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SEPTEMBER 1994

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REVIEW OF INTERNATIONAL ARCHITECTURE

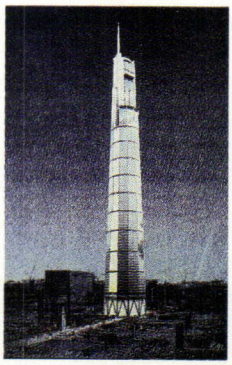
ELVIS

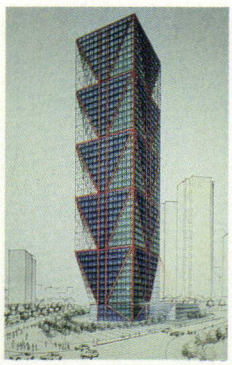
Everyone has their obsessions. We're no different.

GOLF

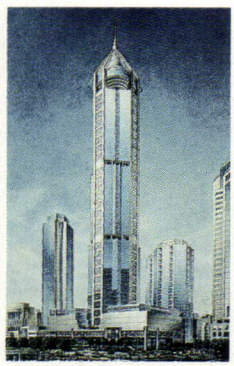
Carpetbagging in Asia

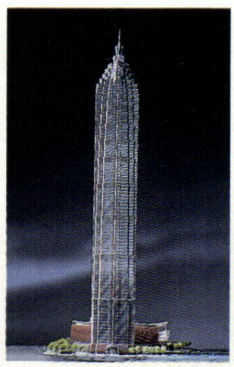
Architects should pack their principles as well as passports when designing abroad.





JOHN BACK





STEINKEMP / BALLOGG PHOTOGRAPHY

ABOVE, LEFT TO RIGHT: Chongqing Tower, Chongqing, China, by Haines Lundberg Waehler; 21st Century Tower, Shanghai, China, by Murphy/Jahn; AVIC Plaza Tower, Shenzhen, China, by Loebl Schlossman & Hackl; Jin Mao Tower, Shanghai, China, by Skidmore, Owings & Merrill.

Four years ago, when ARCHITECTURE published an issue on American architects working abroad, the projects we discovered were concentrated in Japan. Now, as Japan grapples with a recession, the hottest markets for American firms are in Southeast Asia. Explosive economic growth in Indonesia, Malaysia, Singapore, Philippines, and China is creating opportunities for lucrative corporate building commissions—the likes of which have not been enjoyed by American architects since the mid-1980s.

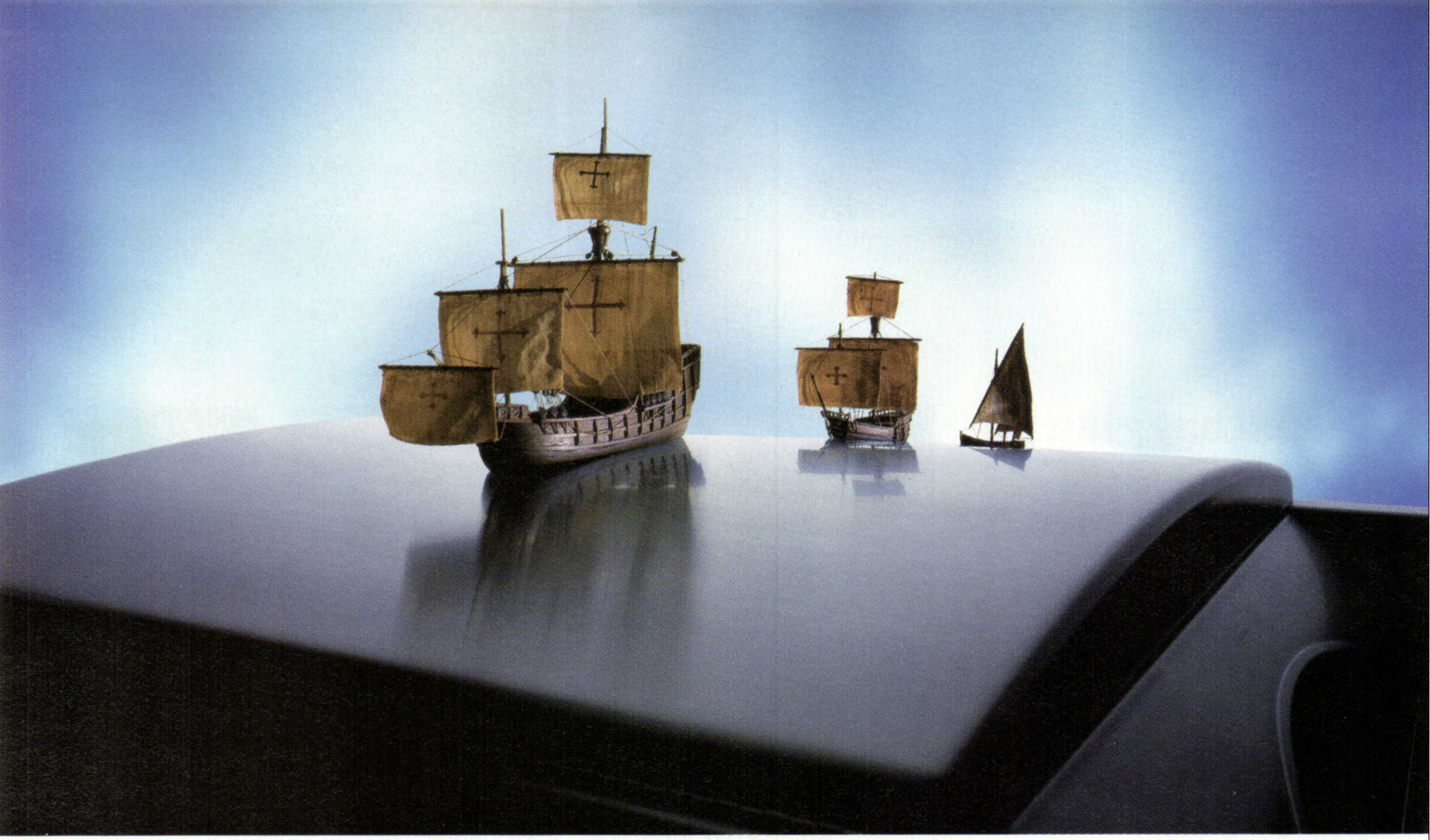
Like the Japanese, clients throughout Asia are hiring American architects to create symbols of power and prestige: high rises that seem more at home in Houston and Chicago than in developing cities still struggling to build roads and sewers. In Kuala Lumpur, for example, the petroleum giant Petronus has tapped Cesar Pelli to design the tallest building in the world, which the Malaysian government is touting as a symbol of the once-agricultural country's industrial progress. Pelli's pinnacle may be topped, however, by a tower designed by New York-based Haines Lundberg Waehler. Proposed for the city of Chongqing in Sichuan, one of China's poorest provinces, the building will break through the clouds at 114 stories—50 feet higher than Chicago's Sears Tower.

These overscaled designs represent only a sampling of the tall buildings sprouting up all over Asia, despite the fact that many Asian cities lack the necessary infrastructure, materials, or skilled labor to build them. In most cases, little thought is given to the environmental and social consequences of high-rise development, which is increasing the density, pollution, and congestion of cities that are already growing faster than any others in history. Such rapid growth, especially in agricultural countries where land is at a premium, may require high-rise housing and offices, but where is the sensitivity to site and context American architects proclaim so loudly at home?

Despite the profession's growing awareness of sound planning, sustainability, and preservation, these issues seem to be ignored by American architects working in Asia, who are leaving their consciences stateside. Many of the skyscraper exports in Asia seem recycled from the 1980s—designs that got shelved during the recession, now gussied up with minarets and pagoda tops.

Recently, much attention has been paid by the AIA and other professional groups to how U.S. firms can market their services to foreign clients. Beyond teaching architects how to gain a toehold in foreign soil, these groups should also evaluate the full impact of American architectural exports. It is time the profession examined the cultural, environmental, and social effects of practicing abroad, and the questionable ethics of architects carpetbagging in Asia.

Deborah K. Dietsch



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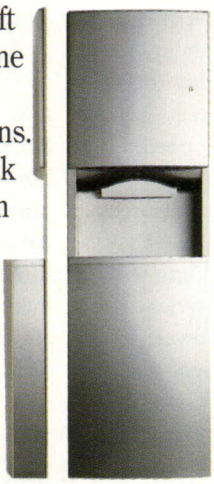

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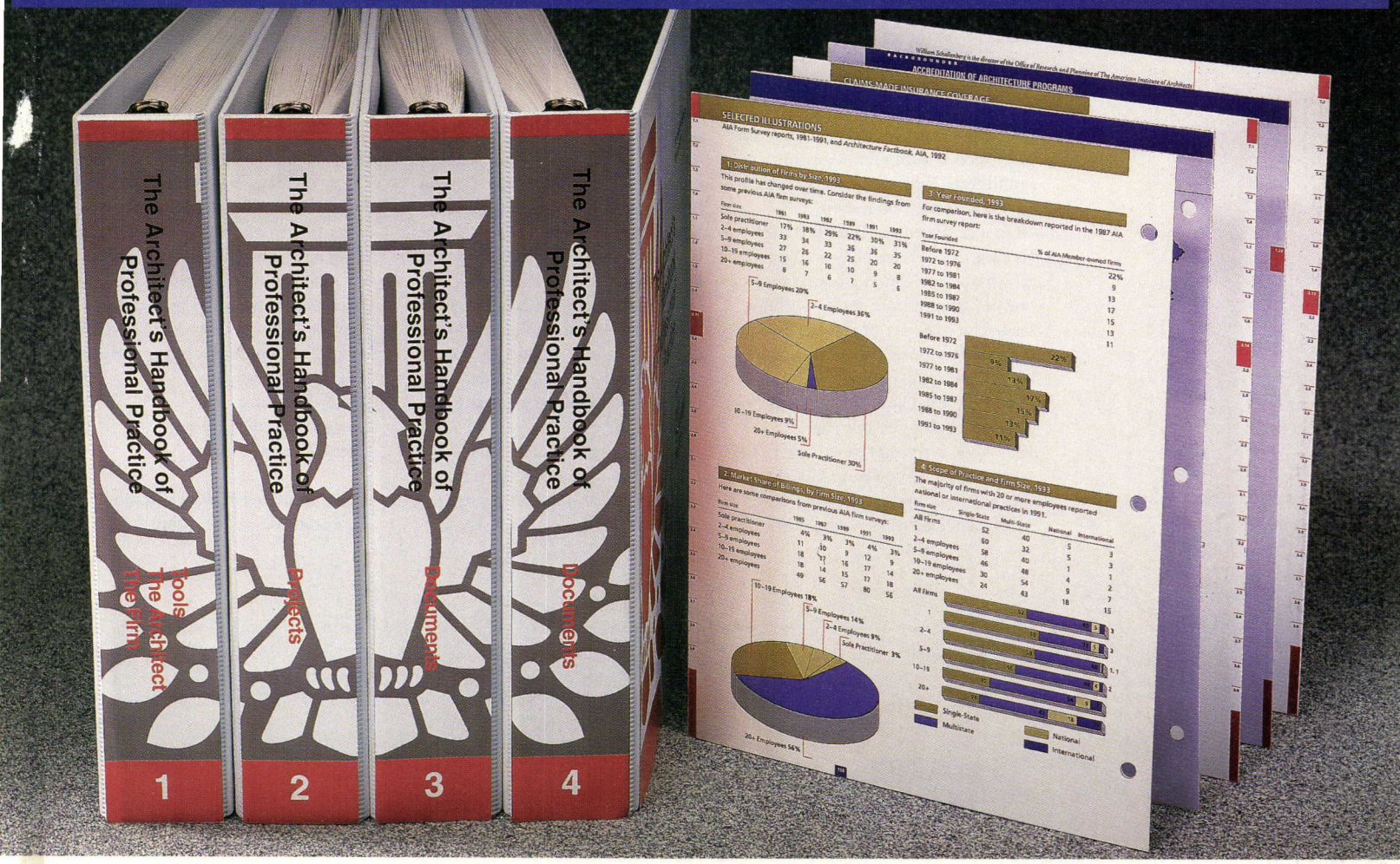

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Letters

Capitol crime

The July 1994 issue of ARCHITECTURE is of the highest quality as usual. In particular, I heartily second your article "Percent for Architecture" (page 15). No matter how we architects approach it, architecture is and always will be "art" as well as "science." Publishing the letter and photographs regarding Lake/Flato's Chandler house (page 19) indicates sensitivity of self-policing within the profession and should be openly highlighted when architects cross the "referential" boundary.

On a similar note, Bradford McKee's article, "Capitol Bias" (page 37), has also violated a boundary—one of presumption; guilty without trial. The majority of the article seems factual, but opinions should be left up to the readers, with charges leveled and proven in the legal system. It's obvious that McKee's case is trying to lead one to be sympathetic by equating General Accounting Office numbers to the AIA's Code of Ethics. George M. White has just been painted as a serious civil rights offender. Without his day in court, is that fair?

McKee's brief article brings out more questions about the bureaucratic system than about White's integrity. He may be a poor manager, but what has the Architect of the Capitol's Office to do with hiring or managing almost 2,000 personnel, from project architects to custodians, in the first place?

To me, the proper focus of the Architect of the Capitol should be on buildings, their design and restoration. His management focus should be on staff restoration professionals and not in the area of building "household" maintenance. McKee's clamoring for the President of the United States to replace White is somewhat biased and opinionated reporting and seemingly out of his area of expertise.

Policing actions of our fellow architects in the realm of architecture has certain historical documentation. Whether we like it or not, we are "our brother's keeper" in the "arts" and "science" of the practice of architecture because we are all in it together. Our reputations depend on the "architectural" actions of one another. When we violate these, we bring disdain on the profession and distrust from the world around us.

However, outside the field of architecture, nonarchitectural accusations are not only inappropriate but counterproductive to the profession. This is not meant to be a protection of George White, whom I do not know, but rather a charge to our magazine to refocus on the practice of architecture. Basically, as a professional organization, let's stick to matters that we can direct and stay clear of those that cause division and should be handled by other systems and other professions.

Johnny W. Cotten, AIA
Cotten Landreth Architects
Corpus Christi, Texas

I read Bradford McKee's "Protest" with some degree of astonishment.

Architects throughout this country know George White and respect him as an exemplar of the profession.

When first appointed Architect of the Capitol, White inherited an office in total disarray and a building complex that literally was falling apart. In the intervening years, White has transformed Capitol Hill into the showplace of the nation.

He has assembled a highly professional staff and engaged outstanding architecture firms to assist him in the restoration of this national treasure. This current flap over minority hiring is perhaps more political smoke than fire.

Furthermore, statistics without qualifying background can often lead to erroneous conclusions. Even if there may have been some management oversights, these should not overshadow a lifetime of dedication to architecture and a career of monumental achievements.

Theodore F. Mariani, FAIA
Mariani Architects Planners Engineers
Chantilly, Virginia

I am writing to protest the obvious liberal bias in your piece "Capitol Bias." The use of racial profiles showing disparate numbers of minorities in certain positions compared to their numbers in the local work force is not in itself "proof" of bias, but only an indication that such bias may exist.

Discrimination happens to individuals, and consequently, proof of discrimination must come from treatment of individuals.

Your example of the high-voltage electricians is the strongest indicator that bias could exist, but several pieces of the "proof" are missing.

Of the 24.8 percent of minorities holding these jobs in the private sector, how many individuals have applied for work at the Capitol? If none have applied, then no discrimination has occurred. Is there a test that must be taken to rank applicants according to knowledge and ability? If so, where do the minorities rank in the list of applicants? If hiring is done strictly on the basis of such a test, and all new hires happen to be white, then no discrimination has occurred. If minorities of high rank on such a list have been passed over for employment, then that is proof of bias, but no such information is forthcoming in your article.

Your example of the high percentage of black women being employed as custodians seems to indicate that white women are discriminated against for these positions.

You cannot use low percentages of minorities in certain positions as evidence of bias, and then turn around and claim that a high percentage of minorities in another unrelated position is also evidence of the same bias.

How large is the pool of qualified minority applicants for the higher paid positions? Could it be that the relative percentages for white/minority applicants for these positions are exactly the same as the actual numbers of white/minority employees? We don't know these figures, because you haven't reported them. If you really wanted to uncover bias on Capitol Hill, this would be something to look into. If, however, you just want to jump on the white-male-bashing bandwagon by using misleading statistics to further your liberal agenda, then congratulations.

J.L. Tyson
Cape Canaveral, Florida

I have just finished reading the article "Capitol Bias" in your July issue. Having visited the U.S. Capitol before George M. White became Architect of the Capitol and at periodic times since, I can say that the average American citizen has no idea of the debt of gratitude owed White for his work. When he took over, the building was a dump. Now it elegantly represents the best for which our country stands.

It is a sad commentary when a man is taken to task for not having the right number of each kind of body and is not praised for the quality of his contribution to society.

John L. Webb
Ponchatoula, Louisiana

Letters

CAD review re-viewed

I read with dismay the July article on CAD systems (pages 113-117). This article misinforms and does a disservice to members of the profession who depend on magazines such as yours to provide accurate and useful information concerning integrating CAD software in their practices.

By what possible measure are these programs in the top 10 of CAD? With the exception of AutoCAD and MicroStation, I question whether any of them qualify. With the exception of Sonata and A&ES, I also question whether any of them qualify based on their usefulness as architectural tools. VersaCAD for Macintosh, which was listed, was discontinued two years ago.

The author says that changes to architectural CAD software are "more cosmetic than substantive." On what evidence is this based? The body of the article is a series of empty non sequiturs grazing issues such as hardware prices, AutoCAD, and facilities management. If a little knowledge can be a bad thing, this very little knowledge demonstrated by the writer is dangerous.

Given ARCHITECTURE's general practice of not publishing software reviews, I feel that this article was especially damaging to the magazine's reputation as a source of good information, to the dozens of major software developers who have dedicated resources to creating tools specifically for architecture, and to the architects who are attempting to evaluate the myriad of available software and hardware alternatives and select the best one for their practice.

David Marlatt, AIA
President, Graphisoft U.S.
South San Francisco, California

It is strange that in your review, Cadkey was represented by its engineering software (CADKEY 7) and not its architectural software. Cadkey's DataCAD is the best value on the market today and, obviously, AutoCAD's worst nightmare. Perhaps that is why it was not represented.

Ray Campbell, AIA, Architect
J. Hyatt Hammond Associates
Greensboro, North Carolina

Your article had about as much meat as would the "Top 10 List" of CAD programs on Letterman. "At a glance" should not mean with eyes closed.

In the article's defense, some information was offered, albeit inconsistently. If the listing was in priority by programs in use, then third-party support could be inferred. Was DataCAD left off as Cadkey's architecturally specific acquisition because it failed to meet top 10 criteria, and if so, why was CADKEY slighted as "not as strong for pure architectural design" when the purchase of DataCAD addressed this and could have been mentioned?

When can our profession expect an intelligent, no-holds-barred, real product evaluation from AIA? A committee could establish relevant criteria: software cost per station, at market average prices; hardware cost per station, at market average prices, for each software manufacturer's minimum recommended platform configuration; recommended training time in cost per hour; a blind test by architects not skilled in CAD for ease of use and relevance to our processes and approach; benchmark tests for specific file sizes for zoom, pan, plot, and load.

Advertisers that don't score high marks may get upset and stop advertising, but isn't that the conflict of interest that the AIA has railed against (as it relates to advertising

and the profession) these many years? Stop the trivia and support your constituency.
Harrison F. Bink, AIA
Partner, Bink & Associates Architects
Camp Hill, Pennsylvania

My mouth dropped open when your author, in reviewing the top 10 CAD programs for architecture firms, reviewed CADKEY 7. Why he did not ask the common-sense question, "Why on earth would one of the top 10 best-selling CAD products for architecture firms be a mechanical engineering CAD program?"

Cadkey is the parent company of DataCAD 5, which is an exclusively architectural CAD software product. DataCAD 5 is a great software program at an extraordinarily modest price, and it is no wonder it has made your top 10 list after selling over 25,000 copies in the last six months. But please note, it is DataCAD 5 that should be reviewed in this article, not CADKEY 7. I regret that architects missed the opportunity to read about this fine CAD product due to your oversight.
Evan H. Shu, AIA
Shu Associates
Boston, Massachusetts

As the MicroStation product manager for Bentley Systems, I have a keen interest in seeing our products positioned well in print. Imagine my disappointment to see MicroStation misrepresented in the review by Jon Pepper. He wasn't exactly inaccurate, yet he certainly wasn't noting current information. I would suggest that he compiled his information from promotional literature for Version 4, released in February 1991. MicroStation Version 5 has been commercially available since December 1993. In addition, judging from the images that appear above the MicroStation entry, which are not MicroStation at all, Pepper did not sufficiently research our product.
Tom Anderson, AIA
Bentley Systems
Exton, Pennsylvania

Healthcare concerns

I am concerned about the American Institute of Architects' stance on endorsing President Clinton's healthcare proposal (June 1994, page 135). The Institute stands for integrity and professionalism. I am disturbed by the AIA's endorsement of a healthcare plan that was crafted in a secret committee and chaired by someone who is not an elected official—First Lady Hillary Clinton.

The AIA should be an advocate for the practicing architect. Anything that is a detriment to economic viability, autonomy, or professional practice should be fought vigorously. The Institute is wrong by "going along to get along" regarding the current move to "fix" healthcare, and its members should be very careful about supporting a bill in Congress that is worse than the problems it attempts to correct.
Keith Starnes, Associate AIA
Clemson University
College of Architecture
Anderson, South Carolina

News or views?

I found David Dillon's article on projects in Texas by David Schwarz (June 1994, pages 28-29) rather mean-spirited. The pages of ARCHITECTURE are hardly the venue for questionable judgments of persons or practices, especially when disguised as a "news item."

Dillon's opinions of architectural design are what I care to read about, not his opinions of the individuals who design architecture. I find the article unbefitting of your normally high editorial standards.
Mark A. Rahe, AIA
Alexandria, Virginia

Corrections

In the July 1994 issue of ARCHITECTURE, Walter DuFresne photographed the Haber Early Learning Center (page 46); Robert Perron photographed the Latino Youth Development Center (page 48); Tim Griffith photographed the Burton E. Green Child and Family Development Center (pages 80-85).

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Events

September 21
Deadline for submission of entries to the American Planning Association's 1995 National Planning Awards. Contact: (202) 872-0611.

September 21-24
National Association of Women in Construction's 1994 convention, in Chicago. Contact: (800) 552-3506.

September 22-24
"Houses and Housing," the 1994 AIA Western Mountain Regional Conference in Jackson, Wyoming. Contact: (307) 745-5322.

September 23-October 30
inSITE94, site-specific artworks throughout San Diego County and Tijuana. Contact: (619) 544-1482.

September 27-28
"Architectural Acoustics and Noise Control Standards," a course sponsored by the American Society for Testing and Materials. Contact: (215) 299-5478.

September 27-29
InterPlan exhibition, covering contract furnishing and interior design, at the Jacob K. Javits Convention Center in New York City. Contact: (212) 221-0500.

October 1
Charles Moore Foundation raffle to endow Moore House and Studio in Austin, Texas. Grand Prize is one week at Sea Ranch. For tickets, contact: Charles W. Moore Foundation c/o Ace Architects, (510) 452-0775.

October 1
"Access," a conference addressing universal design in the kitchen and bathroom, organized by the Cooper-Hewitt. Contact: (212) 860-6868.

October 4
Johnson Controls/United States Energy Association sponsor the Fifth Annual Energy Efficiency Forum, "Delivering Energy Efficiency in the '90s," in Washington, D.C. Contact: (414) 274-4546.

October 4-February 26, 1995
"Good Offices and Beyond: The Evolution of the Workplace," at the Cooper-Hewitt, National Museum of Design, in New York City. Contact: (212) 860-6868.

October 7-8
"Dogon to Digital: Design Force 2000," the first national conference sponsored by the Organization of Black Designers, in Chicago. Contact: (202) 659-3918.

October 14
Deadline for entries in the National Association of Home Builders/National Council on Seniors Housing Fourth Annual Best of Seniors Housing Awards Program. Contact: (800) 368-5242, ext. 235.

October 31
Deadline for entries in the 1995 Presidential Design Awards, administered by the Design Arts Program of the National Endowment for the Arts. Contact: (202) 682-5437.

New Embassies Open in Washington, D.C.

The history of embassy design in Washington, D.C., began with the adaptation of 19th-century brick and stone mansions on Massachusetts Avenue, known as "Embassy Row." In the 1930s, several foreign governments built new embassies on the row, adopting the U.S. fashion of the day, Neo-Georgian architecture, instead of their own national styles; Edwin Lutyens' British Embassy and John J. Whelan's Embassy of Norway (both completed in 1931) are notable examples. Today, three new buildings illustrate a more nationalistic approach: the Finnish and Singapore embassies, and the German ambassador's residence.

Located at 3301 Massachusetts Avenue, the Finnish Embassy occupies a site previously inhabited by a 1950s Federal-style mansion. Designed by the Finnish architectural team of Mikko Heikkinen and Markku Komonen, the new embassy is surrounded by the embassies of Norway and Belgium; the Nunciature of the Holy See (Vatican); and the U.S. Naval Observatory.

A bold steel-and-glass box nestled among its stately masonry neighbors, the Finnish Embassy maximizes an awkward, sloping site, condensing offices, library, and ceremonial room within 4,750 square meters, one-third of which is devoted to parking. Its assemblage of glass block, green-tinted glass, patinated copper and bronze, and polished granite walls conceals a naturalistic haven created behind the building. Replete with natural light, the interior combines the precision of stainless steel nautical detailing with natural wood surfaces. Heikkinen and Komonen's design epitomizes Finland's Modern traditions.

In the 1960s, growing requirements for offices, on-site parking, and security led the State Department to develop an office park for embassies in northwest Washington. Today, the strict guidelines of the 47-acre International Center suggest the new direction of embassy design. Among the first of 23 lots to be developed is the Embassy of Singapore, designed by RTKL Associates. The firm's choice of materials, structure, and landscape reflect Singapore's architectural traditions: The brick and limestone exterior employs teak sunshades and conceals an interior lined with mahogany and cherry, silk wall panels, and custom lighting.

The new German ambassador's residence, located west of Georgetown, harkens back to the grandeur of Washington's Embassy Row. Designed by German architect O.M. Ungers, the hilltop residence is east of the Modern, 95,000-square-foot Chancery, designed by Ungers' teacher, Egon Eiermann, in 1964. While the Chancery conceals itself beneath a cover of trees, the ambassador's residence flaunts terraced landscaping and a reflecting pool with unabashed formality.

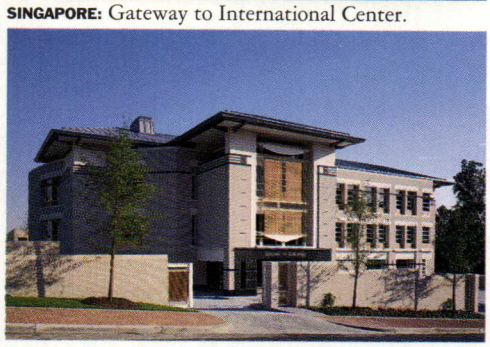
The plan and section of the residence are derived from a square. The roof evidences the separation of public and privates areas: Segmented pyramidal skylights line the corridors, and copper-sheathed pyramidal roofs cap the square private rooms. Devoid of ornamentation, the pure forms of the residence are the antithesis of the layered, complex Chancery. However, the two adjacent buildings share a disciplined approach to design and a consistency of method. Ungers' manipulation of the square is equivalent to Eiermann's methodical application of layers.

Both Finland and Germany commissioned architects from their native country. For Heikkinen and Komonen, the Finnish Embassy provided the first opportunity to build in America. For O.M. Ungers, the chance to design a residence adjacent to his teacher's building represents Germany's continuity of design. Singapore's selection of RTKL indicates the potential opportunities for American architects in the development of International Center, where Chile, Morocco, Bangladesh, UAE, Brunei, and Malaysia are currently engaged in selecting architects for six of the 23 lots.

This center hails a new decade of embassy building, but its success as the Embassy Row of the 21st century will depend on continuing cultural exchanges. —*Ann C. Sullivan*

SINGAPORE INTERIOR: Lanterns anchor RTKL's grand staircase.

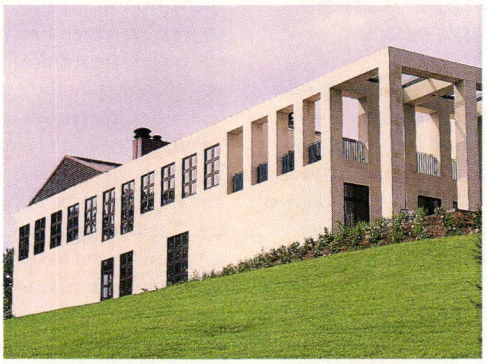
SINGAPORE: Gateway to International Center.



NORTH FACADE: Screen evokes Singapore vernacular.

ALAIN JARAMILLO / BLAKESLEE GROUP

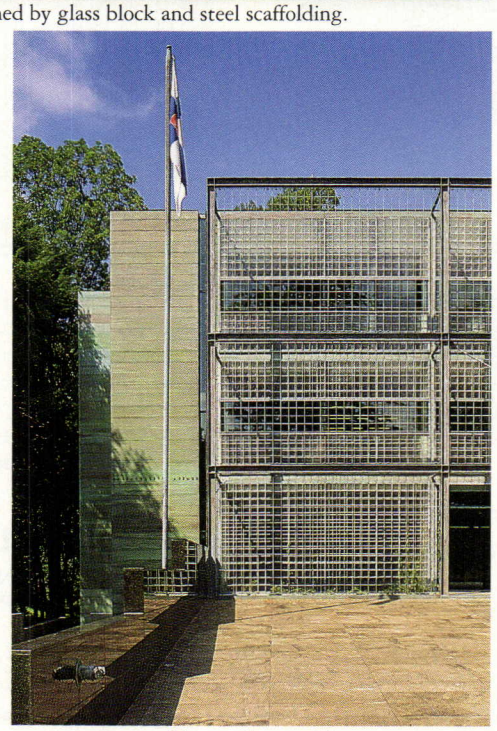
GERMAN AMBASSADOR'S HOUSE: Ungers' Rationalism.



WEST FACADE: Limestone shapes Ungers' design.

FINNISH EMBASSY: Heikkinen/Komonen's facade is screened by glass block and steel scaffolding.

FABRIC-COVERED WALKWAY: Spans Rock Creek Park.



COPPER CLADDING: Textured materials.

MAXWELL MACKENZIE PHOTOS

Details

Robert Peck, group vice president for government affairs, is leaving the AIA to join the Federal Communications Commission as Deputy Chief of Legislative Affairs. Mississippi architect **John Robbins** has been appointed Executive Director of the National Center for Preservation Technology and Training, a new division of the National Park Service, located in Natchitoches, Louisiana. **Michael Graves** has illustrated *Mr. Chas and Lisa Sue Meet the Pandas*, a children's book written by Fran Lebowitz, to be published in November by Alfred A. Knopf. A film by Terry Black on Indianapolis architect **Evans Woollen** will air October 2 on public television. **CRSS** has merged with **Helmuth, Obata & Kassabaum**; the firm will operate as HOK. New York City has selected **HOK** to head a team of consultants in the Yankee Stadium renovation. Chicago-based Valerio Associates and Train Dewalt have merged to form **Valerio Dewalt Train Associates**. Portland-based **Stastny Architects**, with **David N. Sloan & Associates** of Albuquerque, has been selected to design the new Southern Ute Cultural Center and Museum in Ignacio, Colorado. **Eskew Filson Architects** has been selected to design the National D-Day Museum at the University of New Orleans. Boston-based **Machado and Silvetti Associates** has won a competition to renovate Langdon and Wilson's 1974 J. Paul Getty Museum in L.A. Their design was selected over those of Spanish architect **Juan Navarro Baldeweg**; Portuguese architect **Alvaro Siza**; L.A. designers **Hodgetts and Fung**, and **Franklin D. Israel**; and **Kallmann McKinnell & Wood** of Boston. **Langdon Wilson Architecture** has been chosen lead architect for the $10 million renovation of the Heard Museum in Phoenix. The Greenwich Village Society for Historic Preservation has presented its annual Village Award to **Françoise Bollack Architects** for the restoration of the Lesbian & Gay Community Services Center. Former dean of the College of Environmental Design at California State Polytechnic University **Marvin J. Malecha** has been named dean of the North Carolina State University School of Design. **Suzanne Stephens** has resigned as editor of AIA New York's *Oculus* to attend Cornell University's graduate program in architectural history.

Bauhaus Celebrates 75th Anniversary

When Walter Gropius founded the Bauhaus in Weimar, Germany, in 1919, he formalized a standard of education, design, and craftsmanship that became internationally adopted. Political and financial difficulties caused the Bauhaus to move from Weimar to Dessau, Germany, and, in 1932, to Berlin, where the school remained for one year before the Nazis forced it to close. This year, several museums in the United States and Europe are commemorating the 75th anniversary of the Bauhaus with exhibitions, films, and lectures.

In New York, "Bauhaus Workshops: 1919-1933," will be on display at the American Craft Museum through October 9. The exhibition examines the early years of the Bauhaus, when it emphasized craft and decorative objects modeled for machine production. It highlights five disciplines: fiber, ceramics, glass, metal, and wood. From a 1924 ashtray by Marianne Brandt to the textile designs of Anni Albers, the objects illustrate the rigorous tectonics of the German school.

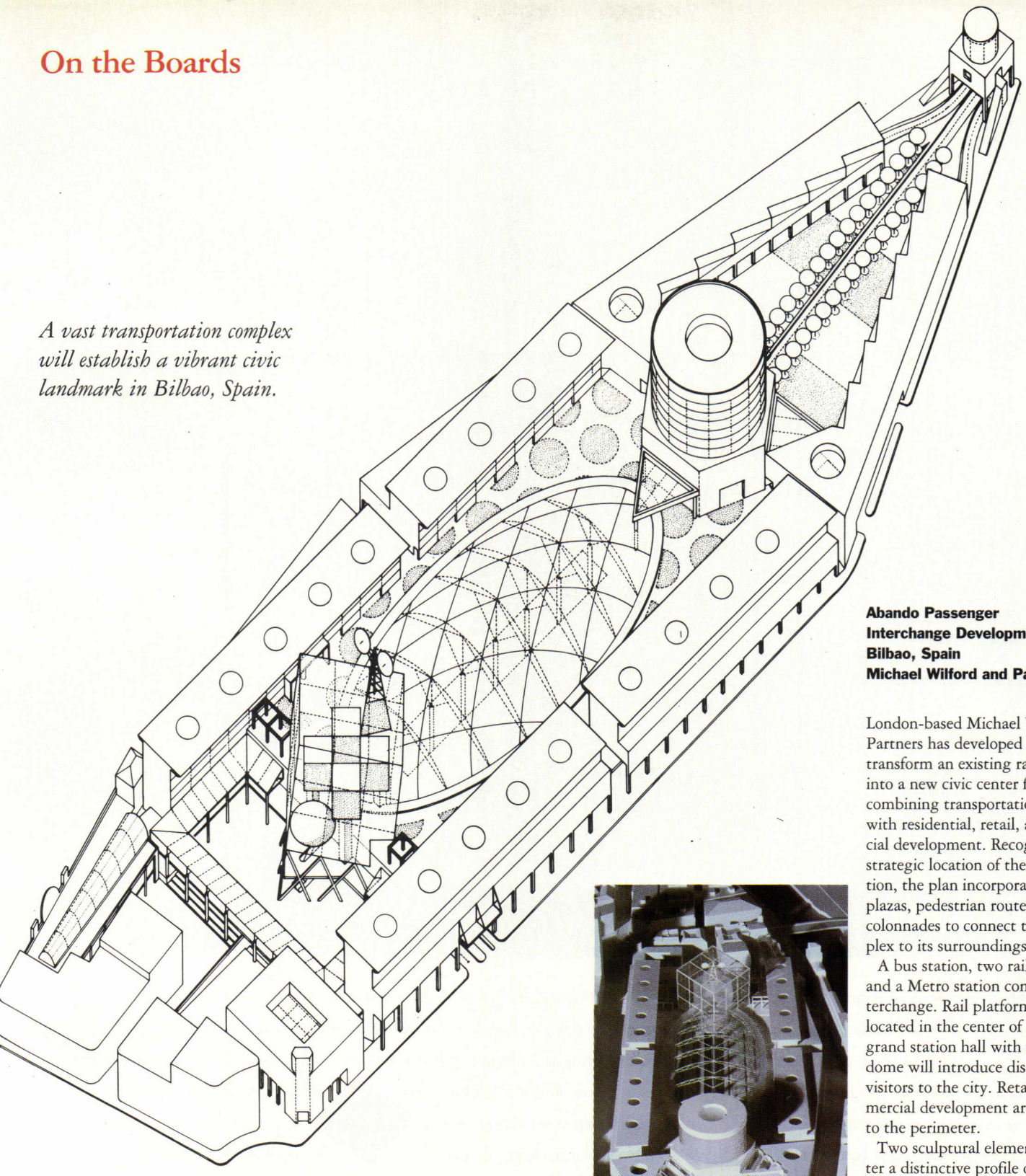
Following the closure of the Bauhaus, many faculty members and students immigrated to America. The Cooper-Hewitt is hosting a symposium on October 15 that chronicles this migration's effect on American design. "The Legacy of the Bauhaus in America" features the premiere screening of *Bauhaus in America*. The film presents firsthand accounts of the school's influence from several prominent American architects, among them Philip Johnson, Michael Graves, James Ingo Freed, and Stanley Tigerman.

Today, the Bauhaus remains a vital institution in Weimar, on the 1911 campus designed by Henry van de Velde. Originally founded to link local craftspeople with artists, this institution spawned the Modern teachings of Gropius, whose 1926 Bauhaus building in Dessau still functions as a studio facility.

Operating today as the University for Architecture and Building Sciences, the Weimar school recently added a department of design, which offers courses in art, industrial design, and visual communication. Until 1988, a competitive admission process limited enrollment to 30 students per year. Following the unification of Germany, the school now accepts 120 students each year, prompting plans for expanding the original architecture building.

Events celebrating the anniversary include cultural activities throughout Europe. On September 16, Weimar's art museum will premiere an exhibition on the early Bauhaus years, focusing on the work of Johannes Itten, who helped shape the school's curriculum. The exhibit will travel to Berlin's Bauhaus Archives in November; the art museum in Bern, Switzerland, will host the exhibit next February.—*A.C.S.*

A vast transportation complex will establish a vibrant civic landmark in Bilbao, Spain.



Abando Passenger Interchange Development
Bilbao, Spain
Michael Wilford and Partners

London-based Michael Wilford and Partners has developed a scheme to transform an existing railway station into a new civic center for Bilbao, combining transportation facilities with residential, retail, and commercial development. Recognizing the strategic location of the existing station, the plan incorporates public plazas, pedestrian routes, and grand colonnades to connect the new complex to its surroundings.

A bus station, two railway lines, and a Metro station comprise the interchange. Rail platforms will be relocated in the center of the site; a grand station hall with a skylit oval dome will introduce disembarking visitors to the city. Retail and commercial development are relegated to the perimeter.

Two sculptural elements will register a distinctive profile on the Bilbao skyline. The round world trade center tower will provide a landmark for vehicles; and an 80-meter-high skewed glass cube, containing elevators and escalators, will mark a pedestrian entrance.

Development of individual portions is scheduled to begin in 1996; the 310,000-square-meter station is expected to be completed in the year 2000.—*Ann C. Sullivan*

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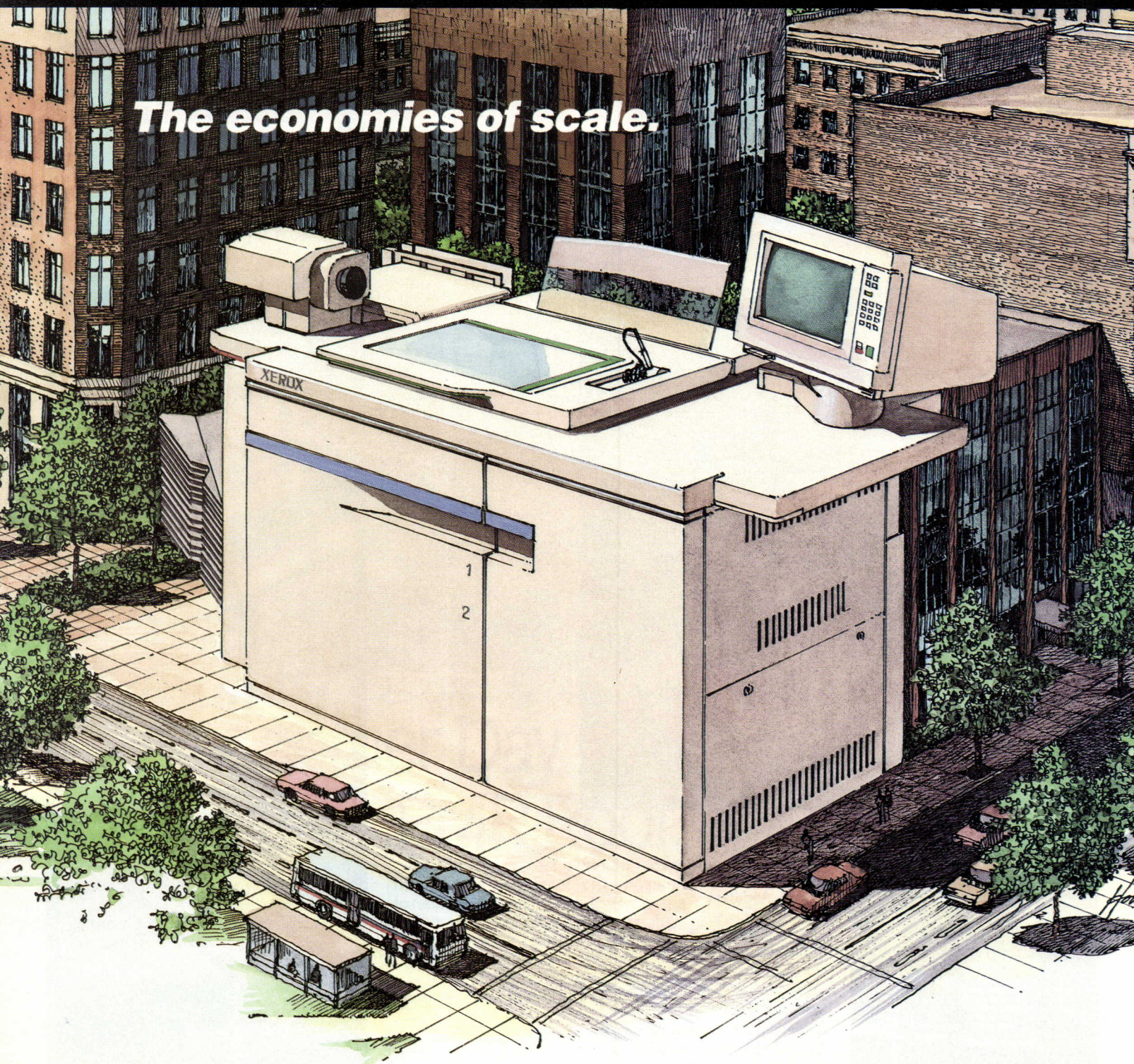

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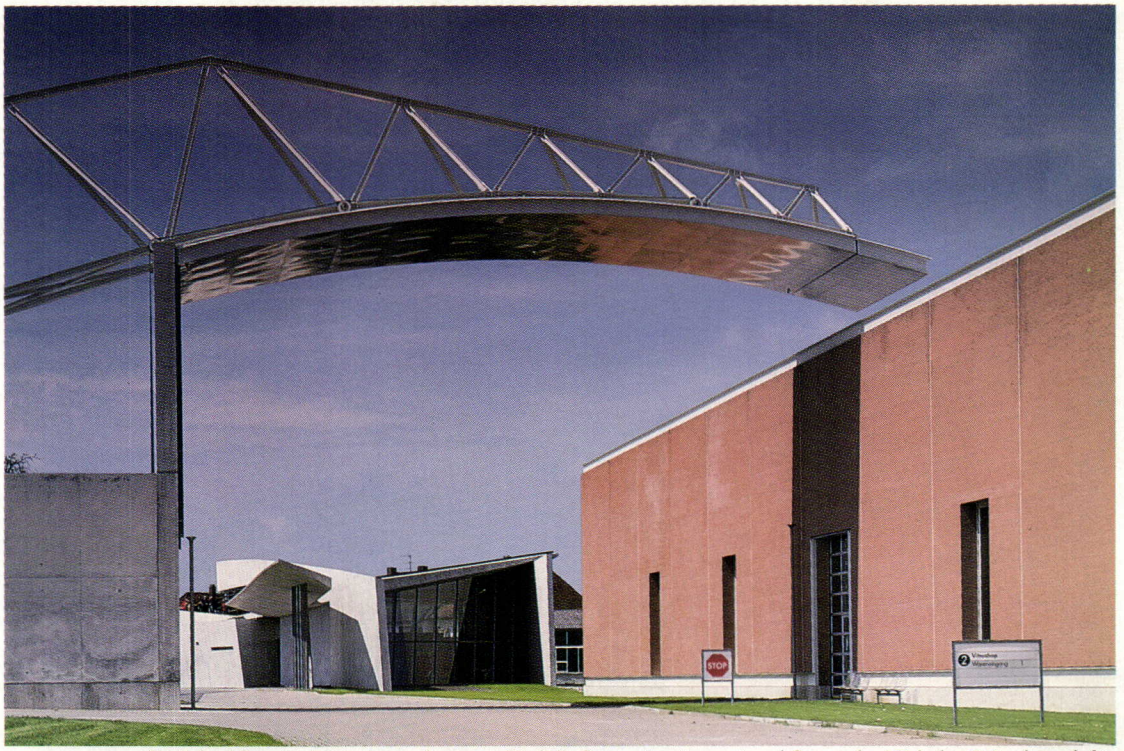
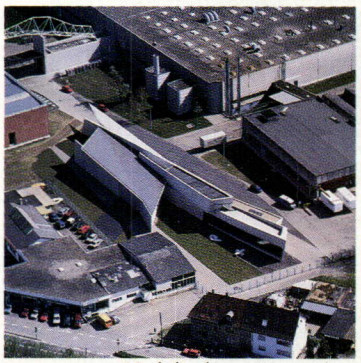
A new factory by Alvaro Siza counters the vitality of Vitra's Weil am Rhein campus.

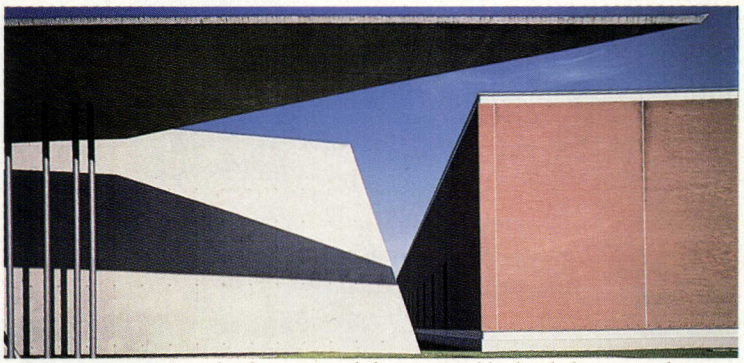


SIZA IN CONTEXT: Siza's building (right) is situated next to Hadid's fire station (center) and factory by Nicholas Grimshaw (left).

VITRA CAMPUS: Siza's factory (right).



FIRE STATION: Hadid's dynamism.



HADID MEETS SIZA: Angular fire station (left) is resisted by brick factory (right).

Siza Misses at Vitra

Were the factory designed by Alvaro Siza at any industrial site other than Vitra, it would be exemplary for its meticulous detailing and luminous interiors. But Siza has joined Nicholas Grimshaw, Frank Gehry, Zaha Hadid, and Tadao Ando, who have all built on the Weil am Rhein campus of this Swiss-based furniture manufacturer. Structures were in place, the context was charged, and expectations were high.

Siza's brief was simply to build an industrial shed at the property's edge, along the hypotenuse of a triangular site. The Portuguese architect responded with a structure based on a square footprint notched out where the hypotenuse slices off one corner. But the building misinterprets the context established by the adjacent Hadid-designed fire station.

Siza kept his building plain and simple, articulate only in the detail. By sheathing the structure in a uniform brick skin, he made an effort to set off the fire station by neutralizing the warehouse. But Siza's mistake is to believe that visual quiet implies neutrality. With brick, he reinforces the static nature of the box by conferring a sense of weight: His design offers strong inertial resistance to the dynamic forms of Hadid's structure. Siza's unresponsive mass virtually stops the flow that Hadid painstakingly culled from the nearby river, railroads, and hillsides.

With the best of intentions, Siza tried to defer to the fire station, and in the deference, he misunderstands it, treating it as a precious object. Moreover, Hadid orchestrated her streamlined forms so that the building and its activities start to urbanize a factory complex that is otherwise internalized. Hundreds of people work at Vitra, yet the site planning hardly gathers people in any way that might be considered civic. Rather than objectifying Hadid's building, Siza might have picked up on its urbanizing gesture with an invented program, or with offices and showrooms borrowed from the existing factories. Lacking program, he might have inflected the blank walls of the boxy shed to acknowledge the adjacent dynamism of the fire station.

The static nature of Siza's design monumentalizes the warehouse at a sensitive point in the Vitra campus that Hadid has intensified. Hadid's building is a sociable runner; it yearns both to fraternize and to pass a baton. Siza, sadly, has retreated into perceived architectural correctness and has missed both the race and the opportunity to foster community.—*Joseph Giovannini*

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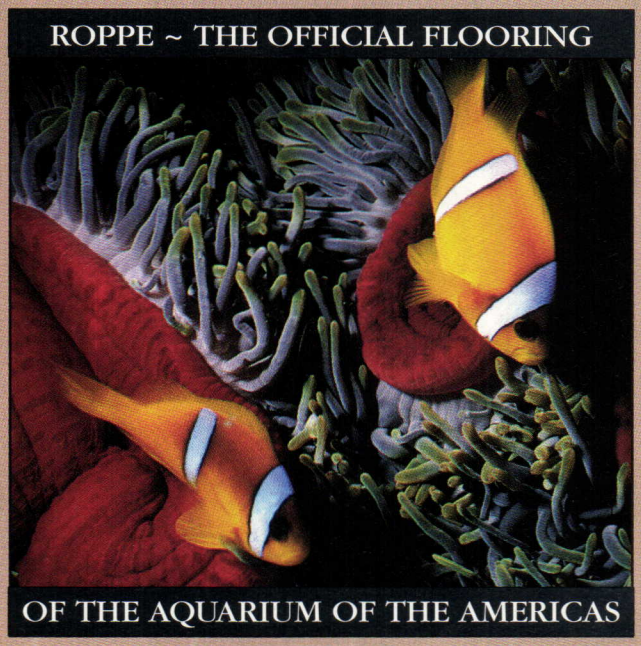

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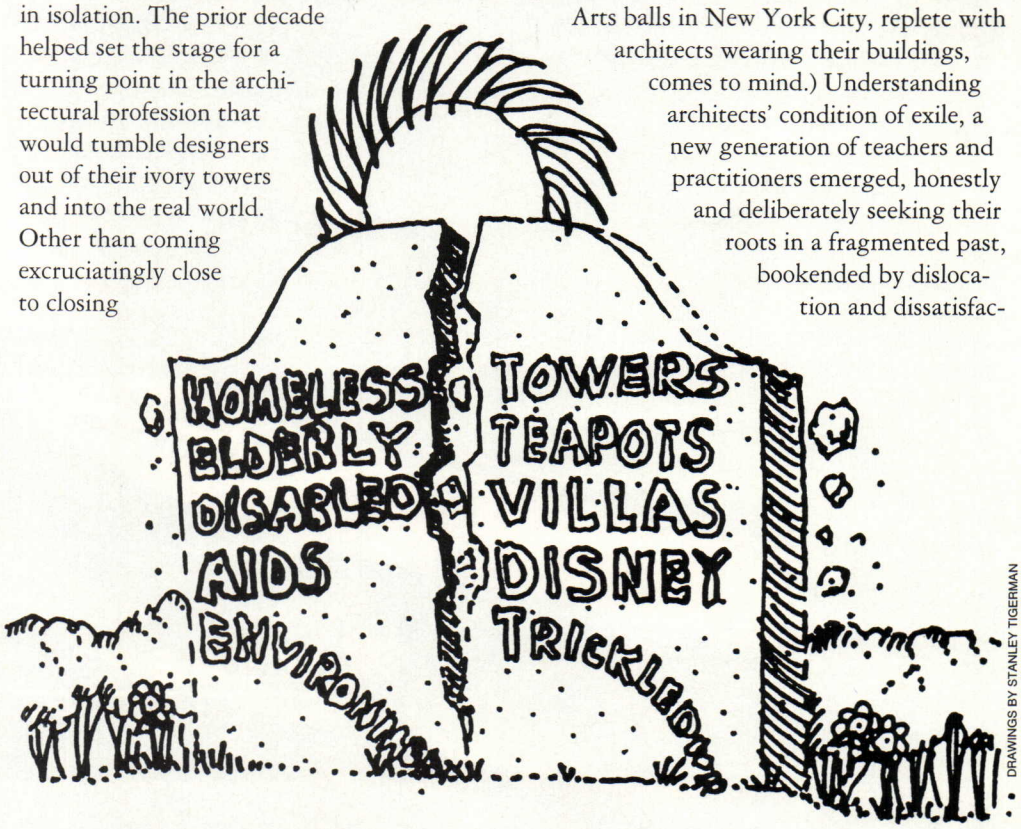
Beyond Trinkets and Teapots

Architects must become more socially responsible, asserts architect Stanley Tigerman.

At the end of the rip-roaring 1980s, economic recession combined with burgeoning social ills to create an economic, social, and cultural watershed for architects. Entry-level jobs dried up virtually overnight, and highly capable veterans working for major firms were summarily dismissed in a rout unheard of since the Great Depression. If real estate developers didn't go bust, they took refuge in office leasing and management, and the entire American office building sector closed up shop. Despite this emerging climate of unprecedented despair, star architects practiced as if unaware of hard times. I will never forget a lavish New York City opening at the Four Seasons, when some of us inaugurated our $30,000, one-of-a-kind *tchotchkes* for Swid Powell, only to step out into the cold night, tripping over corrugated containers that were sheltering Manhattan's homeless population.

But the schizophrenic 1980s did not exist in isolation. The prior decade helped set the stage for a turning point in the architectural profession that would tumble designers out of their ivory towers and into the real world. Other than coming excruciatingly close to closing my own office in the 1974-76 recession, I didn't believe there was any chance of a lasting ripple effect resulting from those troubled times. Another case, I suppose, of architectural amnesia—the inability to project globally that which impacts locally. After all, even though architects couldn't build, we could still draw, and art collectors, gallery dealers, and museum curators, both at home and abroad, seemed to be fascinated by what they saw. There didn't seem to be anything wrong with the theoretical positions emerging from New York's Institute for Architecture and Urban Studies, which situated ideas above building as the center of the discipline, if not the profession, of architecture.

The profession was changing long before creeping alienation was laid at the feet of the long-lived giants of Modernism, who would, in any case, soon be clad in user-friendly Postmodernist clothes. (The memorable precedent of those notorious 1930s Beaux-Arts balls in New York City, replete with architects wearing their buildings, comes to mind.) Understanding architects' condition of exile, a new generation of teachers and practitioners emerged, honestly and deliberately seeking their roots in a fragmented past, bookended by dislocation and dissatisfac-



DRAWINGS BY STANLEY TIGERMAN

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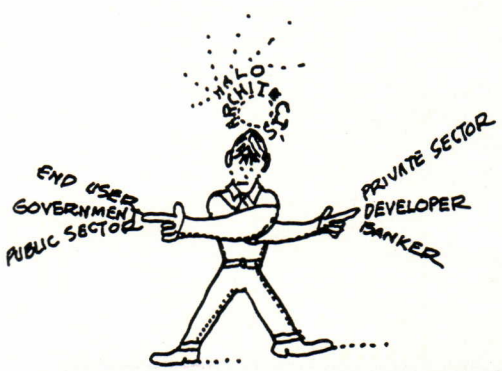
the "pencil" at the disposition of power brokers. I propose that we institutionalize our accountability by our resolve to externalize the greater good within our individual and collective selves.

This, then, is a call to our beliefs—not our burdens—to exploit our capabilities, not to see how far they can be infinitely extended on our own behalf, but rather how much, and in what ways they can be utilized in situations morally and ethically constituted. In all events, it is safe to say that society's needs now transcend each of our own individual desires. Our Constitution beautifully defines the balance between the individual and the collective, and if there ever was a time when the scale needs to shift in favor of the collective, this is the moment.

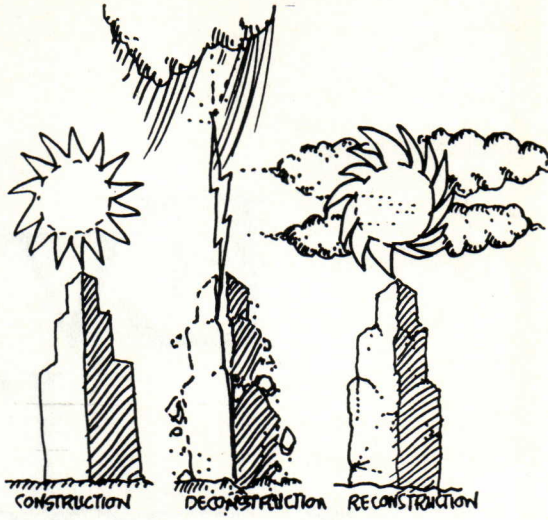
But this is not just a call for ethical responsibility to engage in the reconstruction of society. It is also a call to the courageousness within each of us—a call to that indomitable spirit that causes us to "rush in where angels fear to tread." We are needed as we never were before, not only to design, but to implement design strategies in so many areas, from affordable housing, to solutions to homelessness, to sustainable environments, to housing the elderly and the disabled, to havens for battered women and children. It is no longer appropriate to wait for the benevolent client to appear to deliver us to long-awaited meaningful projects: We have it within ourselves to initiate action in a profession far too accustomed to inaction.

Our obligations to reconstruct must be derived from a moral basis for promoting universal design that is nondiscriminatory for use by us all regardless of age, ability, economic status, race, religion, and gender. There is something suitably poignant about a vulnerable discipline uncertain of itself, casting about to redefine its role both intrinsically and extrinsically.



Strategies for architectural practice for the 1990s need to be more than benignly multivalent. The need for a moral and ethical underpinning for practice is also wide-ranging. These strategies include, but are not limited to, selecting clients for reasons not only rationalized by individual gain; initiating projects for the greater good of society; collapsing the distance between design and its delivery systems for those in greatest need; developing theories based on need disseminated to large audiences rather than theories restricted to the arcane for an architectural intelligentsia; and striving for mutuality of purpose between education and practice for the benefit of both the discipline and the practice of architecture. These are the mandates of the 1990s: Architects need only hear their call—and respond.—*Stanley Tigerman*

Stanley Tigerman, FAIA, is cofounder of Archeworks, a new design laboratory rooted in social cause, which will open this month in Chicago. Projects undertaken by Archeworks' first class will include day-care centers, an enterprise zone in West Humboldt Park, and mixed-use districts in cities.



DESIGN FOR EXCELLENCE

EVERY YEAR, IT TAKES LESS AND LESS TO WIN THIS CONTEST.

PROJECT NAME: Antelope Valley College Library
(Commissioner's Award recipient)
PROJECT OWNER/DEVELOPER:
Antelope Valley Community College District
PROJECT DESIGN TEAM:
ARCHITECT, Spencer/Hoskins Associates
ENGINEER, Robert Bein, William Frost & Associates
ENGINEER, Hillman Biddison & Loevenguth
ENGINEER, Retrofit Originality, Inc.

PROJECT NAME: The Center For Regenerative Studies
at California State Polytechnic University, Pomona
PROJECT OWNER/DEVELOPER:
California State University
PROJECT DESIGN TEAM:
ARCHITECT, Dougherty + Dougherty
ENGINEER, Store, Matakovich & Wolfberg
ENGINEER, EQE International
CONSULTANT, Peridian International, Inc.

Southern California Edison

C R E A T I V E E N E R G Y

SEPTEMBER 1994

ARCHITECTURE

REVIEW OF INTERNATIONAL ARCHITECTURE

ADAPTING TO PLACE

This issue presents an international portfolio of projects that range in location, program, and scale from a remote house in Australia to an office and gallery block in the heart of Paris. As a group, these buildings document the continuing transformation of Modernism from the puristic, tyrannical approach that shaped the most famous icons of this century to a more expressive manifestation of place. American architects have much to learn from the confidence of these new buildings. For all the constraints of an ancient culture, city, or landscape, foreign architects seem to enjoy greater freedom of expression than their American counterparts, who are all too often subordinated to the authority of developers, contractors, and community review boards. The international projects that follow were shaped as much by public trust and political commitment as by sheer talent.

DUCCIO MALAGAMBA

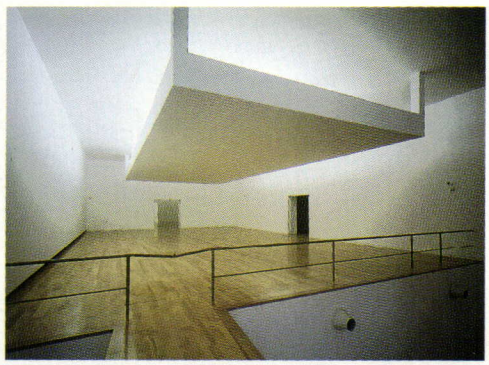
Between these two areas, initially screened by a short flank of wall, a triangular void brings daylight down to wash the circulatory mechanism of the spine. The architect employs such skewed interstitial spaces throughout the Center for Contemporary Galician Art to dissolve weight and shadowy corners, acting as geometric knuckles. They include a skillfully glazed acute incision between the theater and the street, and the pooled niche beyond the café aligned through to water features in the park. Such special moments are fundamentally dependent upon Siza's generating vectors. As proof, they recur or are retraced, as in the splicing clerestory of the library above the auditorium and in the acute angle of the office corridors.

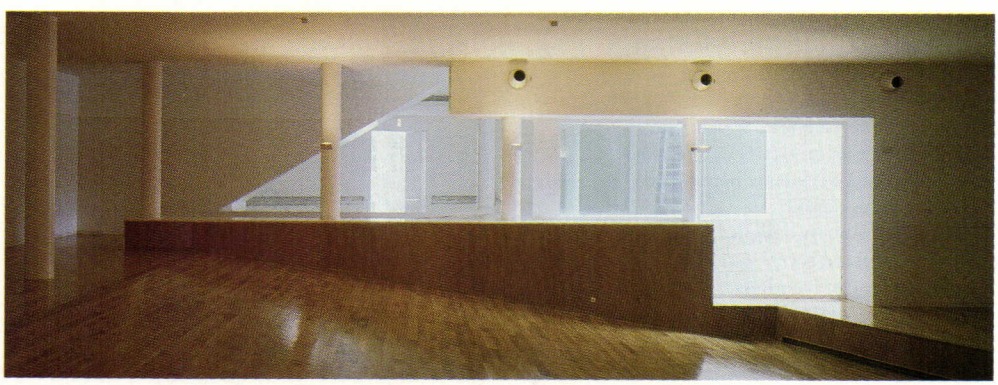
As the architecture unfolds, panoramic views without the interference of mullions are adjusted to precisely framed interconnections within the volume. The building is about viewing art and about viewing itself and its world—hence the tilted ocular antechamber off the boardroom and over the entry ramp. In the surprisingly extensive lower galleries, intended for photographic and sculptural installations, space has been gouged out to admit light and views.

The upper rooms for permanent exhibitions connect to form the art center's principal enfilade, their classic calmness illuminated by beautiful, diffuse light emanating from behind suspended subsidiary ceilings. Much of the outer roof surface becomes an enclosed stone yard for sculpture with a quirky pyramid hiding a slit window to the office corridor below. Here again, Siza combines his minimal palette with provocative geometry to create an unprecedented space, but one which, after meandering through the gentle labyrinth of galleries below, re-presents itself within the entire context of Santiago de Compostela.—*Raymund Ryan*

Raymund Ryan is a practicing architect who also teaches at the University College in Dublin.

FACING PAGE: Gentle ramp leads to brightly lit auditorium. Lack of railings increases sculptural qualities of form in light. Columns support library above. **BELOW:** Suspended ceiling diffuses natural light. Bridge leads across void to balcony projecting toward park. **BOTTOM:** Parquet floor of auditorium slopes away from underside of stairs (above) and resolution (in glass) between geometries of galleries, auditorium, and administrative wing beyond.





DUCCIO MALAGAMBA PHOTOS

Marika House
Yirrkala, Australia
Glenn Murcutt, Architect

ABORIGINAL SHELTER

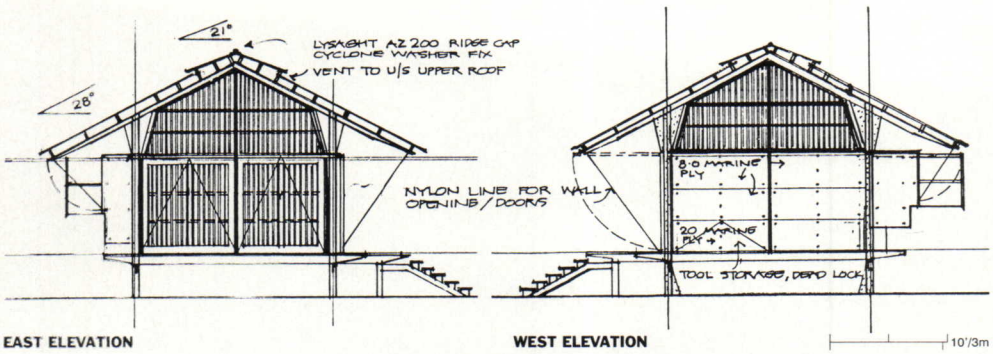
ABOVE: Murcutt organized 82-foot-long house with six 13-foot, 9-inch bays, including projecting sleeping alcoves on south side.
RIGHT: Cantilevered 6 feet, 9 inches on each side, the roof incorporates a raised ridge with vents to exhaust hot air and equalize pressure inside.
FACING PAGE: Murcutt designed the house to withstand severe cyclones. Reinforced concrete footings anchor the frame. Tallowwood slatted panels are hinged to allow breezes through interior and reduce sunlight's glare.

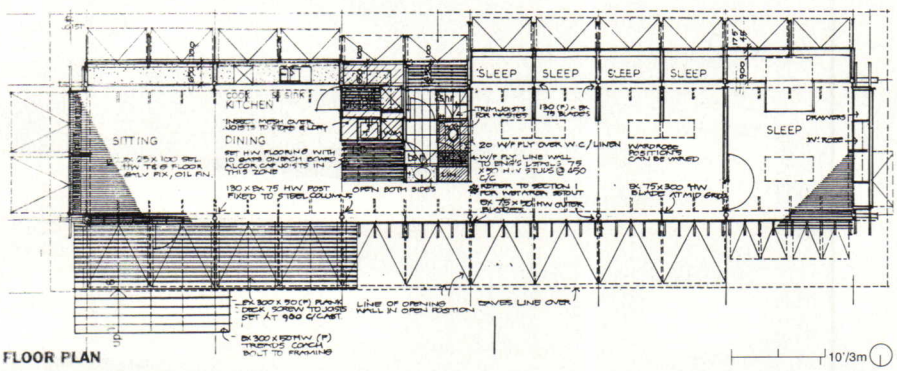
Yirrkala is a remote community with a population just over 500, located in the northern part of Australia beside the Arafura Sea. Glenn Murcutt's house for the Aboriginal artist Marmburra Marika and her husband, Mark Alderton, stands on a narrow spit with a north-facing beach in front and vigorous, freshwater mangroves to the southeast. Under its expansive, corrugated-metal roof, the house resembles a large sand crab. It is like a canoe with sleeping platforms projecting out from the sides like outriggers—a dry, elevated platform exposed to the heat and humidity of the tropics.

Marika's work appears in major collections, including the National Gallery in Canberra. Designing an Aboriginal dwelling presented Murcutt with many challenges because of the differences between white Australian and Aboriginal cultures. Typically, white Australians provide Aborigines with European-style houses and are surprised when they fail. The Marika house bridges this gap.

Murcutt studied his clients' way of life by living with them and sharing their daily experiences. The Marika house is at once Aboriginal and European in its technology. The architect investigated Aboriginal shelters, such as the traditional stringybark hut on stilts, and his solution is a more sophisticated version of this type. Among tribal Aborigines, the best knowledge is practical knowledge which serves life. That is how Murcutt designed the house—to serve life.

BELOW: The verandalike house incorporates perpendicular sun blades constructed of 1/4-inch-thick waterproof plywood to block both morning and late afternoon sunlight.
BELOW RIGHT: Sleeping alcoves on the south side jut out an extra 3 feet from the 14-foot, 5-inch-wide main platform.
FACING PAGE: Kitchen and dining area adjoin sitting room that opens onto veranda on the north side of the house. Vented roof, supported by steel rafters, allows air to circulate.





The house is the essence of simplicity, but rich in its details. At first glance it appears to be all roof, a practical solution since the sun stands directly overhead for much of the year. The region is also affected by severe cyclones. Murcutt's strategy was to design the house with blow out walls fixed to a strong robust frame so the skeleton would survive even if the walls were destroyed.

Aborigines are nomads who are comfortable living in the open with the minimum of permanent shelter—they are a veranda people. The hinged tallowwood slatted paneled walls of the house allow sea breezes to percolate through the interior and reduce the glare from the harsh sunlight. Nearly 83 feet long, the house's platform is divided lengthwise into three zones: a sitting, cooking, and dining area; a core of bathroom and laundry; and a sleeping area closed off from four sleeping platforms. This arrangement allows the kind of flexibility that is essential when Aborigines are visited by their clan relatives.

Australia is one of the most urbanized societies on earth; half its population is concentrated in three large cities, and 85 percent live within 50 miles of the coast. Marika also lives on the edge of the country, and her house is a kind of veranda in its open, loose arrangement of space.

In rediscovering the veranda, Murcutt has created an autonomous space, separate from the house, which deals with climate and landscape in a way that is capable of being adapted to enable an Aboriginal family to stay in touch physically and spiritually with their country. Sheltering the family from the heavy monsoon downpours, the house excludes and filters the blinding tropical sunlight, while letting the perfumes of the native mango, avocado, breadfruit, and pawpaw drift inside. The house is an open boundary which shares itself with its surroundings.—*Philip Drew*

Philip Drew is an Australian architectural critic.

Cartier Foundation for Contemporary Art
Paris, France
Jean Nouvel, Emmanuel Cattani & Associates, Architect

PARISIAN JEWEL

Ever since glass could be manufactured in large sheets, architects have dreamed of transparency and lightness, a visual liberation from mass. Despite Mies' famous glass skyscraper drawing, and the wishful thinking of innumerable plexiglass models, glazed buildings have been lumbered with solid visual mass from without. Now, however, the French architect Jean Nouvel has mastered transparency in his new Cartier Foundation building in Paris.

Nouvel has played with ambiguous sensory perception before—with disconcertingly disastrous results at the all-black interior of the Lyons Opera House (ARCHITECTURE, September 1993, pages 74-75). For Cartier, he has created an environment of lightness, whose ambiguous interpenetration of forms and planes of light always delights. Nouvel's esthetic at the Cartier Foundation, splendid in its apparent simplicity, builds upon the elegant high-tech sensibility he expressed at the stainless steel and glass Arabic World Institute in Paris (1987).

PAUL WARCHOL

PAUL WARCHOL

CHRISTIAN RICHTERS

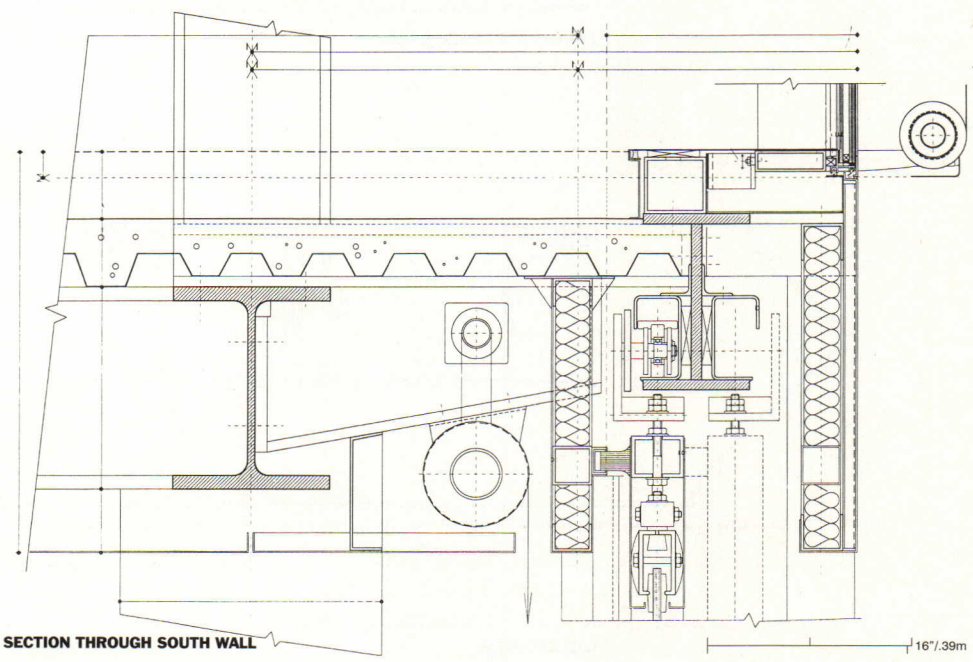
ABOVE: From the Boulevard Raspail, the Cartier Foundation for Contemporary Art is screened by glass wall.
FAR LEFT: North facade reveals exterior elevator support tracks (center); glass elevators rest on the ground.
LEFT: West elevation incorporates exposed steel fire stair behind street wall.
FACING PAGE: Street wall incorporates steel edge-bracing and openings, which reduce wind loading and introduce another layer of transparency.

Nouvel has built two Swiss factories for Cartier, a company that is so confident in the French architect that the international jeweler appointed him to its Foundation Council. The new home for the Cartier Foundation for Contemporary Art in Paris was a dream project from its start in 1991. While Americans are accustomed to corporate clients spending tax-exempt money to create a public image, this is a radical new concept in France. Money was apparently no object. But Cartier

FACING PAGE: At the southwest corner, transparent curtain wall, with frameless glass panels held by clips, meets stone building next door (left). Steel structure and diagonal bracing behind the glass are visible, but elusive because of competing reflections.
BELOW: Glazed plane of north facade prolongation reveals steel fire stair.
RIGHT: Steel columns, tubular X cross-bracing, and mechanical ducts are visible through west wall.

PAUL WARCHOL

CHRISTIAN RICHTERS



SECTION THROUGH SOUTH WALL

will not reveal how much was spent on 700 tons of stainless steel and 50,000 square feet of plate-glass facades to create 16,000 square feet of public exhibition space, 40,000 square feet of office space on seven levels for 170 employees, and 123 underground parking places at the new art foundation.

The site, with its former villa and acre of garden on the tree-lined Boulevard Raspail, had historic associations: Chateaubriand lived here, and his massive cedar of Lebanon, planted in 1823, still dominates the center of the boulevard frontage. As an historically protected site, Nouvel had to contain the building within the footprint of the existing house and maintain all existing trees. The planting of new trees will be finished in early 1995, and a stone-edged grassy amphitheater with a hidden stone fountain behind the curve of the steps will fill in the triangular site to the north. The landscaping and building are interwoven; there are no clear visual delimitations between garden and building.

From the street a visitor sees a screen of mature chestnut trees through the six-story-high freestanding wall of frameless, clear-glass panels along the street. Then the eye travels back to other glass surfaces behind the trees, with other trees yet further beyond. The building volume is thus elusive.

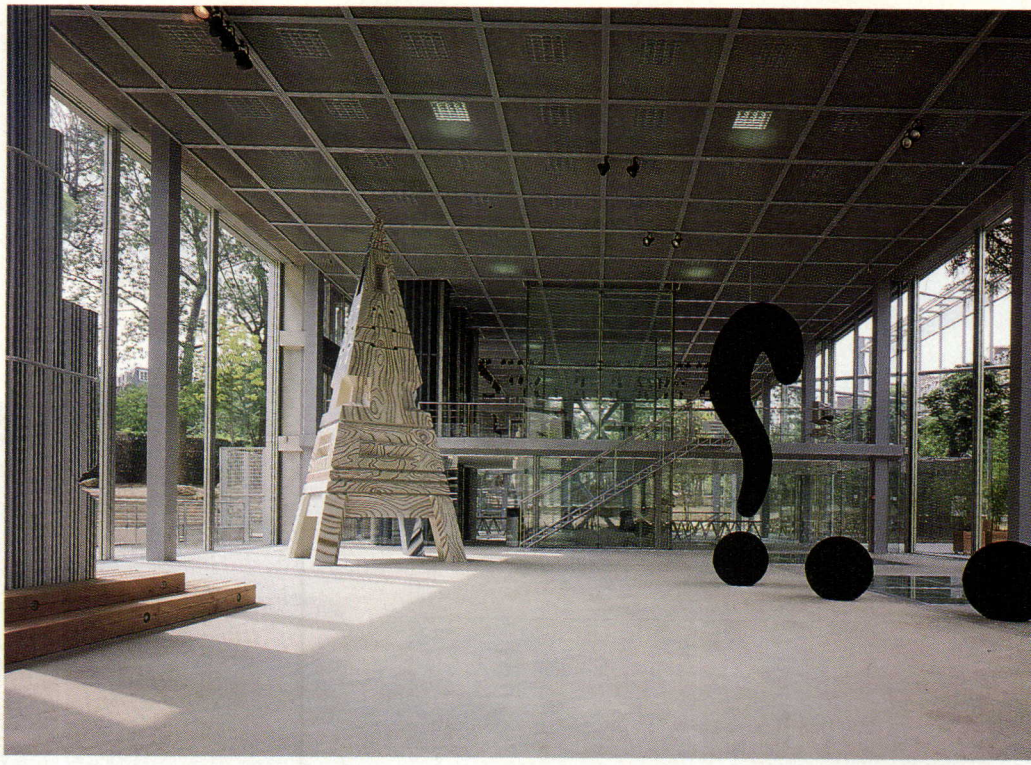
Delicate stainless steel exterior fire stairs are set on the short east and west facades, and the elevators at the center of the north facade consist of exterior glass boxes with concealed climber mechanisms. Mechanical equipment is kept underground.

The building's long facades project sideways past the enclosed volume and open fire stairs, into the garden, as well as vertically above the building envelope at the top terrace, so that the window wall, mimicking the street wall, is dissociated from the volume: Sometimes it encloses space, sometimes it is only two-dimensional.

The office block's north and south facades are protected by pierced plastic and metal fabric sunshades, transparent from inside.

These shades are horizontal over the top-floor executive-level wood-planked terrace, and vertical on the other six office levels. The shades are centrally controlled and are either up or down, depending on the sun. Thus, when the sun shines on the principal south facade facing the Boulevard Raspail, when the building might reveal its solidity by reflecting rather than passing the light, it becomes intangible, hiding behind its pale awnings. The gallery level is shaded by the trees, so that one always sees within and through it. The pervasive green-gray palette is both soothing and unified, without high contrasts.

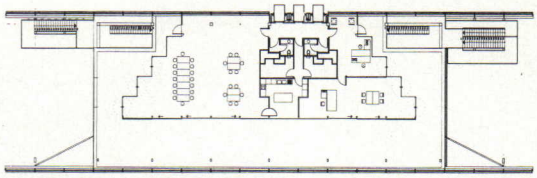
Twenty-six-foot-high glass lights separating two ground-level galleries from the garden slide open, completing the majestic interpenetration of space in the new Cartier Foundation for Contemporary Art. The pair of double-height gallery spaces underground are more banal with their walls and ceilings of plaster, although one incorporates three large glazed ceiling bays that can become transparent or can even be opened completely. All the galleries have simple concrete floors that match the chalky soil outside.



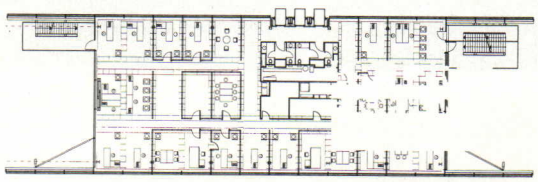
PAUL WARCHOL

CHRISTIAN RICHTERS

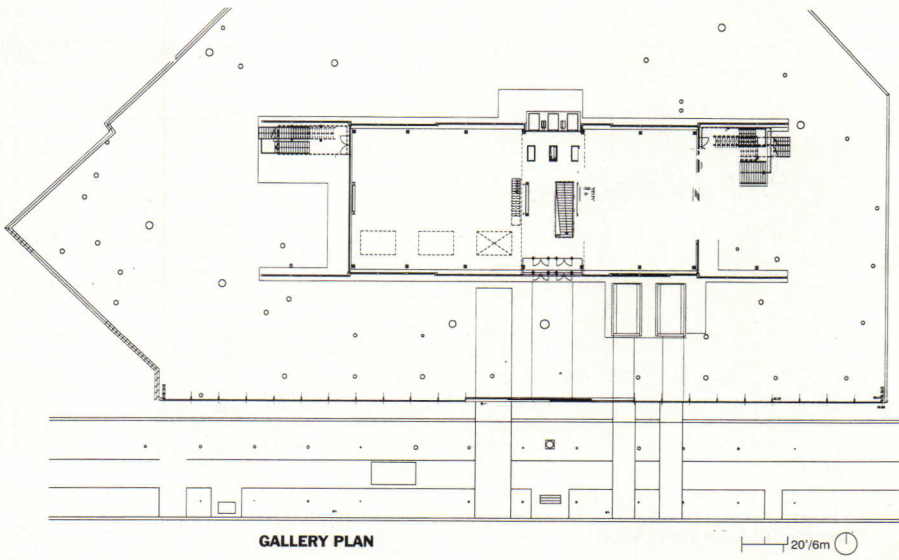
ABOVE: Western ground-floor gallery features sculptures set on concrete floor and 26-foot-high sliding glass doors. Entrance hall and mezzanine are transparent to eastern gallery beyond.
LEFT: On the executive level, wooden-planked terrace offers panorama of Paris. Receding planes of windows swivel on circular tracks.
FACING PAGE: Eastern gallery is fronted by elevator shafts and wind-bracing of street window wall (above left). Steel stair (right) leads to mezzanine.



EXECUTIVE-LEVEL PLAN



TYPICAL OFFICE LEVEL PLAN



GALLERY PLAN

20'/6m

Detailing is exquisitely fine, very light, even insubstantial. Stairs to the lobby mezzanine bookstore are constructed of pierced stainless treads with bent nosings, open risers, and thin railings with slim, woven stainless rope balusters. Even the exposed H-section columns are painted light gray, so as to fade visually.

One perverse detail: In the entry hall opposite the main elevators, crude, dark-gray air ducts are semi-enclosed in vulgar metal cages, at odds with their surroundings. It is as if Nouvel found all this lightness of being unbearable and had to rebel.

Cool, serene, many-faceted, subtly rich with glimmering reflections, Jean Nouvel has produced the best jewel in Cartier's extensive collection.—*Barbara Shortt*

Barbara Shortt is an architect and a writer based in Paris and New York City.

Finnish Forest Museum and Research Center
Punkaharju, Finland
Kaira-Lahdelma-Mahlamäki, Architect

FINNISH WOOD

The forest is the essential resource of the Finnish economy, and despite the increasing urban character of the nation, it remains central to Finnish identity. With a research forest and facilities already in place in Punkaharju, near the country's eastern border, the Finnish Forest Museum Foundation initiated plans in the late 1980s to construct a more public venue in which to exhibit technical knowledge and experience of the forest. That vision has now received form in the center's glowing, wood-clad cylinder.

Called *Lusto*, Finnish for the growth ring of a tree, the Forest Museum design is the result of the 1991 competition-winning entry by young architects Ilmari Lahdelma and Rainer Mahlamäki. Originally from Tampere, the two have now relocated to Helsinki with Partner Mikko Kaira. Their design places a distinctly Modern exhibition and research program on a sloped clearing with a southerly exposure at the head of a small inlet. With few other structures for scale or context, the architects established a cylinder oriented to the north-south axis as a main point of order in the landscape. Exhibition halls of varying heights, a 150-seat auditorium, administrative offices, a café, and services are contained within the cylinder. Arrayed around that form and wedged through it are smaller, orthogonally shaped elements in effective counterpoint: a bridge across a grassed moat to rectangular entrance courts; a long screen wall that doubles as an outdoor

VALOKUVAAMO JUSSI TIANEN PHOTOS

ABOVE: Finnish Forest Museum and Research Center is organized around wood-slatted drum containing galleries, offices, and auditorium. Glass box (right) encloses ramp.
LEFT: Museum is sited with south elevation overlooking lake.
BELOW: A cascade of stairs leads the visitor from café terrace to lower exhibition court and lakeside.
FACING PAGE: Drum's horizontal slats are interrupted by glazed openings and steel details, such as fire escape ladder.

Hôtel du Département
Marseille, France
Alsop and Störmer, Architect

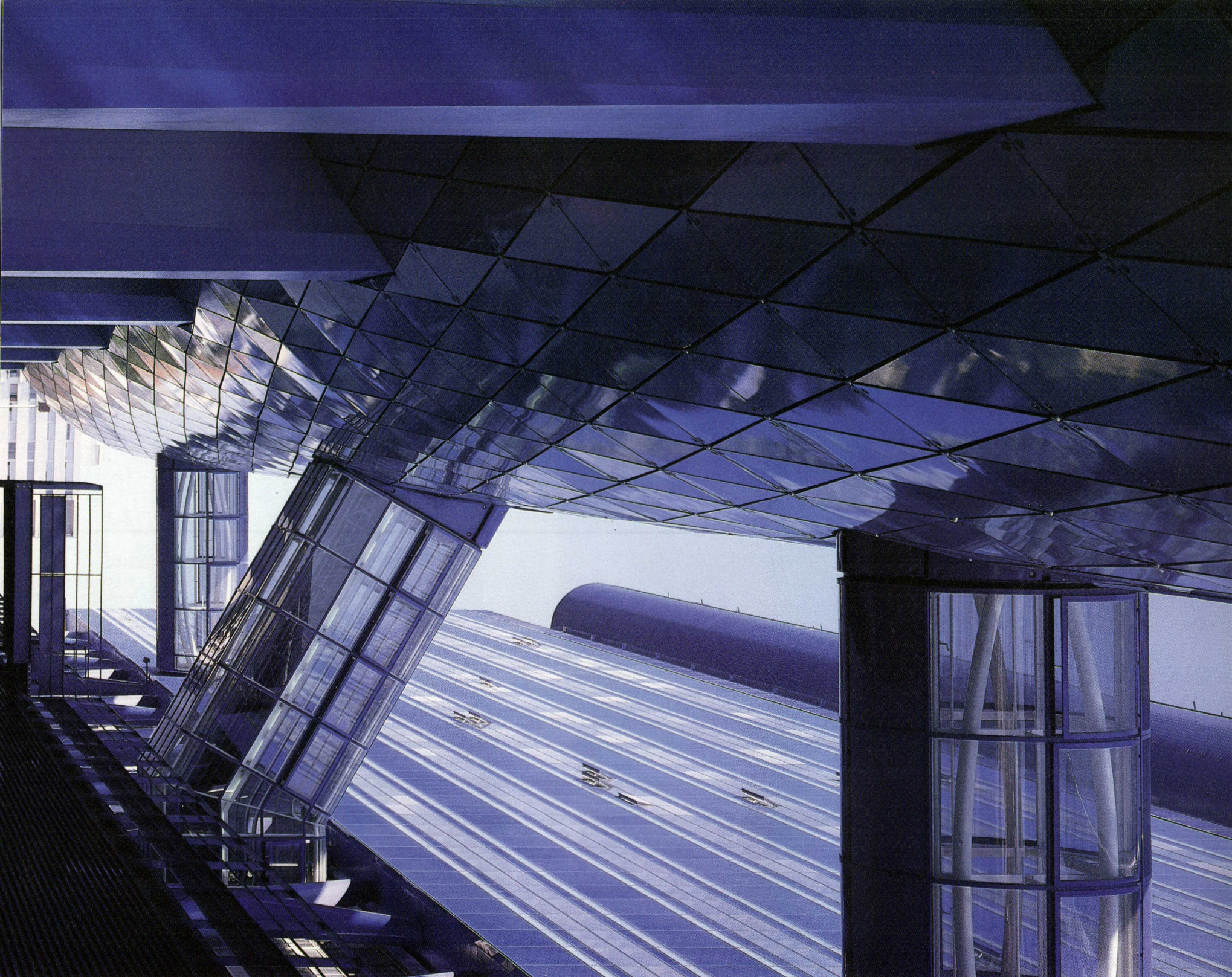
MACHINE FOR GOVERNING

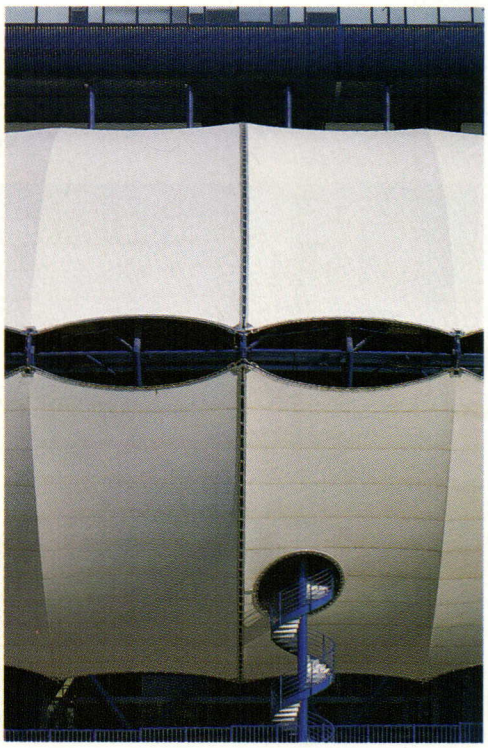
PAUL RAFTERY / ARCAID PHOTOS

ABOVE: Alsop distinguished the ceremonial functions of the Marseille government complex with curved forms. The council chambers are housed in a streetside volume, with a stretched fabric awning (right), and the politicians' offices occupy the distorted cylindrical form on the rooftop.
FACING PAGE: The 935,000-square-foot government building is located in a rundown neighborhood on the north side of Marseille, close to the junction of an elevated highway.

Why are the council chambers of the new Hôtel du Département in Marseille housed in a blue building that looks like a half-eaten fish on legs? Why do the offices for politicians take the form of a squashed jelly roll hovering above one of two parallel administration blocks? Why are the blocks raised on V- and X-shaped pilotis? For the building's designer, 46-year-old British architect Will Alsop, these are meaningless questions. According to Alsop, the whole Modernist notion of functional design is a myth kept alive by a conspiracy. Architects know in their hearts that form emerges in a mysterious way from the imagination, but they are reluctant to admit it. Alsop simply ignores the myth and accepts the reality.

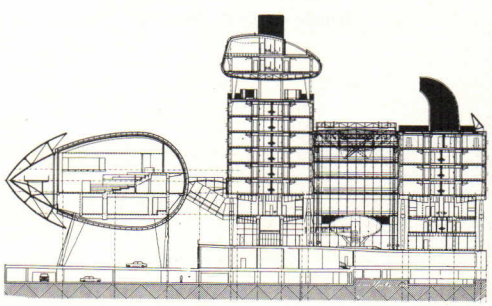
His ideas come not from a detailed analysis of the problems posed by program, site, and available technology but directly from his imagination. He fills his sketchbooks with dozens of colorful, dreamlike images and then translates them into buildable form.





PAUL RAFTERY / ARCAID PHOTOS

FACING PAGE: Glazed footbridges and escalators connect scaly form of council chambers (left) with east wall of the administrative offices (right).
TOP RIGHT: Exposed steel framework supports terraces and fire stairs outside main assembly spaces.
ABOVE: A stretched fabric awning shades the external terraces and fire stairs of the council chambers.
SECTION AND BOTTOM RIGHT: Council chambers (left) are linked to twin administration blocks and atrium.



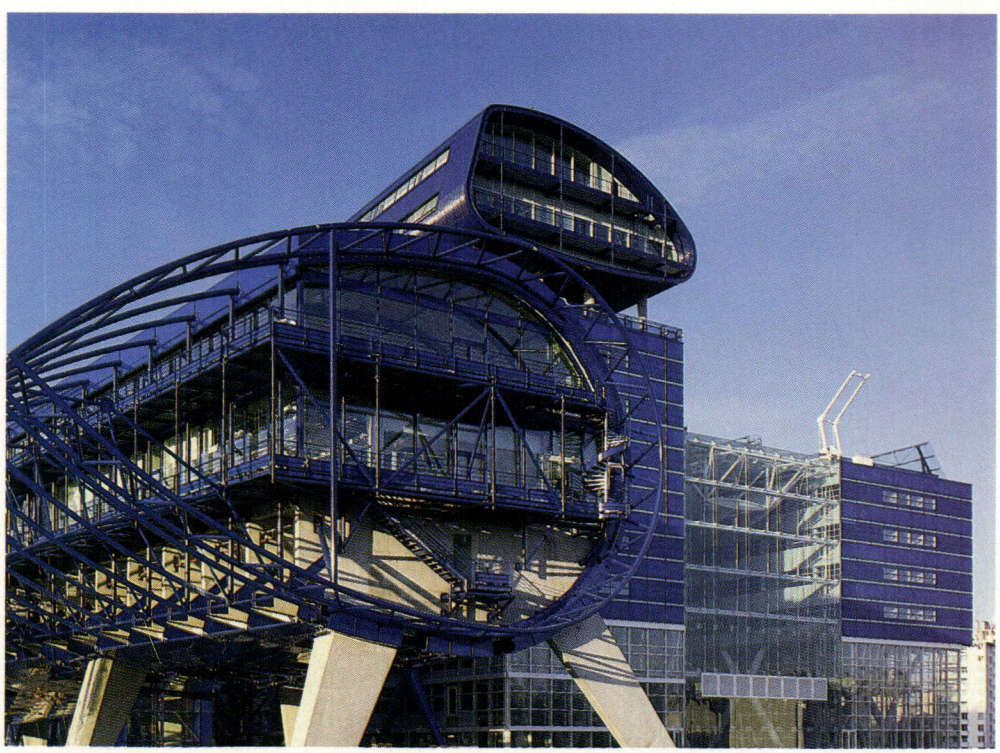
EAST-WEST SECTION

20'/6m

The client for the Hôtel du Département, or County Hall, is the local government for the region around Marseille known as Les Bouches du Rhône. Previously housed in several buildings scattered around the city, the authority wanted a new, centralized headquarters to improve its efficiency and enhance its image. A prominent site by a highway junction near the center of Marseille that is also served by a Metro station was chosen, and a three-stage international competition was launched. Alsop's design was declared the winner in August 1990 (and has been revised since then).

Alsop's design method rules out analysis and explanation of the conventional kind. But a building either functions satisfactorily or it doesn't, and in these terms, the Hôtel du Département can be pronounced a success. Its bizarre forms may not have any obvious relationship to their function, but neither do they impede the building's operation in any way. The 935,000-square-foot program called for two kinds of accommodation: council chambers for the politicians, and offices for the administrative staff. The first is housed in the fishlike object known as the *déliberatif*; the second is housed in two parallel rectangular blocks joined by an atrium and known as the *administratif*.

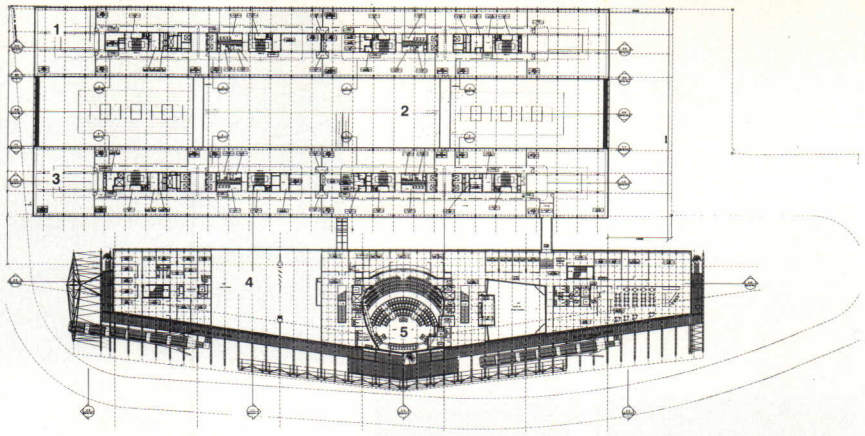
Actually, the administration blocks of the Hôtel du Département are not bizarre at all, except in quite superficial ways. The atrium, for example, is rather straight and even conventional. Right angles predominate, and a



simple axial symmetry organizes the free-standing elements, like the reception desk, which is elliptical in plan, and the *médiateque*, or exhibition room, which is elliptical in section. Inside the administration blocks, the plan is a straightforward double-corridor arrangement with mainly cellular offices.

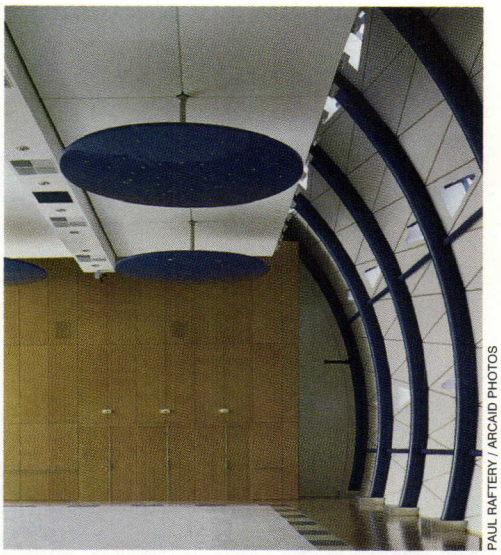
In the block housing the council chambers, more of Alsop's original weirdness survives, though the smooth cigar shape of the earlier designs has been eroded on the side facing the highway. The full extent of the wrap-around skin of triangular, fish-scale-like steel panels is only appreciable from the upper levels of the office block. Inside, the main debating and assembly spaces, designed by Andrée Putman, determinedly ignore the curved section of the building, concealing it behind flat suspended ceilings and stepped auditorium floors. These spaces are utterly conventional and seem at odds with the subversive intention of Alsop's iconoclastic design.

The Hôtel du Département is Alsop's first major public building. It has enabled his practice to grow from a small atelier to an efficient and experienced organization employing about 50 people. Alsop's German partner, Jan Störmer, joined the practice in 1989 and now runs a thriving branch office in Hamburg. There are more large-scale commissions on the way in Britain, France, and Germany, and we can be sure that Alsop will not give up the struggle to oppose the architecture of "Why?" with the architecture of "Why not?"—*Colin Davies*



SECOND LEVEL PLAN

1 WEST ADMINISTRATION BLOCK
2 ATRIUM
3 EAST ADMINISTRATION BLOCK
4 GOVERNMENTAL BLOCK
5 COUNCIL CHAMBERS

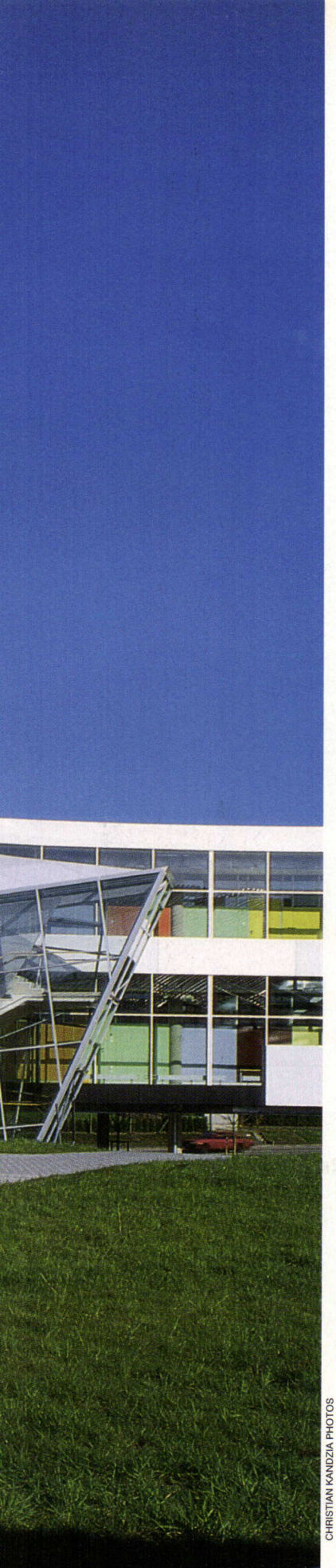


PAUL RAFTERY / ARCAID PHOTOS

PLAN: Second level shows main council chamber in the middle of the tapered block (bottom) and the conventional double-corridor arrangement of the administration blocks (top).
ABOVE: Conference room near council chamber is one of the few spaces in which the curved external wall of the streetside volume is apparent.
LEFT: Main council chamber, designed by Andrée Putman, ignores Alsop's cylindrical cross section.
FACING PAGE: Atrium between twin administration blocks shows X-shaped pilotis and elliptical reception desk and freestanding exhibition pavilion.

Öhringen Commercial High School
Öhringen, Germany
Behnisch & Partner, Architect

TEUTONIC TEACHING



CHRISTIAN KANDZIA PHOTOS

Since the 1950s, the Stuttgart architect Günter Behnisch has applied his penchant for transparency, colliding geometries, lightweight steel construction, and layered spaces and facades in numerous German public buildings. Like Hugo Häring and Hans Scharoun, his predecessors in the German organic tradition, Behnisch strives to reveal the character of materials. The 72-year-old architect prefers concrete, glass, and metal, however, and his planning geometries

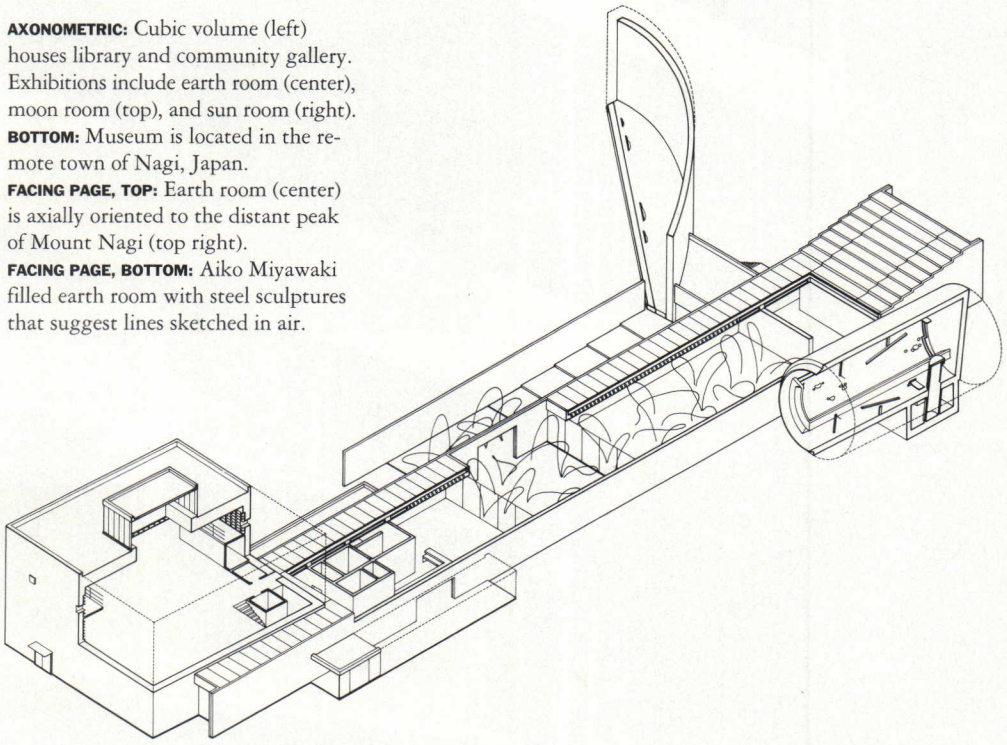
FACING PAGE: Within a sweeping arc of classrooms, a striated concrete panel hides mechanical volume. Angular, glass-enclosed stair joins three levels. **ABOVE:** Wedge-shaped wing contains faculty and conference rooms. Gym (left) is located at western edge of site. **LEFT:** West-facing end of faculty/conference room overlooks courtyard and gym (left). School hugs slope between town and highway.

are even more daring. His best-known buildings include the acrylic-roofed tents of the 1972 Olympic Park in Munich and the daylit, steel-and-glass Plenary Hall for the German Parliament in Bonn (1992).

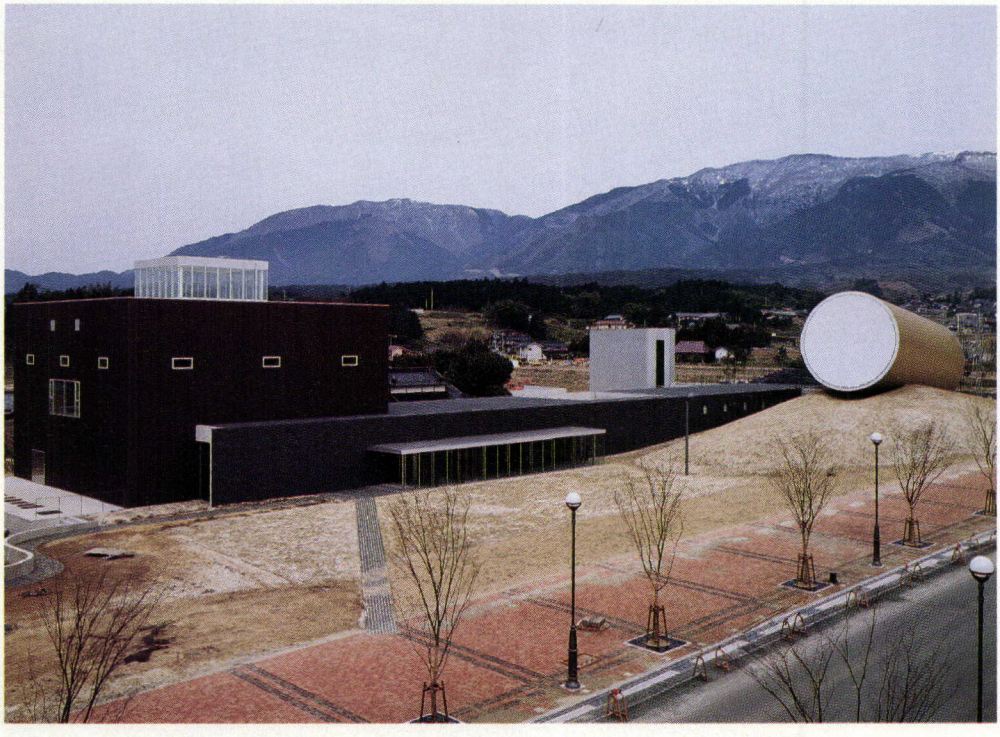
Some of the best examples of Behnisch's impure, off-beat plans are his schools, whose layered glass facades and careening volumes challenge the rules that seem to govern school design, at least in this country. Instead of the little gabled volumes exploited to obsequity in American elementary schools (the notion, architects insist, is to afford schools a homelike quality), Behnisch's Lorch Elementary School (1988) is composed of intersecting polygons and triangles. Rather than building in brick, a tradition in schoolhouse design in Germany as well as in the United States, Behnisch prefers glass, of which he fabricated the daylit School for the Learning Disabled in Bad Rappenau (1990). In his Luginsland Kindergarten (1990), double-loaded corridors and square windows are discarded

Nagi Museum of Contemporary Art
Nagi, Japan
Arata Isozaki & Associates

COSMIC ORDER



AXONOMETRIC: Cubic volume (left) houses library and community gallery. Exhibitions include earth room (center), moon room (top), and sun room (right).
BOTTOM: Museum is located in the remote town of Nagi, Japan.
FACING PAGE, TOP: Earth room (center) is axially oriented to the distant peak of Mount Nagi (top right).
FACING PAGE, BOTTOM: Aiko Miyawaki filled earth room with steel sculptures that suggest lines sketched in air.



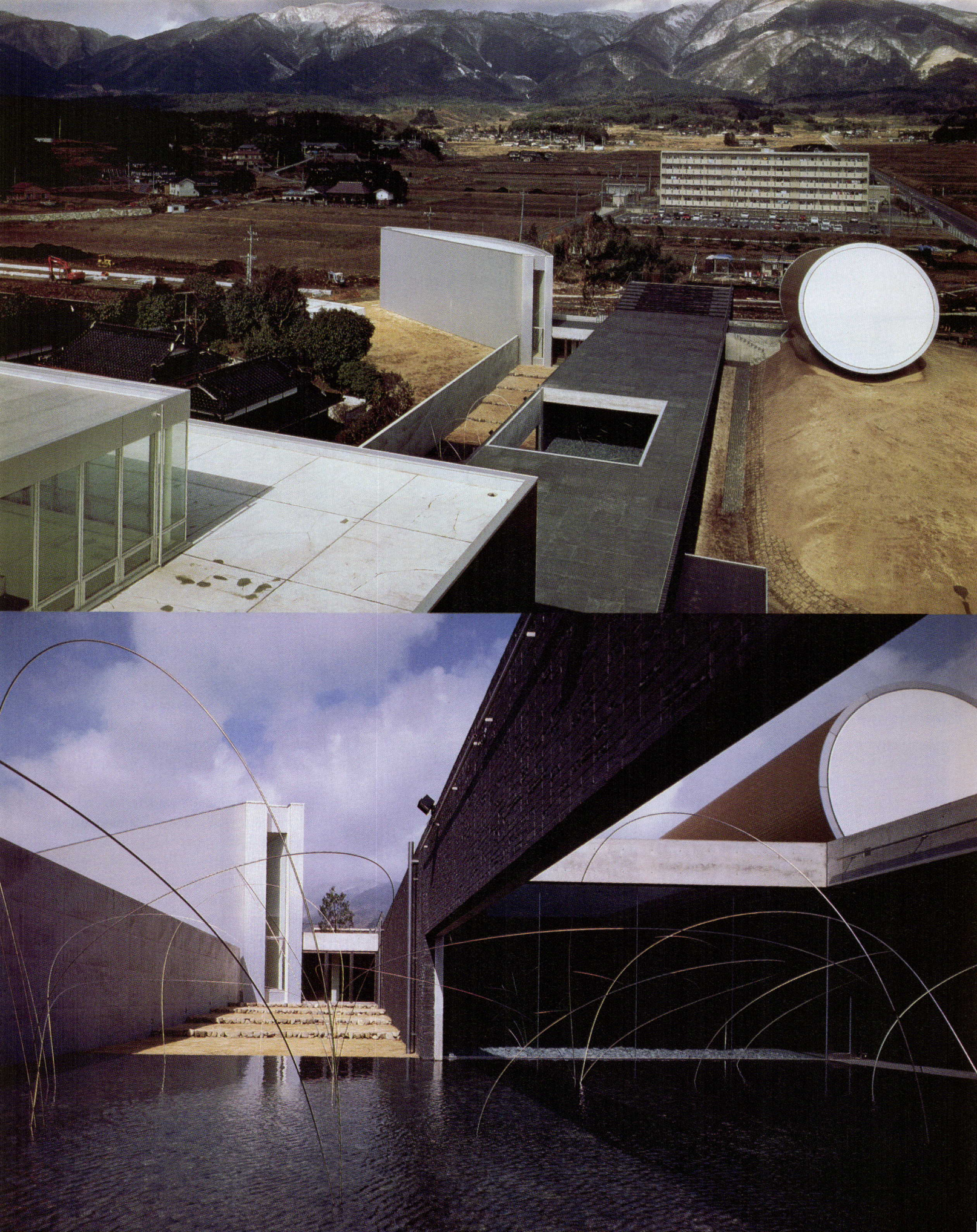
KATSUAKI FURUDATE PHOTOS

Tokyo-based architect Arata Isozaki calls his design for the Nagi Museum of Contemporary Art (Nagi MoCA) "the advent of the third-generation art museum." According to Isozaki, the Louvre in Paris and Museum of Modern Art (MoMA) in New York are examples of first- and second-generation museums: The Louvre's grand sequence of monumental salons evolved into MoMA's internalized box of flexible, partitioned lofts.

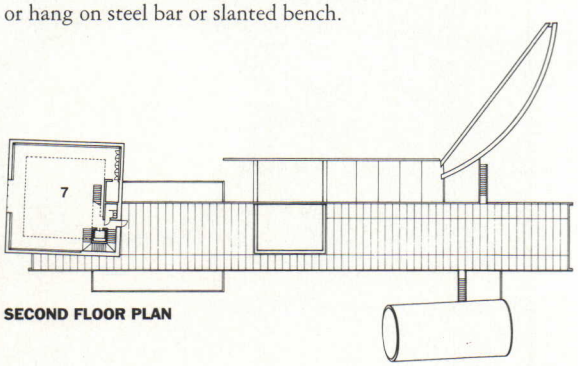
At Nagi MoCA, Isozaki inverts the traditional role of the museum as a container for art. The architect integrated three site-specific installations into the very form of the building, eliminating the expected distinction between the architectural container and the art contained. The artists, conversely, transformed Isozaki's architecture into geometric, environmental sculpture.

Since Nagi is a remote military town in western Japan, unknown even to most Japanese, Isozaki assumed that few tourists would journey there if the only attraction was a collection of autonomous works by artists already represented in the Tokyo National Museum. The architect therefore suggested commissioning new works by Japanese artists whose international reputations rival his own: Shusaku Arakawa, Kazuo Okazaki, and Aiko Miyawaki. As a result, Nagi MoCA forms a group of permanent, habitable sculptures, tiny curiosities in a vast landscape, all seemingly adrift but forever grounded by an inextricable relationship to nature, architecture, and human experience.

Nagi MoCA's sculptural massing can be described as the material and spatial inversion of Isozaki's most famous museum commission, the 1986 Los Angeles MoCA. At first glance, Nagi MoCA looks like a collection of toys that came out of a box sent from L.A. Isozaki sheathed Nagi MoCA's distinct volumes with steel panels, juxtaposing bright, machine-made objects against a dark, fluid backdrop of mountains. Nagi MoCA thus forms L.A. MoCA's suburban counterpart. Like villa and palazzo, the Japanese museum

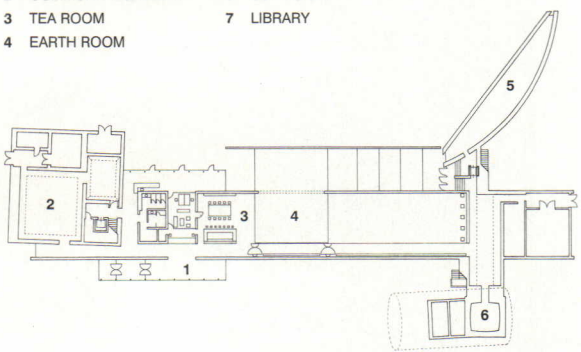


PLANS: Tea room beside museum entrance overlooks reflecting pool (bottom plan, center). Isozaki located south-facing community gallery on first floor (left). Library occupies second and third floors.
BOTTOM: Slanted cylindrical stair marks entrance to Shusaku Arakawa + Madeline Gins' sun room.
FACING PAGE: Barrel-like sun room is elevated to south. Suspended rock gardens recall Kyoto's Ryoanji. Visitors sit or hang on steel bar or slanted bench.

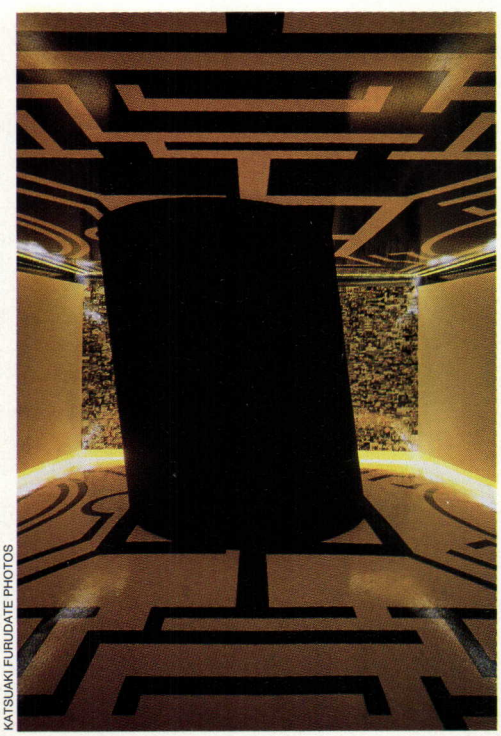


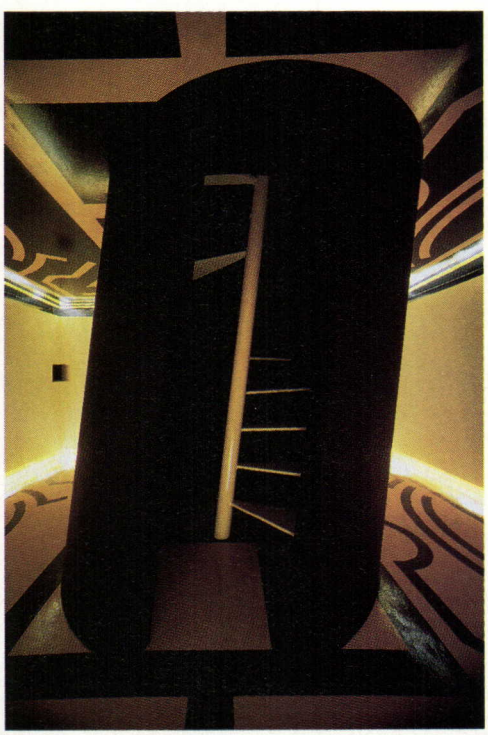
SECOND FLOOR PLAN

1 ENTRY
2 COMMUNITY GALLERY
3 TEA ROOM
4 EARTH ROOM
5 MOON ROOM
6 SUN ROOM
7 LIBRARY



FIRST FLOOR PLAN





KATSUAKI FURUDATE PHOTOS

expresses external freedom, while its American counterpart defers to urban constraints.

Nagi MoCA is also a formal departure from Isozaki's other Japanese museum designs, including the Okanoyama Graphic Arts Museum in Nishiwaki (1984) and the Hara Museum in Gunma (1988). These buildings are similar to Nagi MoCA in scale and suburban context, yet both the Okanoyama and the Hara museums appear more Western and even Classical in character. With its picturesque massing, stripped portico, and interior mosaic courtyard, the Okanoyama Museum owes greater debt to Hadrian's Villa than to Japanese precedent. The Hara Museum, too, while delicately constructed of local timber, commands its site with hierarchical Classical geometries: The museum's symmetrical wings flank a central cubic pavilion, directing the eye upward toward the architect's trademark pyramidal skylight.

Nagi MoCA establishes stronger ties to the Japanese landscape and culture than these earlier works. The building is composed of three pavilionlike volumes—a cube, a crescent, and a cylinder—joined by a rectilinear bar. At the south end of the bar, the cube houses a library and community gallery. A rectangular, flat-roofed skylight above the library serves the functional purpose of blocking direct sun as much as it manifests the architect's poetic intentions. A more expressive skylight such as Isozaki's characteristic glass pyramid would have suggested an affinity with the distant mountains, thereby dominating the entire composition. The eye instead searches for a relationship between the cube, crescent, and cylinder, focusing at last upon the bar itself. Therein lies Miyawaki's "earth room," defined by a riverlike reflecting pool, concrete walls, and a dramatic orientation to the distant peak of Mount Nagi.

The earth room is flanked at the north end by Okazaki's installation, the crescent-shaped "moon room," and Arakawa's more curious space, the cylindrical "sun room." Circular in section and elevated at its southern end, the barrel-like sun room is more disorienting than any interior by Peter Eisenman. Together, the three environmental sculptures represent the forces of the cosmos, like a landscape depicted at day and at night on a Japanese folding screen. Unlike a flat screen or canvas, however, these works command every human sense; their haunting mood derives from a rare collaboration of artists and architects whose command of materials and form taps the elusive qualities of Japanese minimalism.—*M. Lindsay Bierman*

Kitchener City Hall
Kitchener, Ontario
Kuwabara Payne McKenna Blumberg Architects

CANADIAN CIVITAS

BELOW: KPMB-designed new city hall occupies a three-acre block in downtown Kitchener, Ontario.
RIGHT: Rear facade of Kitchener City Hall faces northeast onto public garden. Central rotunda and flanking office wings are clad in Indian sandstone.
FACING PAGE: Entrance canopy (center) evokes Classical portico. Cooling tower crowns aluminum-clad high rise. Fountain doubles as winter rink.

TIMOTHY HURSLEY PHOTOS

In 1972, the City of Kitchener, Ontario, bulldozed its venerable, 1925 Beaux-Arts city hall to make way for so-called urban renewal: a brown office tower that dwarfed this industrial town of 160,000. The developer of the tower then erected a shopping mall at its base, atop the lawn of the leveled city hall. Until last year, the local government leased drab offices in the complex. Since the tower did not accommodate ceremonious gatherings, or even an assembly space for the city council, the city staged a 1989 competition to design a new city hall.

The winning scheme is the first major independent public commission for Toronto-based architects Kuwabara Payne McKenna Blumberg (KPMB). Before Bruce Kuwabara, Thomas Payne, Marianne McKenna, and Shirley Blumberg launched KPMB in 1987, they were associates in Barton Myers' former Toronto office. After Myers moved his practice to L.A., KPMB continued to collaborate with him on major projects such as the Art Gallery of Ontario (ARCHITECTURE, November 1993, pages 58-69) and the University of Toronto's Woodsworth College (1992).

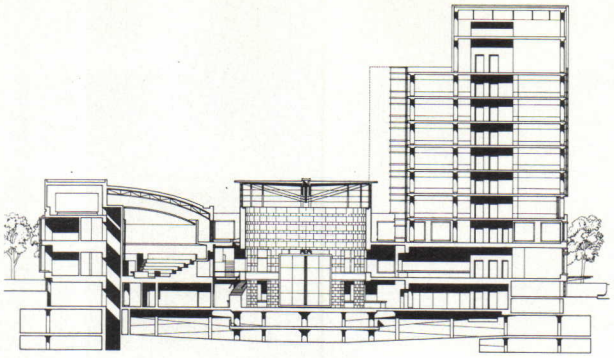
Located 60 miles southwest of Toronto, Kitchener is a smaller town than the grandeur of the KPMB-designed city hall would suggest. Similar projects in the United States are diluted by the uniquely American process of public design by committee, which often leads to a politically correct mishmash of ideas or a cost-efficient box adorned with the requisite artwork over the entrance. In


ROYAL BANK

Canada, the design of public buildings is entrusted to the discretion of elected officials.

However, the new city hall houses the public as much as the local government. Its U-shaped massing defines a new urban square, designed to accommodate a crowd of 6,000. This grand public space is Kitchener's version of New York's Rockefeller Center, complete with low-rise volumes that reinforce the pedestrian scale of the street, a tower pushed back to the center of the block, and a broad, flat pool for winter ice skating. In Kitchener, the ground plane of the square is flush with the lobby floor to emphasize spatial continuity and draw the public inward. A rotunda in the lobby, conceived as a theater in the round, functions like the outdoor square as a living room for the city.

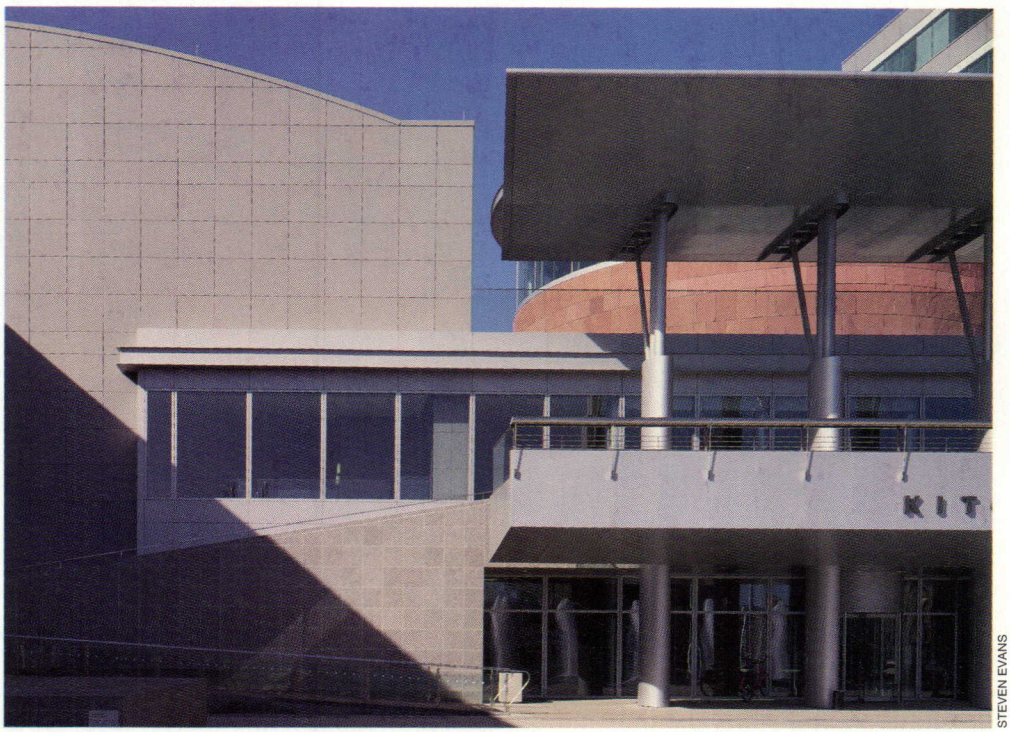
Formally, the square conveys the monumental, symbolic power of civic architecture. Yet the building's facades are stripped of any scenographic association with the city hall's Beaux-Arts predecessor. The whole complex recalls the informal monumentality of James Stirling and Michael Wilford's State Gallery and Chamber Theater at Stuttgart, which, in the spirit of high Baroque Classicism, fuses the opposites of freedom and order. At Kitchener City Hall, one alternatively reads the rotunda as the symmetrical focus between two wings and as part of a free arrangement of distinct volumes. This formal yet informal composition manifests Kitchener's political hierarchy: The public occupies center stage in the rotunda and the square;



EAST-WEST SECTION

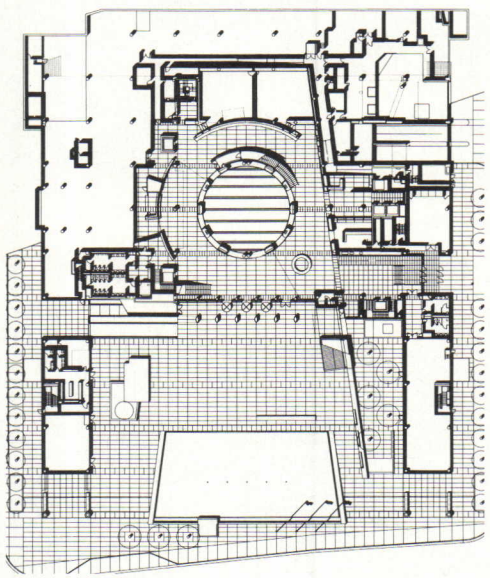
20'/6m

SECTION: Council chamber (left), rotunda (center), and office tower (right) span 470-car parking garage.
BELOW: Aluminum panels sheath curvaceous council chamber (left).
BELOW LEFT: Approach from nearby park aligns with staircase between entrance canopy (left) and tower.
PLANS: Angled wall (right) corresponds to axis from nearby park.
FACING PAGE: Aluminum columns support canopy. Public balcony in tower (upper left) adjoins top-floor café.

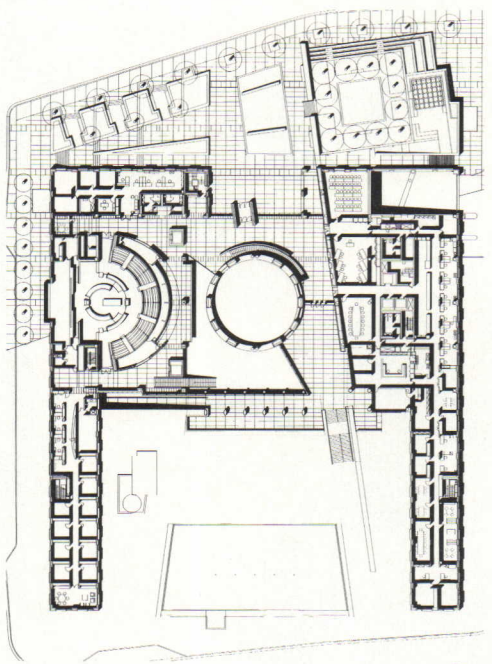


STEVEN EVANS

TIMOTHY HURSLEY



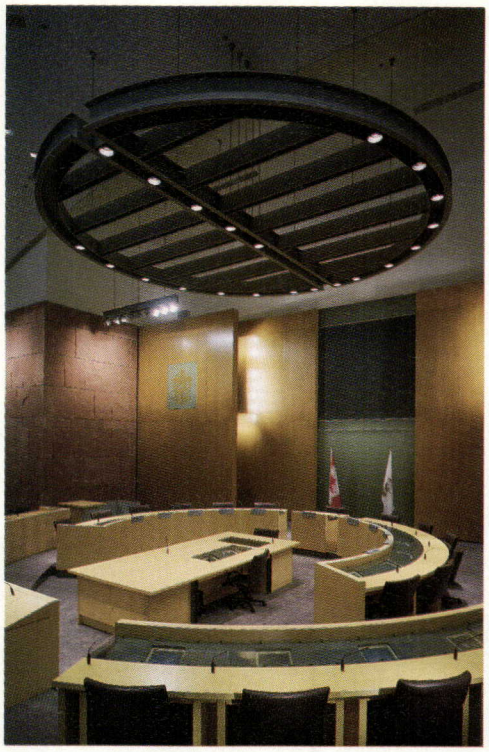
FIRST FLOOR PLAN

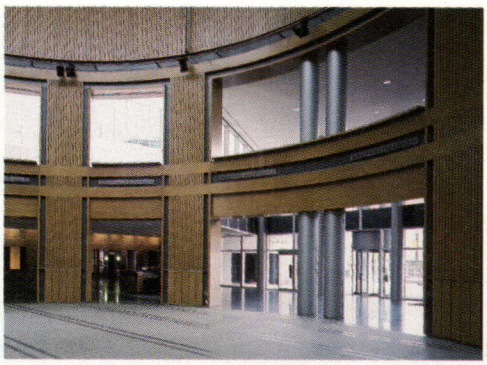


SECOND FLOOR PLAN

50'/15m

RIGHT: Oak paneling adorns theaterlike council chamber interior.
FAR RIGHT: Oak-slatted rotunda is used for receptions and performances.
BELOW: Granite-floored lobby wraps sandstone-clad rotunda.
FACING PAGE: Granite staircase from lobby leads to rear garden.





STEVEN EVANS PHOTOS

public representatives occupy the flanks, balanced by a curvaceous council chamber on one side and a rectilinear tower for the city's departments on the other.

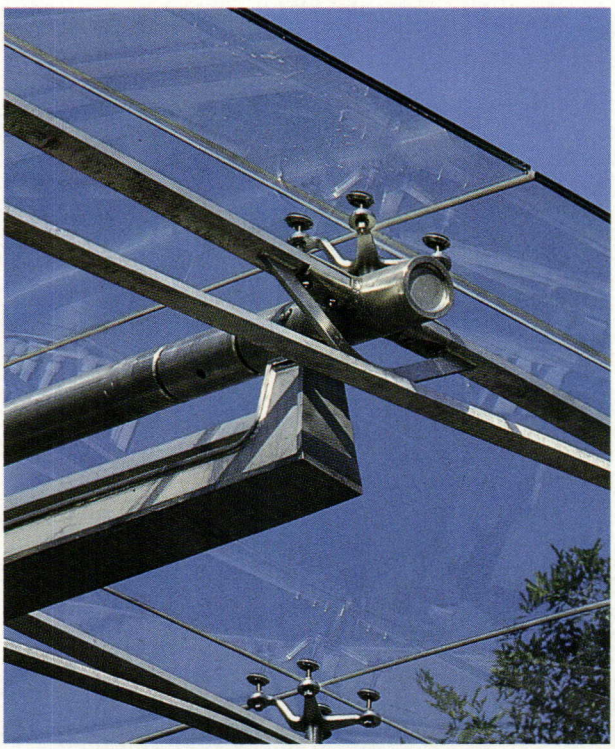
Like Stirling and Wilford, KPMB adapted the city hall's plan and section to a procession across the site, as in a French hotel. To mitigate the rise of the land from front to back, the architects incorporate two grand staircases: One wraps the rotunda inside, the other rises from a corner of the square outside. The latter establishes an axis from the gate of a nearby park, up a narrow street, to the front of the city hall. Unfortunately, this uphill sequence from the square culminates in a disjointed aggregate of parterres dominated by uninspired sculpture and signage.

Spatially and tectonically, the architects achieve the difficult task of synthesizing Modernist spatial ambiguity, sculptural form, and industrial materials with the urbane, figural space of Classical urbanism. This rich collage of formal legacies contrasts the cold, pompous abstractions of city halls recently completed elsewhere in Ontario, including Jones & Kirkland's 1987 Graves-inspired complex for Mississauga, a Toronto suburb.

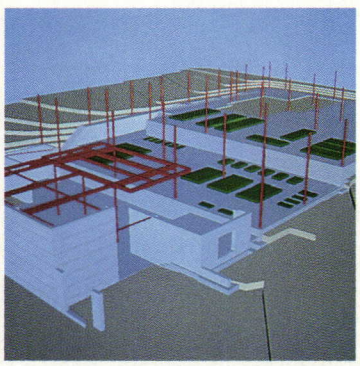
Given Kitchener's ongoing economic recession, the $65 million investment in a new city hall and urban square expresses an optimistic commitment to downtown revitalization. Such an expense requires a long-term vision, the kind of strong political leadership and public responsibility that American cities should emulate.—*M. Lindsay Bierman*

Trisha Wilson, ASID, IBD, founder of Wilson & Associates, Dallas, Texas. Recently inducted into the 1993 Interior Design Hall of Fame for her stunning work in hospitality design, she is a specifier of DuPont Antron carpet fiber.

Technology & Practice



GASTON



This month's focus on international architecture continues with a practice feature on **American architects in Asia**. Fueled by rapidly growing economies, China and countries throughout Southeast Asia are aggressively seeking American design expertise. Our article highlights how practitioners are dealing with foreign codes, business customs, and building technologies.

American architects can learn new glazing strategies from their foreign counterparts, who are pushing the limits of **laminated glass**. Inventive glazing applications by European and Japanese architects were recognized by the Benedictus Awards, an annual program promoting innovations in laminated glass.

U.S. designers and contractors are discovering that **design/build risks** are potentially greater than those of conventional project delivery methods. Our design/build series continues with an article that clarifies insurance policies, licensing laws, and liability limits associated with this delivery approach.

No matter where architects practice, poor communication can cause schedule delays and budget overruns. Researchers at Stanford University's Center for Integrated Facility Engineering (CIFE) hope to improve project delivery methods with new computer **software linking design to construction**. Such innovations should make building easier for architects practicing both here and abroad.

American Architects in Asia

Architects need determination and persistence to succeed in the hottest overseas market.

Since the late 1980s downturn in domestic construction, dozens of American architects have pursued new markets in Southeast Asia, where expanding economies and liberalized trade are driving a wave of urban development along the Pacific Rim. Cities such as Shanghai and Shenzhen in China are sprouting dozens of new, American-designed skyscrapers since the Chinese government relaxed its ban against private enterprise in 1991. Jakarta and Surabaya in Indonesia boast enormous new office and commercial centers conceived in Chicago and New York. Kuala Lumpur, Malaysia's capital city, has become a magnet for multinational firms drawn by new infrastructure, high-tech industry, and phenomenal growth rates of 8 percent per year. And since February, when the United States lifted its embargo against Vietnam—which, like China, has waived Communist dogma for freer trade—American architects are joining multinationals in Hanoi and Ho Chi Minh City to serve Vietnam's long-shuttered market of 70 million people.

Adventurous architecture

To architects in the United States, Southeast Asia represents not merely an alternative to the domestic doldrums, but a gold rush in its own right. Asian clients, through invitational competitions and select negotiations, are tapping American firms to design office buildings, retail centers, housing, hotels, resorts, and entire new towns, creating an aggregate Pacific Rim construction market worth hundreds of billions of dollars. Clients in Asia are affirming their newfound prosperity with heroic high rises and Modernist statements, offering American architects a programmatical slate that is free of Western doubts about daring, large-scale design.

"The Pacific Rim has a fantastic future," remarks architect Paul Rudolph, who has been working in Southeast Asia since 1979. "It's of a magnitude we don't understand, a kind of inevitable push that comes from the opening up of China. It's catch-up time for them."

For all these overseas opportunities, however, American architects are learning that trans-Pacific practice exacts a high procedural toll. It's a long flight to Asia, even from the West Coast, and firm principals find it difficult to manage projects at home when scouting work around the globe. Some firms well established in Asia send younger associates to run their overseas offices, but their clients, staking everything on familiarity and trust, prefer to see principals personally—and often. As a rule, clients in Asia frown on quick, contractual American business customs.

Practical realities

Once Asian projects are under way, logistical problems usually surface. Design specifications and documents throughout the region vary widely from American conventions. Codes don't always cover the types of structures clients commission. Standard building components such as structural steel and curtain wall are arduous or impossible to procure.

"Asia is a tough place to do business," admits Bruce Fowle, principal of Fox & Fowle Architects in New York, who is designing buildings in Shanghai and Jakarta. "On the one hand, the clients recognize their need for Western expertise, but on the other hand, you can only go so far." It took Fox & Fowle six months to gain approval for an office in Shanghai, where the firm was restricted to high-rent areas of the city.

Are Asian projects profitable? Only after years of investment. In the short run, architects must make sure they're paid in hard currency. RTKL requires retainers and direct wire transfers for work in Indonesia. John Portman & Associates' $200 million Shanghai Center lost millions of dollars to delays after China's 1989 Tiananmen Square crisis. Mark R. Miller, of Kaplan/McLaughlin/Diaz in San Francisco, advises architects to wait for jobs for which they feel qualified. "The key is building on successful jobs," Miller notes. "If you invest more time and less money at first, you'll be better off."—*Bradford McKee*

Chinese clients are planning at least $500 billion in massive commercial complexes, hotels, office towers, and, most urgently, infrastructure. Working in China requires American architects to associate with state-run design institutes. Design reviews involve dozens of officials and can take years. "The presentation process can be quite lengthy and formal," notes Roger Zampell, project director of John Portman & Associates in Atlanta, which started work in China in the early 1980s. "But the Chinese do all negotiating behind the scenes, so there's not much to decide when you get to the public session."

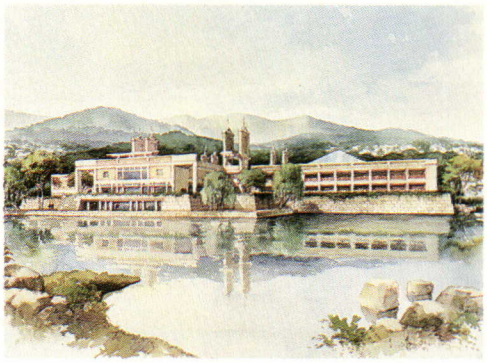
Clients in China want Modernist designs to carry their national profile forward—vernacular gestures conflict with the ahistorical foundations of the Cultural Revolution. "The Chinese have rejected any references we've made to their heritage," says Bruce Fowle of Fox & Fowle Architects in New York. "The Modernist doctrines are more natural to the Chinese sense of pragmatism."

Modern structures, however, require contemporary building components such as curtain wall and low-emissivity glass, for which Chinese building codes make no allowance. "The codes are empirical in nature and haven't caught up with technology," contends Principal Don Hackl of Chicago-based Loebl Schlossman & Hackl.

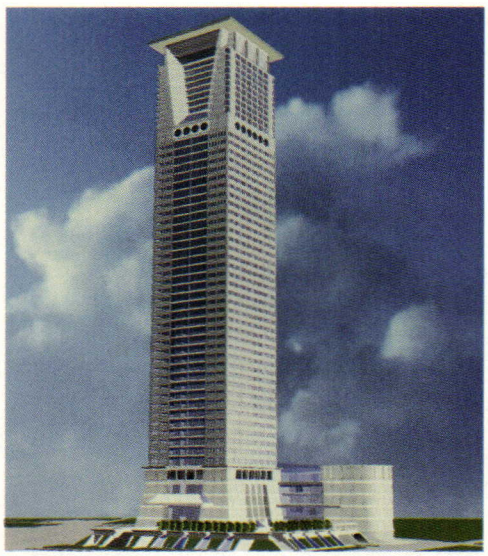
Design and construction documents can be misinterpreted if not translated properly. Hackl, for example, sent his Chinese colleagues a recommendation for post-tensioned concrete in one structure that was initially misconstrued as precast. American documentation is more highly defined than Chinese drawings, Fowle asserts: "Their design documents are like our schematics."

Architects are advised not to surrender too much information without payment, and not to perform any work on spec. "It's an enormous process of education," Hackl asserts. "Culturally, it's an incredibly interesting experience," he adds, "but for the uninitiated, China can be exploitative from a business standpoint."

TOP: Jeffrey M. Kalban & Associates' Tianjin Times Square complex incorporates curtain wall except where concrete frame required punched windows. **ABOVE:** The Shekou Harbor Building, by Loebl Schlossman & Hackl in Shenzhen, required 48 approvals.



LEFT: John Portman & Associates' Dream Lake Mountain Villa complex, in Hangzhou, comprises single-family and clustered residences.
BELOW LEFT: The Callison Partnership's Grand Gateway complex is sited above a Shanghai subway station.
BELOW: Stubbins Associates' Anhui International Trade Center, in Hefei, combines exhibition, conference, and offices.
BOTTOM: Fox & Fowle's Jawa Tower will stand on the Bund, Shanghai's historic waterfront promenade.



Indonesia

The world's fifth most populous country, with 180 million people settled on 13,000 islands, Indonesia is swept up in a rapid hurtle toward modernity and Westernization.

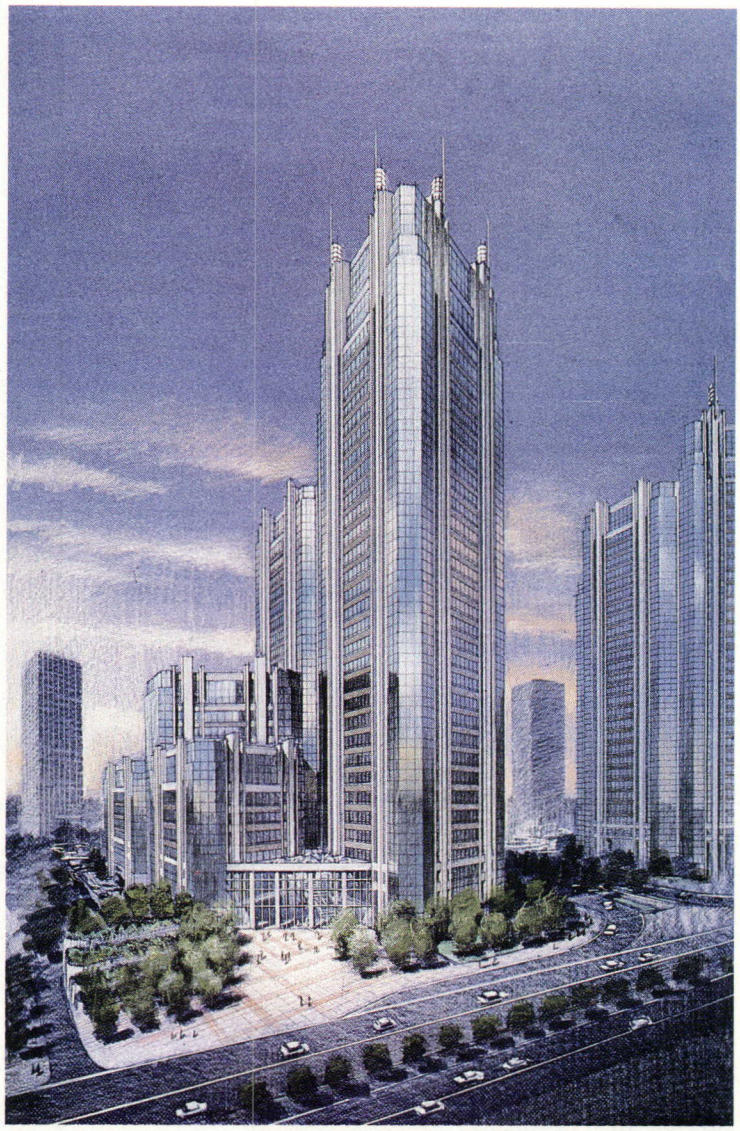
Jakarta has several large office towers in progress, and clients in Surabaya are building offices, housing, and hotels as Indonesia aims to attract financial service firms and heavy industry with its cheap labor. Such growth is the impetus, for instance, for New York City-based Brennan Beer Gorman/Architects' (BBG/A) new Jakarta Stock Exchange building and the adjacent Jakarta Financial Tower, sited in the rapidly developing, 100-acre Sudirman financial district.

What some architects call a "familial" client culture is called "nepotism" by others. Foreign architects make no decisions unilaterally, and negotiations proceed with utmost diplomacy. "Everything on a project is done by consensus," notes Louis Hedgecock, principal of BBG/A, "and you have to learn ways to make things happen that are acceptable."

Indonesia's major cities are fast developing upon unreliable infrastructure. Brownouts occur frequently in the power grid, explains Rod Henderer, vice president and principal-in-charge of RTKL's Seafer Center hotel and mixed-use project in Surabaya. "We had to provide electrical generation plants in the facility because the grid was incapable providing enough power," Henderer explains. The project also requires its own sewage-treatment plant, a common fixture in Asian urban buildings. "We have to design around what they're capable of building in Indonesia," Henderer adds. "They don't have the sophisticated engineering we do, and they can't afford steel frames, curtain wall, or stone veneers."

Even when clients can afford such materials, Indonesia's market for building products is highly protectionist. High tariffs discourage steel imports, so most superstructures are constructed of concrete. Indonesia's granite and marble are too soft for exteriors. Elevators usually come from Japan, and most mechanical systems are ordered from the U.S.

YORI ANTAR



TOP: Kohn Pedersen Fox designed Bank Niaga, in Jakarta, with an adjacent mosque for Muslim worship.
ABOVE: Brennan Beer Gorman's Jakarta Financial Tower is among the first buildings in the fast-growing 100-acre Sudirman financial district.

TOP LEFT: Pei Cobb Freed's twin granite towers of Danamon Square will occupy half of a financial district superblock.
LEFT: Ellerbe Becket's client required daily reviews for its Crystal Garden Tower apartments in Surabaya.
ABOVE: RTKL's Seafer Center mixed-use complex echoes Surabaya's early Modern, Dutch Colonial structures.

Malaysia

Malaysia has an aggressive plan to become fully developed by the year 2020. With high economic growth rates, its government is leaving most improvements in infrastructure and urban centers to the private sector.

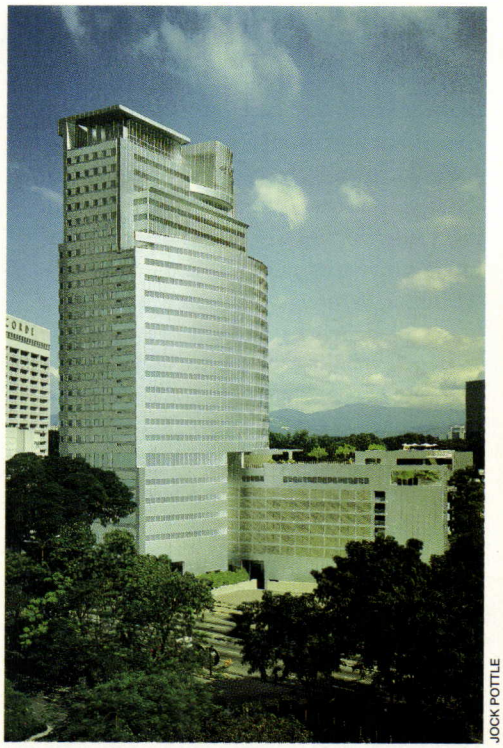
Clients in Malaysia value American architects for their experience and prestige, but officially, foreign practitioners are persona non grata and must associate with local architects. "We go there and run the meetings and coordinate all the work, but if the local architect wants something a certain way, he wins," contends Mark R. Miller, director of Asian projects for Kaplan/McLaughlin/Diaz (KMD) in San Francisco, which has designed a developer-driven scheme for the Perdana Rail City in Kuala Lumpur.

Malaysia places higher priority on urban design and transportation planning than most Southeast Asian countries, asserts Jeffrey J. McCarthy, partner of Skidmore, Owings & Merrill (SOM) in Chicago, but "they don't have a terribly strategic plan or structure; they're trying to steer enterprise the right way without dictating development." SOM is designing a 4 million-square-foot mixed-use and transportation hub called Plaza Rakyat in Kuala Lumpur. A boom in development in the central core of the capital has created a claustrophobic thicket of skyscrapers with little open space. "Our objective from the start was to provide public gathering space—some respite within the city," McCarthy explains.

Polyglot culture adds a major dimension to standard building programs. Architect Cesar Pelli based the design of the 88-story twin Petronas Towers—planned as the world's tallest buildings at 450 meters each—upon Islamic geometric principles. "I didn't try to do a native building," Pelli explains. "I tried to design a contemporary building that is respectful of local traditions." Many buildings adhere to Chinese principles of *fêng shui*, whereby the physical arrangement of building elements is believed to affect the future success of the structure.

TOP: SOM/Chicago's Plaza Rakyat, in Kuala Lumpur, provides urban open space shaded from equatorial sun.
ABOVE: Cesar Pelli's 88-story Petronas Towers, in Kuala Lumpur, are planned as the world's tallest buildings.

BELOW: KMD's proposal for Perdana Rail City merges five railroad lines and 10 million square feet of mixed-use space.
BOTTOM: Perdana Rail City site plan incorporates residential area (left).
BELOW RIGHT: Tsao & McKown designed the Menara IMC office tower for a shipping concern in Kuala Lumpur.



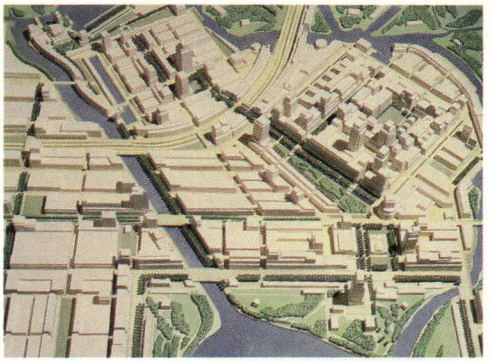
JOCK POTTLE

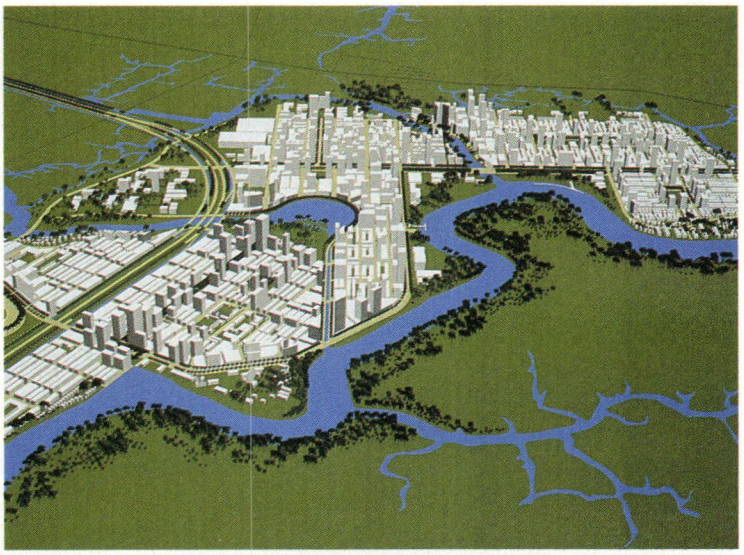
Vietnam

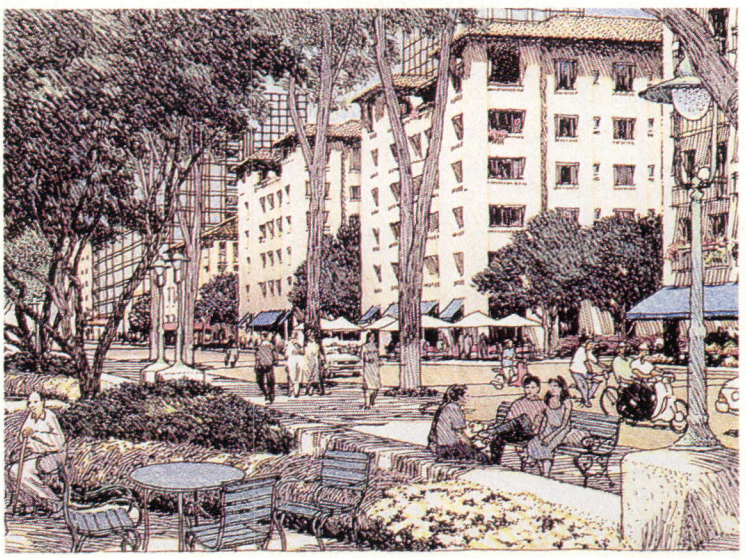
Since the United States lifted its embargo against Vietnam in February, only a handful of American architecture firms have ventured into the country. The Hillier Group has designed housing in Hanoi, the capital, where John Portman & Associates is designing a 21-story business center. Vietnam's Communist leadership, however, has been wooing foreign investors since 1987 and has garnered $7 billion in foreign capital since 1990.

Among the most ambitious joint ventures to date is the plan for a 6,500-acre city center abutting the southern edge of Ho Chi Minh City, formerly Saigon, fixed around a new 11-mile-long roadway radiating from the existing city. The Taiwanese-Vietnamese developer, the Phu My Hung Corporation, staged a paid competition and selected the San Francisco office of Skidmore, Owings & Merrill (SOM) as master planners, with Koetter, Kim and Associates of Boston responsible for the urban design of the city's commercial core.

John Kriken, SOM's partner-in-charge of the project, explains that this commercial and residential zone adjacent to old Saigon will form strong connections with the former capital city, preserve canals on the site, and establish a southern boundary for urban growth. The Vietnamese take pride in the greenness of the old capital city—which, like Hanoi, has numerous parks and many large trees lining major streets. The plan envisions interconnecting, pedestrian-oriented neighborhoods with housing, retail, hospitals, and schools. Proposed building configurations limit high density and preserve open space in the new zone. Sustainability is built into the plan: "We reserved rights of way to accommodate future developments," Kriken maintains, "so they won't have to tear down half their city to go from rubber-tire transit to rail transit." Kriken adds that the plan was conceived with Vietnam's limited resources in mind. "We had to think of ways the city could develop the plan incrementally. We're making conservative suggestions so the plan can be implemented one piece at a time."

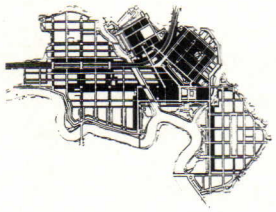




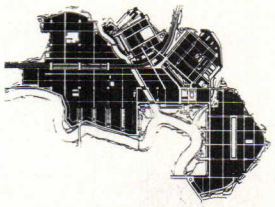


TOP: Koetter, Kim's model of city core shows axial street plan.
CENTER: SOM's computer-generated perspective illustrates urban center's merger with water.
ABOVE: SOM's scheme prescribes open space to extend the green character of existing Ho Chi Minh City.
FACING PAGE: Koetter, Kim's urban design guidelines ensure overlapping uses (top); shaded streets (center); and diverse block types (bottom).

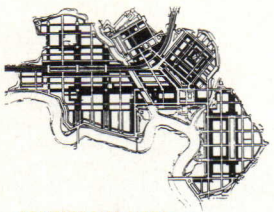
PROGRAM DISTRIBUTION



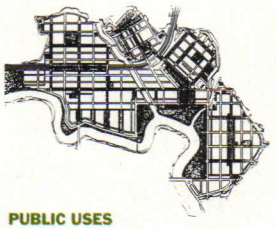
OFFICE USES



RESIDENTIAL USES

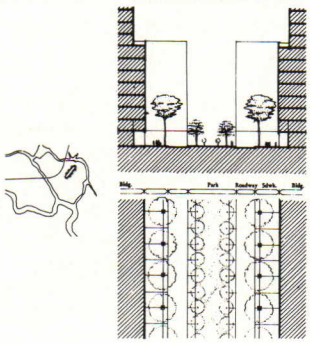


COMMERCIAL USES

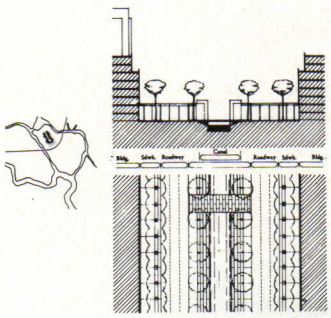


PUBLIC USES

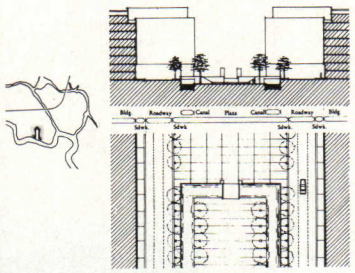
STREET TYPES



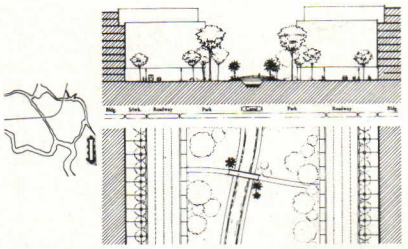
LINEAR SPACE / PHASE 1



MAIN SPACE / PHASE 2

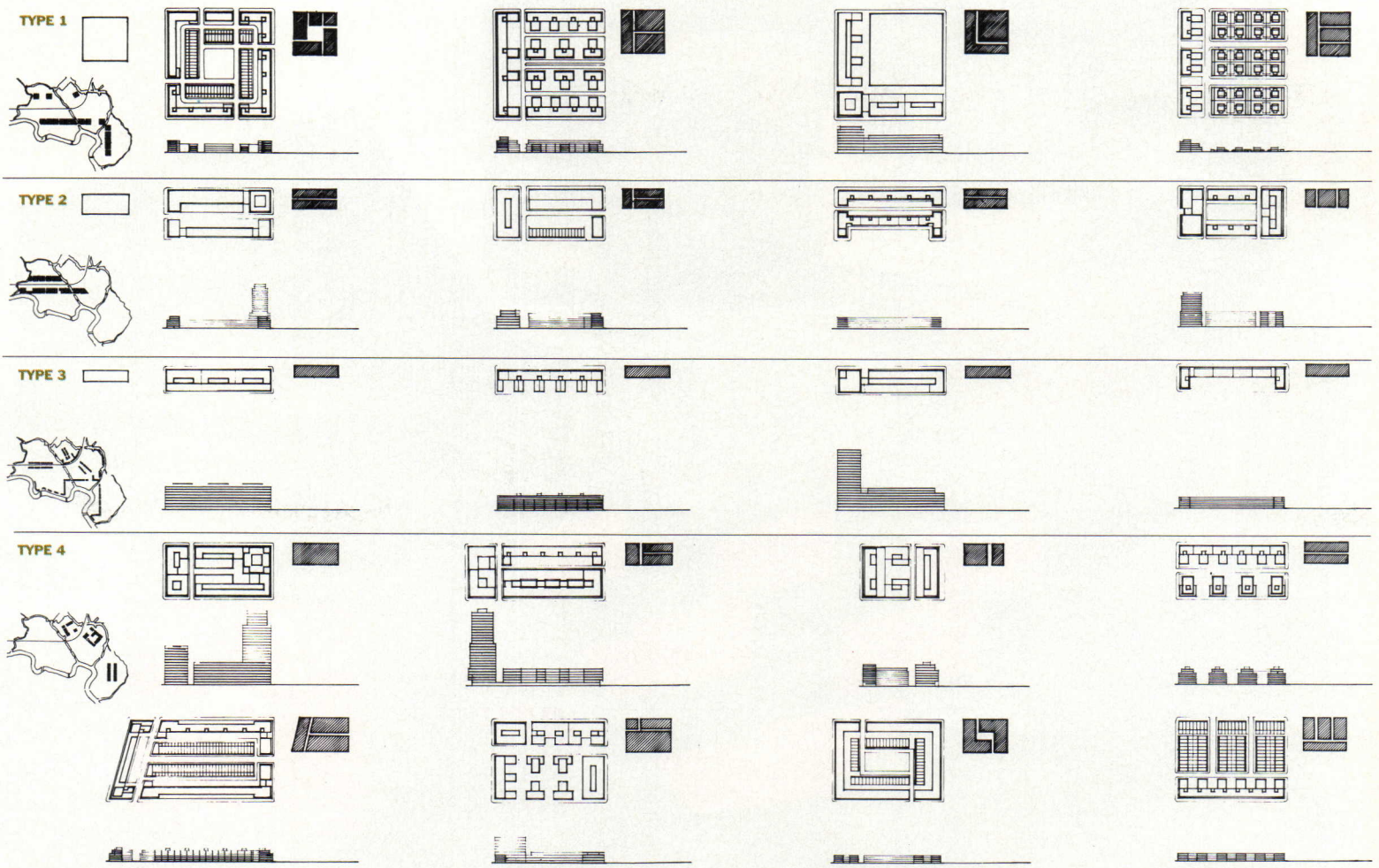


MAIN SPACE / PHASE 3



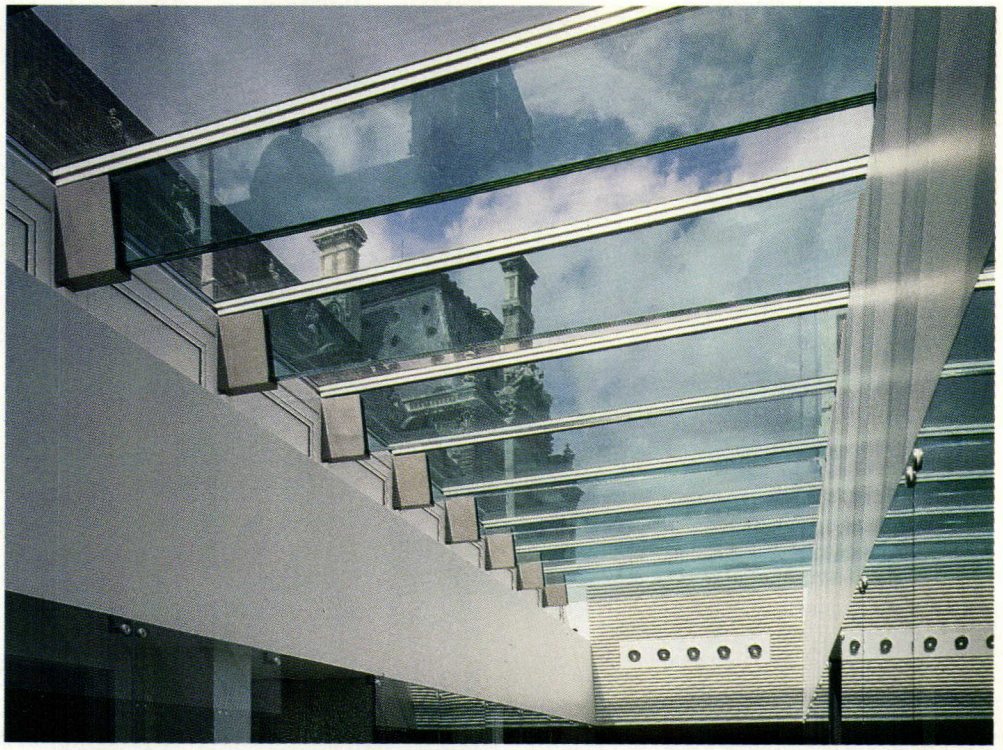
MAIN SPACE / PHASE 5

BLOCK TYPES



Exploring the Boundaries of Laminated Glass

An AIA-sponsored competition honors innovative glazing in Europe and Japan.



ABOVE RIGHT: Laminated-glass beams of the Louvre's research labs reveal the material's structural possibilities.

Architects in this country are probably most familiar with specifying laminated glass as a safety precaution in overhead sloped glazing. But this type of glazing—constructed of a polyvinyl butyral (pvb) resin sandwiched between glass sheets—can be applied to a wider range of elements. In addition to protection against breakage, the pvb interlayer eliminates roughly 99 percent of ultraviolet radiation through the glass and helps reduce glare. It can be tinted to minimize heat buildup in summer and control heat loss in winter and provides an acoustic barrier that dampens noise.

Awards program

Foreign architects, particularly French designers, are specifying laminated glass as a curtain wall; and although the material doesn't offer greater inherent strength than other types of glazing, its structural potential is being explored in beams and columns.

To recognize such innovative architectural applications of laminated glass, the AIA and Association of Collegiate Schools of Architecture (AIA/ACSA) Research Council, the manufacturer DuPont, and the International Union of Architects (UIA) created the Benedictus Awards in 1993. According to ACSA President Richard E. McCommons, the international program, which is named for the English scientist who discovered the lamination process in the early 1900s, aims to "promote the transfer of technological advances into architectural design."

This year's jury—comprising William A. McDonough, Cesar Pelli, and Erhard Schütz—awarded the top Benedictus prize to a bank headquarters in France designed by Paris-based architects Odile Decq and Benoît Cornette. The building features a 280-meter-long glazed facade, composed of laminated-glass panels supported by an external truss.

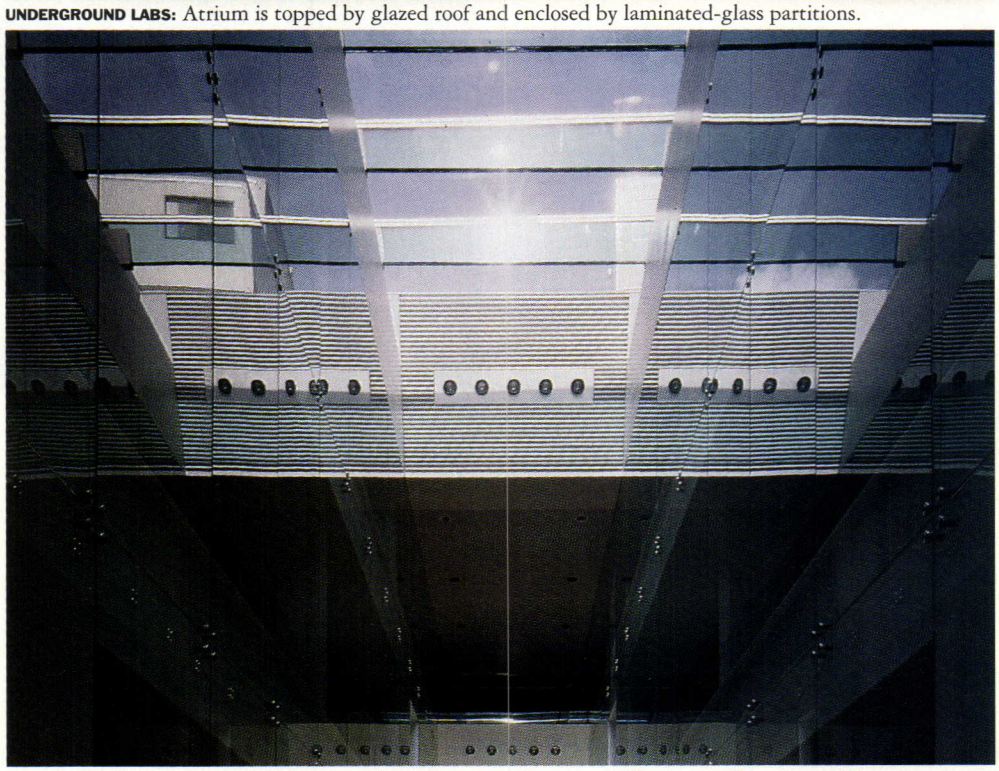
Innovative applications

The other Benedictus Awards reveal the innovative potential of laminated glass: Parisian architects Jérôme Brunet and Eric Saunier's research laboratories beneath the Louvre (above) incorporate laminated-glass beams supporting a glazed roof; the German parliament complex in Bonn, designed by Stuttgart-based architect Behnisch & Partner, and Parisian architect Dominique Perrault's design for an office building feature laminated-glass curtain walls; a gas station in Kumamoto, Japan, designed by Shoei Yoh & Architects and François Deslaugiers' funicular stations in Paris incorporate curved laminated-glass canopies.

American glass manufacturers have started exploring new applications of laminated glass, such as pvb interlayers incorporating color and pattern. But European manufacturers promote the material more aggressively, leading such high-tech architects as Jean Nouvel to experiment with laminated glass. These examples should inspire American practitioners to further investigate the potential of this versatile glazing material.—*Raul A. Barreneche*

Museum Research Laboratories
Paris, France
Jérôme Brunet and
Eric Saunier, Architects

UNDERGROUND LABS: Atrium is topped by glazed roof and enclosed by laminated-glass partitions.

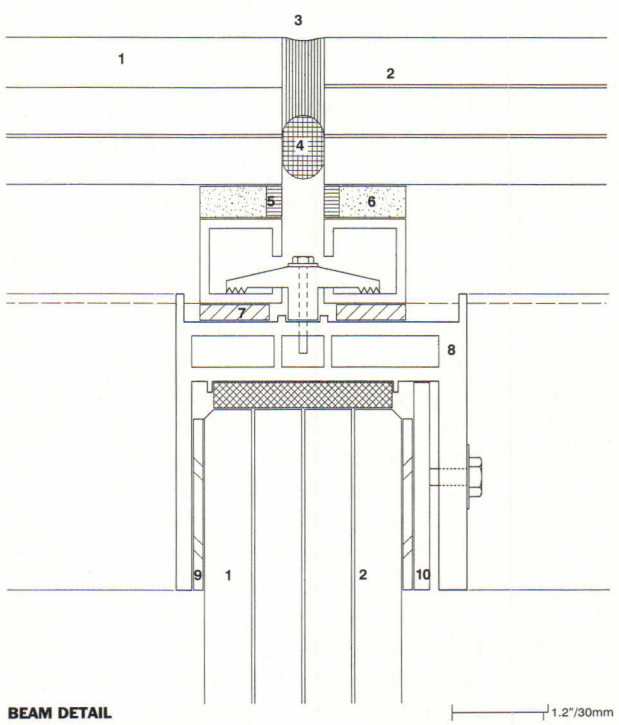


GLASS ROOF: Transparent roof introduces daylight into underground offices and offers views of Louvre.

The underground research laboratories beneath the Louvre's Carrousel Gardens feature the most innovative application of laminated glass among this year's Benedictus Award winners. Paris-based architects Jérôme Brunet and Eric Saunier designed a three-story structure below a courtyard, organized around an atrium that provides abundant natural light to research and conservation spaces. Instead of glazing the atrium with a typical skylight, Brunet and Saunier designed a flat glass roof supported by structural glass beams. This transparent structure introduces more daylight through the roof to spaces below grade and provides unobstructed views of the historic Louvre buildings surrounding the courtyard.

The duo collaborated with engineers to develop structural glass members that could not only support the load of the roof, but also withstand thermal expansion and resist fire. Following a year of experiments and testing, the architects and engineers devised laminated-glass beams composed of four panels of 15-millimeter-thick clear glass with polyvinyl butyral (pvb) interlayers separating the glass sheets. The beams, each measuring 4.35 meters long by 63 millimeters wide and 0.5 meters deep, can support up to 14 tons with minor deflection. The 12 laminated sections of the flat glass roof are supported by 11 glass beams inserted into aluminum end pockets in the atrium walls.

According to project architect Vincent Marchand, the firm is continuing to investigate the structural potential of laminated glazing. "We're certainly among the first architects in France and maybe in all of Europe to be applying this technology," Marchand asserts. Brunet and Saunier's design for a town hall outside Paris, for example, will incorporate laminated-glass columns, and a factory in Germany will feature prestressed, laminated-glass arches.

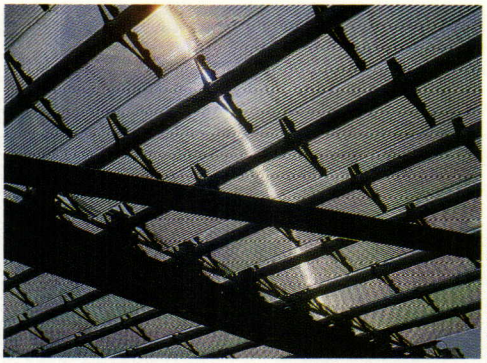


BEAM DETAIL

1 CLEAR LAMINATED GLASS
2 PVB INTERLAYER
3 WATERPROOF MASTIC JOINT
4 FOAM FILLER STRIP
5 WATERPROOF JOINT
6 STRUCTURAL FIXING STRIP
7 GLAZING STRIP
8 ALUMINUM FRAME
9 NONCOMPRESSIBLE LINING
10 SHIM

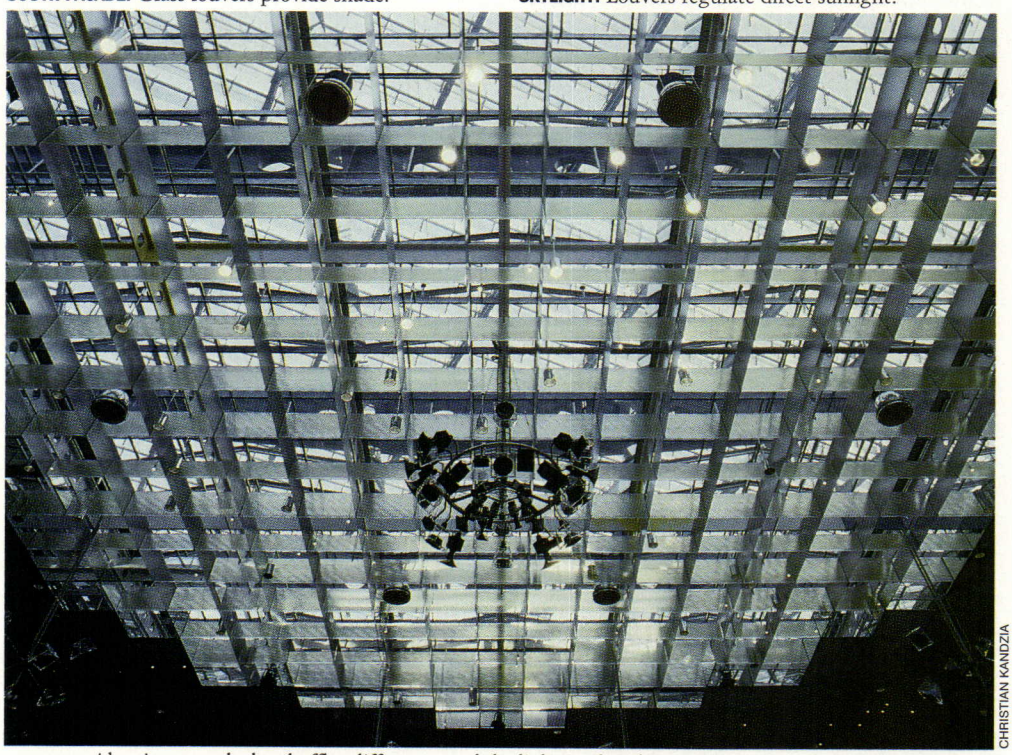
CHRISTIAN KANDZIA

SOUTH FACADE: Glass louvers provide shade.



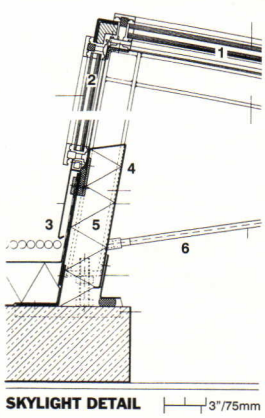
CHRISTIAN KANDZIA

SKYLIGHT: Louvers regulate direct sunlight.



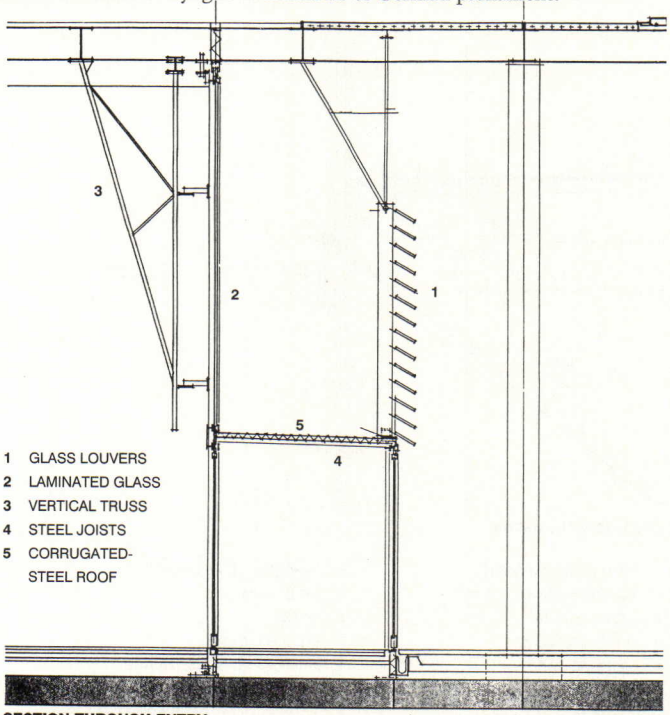
CHRISTIAN KANDZIA

SKYLIGHT: Aluminum-and-glass baffles diffuse natural daylight in chambers of German parliament.



SKYLIGHT DETAIL 3"/75mm

1 30-MM LAMINATED GLASS
2 24-MM LAMINATED GLASS
3 ALUMINUM PLATE
4 STEEL SKYLIGHT FRAME
5 FIBERGLASS INSULATION
6 TENSION TIE



1 GLASS LOUVERS
2 LAMINATED GLASS
3 VERTICAL TRUSS
4 STEEL JOISTS
5 CORRUGATED-STEEL ROOF

SECTION THROUGH ENTRY 10'/3m

German Parliament
Bonn, Germany
Behnisch & Partner, Architect

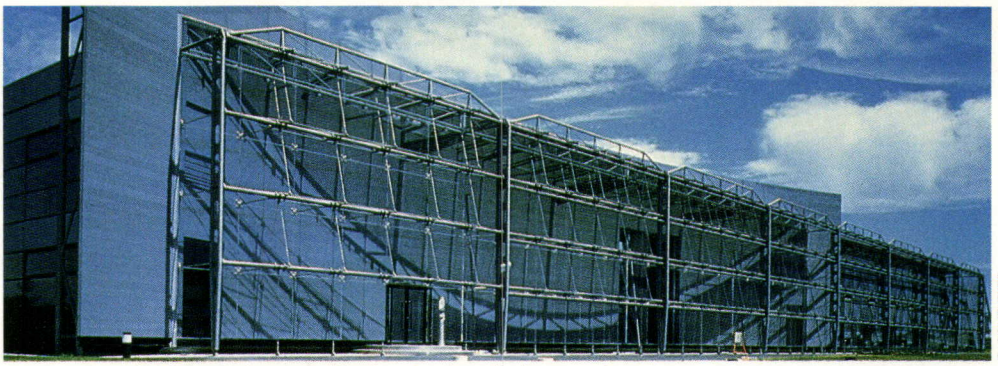
Stuttgart-based architect Behnisch & Partner was commissioned by the German government to design an addition to the parliament buildings in Bonn, sited on the banks of the Rhine. The entire plenary complex demonstrates the broad variety of applications of laminated glass, ranging from an exterior cladding and shading material to an interior, acoustically insulated partition.

To take advantage of views of the surrounding landscape and openly reveal the decision-making process inside the plenary hall, the architect chose to wrap the entire rectilinear building in glass. Behnisch specified laminated glass with thicknesses between 38 millimeters and 44 millimeters, to meet the German government's security requirements for bullet-resistant glazing. To regulate the amount of direct sunlight on the south-facing entry facade, Behnisch mounted fixed glass louvers above the entrance.

Within the main building volume, laminated-glass partitions enclose the plenary chambers and provide an acoustical barrier for privacy during parliament sessions. The 1.4-meter-by-2.5-meter glass panels are composed of 43-millimeter-thick, fire-resistant laminated glass.

The architect also inserted a large skylight above the plenary chambers to illuminate the space with natural light and re-create the sense of the outdoors. The 25-meter-by-25-meter skylight is clad in 24-millimeter-thick glass. Behnisch mounted movable glass louvers above the skylight to regulate the amount of direct sunlight and heat radiating into the space below. These external louvers are mounted on steel beams framed onto girders extending over the skylight and are electronically adjusted in response to changing sunlight conditions. Inside, a combination of aluminum-and-glass baffles are suspended from a steel grid beneath the skylight. This lattice diffuses natural light inside the hall.

Banque Populaire de l'Ouest
Rennes, France
Odile Decq and
Benoît Cornette, Architects



S. COUTURIER

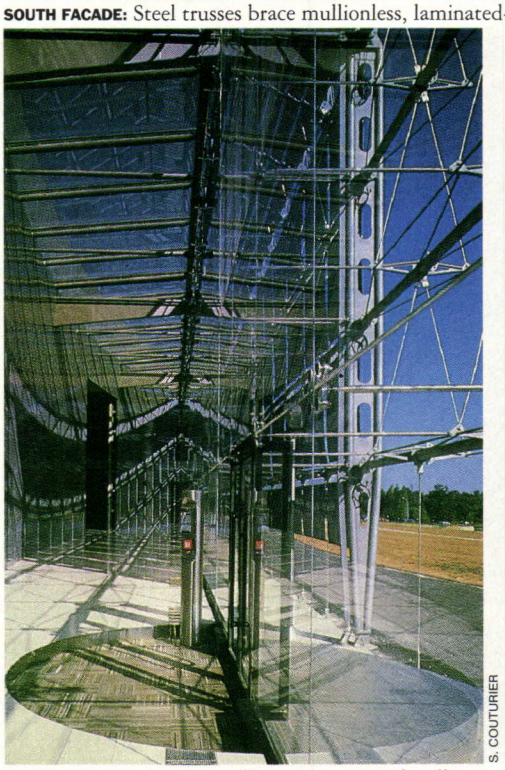
SOUTH FACADE: Steel trusses brace mullionless, laminated-glass panels.

In designing a bank administration building in northwestern France, Parisian architects Odile Decq and Benoît Cornette wanted to create continuous views of the surrounding countryside through a completely transparent facade. Laminated glass allowed the architects to specify a continuous, 280-meter-long glazed wall without mullions or internal frames. According to the Benedictus Awards jury—which presented the project with this year's top honor—Decq and Cornette's laminated-glass curtain wall sensitively responds to light, air, and views.

The building's three-story south facade is composed of 2-meter-square panels of clear laminated glass. Although Decq and Cornette specified single-pane glass to enclose the lobby, they installed double-glazed panels on the office spaces for increased thermal performance. To support the glass panels composing the facade, steel arms extending from the external trusses are attached to four-pronged steel clips. The clips are then bolted into the corners of the glass panels.

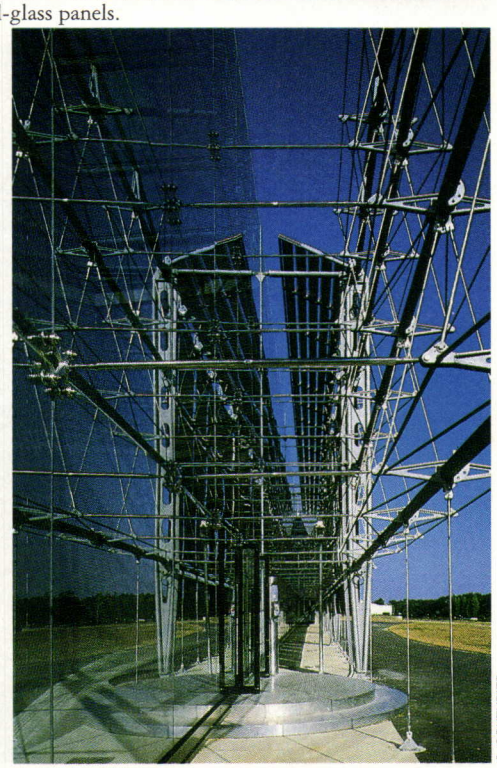
Because the architects eliminated any internal frames in the facade, a repetitive steel truss structure was necessary to laterally stabilize the large glazed expanse. This supporting structure, which the architects note was inspired by the masts and cables of racing yachts, is divided into 12-meter-long bays parallel to the glass and projected 2 meters outside the building. The space between the trusses and the glass envelope also serves as an outdoor arcade.

In addition to stabilizing the facade, the exterior trusses integrate aluminum louvers and motorized fiberglass fabric sunshades that help reduce solar gain on the interior. The placement of these screens outside the facade allowed the architects to shade the air space along the length of the envelope. This shaded buffer provides an additional means of cooling the building interior.



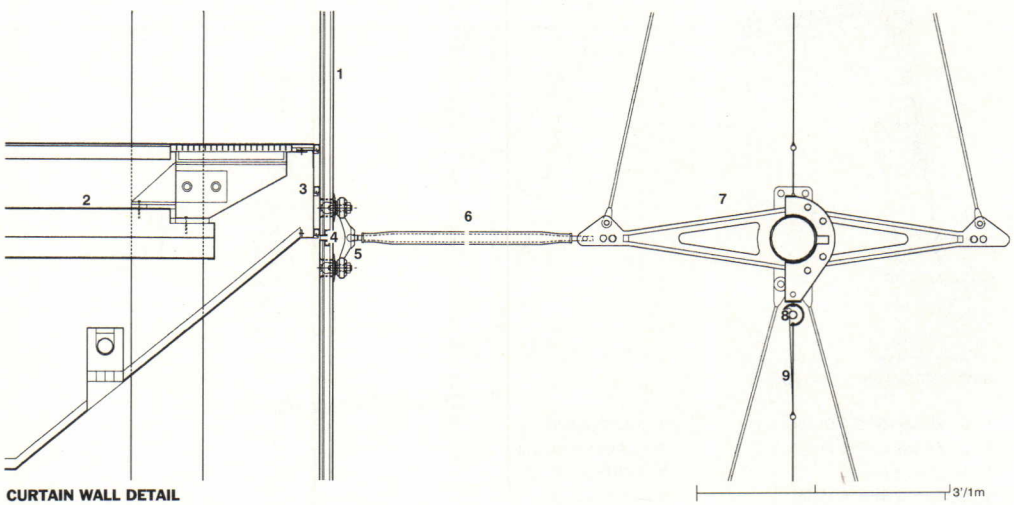
S. COUTURIER

STEEL TRUSSES: Arms span between truss and wall.



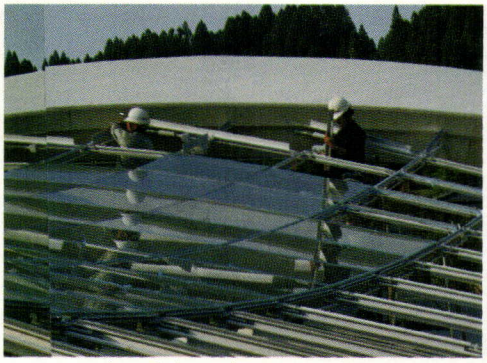
S. COUTURIER

TRUSSES: Incorporate shades and louvers.



CURTAIN WALL DETAIL

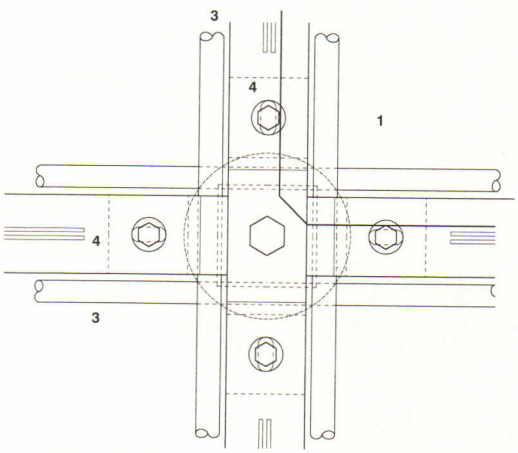
1 8-MM DOUBLE-PANED, CLEAR LAMINATED GLASS
2 STEEL GIRDER
3 NEOPRENE JOINT
4 SILICONE JOINT
5 STAINLESS STEEL BRACKET
6 STEEL ARM
7 TRUSS
8 ELECTRIC MOTOR
9 FIBERGLASS FABRIC SHADE



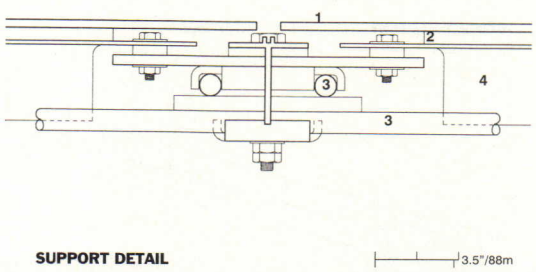
CANOPY: Rods and channels support glass.

GLASS PANELS: Steel mesh filters sunlight.

GAS STATION: Precast concrete arches support undulating glass canopy.



SUPPORT PLAN



SUPPORT DETAIL

1 8-MM LAMINATED GLASS
2 0.3-MM STEEL MESH WITH POLYESTER FILM
3 22-MM-DIAMETER STEEL ROD
4 ALUMINUM CHANNEL

Gas Station
Kumamoto, Japan
Shoei Yoh + Architects

Fukuoka, Japan-based architect Shoei Yoh specified laminated glass to cover an undulating, concrete-framed canopy over a gas station that serves as an entry beacon to a small Japanese town. By specifying laminated glass, the architect met local safety ordinances mandating a completely fire-resistant structure. The glass also represents an appropriate means of infilling the irregular, parabolic-shaped canopy. "It's ideal in its capacity to apparently stretch and maintain its shape over the parabolic planes of the canopy," observed the awards jury.

Yoh erected four poured-in-place concrete arches of different heights and depths along the edges of a wedge-shaped site. Although steel and wood framing had initially been considered for the structure, the architect selected concrete—manufactured in an adjoining factory—because of its fire-resistant quality.

A lattice grid of 22-millimeter-diameter, pretensioned steel rods and aluminum channels is stretched between the arches and bolted to the concrete. The rods and channels create a parabolically curved frame to which the glazed skin of the canopy can be attached.

Laminated-glass panels were cut precisely to fit the varying spaces of this metal grid. The individual panels were then mounted to the top flange of the aluminum channels and fastened with structural silicone joints. According to the architect, this flexible joint minimizes the possibility of cracking caused by thermal stress in the glass.

To provide sun shading below the canopy, the architect specified a combination of 8-millimeter-thick laminated float glass with a 0.3-millimeter-thick sheet of perforated stainless steel that filters direct sunlight. A polyester film placed between the glass roof and the metal support structure provides an additional safety measure, keeping broken glass panels in place.

Montmartre Funicular Stations
Paris, France
François Deslaugiers, Architect

FUNICULAR STATION: Angled steel brackets support curved glass canopy.

GASTON

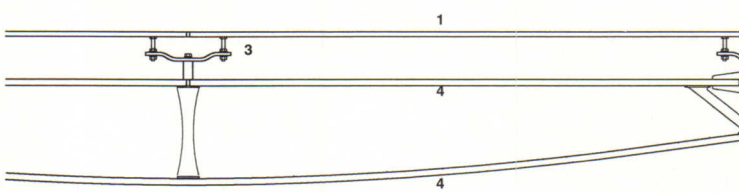
STEEL STRUCTURE: Laminated-glass roof panels are bolted to four-pronged supports.

The laminated-glass canopies atop a pair of funicular stations in Paris provide views of the surrounding Montmartre district while recalling the city's signature Art Nouveau Metro entrances. Local architect François Deslaugiers chose to minimize the stations' enclosures and reveal their underlying structures. The curved laminated glass provides the necessary precautions for glazed roofs to meet local safety regulations.

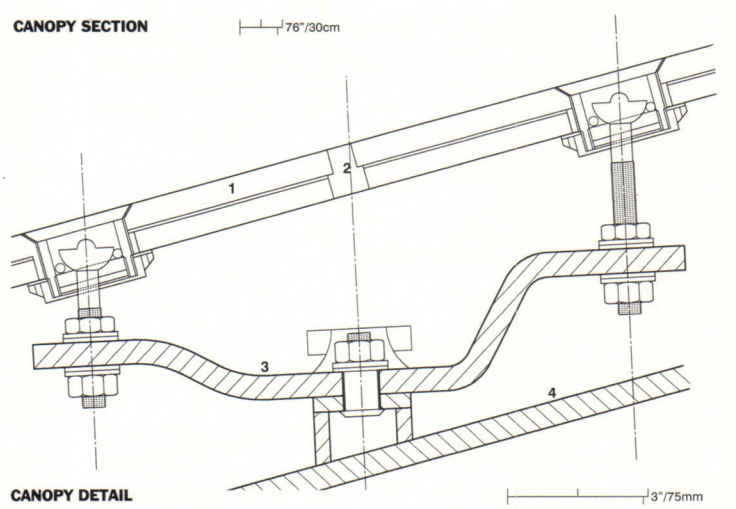
Each of the two twin stations, located at the top and bottom of a hill beneath the church of Sacre-Coeur, features four, 16-meter-long angled steel brackets bolted to concrete bases. The brackets support arched, 20-millimeter-diameter steel tubes and smaller, steel purlins. Together, notes Deslaugiers, these interlocking members create a flexible, bonelike structure over which a transparent glass membrane is then "stretched."

To hold the laminated-glass canopies in place, stainless steel supports with four prongs are fastened to the tubes and purlins. The curved, 1.7-meter-by-2.7-meter panels of 10-millimeter-thick laminated glass are then bolted to the prongs. Along the edges of each canopy, the transparent, laminated-glass panels are fastened to smaller, two-pronged supports. Elastic silicone joints are inserted between the panels to accommodate small expansions and contractions. The glass membrane, notes Deslaugiers, appears to hover above its supports and resembles a "billowing sail stretched taut."

On the ground, Deslaugiers inserted laminated-glass partitions to separate arriving and departing trains and protect waiting passengers. The panels are 3 meters wide by 2 meters high and composed of 16-millimeter-thick laminated tempered glass. They incorporate sliding glass doors that open as a train arrives at the platform. "Since laminated glass stays intact under various stresses," the architect notes, "it is perfect for roofs and impact-resistant partitions."

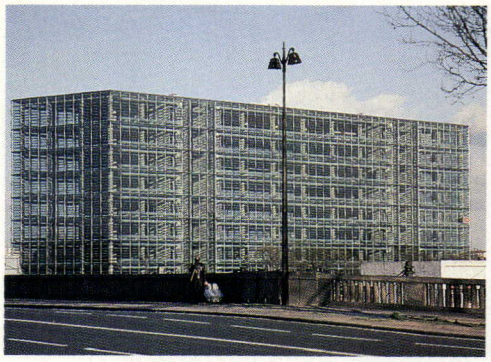


CANOPY SECTION



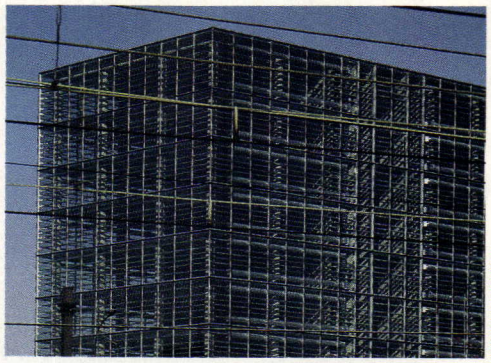
CANOPY DETAIL

1 10-MM CLEAR LAMINATED GLASS
2 SILICONE JOINT
3 STAINLESS STEEL BRACKET
4 STEEL PURLIN
5 STEEL TUBE



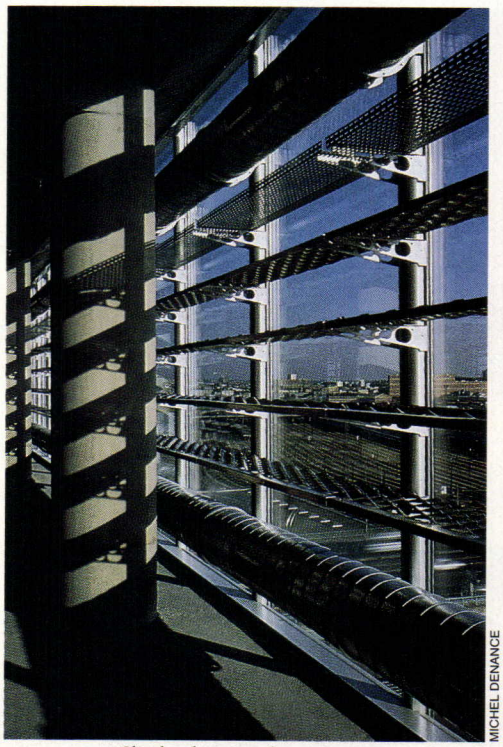
MICHEL DENANCE

OFFICE BUILDING: Glass-clad volume.



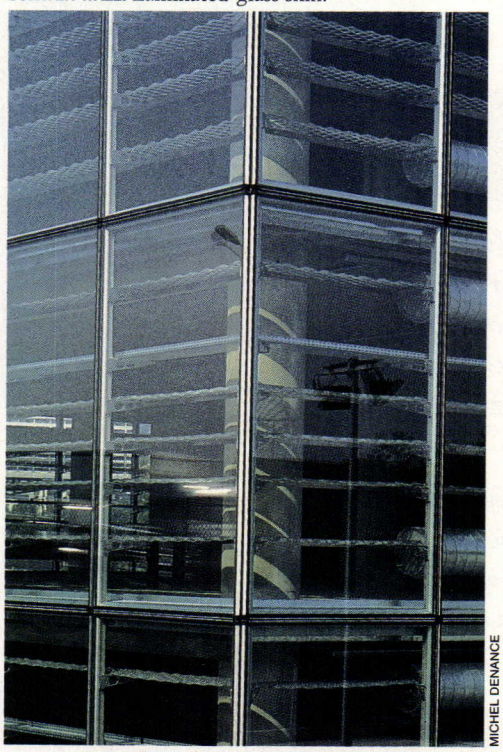
MICHEL DENANCE

CURTAIN WALL: Laminated-glass skin.



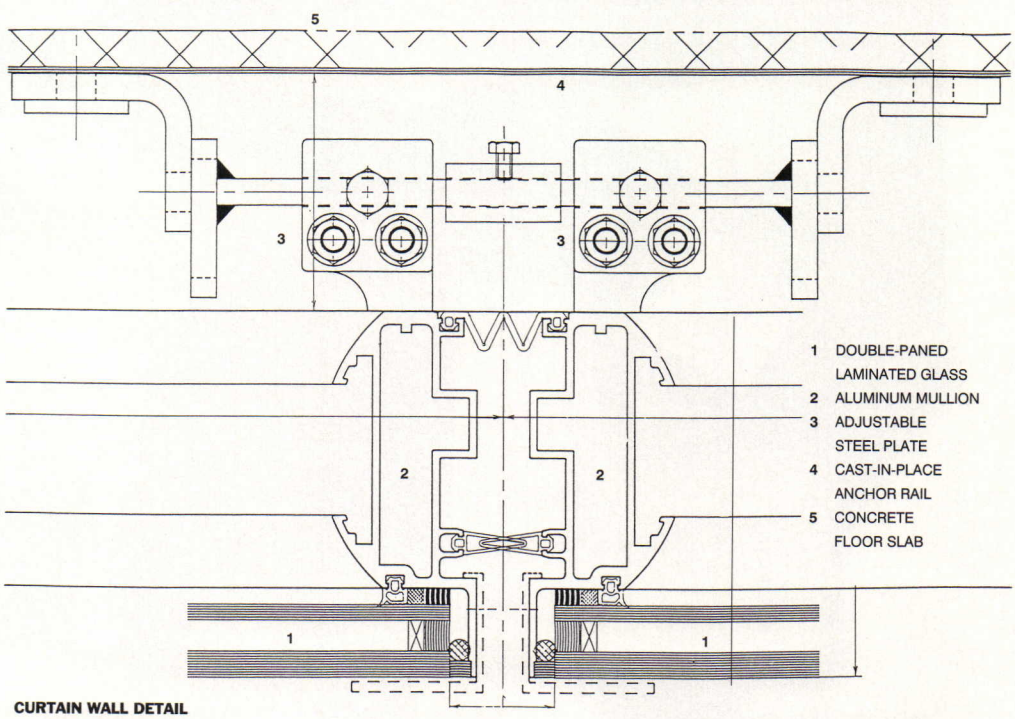
MICHEL DENANCE

CABLE TRAYS: Shade glass envelope.



MICHEL DENANCE

GLAZED PANELS: Reveal concrete structure.



CURTAIN WALL DETAIL

Hôtel Industriel
Jean Baptiste Berlier
Paris, France
Dominique Perrault, Architect

Parisian architect Dominique Perrault, whose gargantuan glass volumes of the French National Library are currently under construction, was commissioned by the city government to create a new type of office building. Perrault was given an industrial site alongside the tracks of the Austerlitz rail station in Paris. The architect's "industrial town house" combines speculative office and industrial space in a 10-story Modernist block that is clad in clear laminated-glass panels.

Perrault wanted to create a completely transparent glass curtain wall that would reveal the building's concrete structure and expose its flexible mechanical system to the outside. To meet this objective and provide acoustical protection from adjoining train traffic, the architect specified 1.8-square-meter panels of double-paned, clear laminated glass. The panels are supported by aluminum restraining clips attached to aluminum mullions; the mullions, in turn, are bolted to a galvanized steel plate that is cast into the concrete slab at each floor level.

Behind the glazed facade, aluminum brackets fastened to the mullions support cable trays for telecommunications wiring. The trays also shade the glass wall. Above and below the trays, exposed air ducts are similarly attached to the window mullions. By strategically placing the ducts and wiring elements along the building's exterior, the architect was able to create completely flexible interiors.

Because laminated glass helps reduce glare, the internal mechanical elements and exposed precast concrete structure remain visible from the outside, imparting scale and proportion to the continuous glass envelope. The laminated glass in the curtain wall also protects against degradation of the interior by eliminating roughly 99 percent of the ultraviolet radiation passing through the building envelope.

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Fogarty & Klein, Houston, TX.
Floor: Dal-Duraflor 8" x 8"

Legal Risks of Design/Build

Performing architectural and construction services has significant legal implications.

Design/build is a method of project delivery in which one entity signs a single contract accepting full responsibility for both design and construction services for the building. It is historically grounded in the concept of the master builder. Over the past centuries, increased specialization began to establish a separation between design and construction. The architect as a distinct professional in the construction process was ultimately defined in Europe during the Renaissance.

Delivery scenarios

During the 1800s, courts began to require a showing of negligence as the standard for liability of an architect, in contrast to the strict liability to which contractors are subject. Concurrently, the traditional design/award/build model of project delivery came into prominence in the construction industry and, in concert, most contemporary statutory and case law also evolved.

In recent years, however, interest in design/build delivery has grown stronger, and with it a potential blurring of the distinct roles of architect and contractor. As a result, the AIA developed three design/build contract forms, which are currently being revised for publication in late 1994 or early 1995.

Today's architect may participate in design/build under one of several common scenarios:
—The owner contracts with a joint-venture entity, often formed between an architect and a general construction contractor;
—The owner contracts with an architect/contractor—for example, an architect acts as the designer/builder, performing both design and construction services;
—The owner contracts with the architect who hires the general contractor as an independent consultant;
—The owner contracts with a contractor who hires an architect as a consultant;
—The owner contracts with a design/build entity which hires an architect and a contractor, each as independent consultants; or
—The owner contracts with a design/build entity or construction company, which employs an architect in-house.

Understanding risks

With the reemergence of design/build, liability issues and the associated legal implications come into new perspective; it is important that the architect understand these issues, their associated risks, and the legal distinctions under these various scenarios.

In traditional project delivery, the architect has well-established fiduciary obligations to a client. The architect performs as an independent consultant in providing plans and specifications, and as an agent of the owner during construction administration. The architect also acts as an arbiter of disputes between contractor and owner.

In a design/build project, these roles are very different. For example, the architect acting as a joint-venture partner with a contractor or as a designer/builder will have a direct

STANDARD OF CARE

That degree of care applied to measure the competence of a professional. If the practitioner performs below this level, he or she can be liable for any damage or injury that may result.

NEGLIGENCE

Failure to exercise the care that other architects would exercise under the same or similar circumstances.

STRICT LIABILITY

Liability imposed by law regardless of fault. Typically applied to manufacturers rather than to service providers.

UNINSURED LIABILITY

Liability not covered by a policy.

financial interest in the project. Financial incentives and economic restraints may affect design decisions, including the selection of materials and the quality of construction. As a consultant to a design/build entity or a contractor, the architect no longer acts solely on behalf of the owner. As an employee of a design/build entity or construction firm, an architect may be even further removed from the client. The architect is challenged to balance these interests, particularly as a professional licensed to protect the health, safety, and welfare of the general public.

Shifts of liability

In the traditional design/award/build project delivery mode, the architect is not liable for job site safety; nor for the means, methods, and sequences of construction; nor for the acts, errors, or omissions of the contractor or subcontractors which may result from the failure to follow the contract documents or from poor workmanship. The architect is not liable for interpretations and decisions made in good faith regarding owner-contractor disputes. He or she can reject work that does not comply with the contract documents; he or she reviews contractor submittals only for general compliance with these contract documents. These contractual limitations, in turn, limit liability exposure.

In contrast, the architect participating as a designer/builder assumes responsibility for all design and construction matters; is responsible for job site safety and for the means, methods, sequences, and construction defects; and thus is exposed to far greater liability. This is, indeed, the perceived advantage the owner seeks: to hold a single entity liable for all design and construction deficiencies.

In those design/build scenarios in which the architect is subordinate to a contractor, there is frequently a loss of design control. The pressure to control costs often means that only a minimal design effort will be funded. Creative design is often discouraged as a way of keeping the building costs competitive with proposals of other design/build firms. Along with the economic pressure to use cheaper materials and labor, the long-term quality of the resulting building and its life-cycle costs may be detrimentally affected. Such an outcome translates into greater liability exposure for the architect.

Standard of care

As long as an architect is providing services under the traditional design/award/build mode, a failure of that architect to perform to the applicable standard of care must be predicated upon a showing of negligence.

Unless an architect gives a written or oral guarantee, the practitioner does not warrant the results of his or her professional services. Generally, the courts consider architects as providing services, not products. Few court decisions have imposed liability on the architect predicated, regardless of negligence, on the legal concepts of implied warranty or strict liability, which are more onerous standards to which a contractor is exposed. An architect acting as a designer/builder, however, could well be held to such standards if he or she is participating in a design/build joint venture or otherwise acting as the entity contracting directly with the owner to provide both design and construction services.

A joint venture is a form of partnership; as a participant in a joint venture, an architect's liability will be joint and several (he or she can be held responsible for the liability of other partners for full satisfaction of damages regardless of individual fault) and will include liability for all design and construction defects.

With careful attention to contract provisions, an architect subcontracting to a design/build entity or a construction contractor can maintain an "independent contractor" status and stay within the comfortable and insurable negligence standard of care. The scope of work provisions of such a contract deserve particular attention.

Architects' professional liability insurance covers only claims for damages and expenses

resulting from professional negligence. Unless there is a special endorsement, professional liability "errors and omissions" policies typically do not provide coverage to architects acting in the role of a designer/builder. Contractors cannot be named as additionally insured under professional liability policies; they must secure comprehensive general liability (CGL) insurance to protect themselves against claims for bodily injury and property damage. Such CGL policies generally exclude coverage for design services, although professional liability insurance for incidental design services provided by contractors or subcontractors (such as shop drawings) is available from some insurers. Some carriers also offer professional liability insurance to protect a licensed "in-house" architect employed by a design/build entity or contractor.

Comprehensive coverage

In order to be insured against claims resulting from construction activities, the architect acting as a designer/builder must either secure comprehensive general liability coverage, or, if the architect has subcontracted with a construction contractor to provide design services, assure that he or she is named as additionally insured under that contractor's CGL policy. Some insurers do offer design/build professional liability insurance specifically for design/build firms but, generally, only in those circumstances where the architect is an independent consultant providing design services to a design/build entity or a contractor. Such policies provide coverage for damages arising from negligence in the design and specifications as well as claims for bodily injury and property damage arising from negligent design, but do not provide coverage for claims arising from the failure of the design/build contractor to construct the project in accordance with the plans and specifications. To fill the gaps in coverage, new insurance products will have to be developed to respond to the needs of architects involved in design/build projects.

Under no circumstances is it likely there will ever be coverage for defects in the construction. Thus, the architect assuming the role of a designer/builder is not only exposed to greater and unfamiliar liability, but to uninsured liability as well.

Licensing laws

Every state regulates the practice of architecture, and many states license persons or companies that engage in the construction of buildings. No state, however, specifically licenses design/build entities. Architects should make sure that the design/build mode does not violate a state's applicable registration and licensing laws, since a nonlicensed person cannot provide architectural services. Conversely, in those states requiring a license to engage in construction, an architect performing design/build services may be required to obtain a general contractor's license.

The validity of design/build contracts is not a settled issue in many states. If the designer/builder is not properly licensed to provide the contracted services, the contract may be considered illegal and unenforceable. The legality of the contract may hinge on whether or not the designer/builder itself has agreed to directly "perform" the architectural services or to "furnish," or hire, others to perform the work. It is important to know the applicable law of any given state before participating in a design/build venture.

The liability exposure to an architect participating in design/build will vary depending on the organizational and contractual relationship of the parties. While the risks may be greater than more conventional project delivery methods, they can be managed if understood. Changes in liability concepts, in the law, and in insurance will likely continue in response to the growing demands of design/build.—*Kenneth H. Natkin*

Kenneth H. Natkin, FAIA, Esq., is a San Francisco attorney who serves as a special master, mediator, and arbiter of construction-related disputes.

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A written or oral statement assuring a level of performance.

IMPLIED GUARANTEE

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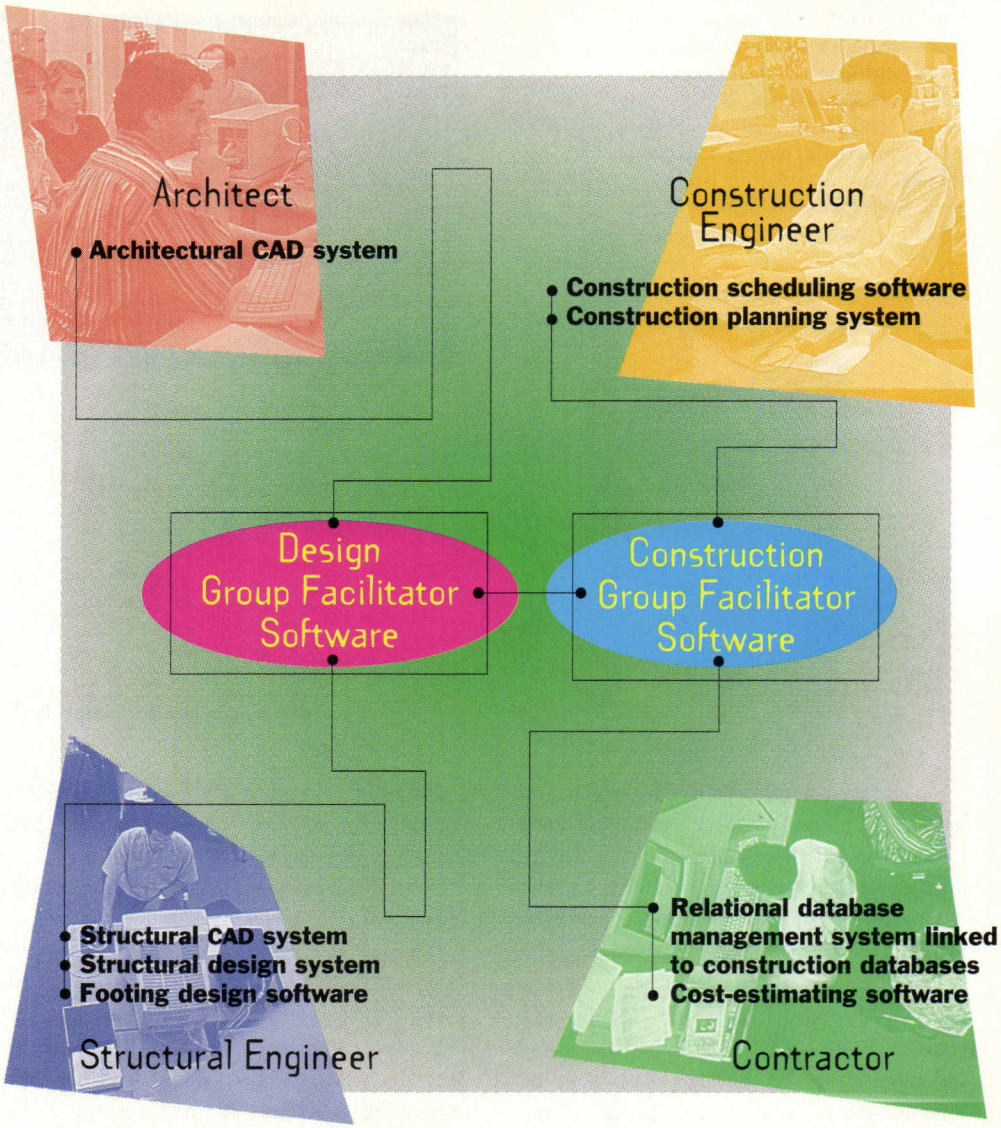
Linking Up the Building Team

New software being developed at Stanford University connects design to engineering and construction.

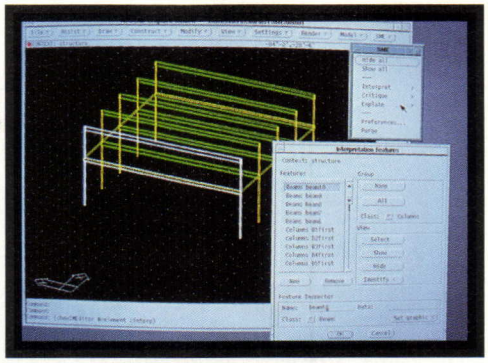


ABOVE RIGHT: Center for Integrated Facility Engineering's software, known as CIFE World, connects disparate programs applied by an interdisciplinary, geographically dispersed team working on the same building.

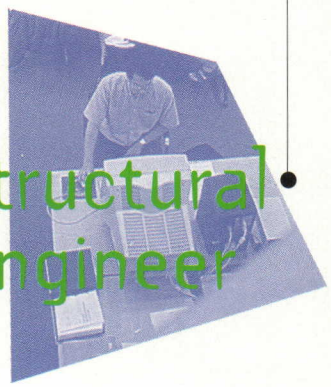
Surrounded by the bucolic serenity of the Stanford University campus, researchers at the Center for Integrated Facility Engineering (CIFE) are struggling with some of the thorniest problems confronting the construction industry. Today, most new buildings are chronically behind schedule, over budget, and plagued with errors in design and construction—problems attributed to fragmentation within the industry and poor communications between disciplines. According to CIFE Director Paul Teicholz, computer technology may provide the key to improving these communications and to smoothing the information flow required during the building life cycle, from initial planning, through design and documentation, to construction, facility management, and eventual demolition, to construction anew.

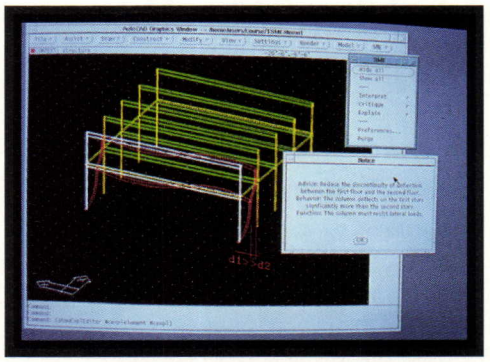
Most existing software does little to integrate design information. CAD software tends to mimic traditional drafting processes and lacks the nongraphic data needed for analysis and documentation. Analysis programs are often isolated on islands of automation, with little cohesion between the disparate pieces. "At CIFE," explains Teicholz, "we are working on research projects that link 3D CAD to knowledge-based design systems to facilitate a multidisciplinary design process. We want to educate the construction industry about the ever-increasing importance of integration and how it can be furthered by advanced technology." However, Teicholz adds, "technology alone won't fix this situation. We need to think about radically different ways of working, to produce buildings that operate correctly from the beginning, just as we produce cars that usually work well the first time they're driven." The most successful applications of technology have been undertaken by design/build engineering firms that deliver to an owner a functioning facility, not just a set of drawings. This is aided by highly integrated technology, but very few architects exploit technology to this degree.

TOP: The Interdisciplinary Communication Medium software displays different views of a building project to different design professionals, depending on their specialty. For example, a structural engineer sees columns and beams. **BOTTOM:** After the structure is analyzed, the software highlights columns exhibiting unacceptable deflection.



columns and beams





structural analysis of deflection

Integrated, interdisciplinary software can best be developed by interdisciplinary teams. CIFE brings together under one roof collaborating architects, engineers, builders, and computer scientists. Unlike many academic research centers, CIFE is supported directly by software and hardware developers, whose active participation ensures that "technology transfer" from lab to workplace will happen quickly and effectively. CIFE is also supported by architecture, engineering, and construction firms, and by building and plant owners and operators. These contributing firms send their executives to seminars and selected employees for training and for participation on software development teams.

Experiments in collaboration

One such team, headed by CIFE research associate and structural engineer Renate Fruchter, working with PhD student Mark Clayton, is developing software to support design collaboration. Their Interdisciplinary Communication Medium (ICM) permits several professionals to share a project's electronic 3D building model, each applying his or her own skills and vocabulary. The shared design appears differently on the screen, depending on the expertise of the person working on it. For example, the architect sees room layouts, walls, windows, and doors, while the engineer, working with the same 3D AutoCAD model, sees beams, columns, and footings.

The ICM operates according to a design sequence of proposal, interpretation, critique, and explanation. For example, in a typical process, the architect proposes a conceptual building design by creating a 3D model showing the building's basic form, the partition locations, and the door and window placements. The structural designer proposes a structural frame to accommodate the form. The architect "interprets" the model by identifying those design elements that relate to the analysis of interest, such as egress or energy. The structural engineer interprets the proposed form by identifying the beams, columns, and connections.

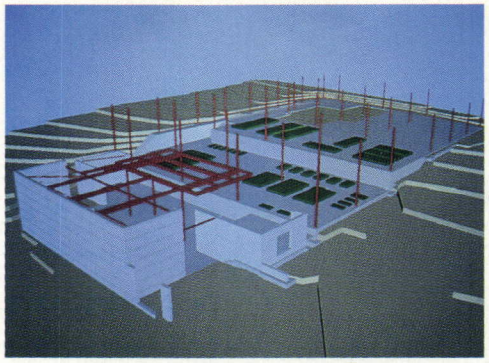
In the critique stage, the architectural information is analyzed for its conformance to requirements of egress and energy consumption; the structural design is analyzed for its resistance to loads. Finally, in the explanation stage, any discrepancies between the proposed design and the evaluation are displayed on the original 3D model. For example, where cooling loads are excessive, the display shows color-coded windows that could benefit from shading. A structural design with unacceptable displacement displays an exaggerated view of the columns in deflection. These graphical displays are particularly important in explaining problems to other team members who are not experts in those areas.

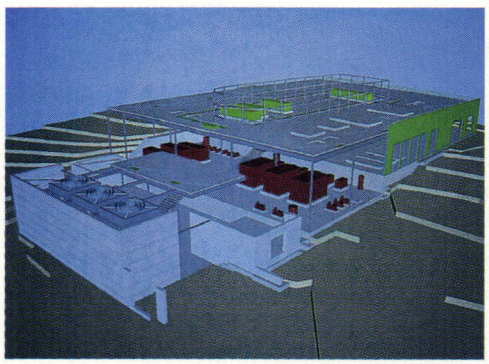
Fruchter hopes that ICM will reduce errors and delays by increasing understanding among professionals of different disciplines. She notes that this requires an integration of CAD software with knowledge-based systems. "For supporting creativity," Fruchter explains, "we need CAD graphic systems that provide, in addition to layers, line styles, and pens, support for multicriteria semantics, critiques, and explanations of design."

Linking platforms and sites

Another experiment in interdisciplinary communication is being conducted by CIFE research associate Taha Khedro working with Teicholz and computer science professor Michael Genesereth. Khedro has developed software programs called "facilitators," which perform translations between the disparate design and analysis software operated by the various design professionals. Khedro's prototype, called CIFE World, links architects, engineers, and contractors in eight applications covering conceptual architectural and structural design; steel beam, column, and footing sizing; cost analysis; construction scheduling; and database management, which feeds information to the other applications.

Results from each design application are sent to facilitator software, which automatically translates the received information and reroutes it in a format suitable for the receiving application. In addition to the basic design data, this information can also include explanations for why certain actions were taken. Although all the data is transmitted electronically, team members still communicate by telephone and negotiate design decisions in traditional ways. The interpretive, intermediary facilitator makes it possible for design professionals to work on different

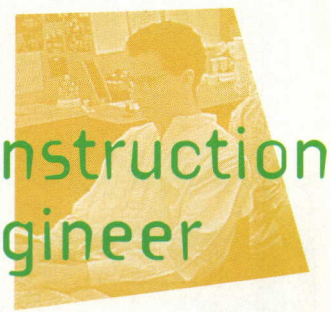




construction at 8 months

construction at 12 months

TOP: CIFE's Eric Collier links construction schedules to a CAD model. Each animation frame shows the updated construction status according to the associated schedule. Processes on the "critical path" are indicated in red. In this hospital project, for example, structural steel and equipment pads are to be installed at 8 months. **BOTTOM:** Equipment and metal stud installations are planned at 12 months.



hardware platforms and in remote locations, yet with the assurance that their work is being shared appropriately and that they are being informed of decisions by the rest of the team.

This software configuration makes it relatively easy to plug in other applications. Khedro notes: "Most often, design applications are integrated through a shared database management system, and a complete data model must be established from the beginning. With this approach, by contrast, the network of facilitators allows systematic and strategic integration where system developers are not forced to integrate all applications at once." Khedro's future work will focus on enhancing the facilitators to identify design conflicts and enforce constraints, and on issues associated with geographically dispersed workplaces.

Expanding university research

In a project sponsored by the Construction Engineering Research Laboratories (CERL) of the U.S. Army Corps of Engineers, researchers at four major universities across the nation are developing an infrastructure for integrating facility design and construction. The applications include an architectural layout and design system developed by Carnegie Mellon University, a structural design environment from the Massachusetts Institute of Technology, cost estimating from Stanford, and an energy analysis system developed by the University of Illinois at Urbana-Champaign. The group will develop models for identifying and resolving conflicts between disciplines, methods for sharing data between unrelated applications running on different hardware platforms, and strategies for collaboration.

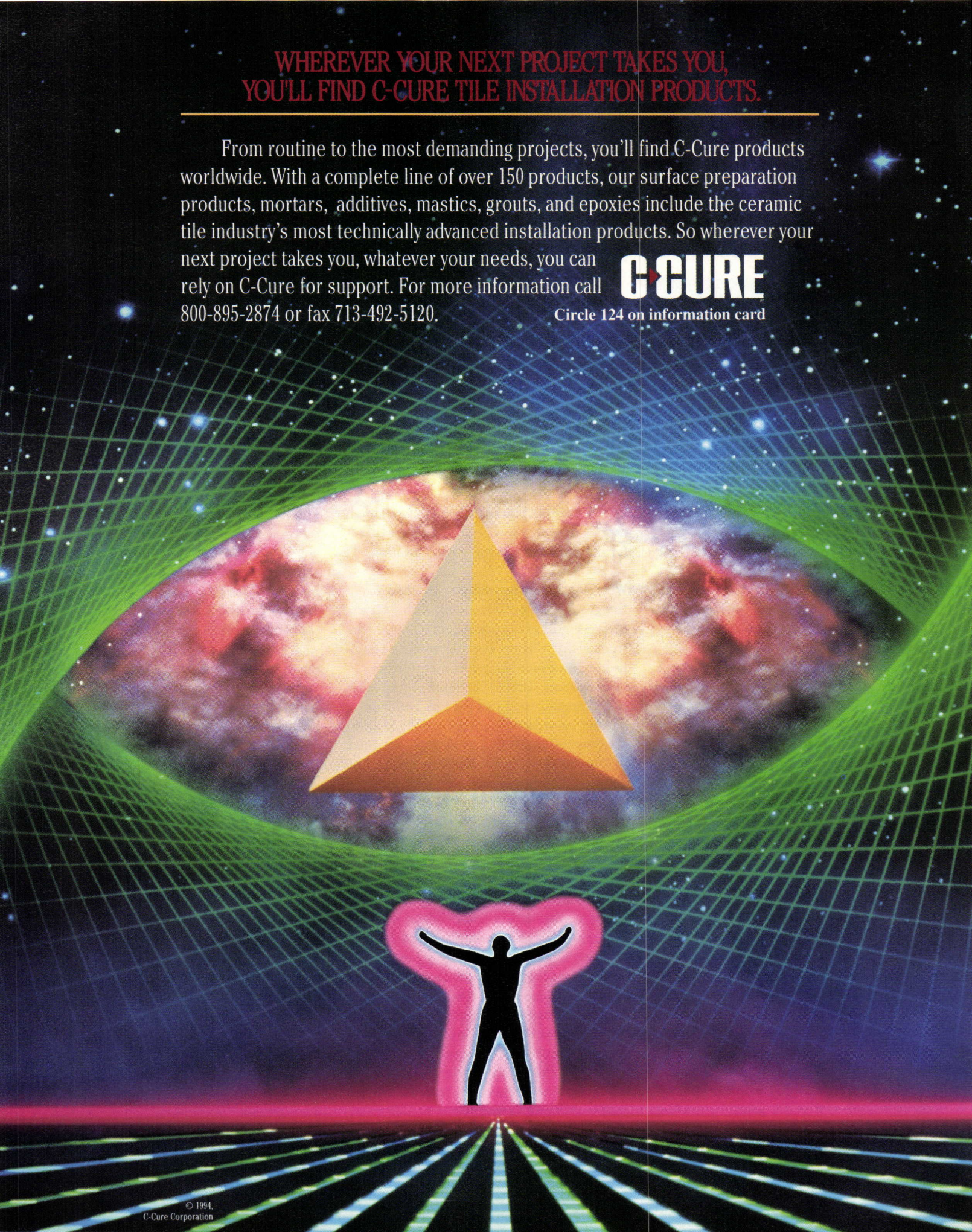
Watching the construction schedule

Integrating project scheduling with CAD has been the goal of architect and CIFE graduate student Eric Collier, working with civil engineering professor Martin Fischer. He has been working with the Dillingham Construction Company to model the five-building, six-year construction schedule of the San Mateo County Health Center Facility, designed by The Ratcliff Architects of Emeryville, California. Collier's goal is to make 3D modeling more valuable by providing a planning and communication tool for everyone involved in the construction process of phased demolition, new construction, and renovation.

This project applies software from Jacobus Technology to link the AutoCAD 3D model of the medical facility to the Primavera construction schedule. An animation of the construction process is created by redrawing the model at regular intervals throughout the construction period. Each frame shows an updated construction status according to the associated schedule. The animation displays, in effect, the building being constructed, piece by piece, enabling construction managers to assess coordination between trades and avert potential timing problems.

Processes along the "critical path"—those which, if delayed, will adversely affect the timing of all other processes—are shown in red. As construction proceeds, the actual schedule can be compared to the proposed, and any delays can be identified. The model can also illustrate when and how departments will be relocated during the long construction period. Collier is interested in the trade-offs between the cost and benefits of such modeling. A sufficiently detailed computer model is time-consuming to construct and to link with scheduling data. But this cost is justified if the modeling process unveils even small discrepancies between drawings that would be more costly to correct if not detected until construction begins.

Getting architects to assume more responsibility for construction processes may mean a reversal of current architectural practices, but a few architects have begun to think of this increase as an opportunity instead of a threat. These practitioners have reclaimed some of the responsibility that has been abdicated over the years to consultants, engineers, and builders. And their leadership may increase in the future with a new generation of design and construction software. Through innovative construction communications software, such as that developed at CIFE, architects may be able to increase the quality of buildings while lowering their costs. In addition, they will provide their clients with the data that can be the starting point for better facility management. Teicholz concludes: "If architects can exploit technology to add value to what they deliver to owners, they'll make a good case for better fees."—*B.J. Novitski*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Alliances between U.S. and foreign architects boost business abroad.

European Consortiums Extend Reach of American Firms

American architects working abroad may benefit from a new business practice recently adopted in Europe: international firm consortiums known as European Economic Interest Groups (EEIGs). These multi-organizational arrangements have many benefits, maintains architect William E. Alisse, director of international operations at The Phillips Janson Group Architects of New York City, which joined an EEIG called Perspective as an affiliate member in June.

Such groups provide contacts and local support in many regions, without requiring a U.S. firm to set up multiple foreign offices, which requires substantial investment, or to look for a local partner for each project, which is time consuming.

Local firms can help with filing requirements; ensure that drawings comply with building codes; and, frequently, develop working drawings or undertake construction administration for the out-of-town practice. Professional service fees for such assistance are negotiated on a project-by-project basis, according to fixed hourly rates provided by each member firm.

For example, The Phillips Janson Group was recently called to prepare a proposal immediately for a project in Italy. Alisse called his firm's Milan affiliate to check out the site and submitted a response to the Italian client overnight. "Logistically, it would have been impossible to meet this deadline without our local contact," he admits.—*N.B.S.*

Brick Hotline

The Brick Institute of America has opened a new automated hotline, called Brick Fax, to provide technical information on brick construction. Brick Fax operates 24 hours a day; seven days a week. Callers choose from a menu of technical papers on brick design, detailing, and construction methods—each supplemented by drawings, photographs, tables, and charts—and the service sends the requested information via fax to the caller. Each paper, which runs from four to 16 pages, costs $2, and requests for information are charged to the caller's credit card. Browsing the catalog is free. Brick Fax's number is (703) 620-1200.

MARK GOOCH

EXCHANGE: KPS's Taylor Plosser, Perov.

MARK GOOCH

CAD: Perov views computer model.

Russian Architect Studies U.S. Practice

Architect Fedor Perov of St. Petersburg, Russia, can't get good materials because they're too expensive to import. He's still stuck with the specs provided by the Soviet state. Cash flow is a problem because Russian architects are paid by the project, not a salary. And projects, Perov maintains, have to be completed quickly in Russia to beat inflation of 6 percent to 20 percent per month.

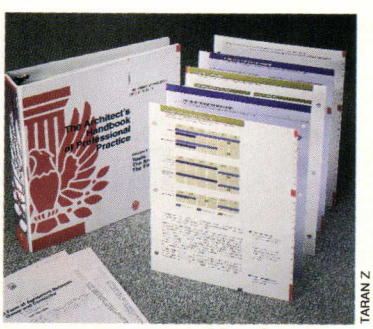
Perov traveled to the United States this summer as part of an international exchange program to learn how capitalists ply their expertise in a free-market economy. His trip was sponsored by the San Francisco-based Center for Citizen Initiatives, a nonprofit group supporting Russia's new entrepreneurs through direct exchanges with their American counterparts. The 38-year-old Russian spent five weeks with the KPS Group in Birmingham, Alabama, primarily studying American housing types to translate them into affordable models for Russian families.

Perov also learned how American architects manage projects to make profits, and how urban design and development are driven by speculation of market demand. KPS President Gray Plosser explained to Perov the nuances of financial planning in entrepreneurial firms, which actually sets a company's course in the marketplace—less perfunctory than planning under the old Soviet system, "where plans simply dictated output and budget." Perov remarks that Russia's fledgling entrepreneurs have not fully caught on to such strategic practices. "We still compensate according to municipal norms. Of course there is a system of free prices in Russia, but the state system continues to seriously influence all calculations. This is why construction costs in Russia are not declining."

But Perov's most singularly American experience occurred on a trip to the A/E/C Systems show in Washington, D.C., where he discovered 3D modeling and computer animation for the first time. "Americans have a great variety of products," he notes. "From my perspective as an outsider, it seemed too much."—*B.A.M.*

AIA Publishes Revised Handbook

The AIA recently issued a revised, 12th edition of *The Architect's Handbook of Professional Practice,* edited by David Haviland, professor of architecture at Rensselaer Polytechnic Institute. The 1,800-page loose-leaf practice "bible" covers architectural education, career strategies, and ethics; firm management, including start-up, marketing, human resources, financial strategies, computers, and firm transition; and an exhaustive section on projects—how to get them, the best delivery methods, and how to protect your firm from the hidden pitfalls of providing service. The *Handbook*'s new format allows readers to enter the book at any point and is structured in short passages that direct the reader to additional information on the subject. The cost of the *Handbook* for AIA members is $140; nonmembers pay $200. Students may purchase an abridged paperback version for $75. To order, call (800) 365-ARCH.



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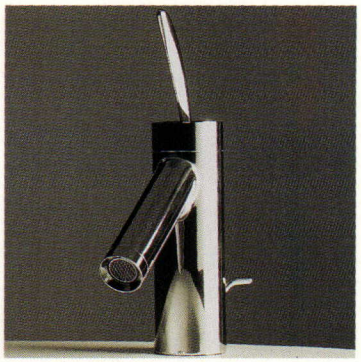
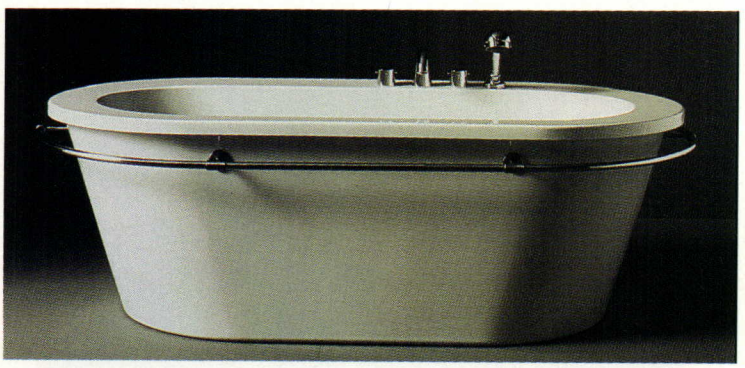
Philippe Starck designs bathroom products for German manufacturers.









In 1991, German manufacturers Duravit, Hoesch, and Hansgrohe commissioned French designer Philippe Starck to design a new line of bathroom fixtures. Inspired by the simple, traditional forms of the hand pump, bucket, and washtub, these streamlined products are the latest addition to Starck's prodigious portfolio of interior furnishings.

Duravit manufactures the ceramics and bathroom furniture; Hoesch, the acrylic bath and shower trays; and Hansgrohe, the tap fittings and accessories. Starck-designed accessories include towel racks, soap dishes, toothbrush holders, toilet paper dispensers, and mirrors.

Unveiled this June in the rustic setting of Karmeliter Kloster, a monastery in Frankfurt, Germany, the line will be available in the United States in 1995. For more information about Hansgrohe fixtures and accessories, circle 401 on information card; for Duravit ceramics, bathroom furniture, and accessories and Hoesch acrylic bathtubs and shower trays, circle 402 on information card.

TOP LEFT: The 57-centimeter diameter ceramic wash basin stands on a semipedestal by Duravit with chrome fixtures by Hansgrohe.

TOP CENTER: The 90-centimeter semicircular wash basin can be wall mounted or supported by a floor-standing conical pedestal. Available only in white, the basin is offered with an optional integrated towel rail.

TOP RIGHT: Available only in chrome, the wash basin nozzle by Hansgrohe translates the movement of the hand pump into a single-lever faucet.

ABOVE LEFT: The 58-centimeter wash basin on a vanity unit is shaped like a barrel, clad in pear wood veneer. Flush panels open to reveal a laminated black melamine interior and a glass shelf with chrome rail.

CENTER: The floor-standing toilet (left) features a tall, slim cistern with ceramic casing on the outside and plastic casing inside, to reduce flushing noise and eliminate condensation problems. The bidet (right) boasts curved edges and a large bowl.

CENTER RIGHT: Wall-mounted toilet and bidet. The European model toilet (left) features Duravit's Stop+Go automatic flushing options; the U.S. version employs the Geberit wall-mounted flushing mechanism.

ABOVE: The freestanding bathtub by Hoesch is constructed of white acrylic. A polished-chrome towel rail encircles the tub. The fittings mounted on the rim of the tub include a retractable hand shower. In addition to the bathtub, Starck has designed a round acrylic shower tray; one side is placed against a wall for plumbing access.

Prefabricated panels
Eastern Exterior Wall Systems manufactures lightweight wall panels, constructed of galvanized light-gauge steel. Available in finishes ranging from granite (above), brick, and ceramic tile to glass and aluminum, these prefabricated panels can be applied directly to an existing facade; they are also appropriate for new construction. Eastern's Cygnus method of installation uses structural silicone to adhere the finish to the panel.
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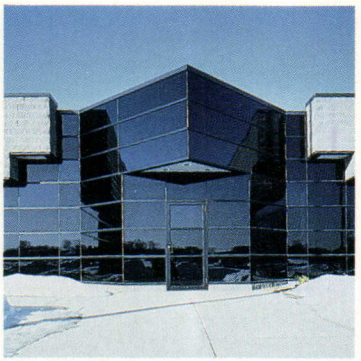

Tinted glass
SuperGrey High-Performance Tinted Float Glass (above), manufactured by Libbey-Owens-Ford, blocks 95 percent of ultraviolet rays, reducing solar heat gain and glare. Ideal for applications near computers, SuperGrey is purported to maintain undistorted exterior views without evidencing an unnatural tint. Available in thicknesses of 1/8, 3/16, or 1/4 inch, SuperGrey can be applied in a single layer or in multiple insulating layers.
Circle 404 on information card.

Curtain wall system
Vistawall Architectural Products offers a complete line of curtain wall options with the CW-250 (above), a standard curtain wall system. The face of Vistawall's CW-250 measures 2 1/2 inches and is designed to accommodate 1/4-inch or 1-inch glazing. Interior mullion depths vary according to loading requirements. The system is available in either a painted or an anodized finish. Stainless steel face caps are also available.
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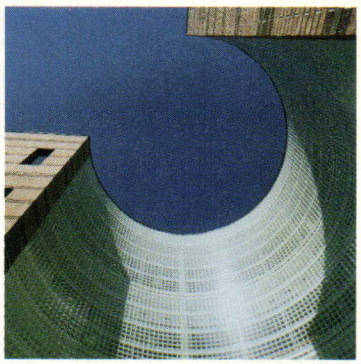

Glass block
Pittsburgh Corning glass block products are available in five patterns that provide varying degrees of visibility and light transmission. The VUE pattern (above) features a smooth, virtually undistorted surface that boasts maximum transparency. In addition to standard 6-, 8-, and 12-inch squares, the VUE pattern is available in rectangular blocks and the TRIDRON 45 degree angular block, for curved configurations.
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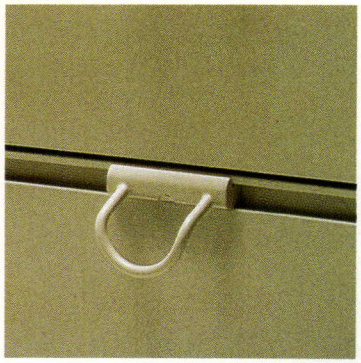

ADA-compliant pulls
EnhancedAccess is a line of ADA-compliant file drawer pulls (above) for disabled office workers, created by designer Tom Edwards. Introduced by Meridian Incorporated, the drawer pulls are ergonomically designed to accommodate prosthetic hooks and orthotic devices. Constructed of plastic, the pulls slide into place on Meridian's Standard Pull drawer fronts and can be tightened with an ordinary allen wrench.
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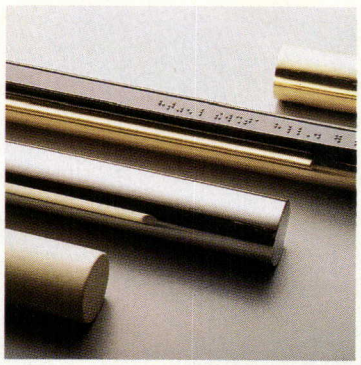
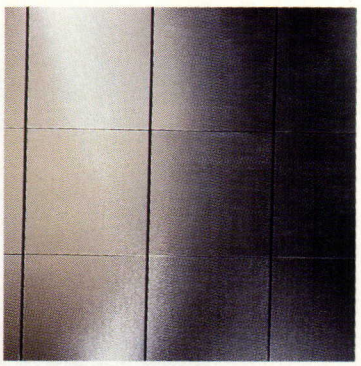
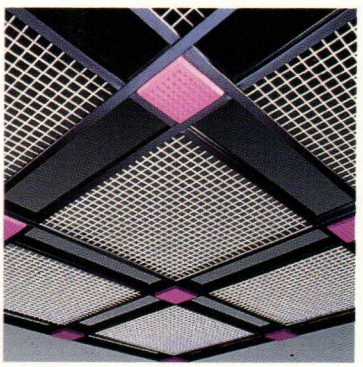


Braille handrail
Boston-based Coco Raynes Associates has designed an information system for the blind that combines continuous Braille messages on the back of a handrail (above) with audio devices, activated with the push of a button, positioned at strategic locations along the rail. Appropriate for hotels, hospitals, museums, and other public buildings, the Braille handrail and audio devices explain a building's floor plan and location of exits.
Circle 408 on information card.



Metal finishes
Surface Systems by Marlite is available in a variety of metal and simulated metal surfaces for interior wall treatments. Copper, brushed aluminum, galvanized steel, stainless steel (above), and a hand-ground moire stainless steel represent the natural metal veneers available. Faux finishes include patinated copper, oxidized steel, and patinated steel. Panels are available in 16-inch-by-24-inch square modules.
Circle 409 on information card.



Ceiling panels
Wireworks Ceiling Panels (above), available from USG Interiors, are inspired by the technology of robotic wire welding. Available with 1-, 2-, 3-, and 4-inch-square cells, the panels are designed to accommodate signage and lighting. Standard and custom colors are available, as well as brass and chrome finishes. The panels are constructed in 2-foot squares and can be combined with existing USG suspension systems.
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Department of Architecture and Urban Design invites applications for the following faculty positions, beginning academic year 95-96.

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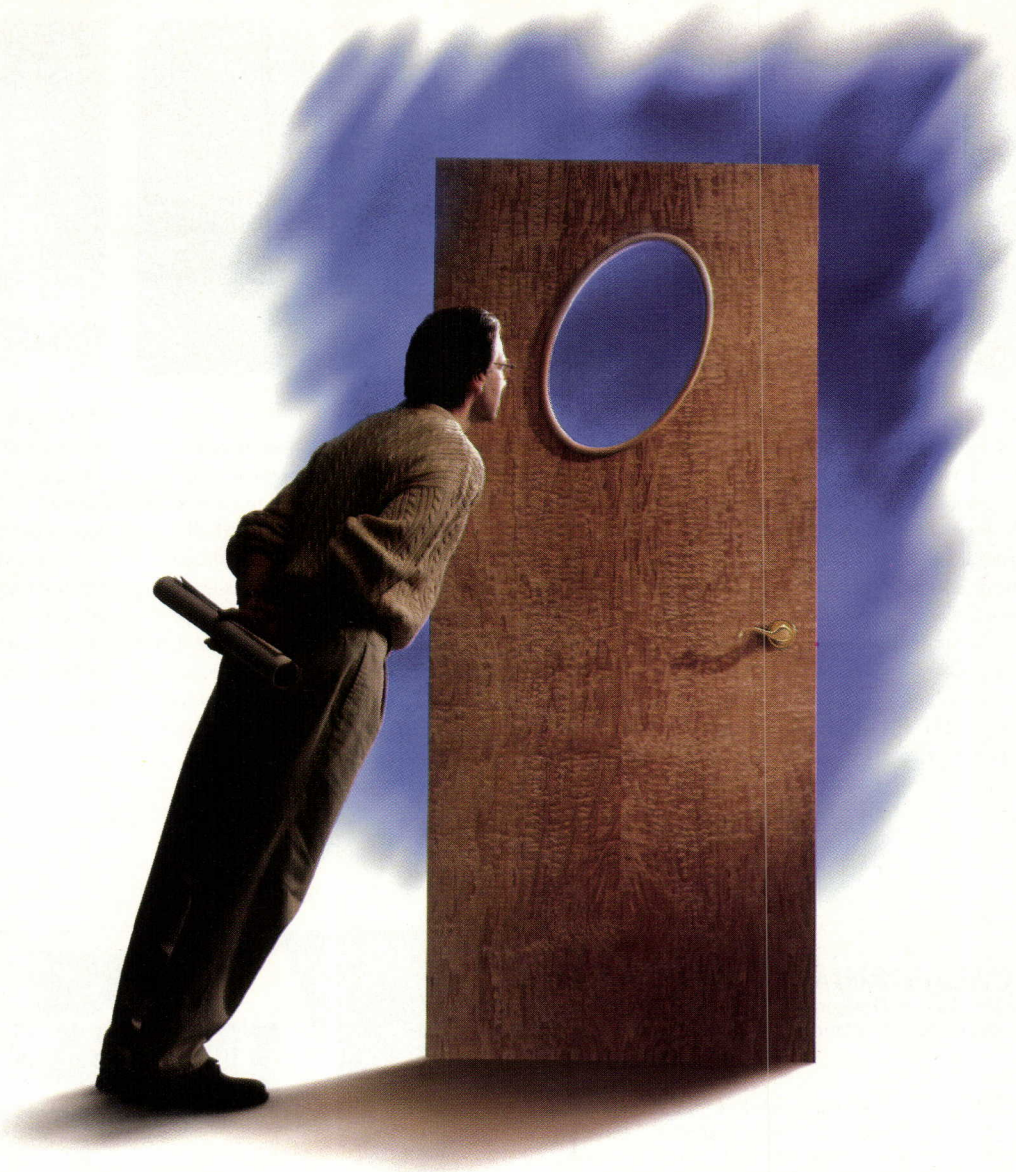
The Department of Architecture and Urban Design at UCLA offers four degrees at the graduate level: M.Arch.I, M.Arch.II, M.A. and Ph.D. in Architecture. Associated with the Department is a new Center for Design and Computation, which supports collaborative research in this area.

The successful candidates will be responsible for teaching fundamentals to professionals and advanced courses to research degree students, including the Ph.D. degree, and will also be responsible for expanding research in their area. It is expected that these tenure track appointments will be made at the assistant professor level; however, depending on exceptional qualifications, appointment at a higher rank may be considered.

Candidates are asked to submit an application which includes a curriculum vitae, the names and addresses of at least three referees, and non-returnable samples of work to Jurg Lang, Chair, Department of Architecture and Urban Design, School of the Arts and Architecture, UCLA, Los Angeles, CA 90024-1467. UCLA is an Equal Opportunity/Affirmative Action employer. The Department of Architecture and Urban Design seeks diversity and encourages women and members of minority groups to apply. **Deadline November 1, 1994.**



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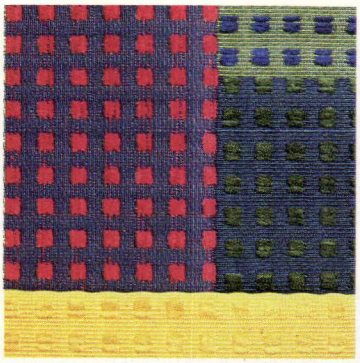
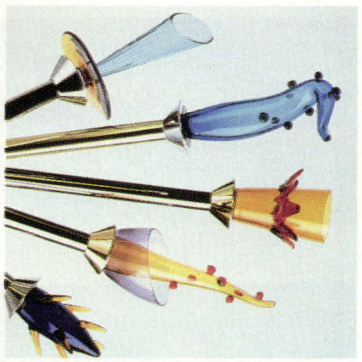
Gigli fabrics
A new collection of eight woven fabrics is the result of a collaboration between Italian fashion designer Romeo Gigli and Donghia Textiles. The Islamica pattern (above), available in three colors, is constructed of 52 percent viscose and 48 percent cotton. Woven in France, the fabric is available in 54-inch-wide segments, incorporating four 13 1/2-inch horizontal repeats and a 40-inch vertical repeat.
Circle 411 on information card.



Textured upholstery
With the introduction of Ossian (above), Zimmer+Rohde has revitalized the traditional chenille pattern with a checkerboard of raised 1/4-inch squares. Appropriate for residential and commercial applications, Ossian is composed of 54 percent cotton, 36 percent viscose, and 10 percent polyester. An extensive range of browns, greens, reds, blues, and yellows is represented in Zimmer-Rohde's palette of 44 colors.
Circle 412 on information card.

Bauhaus-inspired fabric
As part of its year-long celebration of the 75th anniversary of the Bauhaus, KnollTextiles has introduced Pavilion (above), one of three new fabrics in its Bauhaus collection. The flaglike pattern was originally conceived as a carpet design and adapted to an upholstery fabric. Featuring a 6-inch vertical repeat, Pavilion is available in five colors. The material is a blend of 51 percent cotton and 49 percent rayon.
Circle 413 on information card.



Glass window accessories
Mysterious Garden (above), designed by Israeli architect David Palterer for Blome Corporation, is a collection of window hardware that celebrates nature. Each finial and tieback is constructed of hand-blown glass by artisans in Murano, Italy. No two are alike, although each replicates one of Palterer's original designs: five finials, measuring 6 to 10 inches long; and six tiebacks, measuring 4 to 5 inches long.
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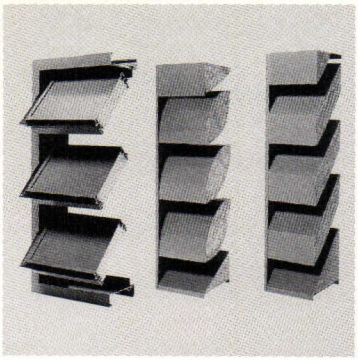
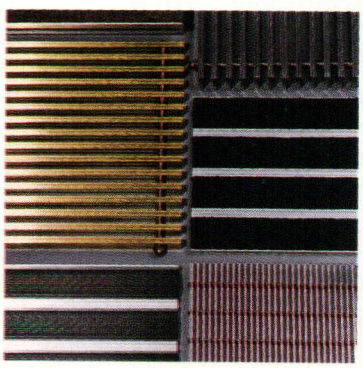


Ventilating louvers

Manufacturers of ventilating louvers for 75 years, the Airolite Company has released a new thermal break louver, the Airolite TBI8046 (above, left), designed to minimize heat transfer and restrict the formation of condensation. The blades of the TBI8046 are adjustable, allowing the louver to function as an insulated wall panel when closed. Airolite has also introduced a new line of acoustic louvers, including the Airolite T9112 (above, right) and the T9212 (above, center). All connections in Airolite's louvers are welded and provide greater structural stability and resistance to corrosion than those constructed with screws or rivets. The Airolite T9212 features an airfoil blade profile designed to further reduce noise. Both the thermal break louvers and the acoustic louvers may be finished with Kynar 500 resin coatings, available in a wide selection of colors.
Circle 415 on information card.



Wall and floor grilles

Kadee Industries offers a complete line of entrance floor mats and ventilation grilles (above). Aluminum entrance grids and roll-up mats are available with carpeted or vinyl inserts. Kadee's newest products, the Aluminum Bar Clean Tread and the Bronze Bar Clean Tread feature grooved surfaces to remove dirt and moisture from shoes. They are available in standard sizes up to 4 feet by 8 feet, as well as in custom sizes. Resistant to moisture, the Aluminum and Bronze Bar Clean Treads are recommended for ceiling and wall ventilation grilles in commercial building applications.
Circle 416 on information card.

Window security

A new line of safety and security window films is designed to withstand turbulent weather, earthquakes, and terrorist acts. Applied to the interior side of windows, LLumar Magnum films hold glass in place and protect people, equipment, and furnishings from broken glass and flying fragments. These laminated polyester films are purported to maintain clear, undistorted vision and block ultraviolet rays. Courtaulds Performance Films manufactures the films in thicknesses of 0.004, 0.007, and 0.011 inches.
Circle 417 on information card.

Architectural glass

Cesar Color has introduced Metallica, a new line of architectural glass. Available in 10 semitransparent and 10 opaque colors, the Metallica line is intended to match or complement interior metal surfaces such as brass, bronze, gold, or stainless steel. Typical applications include doorways, railings, elevators, partitions, and furniture. Standard sheet sizes up to 58 inches by 133 inches are available. Designers may specify several configurations, including clear, tinted, annealed, heat treated, flat or bent, and single or double glazed.
Circle 418 on information card.

Acrylic glazing

Lightweight, durable, acrylic sheets and polycarbonate sheets manufactured by CYRO Industries offer an alternative to glass-enclosed atriums, skylights, or pedestrian walkways. Acrylite AR abrasion-resistant acrylic sheet boasts four times the impact resistance of glass. Simple and inexpensive to cut, Acrylite AR is available in a variety of transparent and opaque colors. For applications requiring significant strength, Cyrolon AR polycarbonate sheet provides up to 250 times the impact resistance of glass. Sheet sizes range from 4 feet by 8 feet to 5 feet by 10 feet; thicknesses vary from 0.06 to 0.5 inches, depending on panel size. CYRO also offers the Acrylite OP-3 and Cyrolon UVP sheets, which filter 98 percent of ultraviolet rays.
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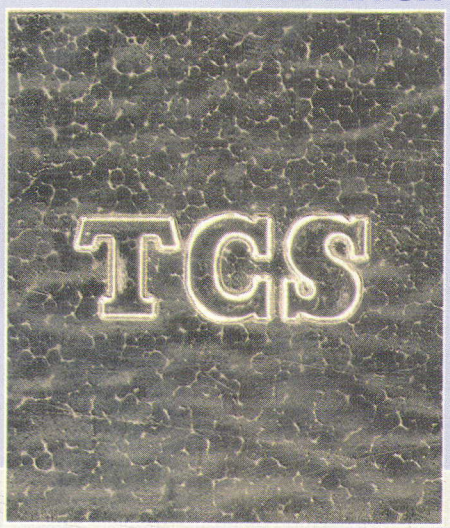
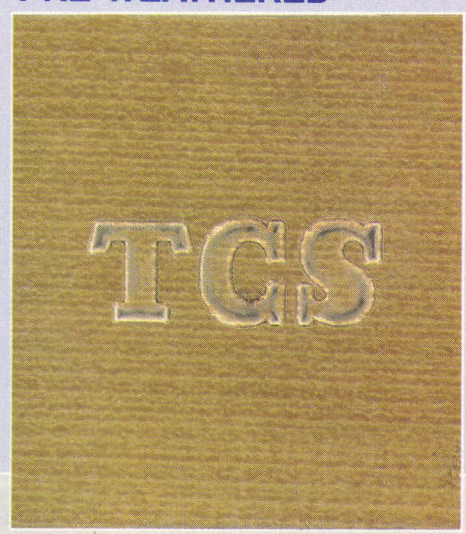


either way, TCS (terne-coated stainless steel) will weather to an attractive, warm gray

PRE-WEATHERED



Hinsdale High School, Hinsdale, Illinois
Architects: Cone & Dornbusch

Pittsburgh International Airport
Architect: Tasso Katselas

Follansbee makes its terne-coated stainless available in two finishes—the standard mill finish and a pre-weathered finish. Both will weather to the attractive, gray finish characteristic of TCS.

MILL FINISH. TCS is a reflective silver color when the terne alloy is first applied (see sample). After exposure, it will gradually oxidize to a gray tone in 8 to 24 months.

PRE-WEATHERED FINISH. The pre-weathered TCS finish is a mill-applied wash coat used to limit initial reflectivity, changing from its brownish color (see sample) to a gray tone in approximately 3 months after exposure.

Once TCS has reached its warm, gray finish, weathering virtually stops and the architectural stainless base plate is protected for decades of service. TCS never requires painting and maintenance is minimal.

We will be happy to send you samples of the available TCS finishes. Call us toll-free, 1-800-624-6906.

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GENERAL CONTRACTOR: Constructora San José SA
PHOTOGRAPHER: Duccio Malagamba

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YIRRKALA, AUSTRALIA

ARCHITECT: Glenn Murcutt, Sydney, Australia—Glenn Murcutt (principal); Simon Thorpe, John Colquhoun (project team/construction)
ENGINEERS: James Taylor & Associates (structural); NABALCO (electrical)
CONSULTANTS: ANTAX (structural steel); Windworker Company (ventilation)
PHOTOGRAPHER: Reiner Blunck

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ARCHITECT: Jean Nouvel, Emmanuel Cattani & Associates, Paris—Jean Nouvel (principal); Didier Brault (project architect)
LANDSCAPE ARCHITECT: Lothar Baumgarten
ENGINEERS: Ove Arup & Partners (structural); Riedweg & Gendre/Sefca, Chauffage & Entretien (mechanical); Iintegral ING, EMI (electrical)
CONSULTANTS: De Buissière Associates (curtain wall); Casso & Gaudin (security); Fondaco (foundations); Sitraba (metal framework); Harmon CEM (window walls)
GENERAL CONTRACTOR: Hepper
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ARCHITECT: Kaira-Lahdelma-Mahlamäki, Helsinki, Finland—Ilmari Lahdelma, Rainer Mahlamäki (principals-in-charge); Juha Mäki-Jyllílä (assistant)
LANDSCAPE ARCHITECT: Gretel Hemgård
ENGINEERS: A. Insinöörit (structural); LVI-Niemi (mechanical); Kalle Havulinna (electrical)
GENERAL CONTRACTOR: A-Rakentajat
COST: $6.35 million
PHOTOGRAPHER: Jussi Tiainen

HÔTEL DU DÉPARTEMENT
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ARCHITECT: Alsop and Störmer, London—Will Alsop (principal designer); Francis Graves, Stephen Pimbley (project architects)
ENGINEERS: Ove Arup & Partners (structural/mechanical/electrical)
CONSULTANTS: Bureau D'Etudes-OTH Méditerranée (technical); Hanscomb Ltd. (cost estimating); Charles Bové, Andrée Putman (interior design)
COST: $150 million
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LANDSCAPE ARCHITECT: Hans Luz
ENGINEERS: Schlaich, Bergermann & Partner; Pfedelbach-Gleichen (structural)
CONSULTANTS: Sigrid Duffner, Armin Gebert, Wolfgang Leukel (site)
PHOTOGRAPHER: Christian Kandzia

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NAGI, OKAYAMA PREFECTURE, JAPAN

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ENGINEERS: Toshio Yanagisawa (structural); Kankyo (mechanical); TL Yamagiwa Laboratory (electrical/lighting)
GENERAL CONTRACTOR: Taisei Corporation
PHOTOGRAPHER: Katsuaki Furudate

KITCHENER CITY HALL
KITCHENER, ONTARIO

ARCHITECT: Kuwabara Payne McKenna Blumberg Architects, Toronto, Canada—Bruce Kuwabara (partner-in-charge); B. Kuwabara, H. Sutcliffe, M. Wilson, M. Jaffar, J. Czechowski, A. Dyke (competition team); M. McKenna, L. LaRocca, D. Pontarini, H. Sutcliffe, M. Wilson, M. Poitras, J. Taylor, J. Allen, C. Henry, G. MacMullin, A. Dyke, C. Pankratz, M. Hall, L. Chow, B. Siber, B. Colaco, J. Calvert, D. Pereklita (design team)
LANDSCAPE ARCHITECT: Milus Bollenberghe Topps Watchorn
ENGINEERS: Yolles Partnership (structural); Merber Corporation (mechanical); Mulvey + Banani (electrical)
CONSULTANT: Rice Brydone (interiors)
GENERAL CONTRACTOR: Ellis-Don Construction Ltd.
PHOTOGRAPHER: Timothy Hursley

No excuses after this information exchange

Curtain Wall

CSI Section 08900

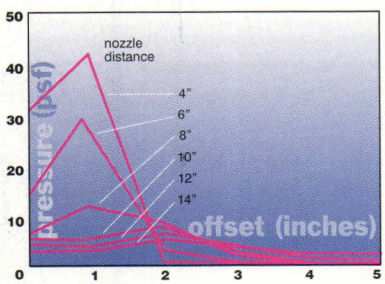
Testing for leakage

Many project specifications written by architects provide for window and curtain wall leakage tests as part of the project quality assurance program. The two most common are the chamber and hose tests. Chamber tests simulate wind-driven rain through a uniform water spray in conjunction with differential pressure. Racks of calibrated nozzles and sealed test chambers with centrifugal blowers provide the water spray and a measurable pressure differential (frequently 6.24 psf). The methods of ASTM E 1105 or AAMA 501.3 are typically followed.

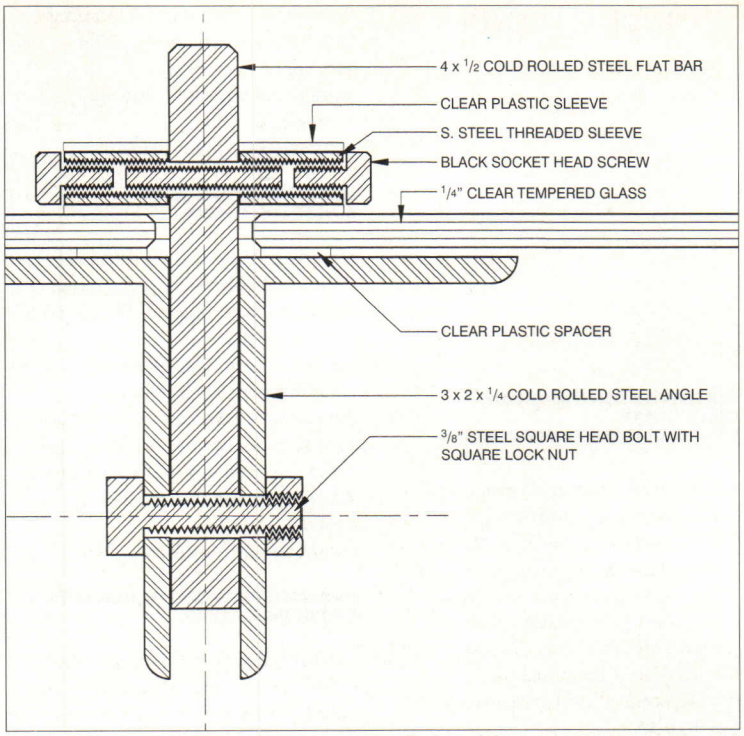
Hose tests use much simpler equipment. The AAMA 501.2 standard method requires only a garden hose with a specially calibrated nozzle and pressure gauge. The procedure calls for spraying 5 feet of window or curtain wall jointery for 5 minutes with the nozzle 12 inches away, and the hose pressure set at 35 psi. If no water leakage is detected from the interior, the next 5 feet of jointery are tested, and so on, until the prescribed area has been completely tested.

To determine how much pressure is applied to the tested area, our firm conducted studies with a manometer port and a standard Monarch B-25 nozzle at perpendicular distances ranging from 4 to 14 inches, and lateral offset distances ranging from 0 to 9 inches. The size of the pressure port varied from 0.125 to 0.345 inch in diameter (see graph below).

We found that the nozzle spray pattern is not uniform and that maximum pressure occurs in a concentric ring 1 to 2 inches radially outward from the center. The maximum pressure generated at a distance of 12 inches is approximately 7.6 psf. Conducting hose tests at distances less than 12 inches can generate pressures considerably higher than typically specified for chamber tests.



AAMA 501.2 TEST PRESSURES



DETAIL: Interior glazing supported by cold-rolled steel frame.

Hose testing is well suited, therefore, for testing exposed inoperable joints and seals. Window and curtain wall systems that rely on hidden seals, end dams, and panning are more appropriately evaluated through chamber tests and/or sill damming flood test methods.

Kurt R. Hoigard
Raths, Raths & Johnson
Willowbrook, Illinois

Glass and Glazing

CSI Section 08800

Detailing interior glazing

Readily available standard steel sections, common mechanical fasteners, and glass provide architects with the raw ingredients for an interesting, affordable, and simple-to-install interior glazing system. To create such a system that functions well and has esthetic appeal, the architect should carefully consider the steel components and their finishes, the fastening devices, the acoustic quality of the wall, and the glass itself.

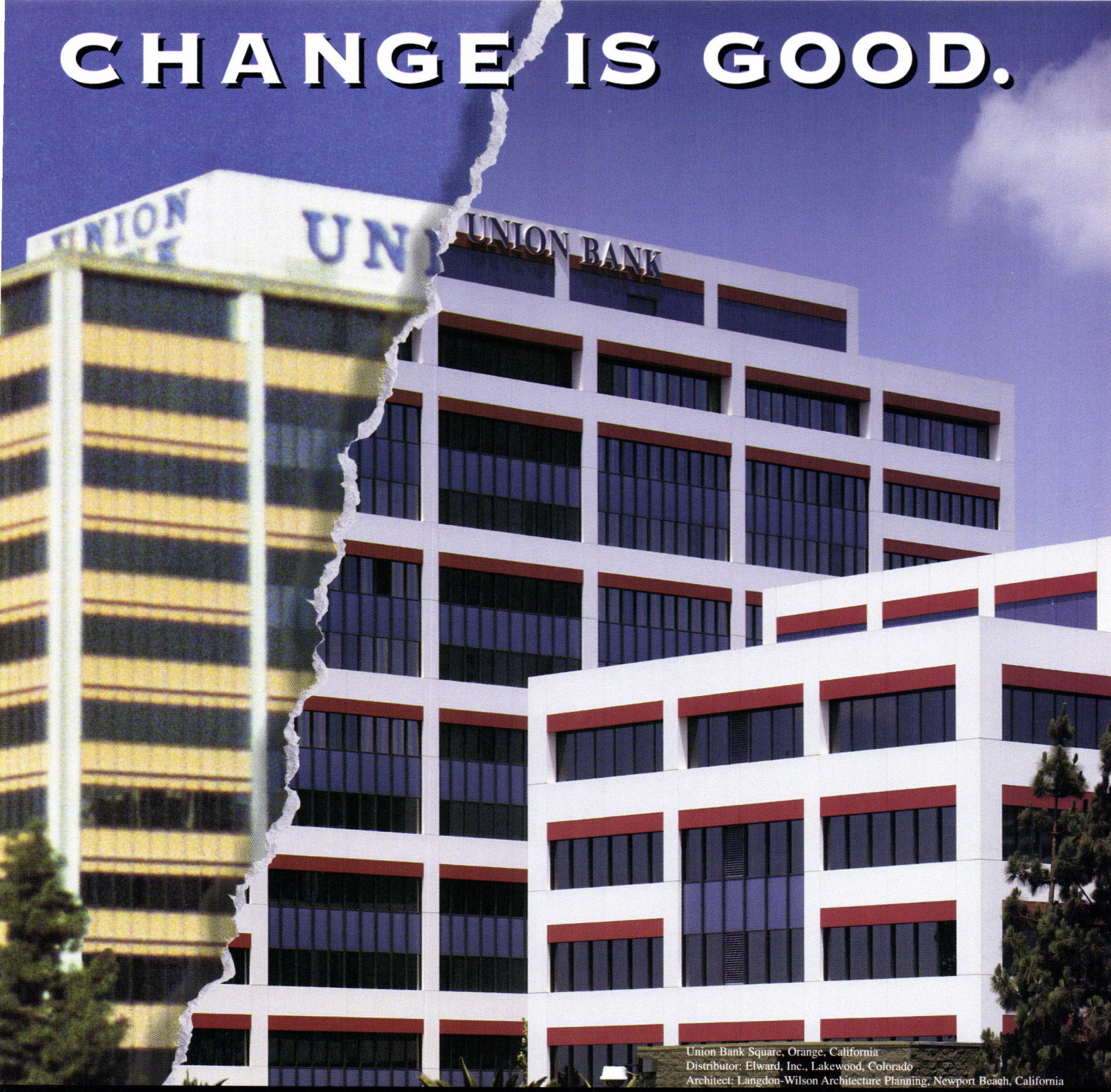
Either hot-rolled or cold-rolled steel can be employed for the structural frame. Hot-rolled steel is more appropriate for concealed structural building applications and should be further refined from its factory finish by sandblasting the steel and applying a clear lacquer, a process that produces a natural finish, or by applying paint. Cold-rolled steel is less available than its hot-rolled counterpart and offers less variety of shapes, but it does have the advantage of a smoother, more refined factory finish. With a simple lacquer applied for sealing, cold-rolled steel can be left in its natural state to produce an industrial esthetic (detail above).

The fasteners for this wall system are critical both as the means of connecting the various pieces and as the visual element that projects a high-quality image for the assembly. Fasteners should be specified according to the scale, structural strength, and material palette of the project.

The choice between tempered or plate glass will depend on code issues. To satisfy privacy and esthetic considerations, frosted, tinted/colored, or textured glass may be appropriate. Any caulking of the glass and frame will depend on the degree of acoustic privacy required. In general, glass walls do not offer good acoustic qualities. However, caulking of all joints can greatly improve the acoustic performance. If privacy is not an issue, then caulking is generally not required. However, it does help in isolating sounds caused by vibration. In designing interior glass walls, as with any element of a building, architects' success depends on attention to details.

Lewis J. Goetz, AIA, and Mansour Maboudian
Greenwell Goetz Architects
Washington, D.C.

CHANGE IS GOOD.



Union Bank Square, Orange, California
Distributor: Elward, Inc., Lakewood, Colorado
Architect: Langdon-Wilson Architecture Planning, Newport Beach, California

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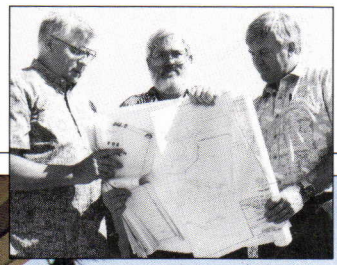
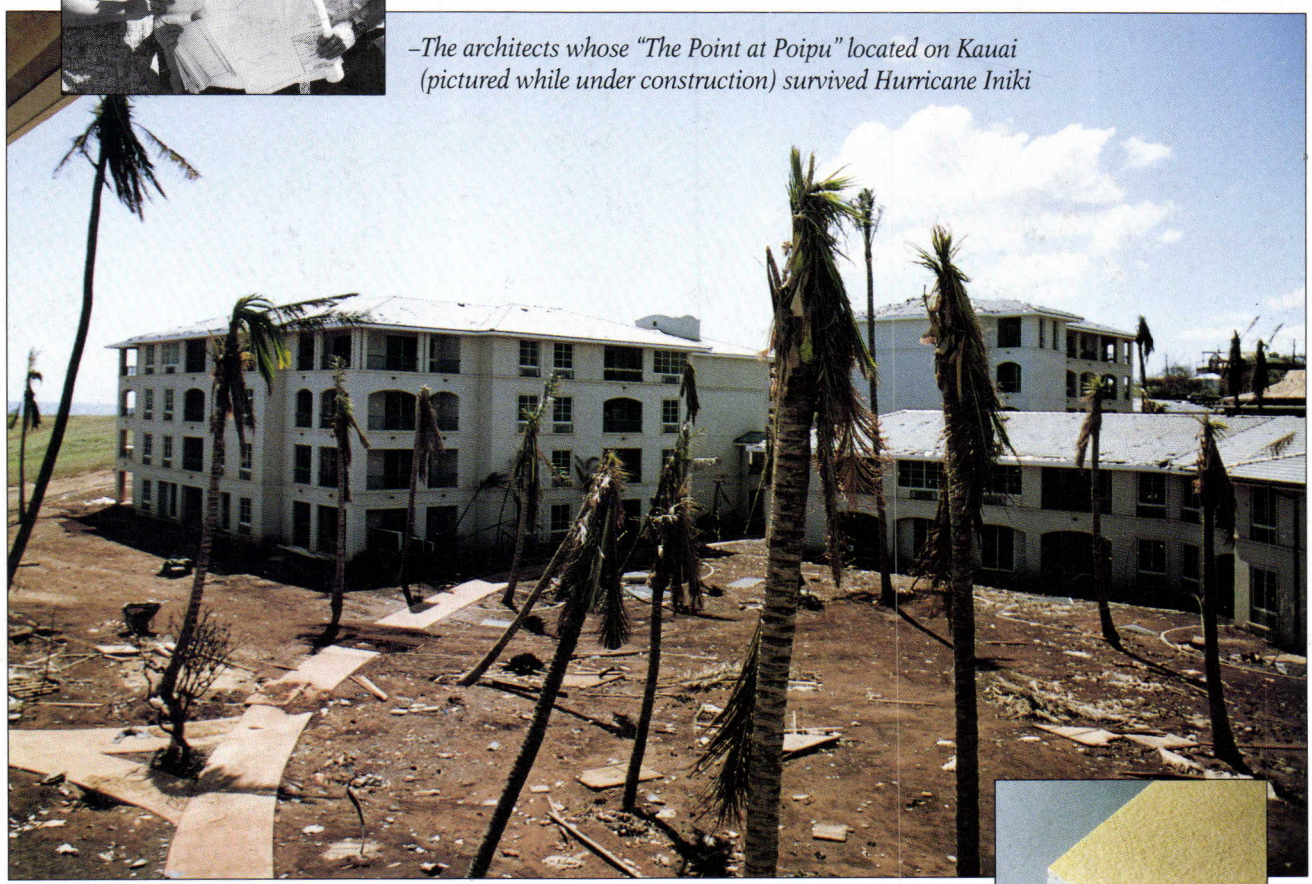
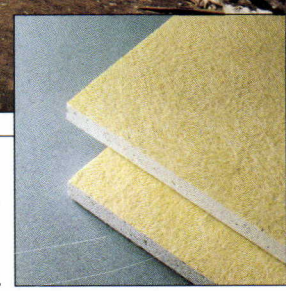
"We chose G-P Dens-Glass® Gold to protect the project from moisture. We were not expecting a hurricane."



–The architects whose "The Point at Poipu" located on Kauai (pictured while under construction) survived Hurricane Iniki





Architect: Group 70 International, Inc./ General Contractor: Fletcher Pacific Construction Company

G-P: You figured you'd use Dens-Glass® Gold to keep moisture out of the condos, and it ends up ...

ARCH: *...helping the condos stand up to hurricane force winds as well. The combination of the synthetic plaster we used and the Dens-Glass Gold gave the condos more structural stability than regular gypsum board could have.*

G-P: You counted on Dens-Glass Gold for protection from sea spray, right?

ARCH: *Yeah, constant sea spray riding in on lovely breezes up to 42 knots. That was a key reason we specified Dens-Glass Gold–paper-face can't touch it for moisture protection.*

G-P: So when Iniki arrived, the condos survived the winds *and* the rain.

ARCH: *Frankly, we were astonished. You know, over 85% of the buildings on the island were damaged. No one would have expected Dens-Glass Gold to withstand that kind of storm. But it is made for high performance. Its construction is totally unique. Silicone and fiberglass, right?*

G-P: Silicone-treated core and embedded fiberglass mats front and back, with the gold-colored alkali-resistant coating.

ARCH: *And it's those fiberglass mats that make it more stable than paper-face.*

G-P: By the way, G-P backs Dens-Glass Gold with a six-month limited warranty against moisture deterioration when it's fully exposed to the weather. It's also warranted for 5 years against manufacturer defects.*

G-P: So, you're a pretty satisfied customer?

ARCH: *And you're a master of understatement.*

*For a free brochure on Dens-Glass Gold including warranty information, call 1-800-BUILD GP(284-5347), Operator 731. For technical assistance, call 1-800-225-6119. (In Georgia, call (404) 987-5190.) Look for us in Sweets, Section #090250/GEN.

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