. Technology has been accepted in every other profession. Industrialization is a low-grade technology, an accessible technology. To build a spaceship requires thousands of people, to build a steel house, you need two guys and a truck.

Bussel: Has your design philosophy evolved or changed over the years?

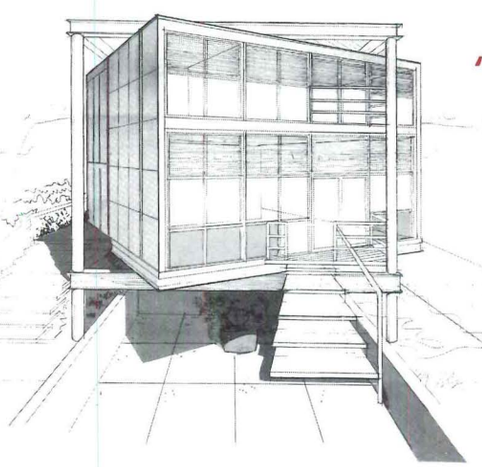
Koenig: My beliefs are fundamental and aren't subject to change. The way in which they are fulfilled has changed. Simplicity, honesty, and relationship to nature are most important. I have a kind of gestalt attitude. I think that fewer and bigger parts are better. I still believe in order and organization and in the principle of repetition, but I also believe in change. One achieves change through repetition. Repetition is the secret of life. It is part of nature.

Bussel: Has the way you choose to embody your principles changed over the years?

Koenig: I believe the changes have been evolutionary rather than revolutionary. With each project, I have continued to pursue a balance between emotional, artistic, and industrial solutions. Solutions should not do just one thing, but many things. I think that's where the exposed connections in my buildings come from. They provide an aesthetic all their own, they are easy to assemble, and they support a building in three directions.

Bussel: I am curious about what you think about current architectural theory. Deconstructivist theory, for example, is posed as a dismantling of architectural and societal conventions.

Koenig: I have been thinking about this. You know, it's important to tear down and to destroy in order to produce something new. All of us whose careers began just before or after World War II were doing this. We were destroying the established values of building. We were questioning what the house was, what the home was. It was a destructive process as well as a constructive process. If we took things away from people we gave them much more in return. That was always my feeling. We were all radical at that time. Whether or not that is what's happening today, I don't know. If it's real destruction and construction, then I'm all for it. I think that a lot of Deconstructivist work is just ornamentation.



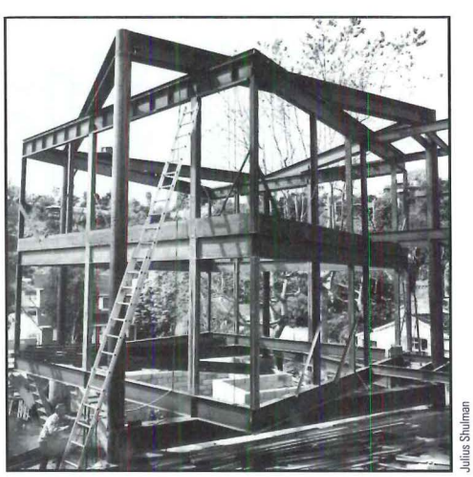
"Architects are afraid they are going to lose control if they do something as big as industrialized housing."

Bussel: The idea of giving something back is quite powerful. In the 1980s, the building-as-object and the architect-as-star overtook context, people, and function as a priority. Is it possible to revive the search for a better quality of life as it was pursued in the Post-War years?

Koenig: It is possible, but I don't see anyone taking the initiative. There is very little interest or imagination. Architecture is entertainment, like everything else today.

Bussel: Your career has spanned a provocative and problematic time architecturally and otherwise. We face problems today that are not entirely dissimilar to those of 1945. If we have come full circle, what now?

Koenig: I still don't see anyone taking advantage of the modern world in the area of housing. Today, there is even less interest in technology. It's almost the year 2000 and we are still building little wooden structures.



Julius Shulman

Koenig's Schwartz house is currently under construction in Los Angeles.

Export Architecture

Were Europe's colonies architectural, as well as political, conquests? Four historians offer revisionist answers, reviewed by **Jane C. Loeffler**.

Books of Note

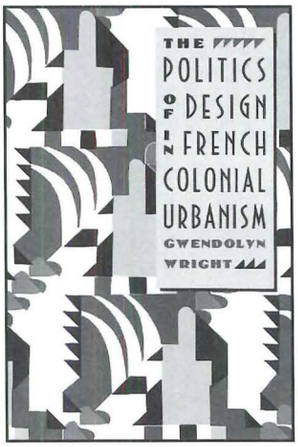
The Genius of Architecture; Or, the Analogy of That Art with Our Sensations *by Nicolas Le Camus de Mézières, introduction by Robin Middleton, University of Chicago Press, Chicago, 1992, 223 pp., $34.50 cloth, $22.95 paper.*
Architecture should stimulate the senses as well as the mind, argued Le Camus, an 18th-Century French architect. This text is a fine addition to the Getty Center's Texts & Documents series of overlooked or untranslated writings chosen for their relevance to the field today.

John Pawson *introductions by Bruce Chatwin and Deyan Sudjic, Editorial Gustavo Gili, Barcelona, 1992, 95 pp., $28.95.*
Sudjic argues that Pawson's exclusion of superfluous elements makes his work intensely liberating. The book includes projects by the British architect from 1983 through 1991.

The World's Columbian Exposition *by Norman Bolotin and Christine Laing, Preservation Press, Washington, D.C., 1992, 166 pp., $29.95.*
Rather than produce an academic or critical text on the 1893 Chicago World's Fair, the authors lead an "armchair travel" tour, replete with archival photographs and drawings.

Landmarks of Soviet Architecture 1917–1991 *by Alexander Ryabushin and Nadia Smolina, Rizzoli, New York, 1992, 159 pp., $35 paper.*
The tumultuous relationship between architecture and politics in the Soviet Union is well documented.

The Politics of Design in French Colonial Urbanism *by Gwendolyn Wright, University of Chicago Press, Chicago, 1991, 389 pp., $65 cloth, $24.95 paper.*



Architecture, Power, and National Identity *by Lawrence J. Vale, Yale University Press, New Haven, 1992, 338 pp., $45.*

Enclaves of America: the Rhetoric of American Political Architecture Abroad, 1900–1965 *by Ron Robin, Princeton University Press, Princeton, 1992, 208 pp., $24.95.*

Forms of Dominance: On the Architecture and Urbanism of the Colonial Enterprise *edited by Nezar AlSayyad, Ashgate Publishing Company, Brookfield, Vermont, 1992, 358 pp., $67.95.*

Casablanca is more than an immensely popular movie; it is also a real place. But the reality of that place has been reconfigured by different people at different times. The French invaded Casablanca in 1907. To them, the city represented the exotic and the romantic, qualities captured, for example, in already well-known paintings by Delacroix and Gérôme. The French constructed an image of a timeless and unchanging place and projected it upon the old but bustling and ever-evolving city. Their colonial policies reinforced this image.

Colonialism and its legacy are receiving widespread attention these days, as the often concocted entities that were eventually recognized as independent nations attempt to take possession of their own history. Four new books offer insight into the colonial landscape and the architecture of national identity. Together, they add significantly to our understanding of the relationship between art and culture and to the intensifying debate on authenticity and exploitation. These issues are relevant today to the design of public buildings both here and abroad.

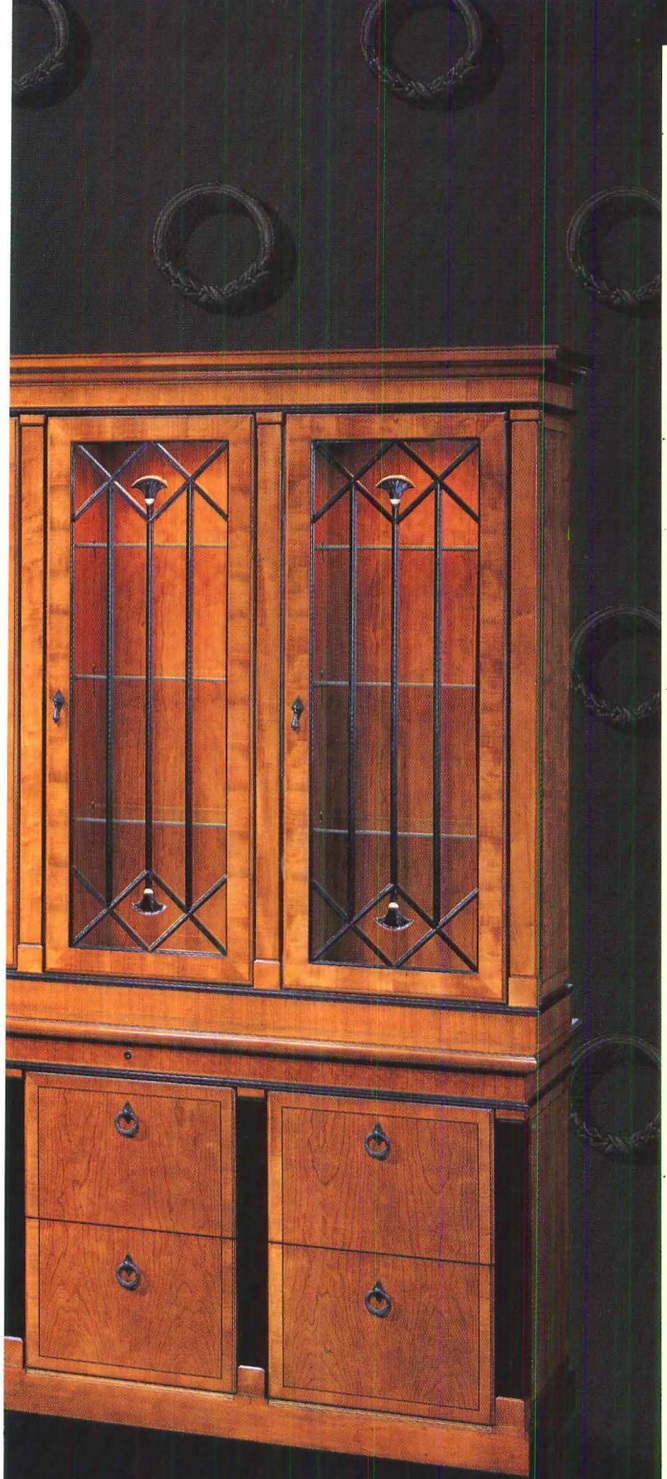
In *The Politics of Design in French Colonial Urbanism*, Gwendolyn Wright explores how culturally generated images played a key role in determining urban design policy, and more broadly, how colonial architecture reflected a political agenda. The allure of Casablanca may well be the product of an imperialistic vision, but I think that very fascination with "faraway" places is part of what makes Wright's book so enjoyable. She explores the colonial landscapes of Morocco, Indochina, and Madagascar, showing how design was used to augment French foreign policy, and demonstrating how the French colonies offered planners an unequaled opportunity to apply social science for urban betterment.

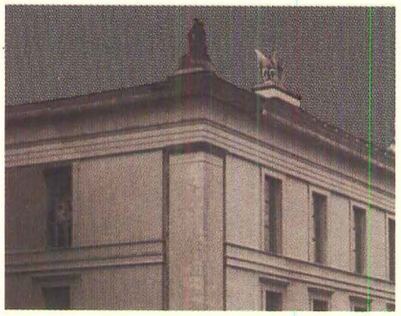
Here, as in her earlier book, *Moralism and the Model Home*, Wright investigates the cultural implications of spatial organization and how architectural style can be used to establish identity. Like reform efforts embodied in the model home, French colonial architecture and urban design reflected a widespread need for order amid perceived chaos. But in the colonies planners had the power they lacked elsewhere to control land use. This meant that the political and social agenda that shaped urban design was far more explicit in the colonial context than it was "at home." Under the direction of Georges Cassaigne, for example, garden suburbs were constructed outside of the Malagasy capital of Antananarivo in the 1920s. Ostensibly they were for all residents, but effectively they accommodated only French families because of prohibitive cost, and moreover, because of their design. "The Malagasy rituals that governed the orientation of rooms and of the house itself," Wright says, "found no place in the design of subdivisions intended for Europeans." As she notes, French residents were pleased that simple building codes achieved for them the racial segregation they sought.

In Morocco, segregation was similiarly achieved through the creation of dual cities. Historic preservation was the control device that allowed planners to maintain the illusion of charming "timelessness" while confining the Moroccans to "traditional" quarters. As Wright illustrates, Casablanca was the focus of preservation efforts while Rabat became the modern administrative capital designed for foreigners and their commerce.

At times it is hard to follow the careers of the various French officials and their policies because of the organization of this book. It seems clear, though,

(continued on page 128)





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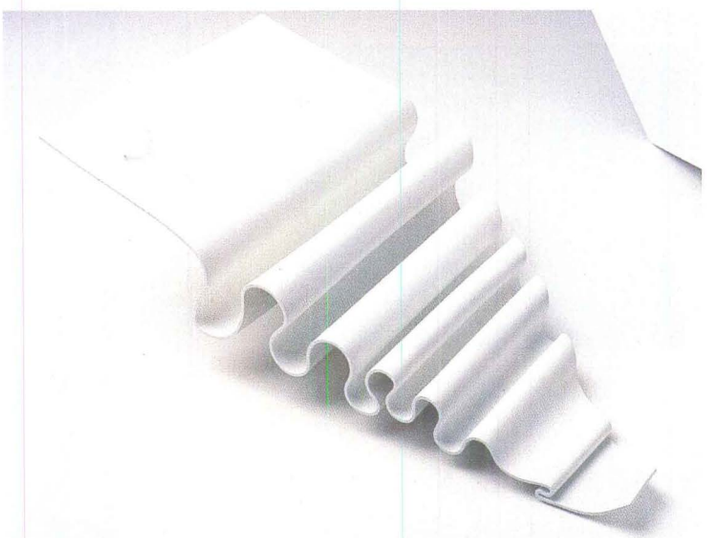
New Products and Literature



New Surfacing Material

Formica has introduced "Nuvel"™, a surfacing material that "has the look and performance characteristics of solid surfacing – at half the cost." It is produced from General Electric's VALOX®, a high-density, mineral-filled polymer .090 inches thick; the product is billed as the first thermoplastic (a "potentially recyclable material") to be used in the solid surfacing market. It is said to be stronger, more formable and durable, and to have a higher heat resistance than laminates; other characteristics include high impact resistance and easy repair of scratches and deep cuts. It is applied to typical substrates such as particle board or medium-density fiberboard and is applicable for countertops, cabinetry, furniture, shelving, and many other commercial installations. Sheets up to five feet in width and in any length may be specified. There are five colorways available including Antique White, Almond, Surf, Folkstone, and White. Formica.

Circle 100 on reader service card

Compact Fluorescent Fixtures

The new "F39" and "F39C" are designed to offer soft, shadow-free ambient light. The "F39" is a unidirectional louvered unit with a self-locking yoke that allows complete focusing in horizontal and vertical planes. The "F39C" can be focused in all vertical positions. The 18-inch-long fixtures use the 12,000-hour energy efficient twin-tube compact triphosphor fluorescent lamp; various accessories are available for both fixtures. Lighting Services.

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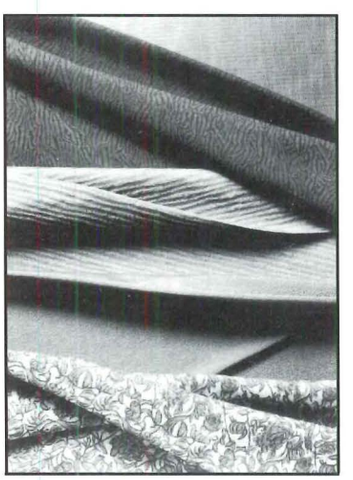

New Textile Collection

Laura Guido Clark, a San Francisco-based textile designer, has produced a new upholstery collection called "Surface Play." Each of the nine fabrics is available in several muted colorways. Carnegie.

Circle 102 on reader service card

New Rug Collections

Four new wool rug collections by David Shaw Nicholls of New York were designed with a computer and are knotted, looped, woven, carved, or hand-tufted in India. "Gardens," "Pompeii," "Chivalry," and "Piazza" come in several versions and are available in 6′ × 9′ and 9′ × 12′ sizes. "Piazza at Dusk" is shown above. DSN Corp.

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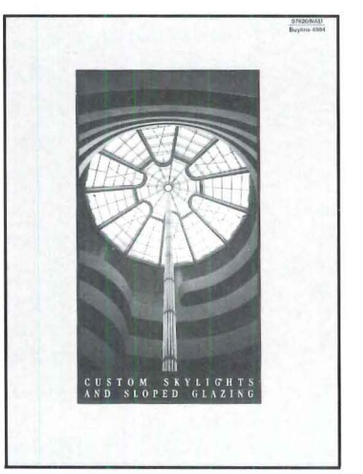

Skylight, Glazing Brochure

Skylights, sloped glazing, and accessories for commercial applications are documented in this manufacturer's brochure. The specifications and installation photographs of the "BMS 3000" structural skylight system and pre-engineered skylights are included. Naturalite/EPI.

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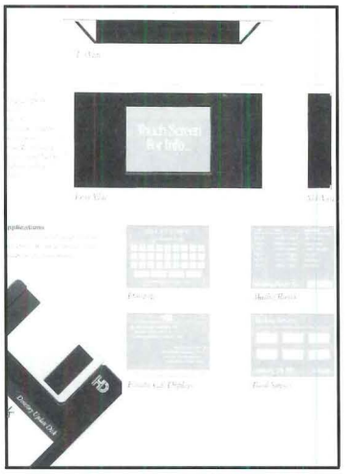

Interactive Communication System
"Link" is a solid state, stand-alone interactive computer information system that can be used for many applications such as office building directory systems, elevator cab displays, wayfinding systems, displays for bank products and services, meeting and conference room management, gallery and exhibition information, public and health service facilities, and bulletin boards for hotels and convention centers. "Link" units are eight and one-half inches high, 17 inches long, and two inches deep; custom software is available. King.
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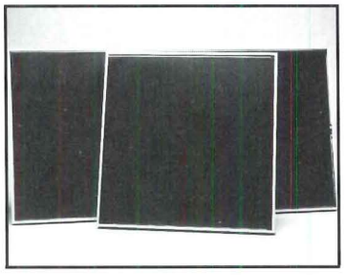

Solar Electric Modules
"Power™ Value" solar electric modules have power ratings of 27 and 53 watts; they are constructed of aluminum framing, double-glass laminate, a polycarbonate junction box, and a 12-year power output warranty. Photocomm.
Circle 105 on reader service card

Indoor Air Quality Booklet
The *Clean Air Digest* has been published as an educational tool to explain the importance of indoor air quality and how to achieve safer indoor air. The digest describes the dangers of airborne particulate and how to improve poor air quality with the proper air cleaning system. United Air Specialists.
Circle 201 on reader service card

Building Products Manual
The *Architect and Technical Manual for Construction Products and Systems* includes technical literature, specifications, detail drawings, insulation/ substrates, and other product information for gypsum board and plaster, veneer plaster, shaftwall, area separation walls, and prefinished gypsum wall panels. The manual is written in the CSI three-part format.
National Gypsum.
Circle 202 on reader service card

Linoleum Flooring Catalog
Installation photos, specifications, technical illustrations, and color charts for the full line of linoleum and vinyl flooring products are included in this 1993 product catalog. Forbo.
Circle 203 on reader service card

Preview: A/E/C SYSTEMS '93

Featuring more than 1,400 exhibitors of architecture, engineering, and construction related computer products, this year's A/E/C SYSTEMS show will be held June 7–10 in Anaheim, California.In addition to the product exposition, the event features tutorials, seminars, panel discussions, and concurrent conferences.

Among the panel discussions will be: "CAFM Futures," moderated by P/A contributing editor, Eric Teicholz; and, "Virtual Reality . . . Toward a New Millennium," moderated by University of Houston Associate Professor, Elizabeth Bollinger.

Seminars include: "The Laptop Design Professional," given by Charles S. Han (see P/A Oct. 92, p. 69); "Creating and Managing Electronic Design Environments," given by Erin Rae Hoffer (see page 34); and "Computers in the Design Office: A Case Study," given by LPA architect, John Hill.

Concurrent conferences include: Intellibuild '93, on intelligent building technologies; Facilities '93, on facilities management; Marketing with Computer Supported Presentations; and the AIA's Creativity and Architecture: The Impact of New Electronic Tools.

For information about attending A/E/C SYSTEMS '93 call the show's organizers at 1-800-527-7943.

Rendering by Miles & Margot Ritter, Panoptic Imaging

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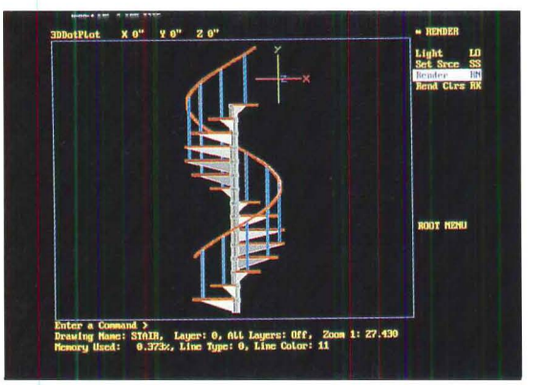

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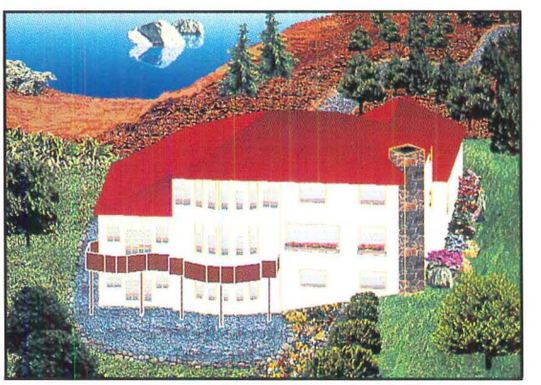


3

1 3D Studio
Autodesk's premiere PC visualization and presentation software was recently upgraded with Release 2. In addition to "workstation quality" rendering, the program includes a Video Post Production module. Premiering at A/E/C SYSTEMS will be Visual Link, which will allow users to create and edit 3D Studio files from within AutoCAD. Visual Link will be available for free to 3D Studio buyers through August.
Autodesk.
Circle 106 on reader service card

2 Generic 3D
This entry-level DOS-based 3D drawing package has been revised with Release 2. The new version adds improved cursor alignment tracking, Boolean sculpting operations, AutoCAD compatibility, linear dimensioning, nested commands, and a symbol library.
Autodesk Retail Products.
Circle 107 on reader service card

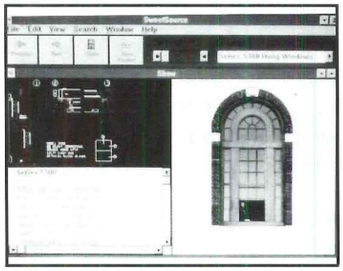
3 VideoScapes
A new version of this library of images and tools for landscape visualization, VideoScapes works with all packages that use the .GIF file format, and inside LANDCADD's Plant Specifier module. The program contains images of plant materials, people, cars, site furniture, and building textures. Objects in the new version have a resolution of 640×480. LANDCADD.
Circle 108 on reader service card

CADVANCE
ISICAD will announce version 5.1 of this PC CAD program. The new release features TrueType support, database enhancements, and increased programmability. Performance is said to be optimized by two-way object linking and embedding (OLE), and the program will now support Microsoft Windows's Multiple Document Interface protocol. ISICAD.
Circle 111 on reader service card

ArchiCAD
Graphisoft will debut the Windows version of this popular high-end architectural CAD system. The company says this new product will have the same intuitive graphic interface as the preexisting Macintosh version, which has recently been updated in version 4.12. Graphisoft.
Circle 112 on reader service card

Auto-Architect
Softdesk's architectural AutoCAD add-on has been revised to take advantage of AutoCAD Release 12. The new version also offers a new series of roof commands to accommodate complex roofing, and an improved "redo wall" command. The company's building services modules have also been revised. Softdesk.
Circle 113 on reader service card
(continued on next page)

AEMAS Plus
Version 1.5 of this integrated accounting/job costing software allows users to recognize work-in-process, or the billable value of unbilled labor and other expenses. The new release also features expanded unit categories, and multiple billing addresses. Data-Basics.
Circle 109 on reader service card



SweetSource
The CD-ROM version of Sweets' Catalog has moved to the Windows environment. Its latest version contains Snapshots and Showcases. Snapshots contain photographs, drawings, details, guide specifications, and technical information on specific products. Showcases add ordering options, installation requirements, warranties, and manufacturer promotional information.
Sweets' Electronic Publishing.
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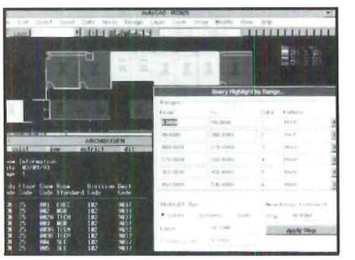

ARCHIBUS/FM
ARCHIBUS/FM is a facilities management extension that works in tandem with AutoCAD. Version 6.1 will support AutoCAD's Release 12 for Windows. The company claims that significant performance improvements have been achieved over the DOS version: up to 30 percent. ARCHIBUS.
Circle 114 on reader service card

TurboCAD
This low-cost CAD program has been revised with version 3.0. Enhancements include a revised interface with pull-down menus, improved symbol libraries, an object grouping feature, and smart dimensioning. IMSI.
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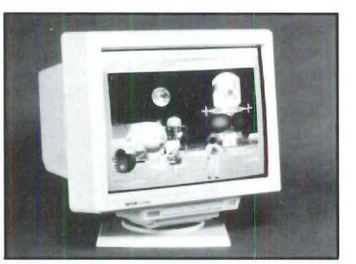
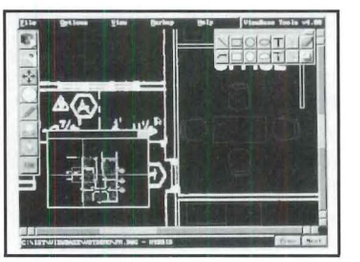


Vision Master
This series of flat screen monitors are microprocessor controlled to automatically control sizing and positioning, color balancing, image distortion, and brightness and contrast. The microprocessor allows the user to adjust color temperatures for perfect color matching to output devices. IDEK/Iiyama.
Circle 116 on reader service card

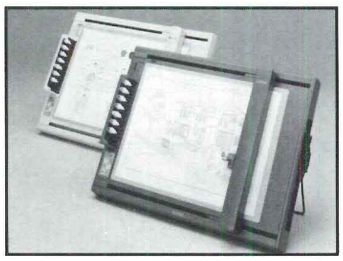
Construction Criteria Base
The National Institute of Building Science's (NIBS) Federal construction CD-ROM system contains approved guide specifications, manuals, standards, and additional criteria from all the various agencies involved. NIBS has added a catalog of construction product information. NIBS will also show a Windows version of the system. NIBS.
Circle 117 on reader service card



ViewBase
A program for viewing raster (scanned) and AutoCAD vector drawings, ViewBase can be linked to industry standard databases and custom menu environments, providing an alternative to the "flatfile search" for hardcopy drawings. Image Systems.
Circle 118 on reader service card

Jet Set
Graphics Technology International's new line of CAD ink jet materials consists of a new double-matte film and five papers. The film, vellum, and a vellum-like bond are said to provide outstanding image density, visual contrast, and fast diazo reprint speeds. Graphics Technology International.
Circle 119 on reader service card

Byers Plot Station
Byers Engineering will debut version 7.0 of this network plot management software for AutoCAD and MicroStation. Enhancements will include an improved queuing, a new plot log, and a graphical user interface (GUI). The program allows files to be plotted without having to enter CAD.
Byers Engineering.
Circle 120 on reader service card



SketchMate
Roland Digital Group will show these new desktop plotters. The plotters feature an electrostatic paper hold system, 16 inches per second plotting speed, HP-GL compatibility, and a cutting pen that cuts vinyl film or other signmaking materials. Roland Digital Group.
Circle 121 on reader service card

LCD Tablet
Hitachi Digital Graphics will display this new pen-based computing product. The backlit display will have an active area measuring 7.5×5.6 inches and will have a resolution of 640×480 pixels. The digitizer resolution will be approximately 254 lines per inch with an accuracy between +/- 0.02 to +/- 0.04 inches depending on pen position.
Hitachi Digital Graphics.
Circle 122 on reader service card

254/255 Module
Semaphore has introduced a module to automatically generate government contract forms 254 and 255 from its Sema4 Financial Management System. The company claims this will save firms hours of time spent inputting the 18 or so pages of information required in these forms. Semaphore.
Circle 123 on reader service card

CADImage/MANAGER
This program is a groupware organizer of scanned drawings, CAD drawings, and related documents of all sizes. The system is meant to assist in project/time management and revision control. Vemco.
Circle 124 on reader service card
(continued on next page)

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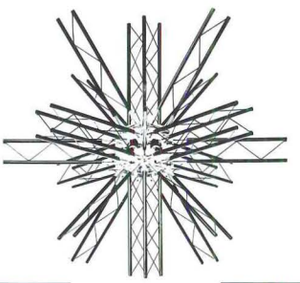

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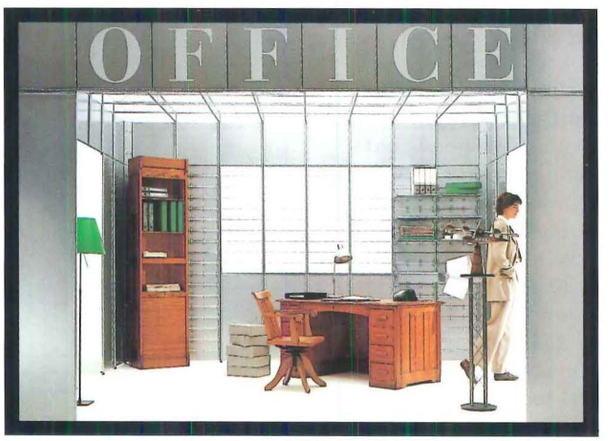

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(continued from page 123)

SUPERSTATION XP800
This graphics accelerator is designed to take advantage of a new generation of monitors operating in the 85kHz range that are capable of 1280×1024 and 1600×1200 resolutions. The board can accommodate up to 4MB of VRAM memory. Hercules.
Circle 125 on reader service card

DRAWING Librarian
This PC AutoCAD drawing viewing and file management utility will be upgraded with a Windows version. The program will have a new interface, including a toolbar and enhanced file dialogs. The upgrade also exports Metafile and bitmap images for transferring AutoCAD files to other Windows software. SoftSource.
Circle 126 on reader service card

Dual Screen Driver
This package for Intergraph's MicroStation CAD package comes bundled with Matrox's HiPER Plus graphics accelerator which allows PC users to have access to two screens each with a resolution of 1280×1024. Matrox.
Circle 127 on reader service card

HyperConverter
This converter board transfers hi-resolution computer graphics output to any standard television set. The board accommodates resolutions up to 1024×768 in Super VGA, VGA, 8514, and XGA formats. Expert Graphics.
Circle 128 on reader service card

Building Materials

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

Lawson-Westen House, Los Angeles (p. 68). *Architects: Eric Owen Moss Architects, Culver City, CA.* Steel columns and girders: Davlar. Portland cement plaster: La Habra Stucco. Galvanized sheet metal: Marina Sheet Metal. Aluminum nail-on windows: Marshall Windows. Storefront windows: Rebco West. Aluminum/glass skylights: Aluminex. Bituthene sheet membrane waterproofing: W. R. Grace. Deck coatings: Dex-O-Tex, Crossfield Products. Decoville flat finish interior paint: Dunn Edwards Paint & Wallcoverings. Hot-rolled steel pipe and angle stairs and treads, cold-rolled steel handrails, plate steel fireplace: Farrage & Co. Forced air heating system: Lennox Industries. Hydronic radiant heat air-conditioning system: Heatway. Wall-to-wall carpet: Shaw Commercial Carpet. Audio system: Cello Music Systems. Orbit-type knob locksets: Schlage. Two-pin top and bottom door strikes: Adamrite. Ceramic tile: Dal-Tile. Kitchen sinks and faucets: Elkay Manufacturing. Bathroom tubs and commodes: Kohler. Bathroom faucets: Dornbracht. Upholstered furniture in living room: Martin/Brattaud. Womb Chair, ottoman, Pfister Club, Franzolini desk chairs: Knoll International. Breakfast chairs: Brayton. Master bed: Room with a View.

The Stainless Steel Apartment, Chicago (p. 96) *Architects: Krueck & Sexton Architects, Chicago.* Latex wall and ceiling paint: Benjamin Moore. Lacquer panels: Caseworks Ltd. Textured stainless panels: Rigidized Metals. Gypsum board walls and ceilings: US Gypsum. Custom wool area rug: V'Soske. Glass terrazzo: Metropolitan Terrazzo. Recessed incandescent lighting: Lightolier, Halo. Indirect fluorescent lighting: Lithonia. Custom laminate office w/metal files: Fraser Construction, Meridian. Custom millwork: Caseworks Ltd. Custom dining table: Bayer Blacksmith. Custom coffee table: Tesko. Custom living room sofa: Joe's Upholstery. Dining and living room chairs and living room sofa: AI. Sofa leather: Spinneybeck. Mechanical shades: Mecho. Cotton velvet drapery: Indecor. Ball bearing drapery glides: Kirsch. Mohair chairs: Ward Bennett.

SHERATON CHICAGO HOTEL AND TOWERS

Hotel Lobby Interior

To create this classic interior... Solomon, Cordwell Buenz & Associates used Alliance Ceramicsteel bronze metallic panels, one inch in thickness. Custom graphic decorations were screened and fused "into" the surface... thus creating a beautiful, virtually indestructible surface finish.

Books *(continued from page 115)*

that they learned from experience. When they took control of Algeria, they destroyed monuments, and cleared intricate old towns, replacing them with grid plans drawn by military engineers. Hubert Lyautey rejected that approach in Morocco. Under his direction French architects designed buildings that retained elements associated with Moroccan architecture – pointed arches, stalactite *muqarnas*, tilework, and unornamented flat white-washed surfaces. Despite such efforts "to show their adaptation to the surrounding culture," Wright concludes, this architectural inclusivity failed to produce cross-cultural understanding.

Do specific politics generate certain distinct architectural styles or do those styles acquire political connotations only by association? How have new nations reconciled the Modernist imperative with the necessity for cultural continuity? These and other questions raised by Wright's work are superbly analyzed by Lawrence Vale in *Architecture, Power, and National Identity*. This is a beautifully produced book, replete with photographs, maps, and fine drawings. It offers a remarkable opportunity to visit and examine post-colonial capitol complexes in Bangladesh, Sri Lanka, Kuwait, and Papua New Guinea as well as designed capital cities, including Chandigarh and Brasília. Vale's broad background in design and international relations is evident in his analysis, which draws also on recent ethnographic work.

Too often architects refer to "Le Corbusier's Chandigarh," as if the architect had not only designed it, but possessed it like a collectible object, as if it existed apart from its context. The same is true of Louis Kahn's citadel at Dhaka, Bangladesh, more often examined as a work of art or an isolated monument than as the capitol of a poverty-stricken nation wracked by religious differences. Although barely occupied, Vale says, the Dhaka National Assembly requires year-round air conditioning and costs $2 million a year to maintain. As he indicates, its annual energy consumption equals that of nearly half of the rest of Dhaka. If Kahn disregarded economy in his design, he also disregarded local climate, the religious sensitivities of the sizable Hindu minority, and moreover, the undemocratic nature of the government itself. "As a result," Vale writes, "the discontinuity between Kahn's architectural ideogram and Bangladesh's political reality is acute."

Elsewhere politicians and architects have similarly attempted to package national identity. In Modernism, Brasília's designers found a language that was at once anticolonialist and anticapitalist, but the Modernist vocabulary produced little more than another "privileged sanctuary," according to Vale.

Neither its newness nor the formal attributes of its capitol buildings prevented the military coup which followed Brasília's construction. Civil war between the Buddhist Sinhalese and the Hindu Tamils, likewise, put an end to free elections in Sri Lanka just after the completion of an impressive new parliament building there. The fact that its architecture draws only on Sinhalese tradition did not cause the strife, but does reflect the cultural and political situation that fuels it. In these and other situations, architects are faced with the puzzling problem of how to construct national identity where nationalism barely exists.

Papua New Guinea, for example, is a rural nation made up of 1,000 tribes speaking more than 700 different language dialects. The architect Cecil Hogan incorporated a wide array of indigenous art into his design for its new national parliament building. His solution, a soaring concrete structure embellished with mosaics, is modeled on a men's village house found in the prime minister's own home region, but alien to most other parts of the country. Is this anything more than "tourist architecture," Vale asks. Could anything possibly symbolize such a diverse place?

In *Enclaves of America: the Rhetoric of American Political Architecture Abroad, 1900–1965*, Ron Robin studies the symbolism of American battle monuments and embassy buildings. He sees these projects as imperialistic gestures and condemns them for the "jumbled messages" they convey. The subject is fascinating and important, but the book is overly subjective and lacks solid methodology as architectural history. Buildings are more than their façades, and meaning is more than simply a surface phenomenon.

Those intrigued by the cultural connotations of the built environment will welcome Nezar AlSayyad's collection of essays, *Forms of Dominance: On the Architecture and Urbanism of the Colonial Enterprise*. Underlying these essays is the assumption that all urban development is inherently colonialist. AlSayyad's own essay, for example, links the Arab conquest of the Middle East to colonialism. The Islamic city of Damascus, he shows, was first laid out as a Roman city on a grid. Seized as part of the Byzantine Empire, Damascus saw the construction of Christian churches. Conquered by the Arabs, it saw its churches turned into mosques as the new rulers sought to establish their own dominance, spatially and spiritually. What is authentic or native and what is foreign, AlSayyad reminds us, is often indistinguishable.

For a book about design, this one is not designed well. Photographs and maps are tiny and few, the small type appears to be faded, and there is no index. Still, the collection is provocative and useful. Michele Lamprakos, for example, presents a fine study of Le Corbusier's Plan Obus for the city of Algiers in the 1930s. This scheme featured a Casbah preserved as a mere relic, lying beneath an elevated highway linking the business district with modern French residential enclaves. Through rigid zoning, the plan maintained the separation of old and new, local and foreign. Though never implemented, it stands as a monument to the arrogance and elitism of its architect/author.

In "Cities of the Stalinist Empire," Greg Castillo examines how the Soviet Union tried to demolish its architectural history, how Moscow controlled design in its East bloc satellites, and why the State was threatened by such apparently small details as horizontal strip windows. Mia Fuller uses Italian architectural journals to study how Italy sought to unearth the Roman past in its Libyan colony, an effort to establish its legitimacy there. Fuller, like nearly all the other contributors to this collection, draws on the recent work of Anthony King, author of the final essay. King calls attention to the "voices" that have yet to be fully heard with reference to colonial dominance. His ideal is for people to "have control over their own culture." Unfortunately for his thesis, national boundaries do not fall neatly along cultural lines, nor is nationalism, as expressed cultural identity, always a liberating force. In an interconnected world, control by one culture often leads to exploitation of another.

The more possessive people become of their pasts, real and imagined, the harder it is for architects to find a common language of expression. Lawrence Vale observes that cultural diversity in large places like India, and even in small places like Papua New Guinea, makes it nearly impossible to identify any one cultural voice for a city, let alone an entire nation. The architect must listen to all voices, he says. But what if he or she hears only a cacophany? The voices must listen to each other as well. These books are steps in that direction.

Jane C. Loeffler ■

The author is an urban planner and doctoral candidate in American Civilization at the George Washington University. She is the author of "The Architecture of Diplomacy: Heyday of the United States Embassy-Building Program, 1954–1960," Journal of the Society of Architectural Historians, Sept. 1990.

Architecture at the Crossroads:
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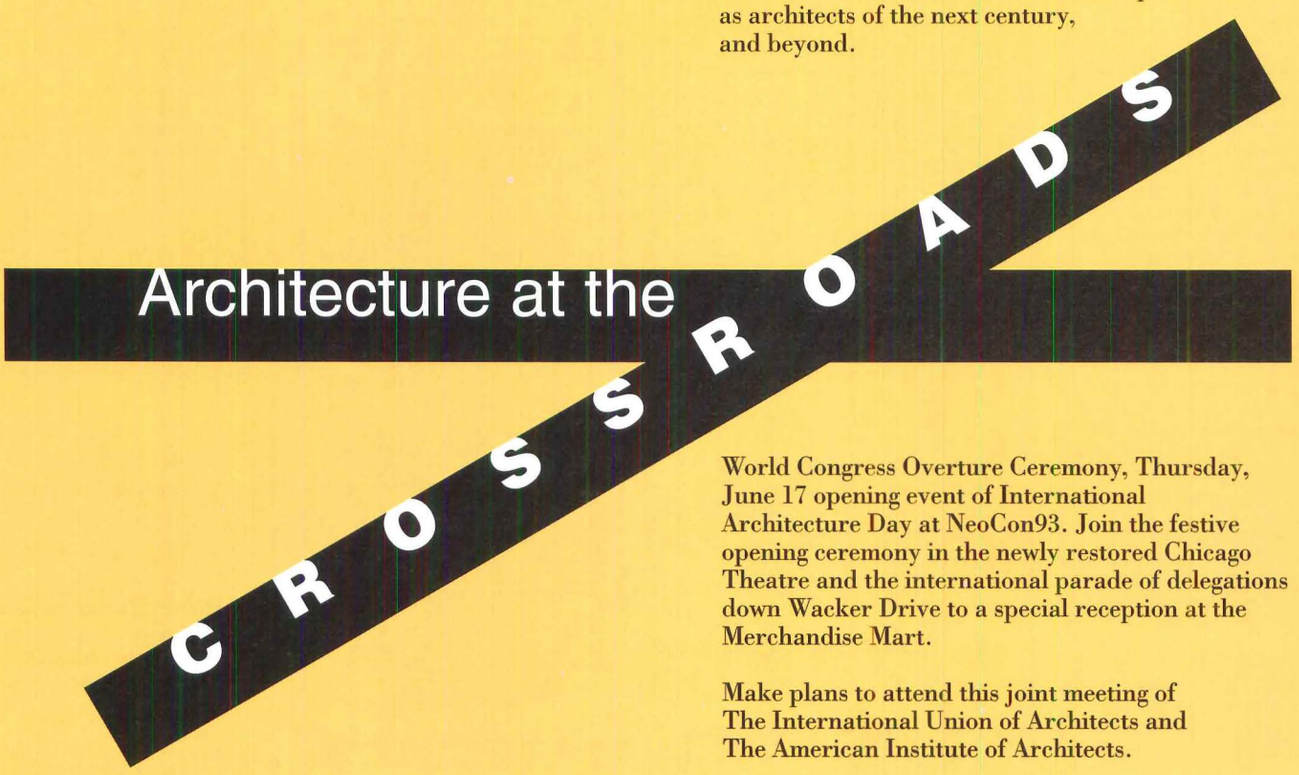
This is the theme for the 1993 World Congress of Architects that will convene at McCormick Place in Chicago June 18-21. Join the world's architects and allied professionals in an exploration of the delicate balance between natural and human environments, and a formulation of our roles and responsibilities as architects of the next century, and beyond.



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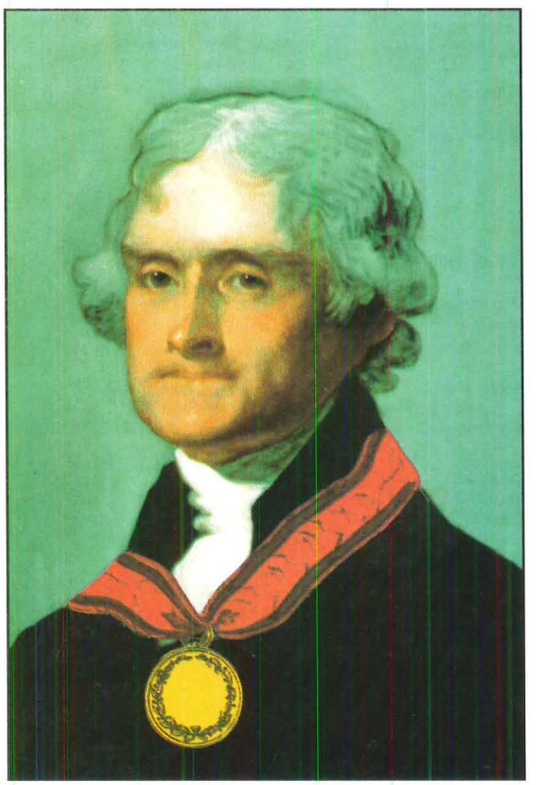
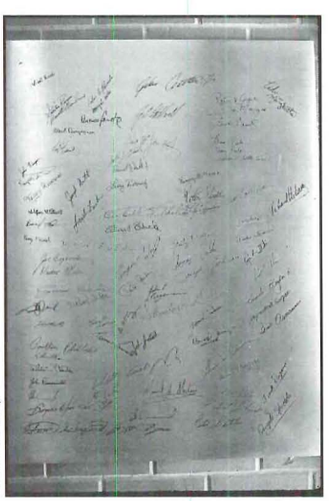


Thomas Jefferson, FAIA *It's rare for the AIA to present two Gold Medals in one year. It's equally unusual for the Medal to be awarded posthumously. But the AIA's announcement in March that it is awarding its highest honor to Thomas Jefferson (left) – who would be 250 years old this year if not for his timely death – approaches the bizarre. Will this open the flood gates for other deserving nominees who have been snubbed? Christopher Wren? Palladio? Vitruvius? And we wonder: does Jefferson's honor automatically make him an AIA Fellow, as it did his fellow 1993 Medalist, Kevin Roche?*

Act of God or Act of SITE? *Pity the poor insurance adjustor who, while sorting through the wreckage of Hurricane Andrew last August, had to evaluate this Best Products showroom (above) on Route 1 in South Dade County, Florida. While we'll concede that the architects, SITE, Inc., are masters of deconstruction, nobody beats Mother Nature.*



The Stein Partnership

Where Credit is Due *You're all familiar with the plaques that go up in the lobbies of public buildings, listing the names of a few politicians and perhaps the architecture firm responsible. New York architect Carl Stein has a more inclusive approach. Everyone who worked on the jobsite of the 41st Precinct Police Headquarters in the Bronx was asked to "sign off" on the building; their signatures are captured on a stainless steel photoetching inside the building (left).*

Question of the Month

"What building would you miss the least if it went away?"

Last month we asked what departed building you miss the most (answers to come in August). This month, we turn the tables. Before July 15, send photos of the eyesore you'd most eagerly engage with a wrecking ball to Furthermore Editor, P/A, 600 Summer Street, Box 1361, Stamford, CT 06904. *We'll publish the most intriguing responses in September.*

P/A in June

Another new terminal opens next month at Chicago's O'Hare International Airport, home of Murphy/Jahn's widely praised United Terminal (P/A, Nov. 1987, p. 95). The new international arrivals terminal by Perkins & Will employs a very different strategy, but one that celebrates flight (and Modernism) with equal aplomb. Also in the issue:

- **a portfolio of three temporary buildings that explore the possibilities of impermanence;**
- **an article on the long struggle over the redevelopment of New York's West Side Rail Yards, culminating in the the recent Riverside South plan;**
- **a look at Tadao Ando's Water Temple on the Japanese island of Awaji, including an interview with the architect;**
- **a critique of the Yale Psychiatric Institute by Frank O. Gehry & Associates and Allan Dehar Associates;**
- **reports in Perspectives on the aftermath of Hurricane Andrew and on European summer programs in architecture.**

In addition to a Technics article on the waterproofing of underground buildings, we will inaugurate a new recurring feature called Technics Forum, in which we will print expert answers to technical questions from readers.