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AMERICANS ABOARD:
THE ANNUAL INTERNATIONAL REPORT
GUEN MURCUTT SPEAKS
DALLAS'S CRUMBLING LEGACY



ENDS OF THE EARTH

Yale's School of Architecture has a new dean—finally. It took more than a year to find the right candidate, but then this isn't just any academic appointment. It's Yale. Old Blue. Mario Botta, Richard Rogers, and Vincent Scully teach (or have taught) there. Norman Foster, Maya Lin, Robert Venturi, and a host of other luminaries are graduates. Charles Moore, Cesar Pelli, and Paul Rudolph were all Yale deans.

So whom did Yale President Richard Levin pick over the likes of New Urbanist Elizabeth Plater-Zyberk and old Modernist Charles Gwathmey to succeed outgoing dean Fred Koetter? Who's got the mojo to lead the fabled school into the 21st century? Are you sitting down? The winner is: Robert A. M. Stern, the suede-loafed

studios nearly 30 years before it was hip.

Further erosion of this heritage of leadership would be a tremendous loss to Yale, academia, and the profession. Which brings us back to Robert Stern. Can a man whose architectural vision is rooted so firmly in the past really look to the future?

Yes, if he chooses to. Whether you agree with Stern's design esthetic or not—and I don't—it's hardly mindless. Thinly conceived projects like the University of Virginia's Darden School notwithstanding, Stern's buildings are often thoughtful, and occasionally, as with Burbank's Disney Feature Animation building, delightful.

However, style is not the central issue here. What matters is that Stern and his

The New Old Blue

Can Yale's new dean of architecture revive a moribund program?

sultan of suburban retroecture, Disney party-boy, and notorious academic curmudgeon. His, according to Yale, is the face of a new millennium.

Or perhaps Stern is the final nail in the coffin of what was once one of the world's finest architecture schools: The sad, public secret of why Yale's search took so long is that the job was just not very attractive. Under Koetter's deanship-in-absentia, the greenest of the Ivies wilted. For instance, Yale's iconic, Rudolph-designed Art and Architecture Building is dilapidated and ill-equipped; the school's once glittering faculty has lost its luster; and last year, admissions officers could barely scare up enough desirable students to fill the incoming class.

Yale's rapid slide from prominence is not simply a matter for nostalgic fretting. Over the last 50 years, the school has repeatedly defined the academic forefront. For example, Yale's student-run *Perspecta* was the paradigm for all collegiate architectural journals. Rudolph's building was the first modern home for an architecture school to boast a clear pedagogical and political agenda. And Yale began teaching design-build in its

architecture spark debate. In this way, Stern fits the tradition of a Yale dean well: He is a teacher, scholar, and practitioner (see page 29, this issue) whose passion for and dedication to architecture are beyond question. In his books, his PBS television series "Pride of Place," and countless lectures, Stern has championed the cause of good design—without regard to its era or style—to wider audiences than almost any other living architect. He brings Yale a nimble intellect, an enormous amount of energy, and a Rolodex fat with potential faculty and patrons. And as a Yale School of Architecture alum, Stern should be smart enough not to try imposing an esthetic agenda on a school that has always valued pluralism. He isn't going to Yale to make his reputation, but to cap it.

These signs auger well for a program that could use some good news. The short-term cost of Stern's appointment is the excitement that would have accompanied a more progressive choice like Steven Holl (whose name also ran through the candidate rumor mill). Stern at least brings the promise of an activist Yale dean, something the school and the profession have missed sorely. *Reed Kroloff*



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blueprint. Your vision, your insight adds the details which take a home from ordinary to

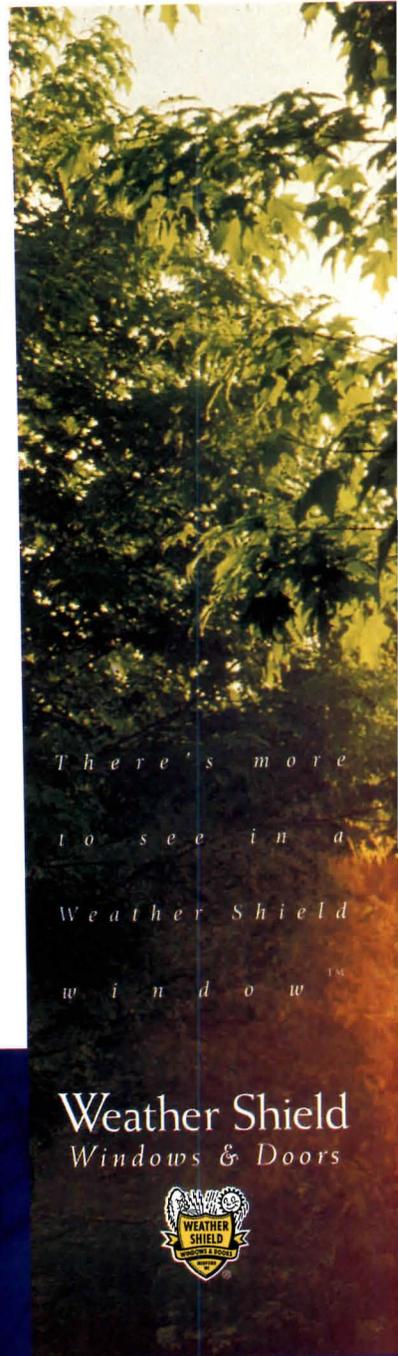
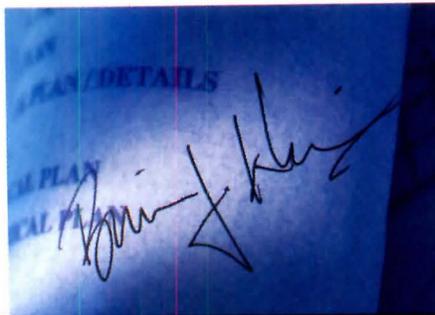
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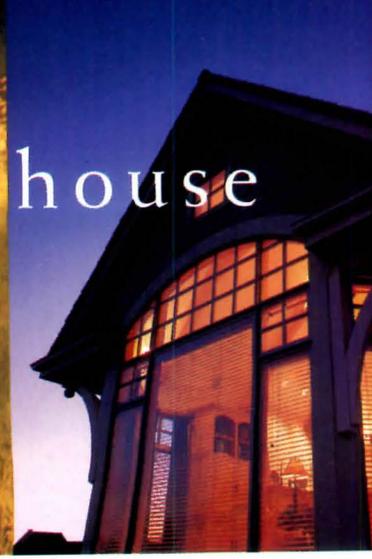
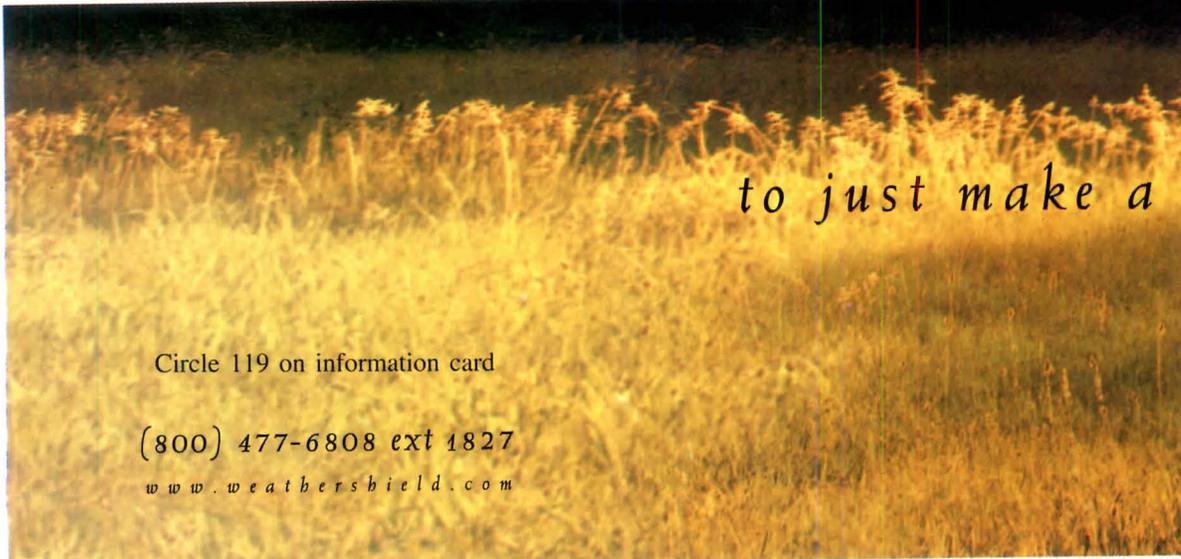


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Sigh-Arc

Your interview with Ray Kappe and Neil Denari (*Architecture*, August 1998, pages 37-43) is a hoot—it shows how hard it is to sit on the cutting edge. Institutionalizing the avant-garde isn't easy, especially when the school's members are as busy positioning themselves within the institution as the school is busy positioning itself in its market.

The noncommittal mumbo-jumbo of the principals is worthy of the most moss-backed institutions, even poor old University of Southern California. SCI-Arc will be truly speculative again when it takes the same risk with new talent that it did with the now old-guard, on whose reputation they tiresomely continue to tirade.

Ralph Bennett
Professor, University of Maryland
College Park, Maryland

The Duany Show

Reed Kroloff is caught within the Chinese puzzle box he described in his editorial (*Architecture*, August 1998, page 11). By believing that Seaside, Florida, is actually as depicted in *The Truman Show*, he joins the audience of chumps that the film satirizes.

Andres M. Duany
Duany Plater-Zyberk & Company
Miami

Stop the madness

I found the article "Guess Who's Going Green?" (*Architecture*, August 1998, pages 116-119) informative but maddening. Why aren't sources, Web sites, and phone numbers listed? It would help us neophytes with our research.

Joe Sultan
New York City

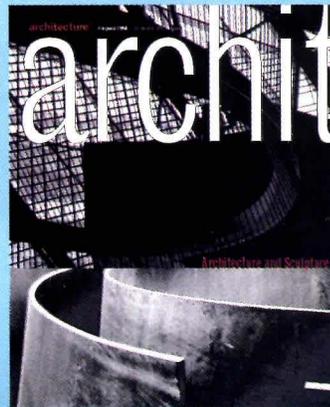
Editor's note: Future issues will include more resources for Technology + Practice articles. Additional information can also be found on our Web site: www.architecturemag.com.

Preservation pays off

Congratulations to Eric Adams for "Making Preservation Pay" (*Architecture*, July 1998, pages 102-109). It was an excellent survey of the Federal Historic Preservation Tax Incentives program. This program, run by the National Park

Service along with the Internal Revenue Service and the State Historic Preservation Offices, is not a simple one to explain in a short space, but Adams did just that. I have read many articles on the rehabilitation investment tax credit, and this one was the best. By knowing about this financial incentive, architects can help their clients very materially, and assist in the preservation of our nation's historic buildings. By bringing this program to attention, *Architecture* did its readership—and the country—a great service.

Sharon C. Park
Technical Preservation Services
National Park Service
Washington, D.C.



Yes means no?

Reed Kroloff's July editorial (*Architecture*, page 11) was a slight to the thousands of hard working people who organized the coalition and contributed resources to bury California's Proposition 224. He states that nearly a third of voters agreed that price should substitute quality as the architectural standard. This initiative campaign was not a well-articulated public debate over design excellence. To the contrary, campaign research indicated that "yes" and "no" votes alike were against higher costs. Fortunately for the architectural profession, voters didn't want to hand the government the public realm's exclusive design rights. We would have liked to have had a meaningful dialogue on the value of design excellence, but that was a luxury we could not afford. The bottom line was a win, so we needed to focus our limited resources almost exclusively on getting "no" votes.

Though it is perhaps well deserved, it is somewhat ironic for

the profession to be chastised for political apathy when the very issue that such a rebuke appears in contains no political reporting. Most architects would prefer to have their noses pressed against a drafting board than get politically involved. Can we expect *Architecture* to lead the design press in an attempt to change the culture of political inactivity in our profession?

Donald M. Comstock
President, AIACC
Sacramento, California

Urban elegance

Imagine my surprise when I read that the Dayton House (*Architecture*, July 1998, pages 92-99), a mere 10 blocks from my own home, was described as being located in the "inner suburbs" of Minneapolis. The house is located in a beautiful urban neighborhood within walking distance of the center of downtown. One of the more compelling aspects of the Dayton House is that the clients chose an urban site. Vincent James Associates took a sliver of land in the middle of the city and did what most cannot achieve with 10 times the acreage: created a dignified, elegant home that fits in seamlessly with its neighbors. Too bad your readers didn't know that.

Bob Dillon
St. Paul, Minnesota

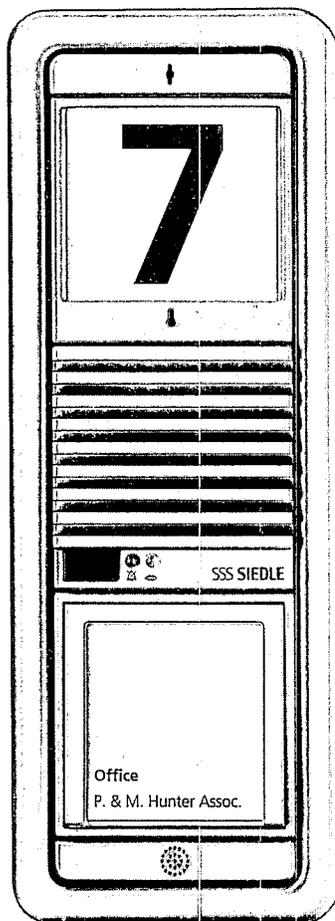
Natural contrast

Congratulations on the July 1998 issue; few magazines take me from cover to cover in one sitting, but this issue did. It had the content and subtext that I believe could edge architecture towards a more poetic place. The contrast and interplay between PLANT's projects ("Into the Woods," pages 58-63) and the interview with Douglas Cooper ("The Plot Thickens," pages 43-51) was excellent editorial work.

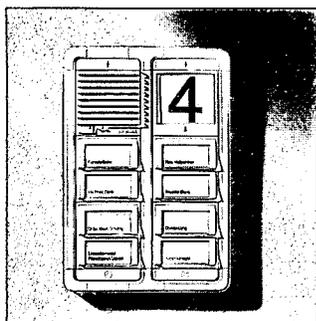
Michael Bobrow
San Francisco

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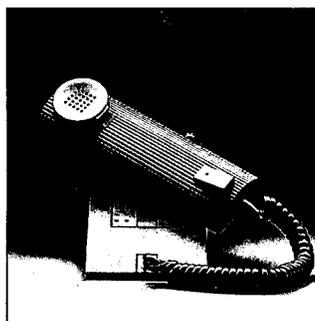
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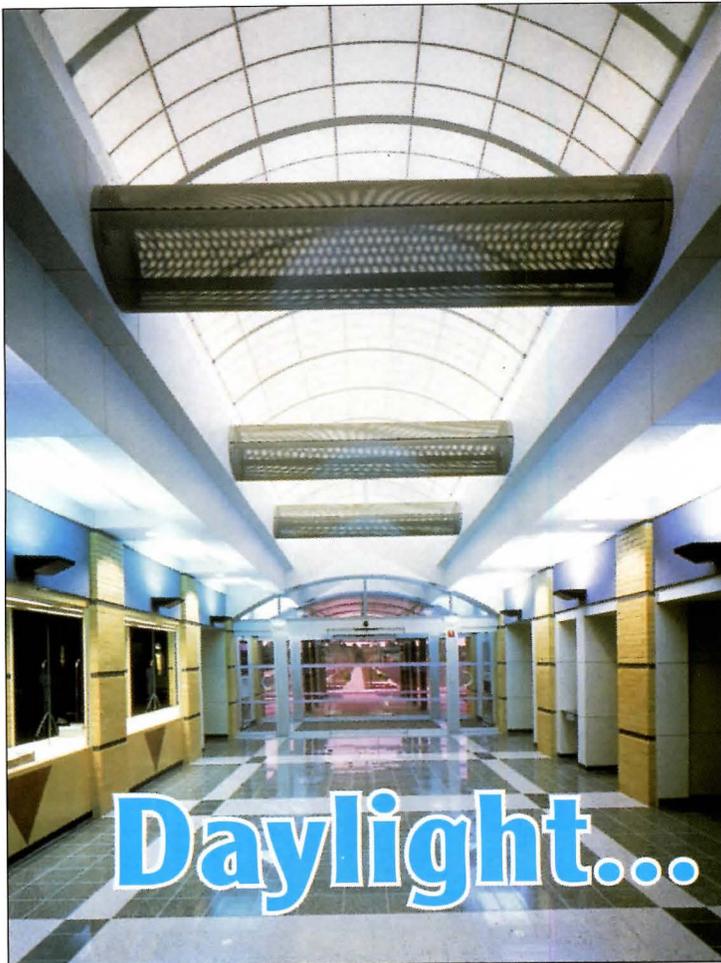
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exhibitions

city	dates	exhibition	contact
Chicago	through January 31, 1999	All Wright: The Dana Thomas House at the Chicago Architecture Foundation	(312) 922-3432
New York City	October 13-January 10, 1999	George B. Post: Great American Architect at the New-York Historical Society	(212) 873-0509
	through January 21, 1999	Building for New York and the Nation: The Architecture of Cass Gilbert at the U.S. Courthouse at Foley Square	(212) 835-2789
Northampton, Massachusetts	through December 13	Equal Partners: Men and Women Principals in Architectural Practice at Smith College Museum of Art	(413) 585-3124
Pittsburgh	November 7-March 28, 1999	Zigzags and Speed Stripes: The Art Deco Style at the Heinz Architectural Center	(412) 622-3131



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East Columbia Library, Columbia, MD Architects: Grimm & Parker

conferences

city	dates	conference	contact
Columbus, Ohio	November 12-13	Property Management and Housing Symposium , sponsored by Building Officials & Code Administrators International	(708) 799-2300, ext. 329
Las Vegas, Nevada	January 18-22, 1999	World of Concrete USA '99	(630) 705-2578
Savannah, Georgia	October 20-25	52nd National Preservation Conference , sponsored by the National Trust for Historic Preservation	(800) 944-6847
Toronto	November 12-14	Urban Waterfront 16 , sponsored by the Waterfront Center	(202) 337-0356
Washington, D.C.	October 24	Festival of the Building Arts at the National Building Museum	(202) 272-2448
	January 28-30, 1999	Restoration & Renovation 1999	(800) 982-6247, ext. 10



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Waterfront Center honored Montgomery and Sisam Architects' Humber River Bridge (1997) in Toronto, site of their 1998 Urban Waterfront conference.

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competitions

competition	deadline	contact
International Design Competition for the Contemporary Arts Center in Rome, Italy	October 19	(390) (6) 80 66 25 18
The 1998 U.S. General Services Administration Design Awards	October 26	(202) 501-1888
Canadian Centre for Architecture Visiting Scholars Program	November 1	(514) 939-7000
Awards for Architectural Research, cosponsored by <i>Architecture</i> and the Initiative for Architectural Research	December 1	(212) 536-6221
The 46th Annual P/A Awards, sponsored by <i>Architecture</i>	December 1	(212) 536-6221
Preservation Technology and Training Grants, sponsored by the U.S. Department of the Interior	December 18	(318) 357-3214
Rudy Bruner Award for Urban Excellence, sponsored by the Bruner Foundation	December 18	(617) 492-8401, ext. 184
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U.S. Department of the Interior grant funded Kentucky Heritage Council's video titled "Restoring Dry Stone Walls and Fences."



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DOUG MCCULLOCH

Robert A.M. Stern Named Yale's Architecture Dean

Yale University has chosen New York City architect Robert A. M. Stern to be the next dean of its troubled school of architecture (this issue, page 11). Stern replaces Boston-based architect and Yale Adjunct Professor Fred Koetter, whose five-year term ended in July.

Stern's work includes the University of Virginia's Observatory Hill Dining Hall (1984), the Center for Jewish Life at Princeton (1993), and many private residences, including "Spruce Lodge," a Colorado retreat he designed for Disney Chairman Michael Eisner (Stern is a member of Disney's board of directors.)

A graduate of Columbia University and Yale's School of Architecture, Stern has taught at Columbia's Graduate School of Architecture, Preservation, and Planning since 1970. He is the author of an acclaimed three-part book series on New York City's architecture and urbanism and the noted PBS television series "Pride of Place."

Sterling Professor Emeritus of Yale Vincent Scully affirmed the committee's decision, citing Stern's "integration of architectural design, historical scholarship, executive ability, and devoted academic service." The appointment is effective immediately. *Michael J. O'Connor*

Canadian Architects Chastised for Colleagues' Misdeeds

In April, responding to a rash of building envelope failures in condominiums all over rainy British Columbia (B.C.), Canada, provincial officials formed the Barrett Commission, an ad hoc panel headed by former B.C. Premier Dave Barrett, to investigate the problem.

After nearly two months of careful examination, the commission made shocking recommendations to B.C.'s legislature: Their 128-page report called for each of the 1,350 members of the Architectural Institute of British Columbia (AIBC) to pay \$1,000 a year in perpetuity above and beyond their \$700 annual dues to defray the estimated \$600 million to \$1 billion repair costs. The commission's demands for restitution stem from AIBC's direct link with architect licensing in Canada: B.C. designers must belong to the institute in order to practice in the province.

While AIBC Vice President John Davidson concedes that

architects should share the blame in the "leaky condo matter," he complains that singling out architects with what amounts to a fine is unfair: After all, engineers and builders were also part of the problem, but initially escaped penalty.

The report fueled quick political action. In July, the B.C. legislature passed the Homeowner Protection Act, which requires the province to establish a home improvement loan program, a new licensing system for builders, and a research and educational foundation. Further, it mandates specific warranties on workmanship, materials, and building envelope integrity.

Negotiations among the AIBC (and now Canada's professional associations of engineers and builders) and the Barrett Commission continue. Whatever compromise they reach is likely to include some financial support by the AIBC (though less than the original \$1,000 figure) for the educational component of the act to prevent future transgressions.

Shayne Ramsay, CEO of a new government watchdog office devoted to monitoring the act's implementation, is heartened by the AIBC's efforts and is confident that the institute will heighten architect awareness of the area's residential construction perils. *M.J.O.*



Modern interventions by architect Page & Park will make Mackintosh's former Herald building (left) into design museum. Stylized street grid of Glasgow (background) inspired graphic identity program of city's yearlong architecture celebration.

More Than Mackintosh

Even architecture aficionados think of Glasgow, Scotland, as a one-architect town. No more, say city officials. A yearlong, citywide arts program titled "Glasgow 1999: U.K. City of Architecture and Design" will attempt to refresh the city's faded industrial image with an ambitious schedule of events that includes a film series, temporary and permanent installations, street festivals, and hundreds of exhibitions. Arts 2000, a public arts initiative behind the effort, claims there will be at least one event each day for the entire year. At the heart of the program is the conversion of Charles Rennie Mackintosh's first major public project, *The Glasgow Herald Building* (1893), into The Lighthouse—a museum of architecture, design, and urbanism scheduled to open in May 1999. *M.J.O.*



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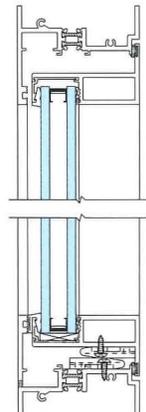
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Ooh La...Las Vegas?

Just when you thought Las Vegas's cultural identity couldn't stray any further from its Wild West origins, Hilton Hotels has announced Paris-Las Vegas, the latest in a slew of fantasy destinations that

have allowed the desert city to become Egypt, New York City, and Ancient Greece—all at once. The 24-acre resort, designed by Las Vegas-based Bergman, Walls & Youngblood, will feature almost 3,000

guest rooms, an 85,000-square-foot casino, and reduced-scale replicas of the Eiffel Tower and the Arc de Triomphe. Paris-Las Vegas will open in October 1999. *C'est la vie!* M.J.O.



The 1998 Aga Khan Awards for Architecture

His Highness Prince Karim Aga Khan IV (*Architecture*, March 1997, pages 57-59) founded the Aga Khan Awards for Architecture more than two decades ago to honor projects that successfully address the needs of Muslim societies. This year's jury selected seven projects (from top to bottom) for the triennial award. *M.J.O.*

Rehabilitation of Hebron Old Town, Jordan

The Hebron Rehabilitation Committee rescued the architectural heritage of this war-torn city by carefully upgrading basic infrastructural systems while maintaining the historic stone fabric. The group preserved 127 residences and 25 shops; another 95 structures are in progress.

Slum Networking of Indore City, India

Civil engineer Himanshu Parikh initiated a comprehensive sanitation program for Indore City's teeming slums, including plumbed toilets and washrooms, streetlights, and storm drainage.

Lepers Hospital, Chopda Taluka, India

Norwegian architects Per Christian Brynildsen and Jan Olav Jensen fashioned a series of simple, vaulted steel and masonry structures that frame a "paradise garden" to create a treatment center for the area's outcast leprosy victims.

Salinger Residence, Selangor, Malaysia

This open-plan house on stilts by Malaysian architect Jimmy C.S. Lim blurs indoor and outdoor spaces and incorporates natural ventilation and local hardwood details.

Tuwaiq Palace, Riyadh, Saudi Arabia

German architect Atelier Frei Otto, local architect Omrania, and British engineering firm Büro Happold devised an oasislike recreation center for Riyadh's diplomatic quarter. Tents house lodging, restaurants, and a pool.

Alhamra Arts Council, Lahore, Pakistan

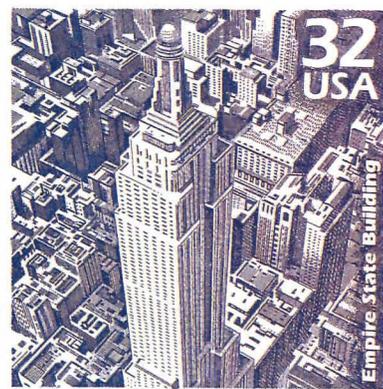
Pakistani architect Nayyar Ali Dada spent 15 years crafting a multibuilding complex for a private arts organization in Lahore that combines acoustically friendly geometry and brick skins—a nod to local red sandstone.

Vidhan Bhavan, Bhopal, India

Indian architect Charles Correa crisscrossed Vidhan Bhavan—the new State Assembly building in Bhopal—with a series of labyrinthine pathways and courtyards to emphasize the public's role in government.

Stamp of Excellence

As part of the U.S. Postal Service's "Celebrate the Century" program, citizens nationwide voted for those subjects from each decade that they wanted



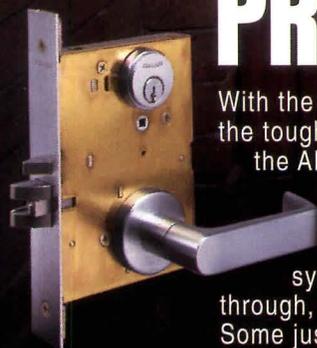
to immortalize in adhesive-backed glory. Recent releases include stamps that honor the Model T Ford, Crayola crayons, and Babe Ruth. Last month, a stamp depicting Shreve, Lamb & Harmon's Empire State Building (1931)—one of 15 that commemorate the 1930s—made its debut.

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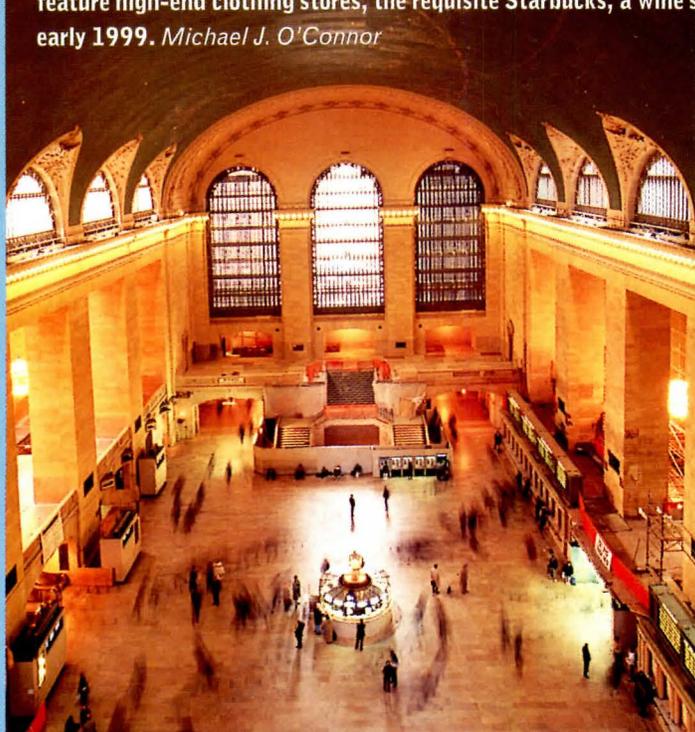
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Grand Reopening

New York City officials celebrated the completion of the decade-long refurbishment of Warren & Wetmore and Reed & Stem's landmark 1913 Grand Central Station's public amenities at a rededication ceremony earlier this month. Preservation architect Beyer Blinder Belle Architects & Planners (BBB) and a myriad of conservators carried out improvements to the building's roof, skylights, walls, and ceiling mural (*Architecture*, September 1997, pages 138-144). The project's next phase, designed by the Rockwell Group with BBB, will nearly double the station's commercial venues, lining the main level's balconies with restaurants and creating a lower-level dining concourse that will also feature high-end clothing stores, the requisite Starbucks, a wine shop, and a pharmacy. Developers hope to complete the retail additions by early 1999. *Michael J. O'Connor*



JAMES RUDNICK

Buzz

German officials shelved the now decade-old competition for a Holocaust memorial in Berlin until after the September national elections. Chancellor **Helmut Kohl** and his leading challenger, **Gerhard Schröder**, revived the discourse in this summer's electoral mudslinging. Kohl supports **Peter Eisenman** and sculptor **Richard Serra's** cemeterylike maze of 2,700 pillars. Schröder opposes the memorial's site, scale, and the appropriateness of its symbolism.

Oslo, Norway's Highway Department plans to build a pedestrian bridge over a suburban highway based on plans **Leonardo da Vinci** completed in 1502 for a Turkish

sultan. The 1,155-foot-long elliptical span, however, will be shortened to just 190 feet.

The Archbishop of Barcelona, Spain, has recommended local architect **Antonio Gaudí** for beatification in the Catholic Church. Gaudí devoted the last 40 years of his life to building the still-unfinished Holy Family Cathedral in Barcelona.

Dutch architect **Erick van Egeraat** will design a new headquarters for The Royal Shakespeare Company in Stratford-on-Avon, England. Swiss architect **Peter Zumthor** received the 1998 Carlsberg Architectural Prize in Copenhagen, Denmark, last month. The \$221,000 prize, given by a foundation established by the **Carlsberg Brewery**, has the world's largest cash award.

In Principal

A recent survey of 629 architecture, engineering, design-build, environmental consulting, and interiors firm principals revealed some telling data about the profession:

95% are male

95% are Caucasian

40% are between the ages of 40 and 49

32% are in their fifties

61% hold bachelor's degrees

34% have a master's degree

89% are registered professionals

\$91,000: Median annual base salary (1997)

\$20,000: Median bonus amount (1997)

92% are married

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50 hours: median work week

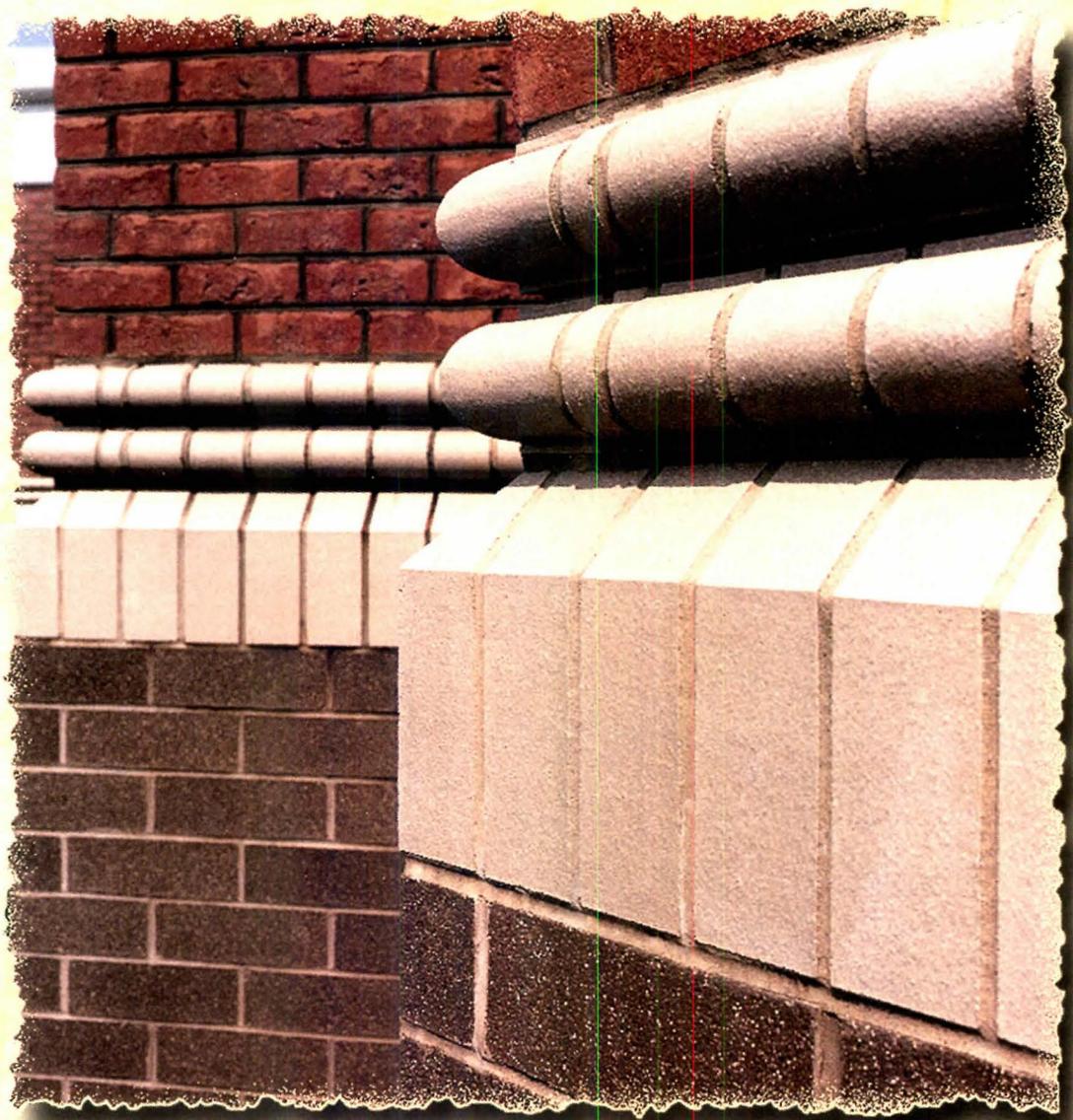
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Source: *The 1998 Principal's Report*, Zweig, White & Associates

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More Buzz

Canadian Centre for Architecture founder and Director **Phyllis Lambert** has appointed **Kurt W. Forster** as her successor. Forster, founding director of the Getty Center for the History of Art and Humanities and current chairman of the art and architecture department at the Federal Institute of Technology in Zurich, Switzerland, will assume the post on March 1, 1999.

Who will design **Bill Clinton's** Presidential Library? In recent weeks, *The New York Times* has speculated that New York City architect **Charles Gwathmey** is in the running after the President visited several Gwathmey-designed projects (including **Steven Spielberg's** place in East Hampton, New York) and Gwathmey sat with President Clinton at the Pritzker Prize ceremony at the White House in June. **Skip Rutherford**, president of the Little Rock, Arkansas-based William J. Clinton Foundation, will confirm only that he is actively pursuing an architect—and funds—to build a library on a 26-acre riverfront parcel in Little Rock, Arkansas. While Gwathmey concedes he'd love the commission, he warns that "it's all a rumor. Nothing has been decided."

The prestigious MacDowell Arts Colony in Peterborough, New Hampshire, has named **I.M. Pei** the winner of the 1998 Edward MacDowell Medal for outstanding contributions to the arts. Pei is the first architect so honored; past winners include artist **Georgia O'Keeffe**, author **Norman Mailer**, and composer **Leonard Bernstein**.

Antoine Predock has designed a 60,000-square-foot arts complex for Colorado College in Colorado Springs. He also made the shortlist for the commission to design the National Constitution Center in Philadelphia. He will compete with **Centerbrook Architects & Planners**, **Michael Graves Architect**, and New Yorkers **Gwathmey Siegel & Associates**, **Pei Cobb Freed & Partners**, and **Polshek and Partners**.

The Mesa Arts and Entertainment Center has announced a shortlist of five architects for its proposed facility in Mesa, Arizona: **BOORA Architects**, **Hardy Holzman Pfeiffer Associates**, **Machado and Silveti Associates**, **Barton Myers Associates**, and **Zeidler Roberts Partnership**.

The shortlist for the expansion of Pittsburgh's convention center comprises **Arquitectonica** and **HOK**, **Cesar Pelli & Associates**, **Rafael Viñoly Architects**, **Pei Cobb**

Freed & Partners, **Kallman McKinnell & Wood Architects**, **Skidmore, Owings & Merrill**, and **Zimmer Gunsul Frasca Partnership**.

Actor **James Cromwell's** Hechel Oyakapi (which means "they tell it this way") Foundation and the Oglala Lakota community has selected Los Angeles's **RoTo Architects** and **John Sergio Fisher & Associates** to create a multiformat theater to be used for Native American storytelling on the Pine Ridge Reservation in Kyle, South Dakota.

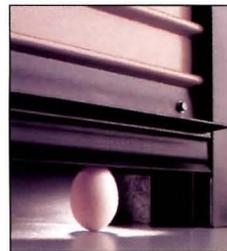
Peter Chermayeff, **Robert Poole**, and **Peter Sollogub**, three of **Cambridge Seven's** partners,

have left the firm to start an as yet unnamed Massachusetts-based venture.

Gluckman Mayner Architects has received yet another museum commission: They will design the new Austin (Texas) Museum of Art. **Herzog & de Meuron**, **Steven Holl Architects**, and **Antoine Predock** will compete to design a new facility for the University of Texas's Jack S. Blanton Museum of Art in Austin. **BOORA Architects**, **Blackburn Architects**, and landscape architect **Martha Schwartz** will team to design the National Underground Railroad Freedom Center in Cincinnati, Ohio.

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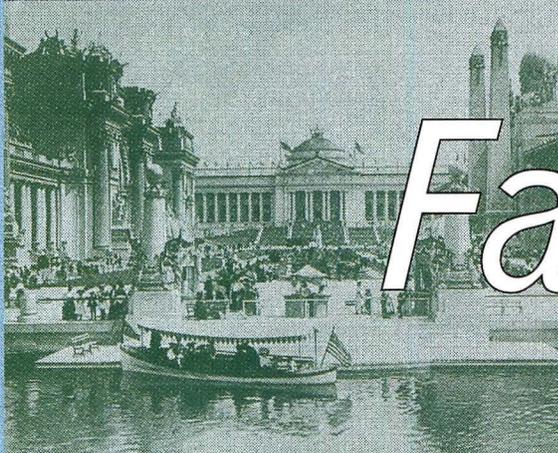
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A new survey of world's fairs gives these events their due place in architectural history.

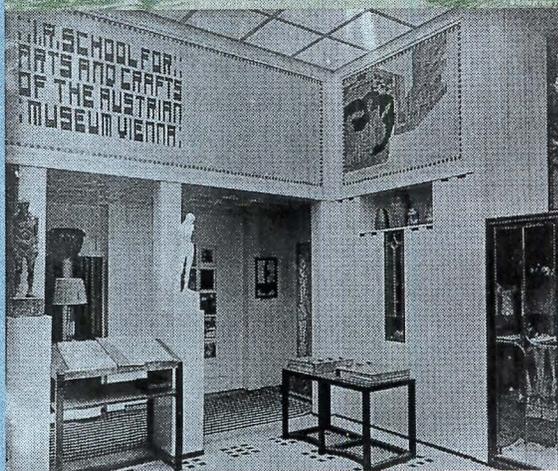


Fair Share

World's fairs provide architects with a unique laboratory for formal experimentation, largely freeing them from such constraints as limited budgets, structural permanence, and contextual propriety. Not surprisingly, these circumstances have resulted in some of the most important buildings and temporary environments of the past 150 years: the Crystal Palace, the Eiffel Tower, and the Barcelona Pavilion, to name a few. Architectural history naturally favors these famous structures, yet as a new survey, *World's Fairs* (Princeton Architectural Press) by Dutch historian Erik Mattie demonstrates, the output is actually much broader and richer than the discipline typically lets on.

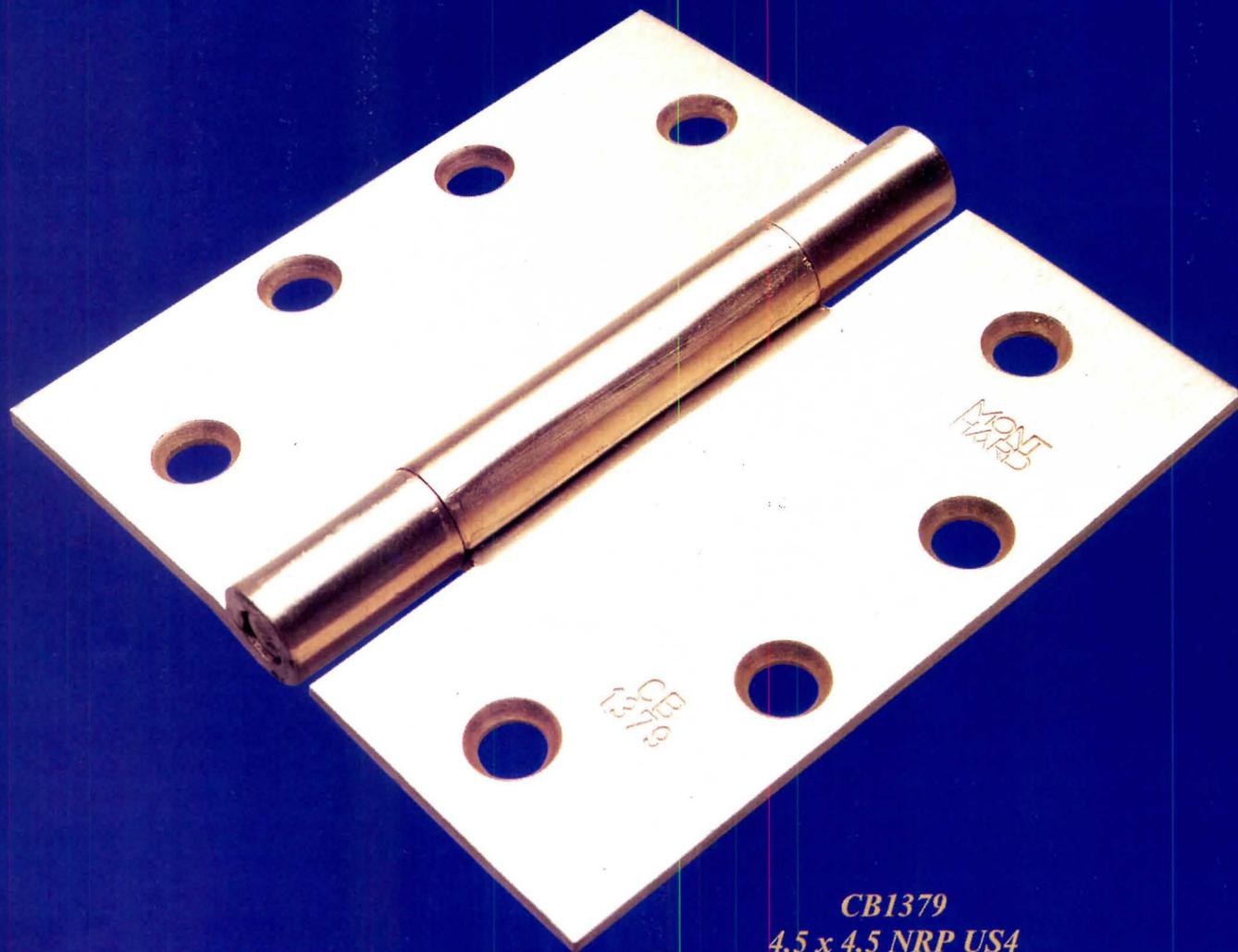
The author devotes each chapter to a successive fair, starting with the first, London's Great Exhibition of 1851, and concluding with sketches of the upcoming Hannover Expo 2000 (this issue, page 56). Mattie introduces the fairs with such pertinent statistics as attendance, the number of participating nations, and "novelties," which at the 1962 Seattle Century 21 Exposition included a giant spherical elevator delightfully called "The Bubbleator." Subsequent sections trace the history of the exhibition hall as a building type, other significant pavilions, site and development strategies, and general architectural trends.

Despite the potential tedium of all these facts and figures, Mattie keeps the book lively by deviating slightly from the survey format, omitting otherwise regular sections where they happen to



At 1904 Louisiana Purchase Exposition in St. Louis (top to bottom), horsehide tents erected by tribe transplanted from Patagonia vied with James Knox Taylor's pompous domed U.S. Government Building. Austria introduced high culture to hinterland with Secessionist interiors. At 1893 Chicago fair, George Ferris's eponymous ride, 260 feet tall, made its debut.

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be irrelevant to a particular fair. In fact, the entire enterprise is subtly infused with an enthusiast's idiosyncratic, informed opinions; a blurb on the dust jacket describes the author as a "collector of world's fair memorabilia."

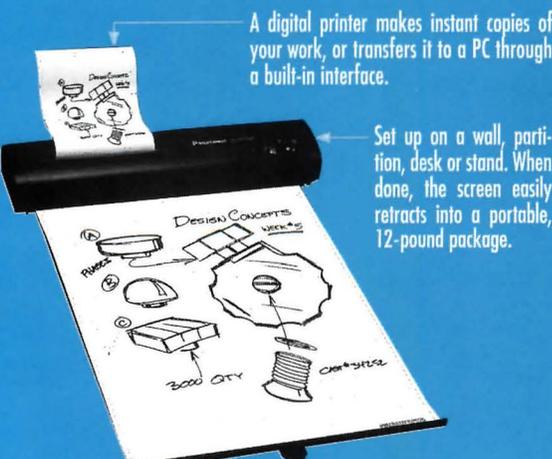
Mattie dutifully tells the straight story about the better-known buildings, but also unveils some surprises along the way. Most discussions of the 1893 World's Columbian Exposition in Chicago concentrate on the usurpation of the fledgling local Modern school by Beaux-Arts Classicism, showing Louis Sullivan's Transportation Building as a lone progressive stand-out against the pretensions of such East Coast practitioners as Richard Morris Hunt and McKim, Mead & White. Yet the illustrations Mattie chose for his discussion of this seminal turn of events include Henry Ives Cobb's Romanesque Fisheries Pavilion and Ferdinand Boberg's bulbous, vernacular Swedish Pavilion, which suggests that the "White City," as the Chicago fair was called, was perhaps less of a lily than tradition has it.

Of all of the book's quirky joys, there's none better than the eclectic fair architecture itself, much of which has been forgotten. If anyone remembers the 1902 Exposition of Modern Decorative Art in Turin, Italy, it's for the interiors designed by Viennese architects Peter Behrens and Joseph Maria Olbrich. Mattie is clearly more captivated, however, by the lavish, difficult-to-categorize style of the buildings designed by the Turin Exposition's neglected chief architect, Raimondo d'Aronco.

The author's obligation to tell the mainstream story prevents too much deviation from the norm, but the book's interest and value only increases the further Mattie moves off course. In his discussion of the 1904 Louisiana Purchase Exposition in St. Louis, Mattie tantalizingly, and too briefly, mentions a 13-acre reproduction of the city of Jerusalem as well as whole villages imperialistically transplanted from the Pacific Rim, replete with villagers—environments far richer than, for instance, architect James Knox Taylor's sturdy United States Government Building at the same fair.

Mattie curiously omits last summer's Expo '98 in Lisbon, Portugal, and, in fact, every fair from the Expo '70 in Osaka, Japan, to the 1992 Universal Exposition in Seville, Spain. (You can't entirely fault him. The 1982 fair in Knoxville, Tennessee, for instance, was hardly a blockbuster.) In contrast, the earlier postwar fairs exhibit a level of architectural invention that rivals the better-known fairs staged before World War II. The 1958 Brussels Universal and International Exposition boasted a 360-foot steel molecule called the Atomium; Sverre Fehn's Plexiglas Norwegian pavilion; and Le Corbusier's concrete-and cable-stayed Philips Pavilion. Buckminster Fuller's U.S. Pavilion and Moshe Safdie's Habitat, both built for the 1967 Exhibition in Montreal, are still spectacular even in their fragmentary, and altered states. Despite the increased competition world's fairs face from trade fairs and theme parks, their architecture still has the capacity to thrill. Mattie was good to remind us. *Ned Cramer*

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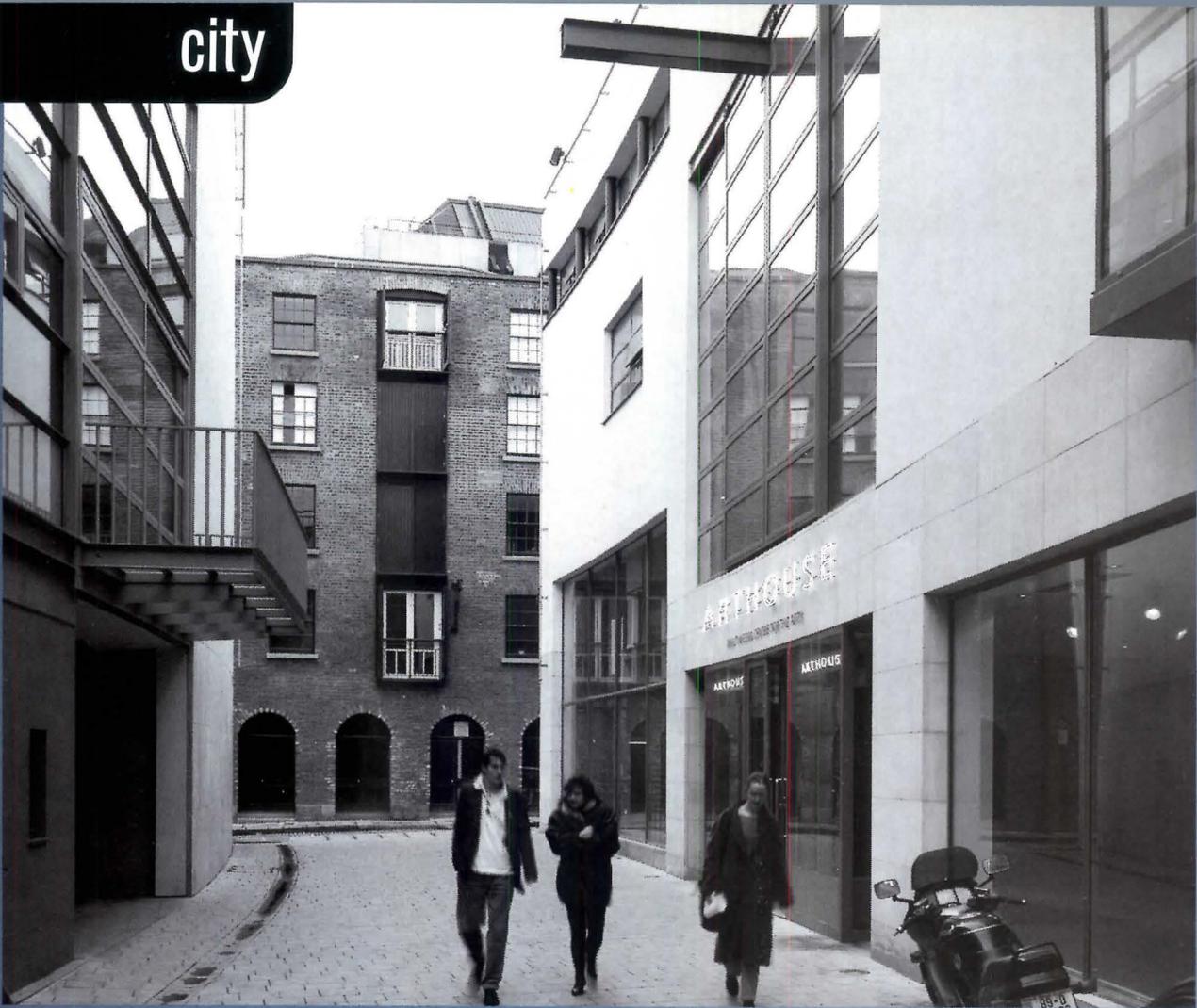
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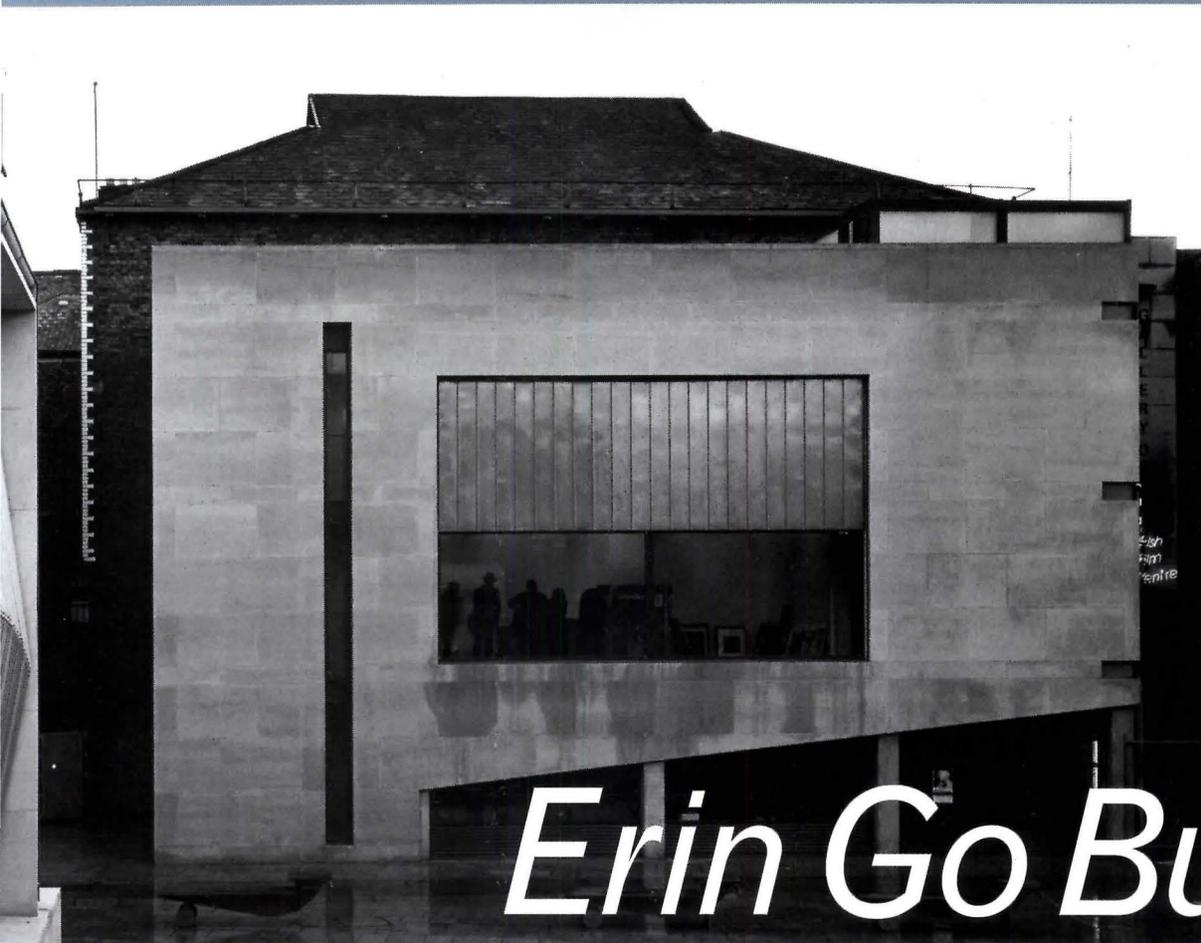


DENNIS GILBERT / VIEW

Modern cultural buildings anchor renewal of central Dublin's historic Temple Bar neighborhood (clockwise from above): Shay Cleary's Arthouse Multimedia Center (1995, at right); O'Donnell and Tuomey's Gallery of Photography (1996); and McCullough Mulvin Architects' Music Center (1996).



DENNIS GILBERT / VIEW



Erin Go Build

Dublin leads the way in Ireland's cultural and economic resurgence.

Centered on Dublin Bay and backed by the green Wicklow Mountains, Dublin's setting evokes romantic analogies with the Bay of Naples. The 18th century was its confident era, when peace, prosperity, and a swelling population made Georgian Dublin a center of wealth and power to rival London. During the 19th century, however, the city began a slide into relative poverty that ultimately resulted in its marginalization within Europe. Now fueled by European Union (E.U.) grants and the evolution of Ireland's agrarian economy into one based on tourism and high-tech and service industries, Dublin has become a "Celtic Tiger" in the late 20th century, a symbol of Ireland's rapid modernization.

Last year, Ireland's economic growth exceeded 10 percent, a remarkable upsurge that can be attributed to a combination of factors. An expansionist educational policy has produced a skilled workforce, attractive to foreign investors, and E.U. funding has shrewdly been used to develop economic infrastructure. Falling unemployment has resulted in a shortage of skilled and professionally qualified workers, and authorities are making concerted attempts to lure Irish emigrants home from abroad

(the number of Irish expatriates far exceeds the native population of 3.5 million), particularly those with professional and scientific skills.

The easing of political tensions in Northern Ireland has also contributed to the republic's economic growth, with the peace dividend bringing increased foreign trade and tourism. The Good Friday Agreement, signed earlier this year, and the subsequent relinquishing of Ireland's sovereignty claim to Northern Ireland, was backed by 90 percent of Irish voters. Despite terrorist splinter group opposition, the hope is that the agreement will hold, generating new economic possibilities in both the north and south.

A thriving construction industry reflects the effects of the new economy, as well as the hope for peace. Nationally, the construction sector grew by 15 percent during 1997, with Dublin leading the way. This doesn't guarantee good design, but the buoyant economy has generated a willingness to experiment among the city's architects and their patrons.

Dublin's fabric is a complex amalgam of influences and cultures, from the Vikings to the Victorians. In the 18th-century, a series of public buildings, rowhouse terraces, and squares consolidated



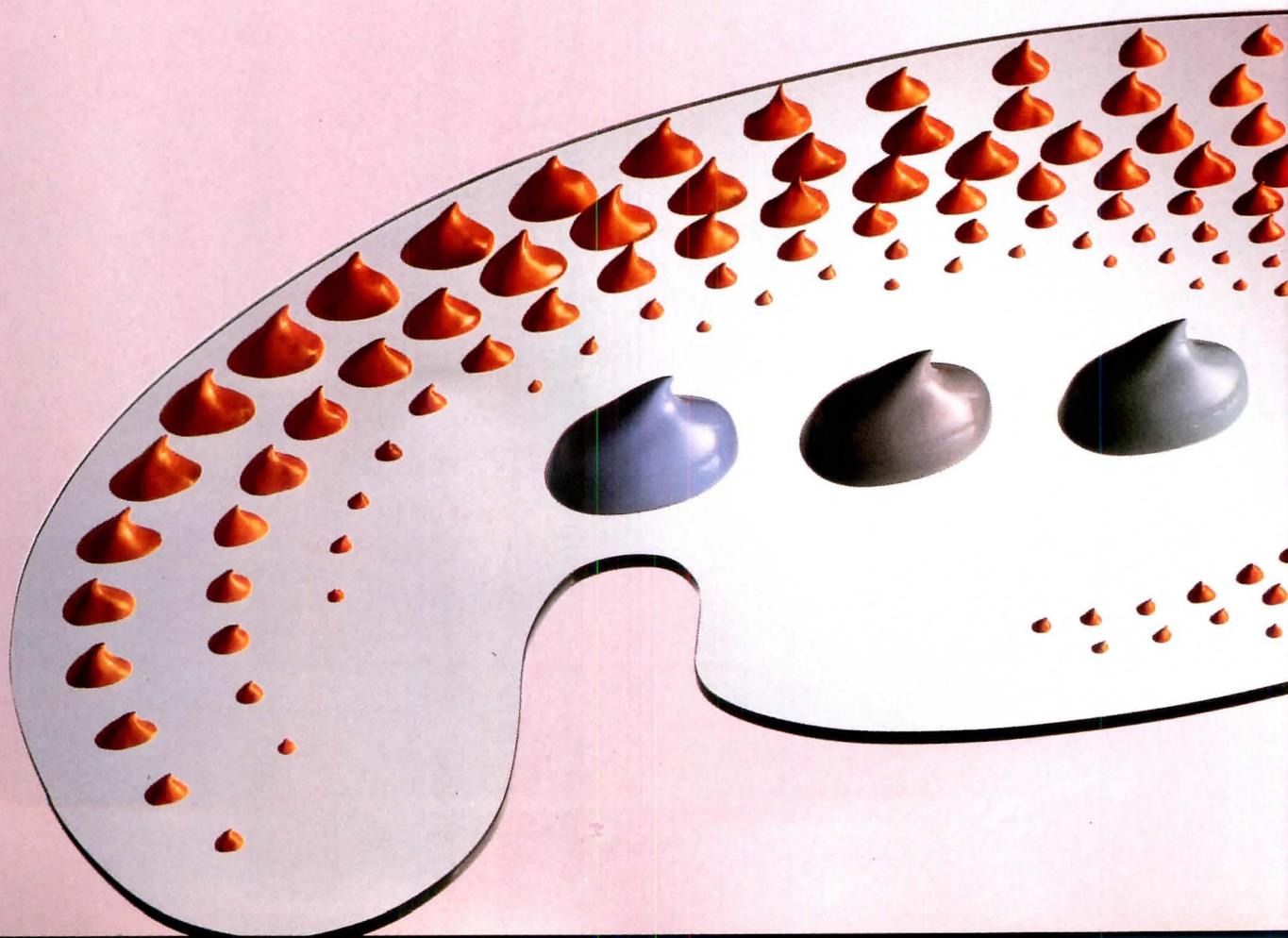
BARRY MASON

Irish military now shares 1701 Collins Barracks (above) with National Museum of Ireland. Gilroy McMahon's new glazed additions on southern corners of courtyard house vertical circulation.

the sober Neoclassicism of the English Palladian style and its expression of colonial power. The city's subsequent 19th-century decline meant that sweeping Victorian reconstruction did not occur; instead, Victorians adapted Georgian buildings according to their needs. The issue of how to deal with the legacy of the city's past has often been vexed—as unwanted reminders of an imperial past, and in this century, Dubliners either swept away many buildings or let them fall into depressing decay. The rise of the conservation movement in the early 1970s grew out of the public's renewed interest in Dublin's historical architecture. Now, through legislation and funding (prior to 1987, there was no state funding for architectural conservation), the rot is gradually being stopped.

Paradoxically, these successes can be partly attributed to the adverse economic conditions that preceded the current boom. During the recession of the 1980s, lack of work pushed many young architects into withdrawal and reflection. Some theorized about a new direction for the city's development, to counter the baleful influence of rapacious property speculators and traffic engineers. Particularly influential was a group of architects teaching at the School of Architecture at University College Dublin, who shared a passionate commitment to the city's reconstruction through a sympathetic yet modern reinterpretation of indigenous urban traditions. (The influence of European architects and urban theorists such as Aldo Rossi and Leon Krier was visible in this

Expertise



cause.) Through a shared experience of teaching and research, reinforced by collaboration on competitions, exhibitions, and publications, the collective of eight local practices—Shay Cleary, Grafton Architects, Paul Keogh, McCullough Mulvin Architects, McGarry NiÉanaigh, O'Donnell and Tuomey, Shane O'Toole, and Derek Tynan—evolved into Group 91.

A competition to devise a masterplan for the Temple Bar quarter of Dublin provided the group with the impetus to join forces. (Held in 1991, it provided the newly established collective with its name—Group 91.) Temple Bar is a raffish 30-acre Georgian residential and commercial neighborhood in the heart of Dublin, bounded on its northern edge by the River Liffey, and to the south by the city's financial district. Its network of narrow streets extends from Trinity College and the 18th-century parliament complex in the east, to City Hall and Christ Church Cathedral in the west. Prior to the competition, the city planned to demolish Temple Bar's decaying buildings to make way for a new bus and underground rail interchange. In 1987, when then Prime Minister Charles Haughey scrapped the transport plans—partly on economic grounds and partly in the wake of public concern over cost, coupled with a resurgent enthusiasm for Temple Bar's vibrant street culture—he implemented a more sympathetic, consensus-based approach to redevelopment of the area. The brief emphasized the design of public space—streets and

squares, their sequence and proportions—as crucial to the identity and physical character of the city, and established a collective planning framework that encouraged individual users and private enterprise to participate in the building and renovation process. To oversee the project and coordinate some \$64 million of grant aid (half from the E.U.), the Irish government established a development agency, Temple Bar Properties, while generous tax incentives encouraged private investment.

Group 91 won the Temple Bar competition with a plan that incorporated both new and renovated buildings for a mixture of commercial, cultural, and residential purposes. The group also proposed a new east-west pedestrian spine, interspersed with new urban squares. A deal between Group 91 and Temple Bar Properties gave members of the collective and other outside architects separate building commissions, while the group acted as urban design consultants.

The pivotal public space on the spine is Temple Bar Square. A 1995 building by Grafton Architects bounds the south side of the square, which accommodates an eclectic range of commercial and residential functions. A quartet of cultural buildings housed in a renovated Georgian Presbyterian meetinghouse—including O'Donnell and Tuomey's National Photography Centre and Gallery of Photography (1996), the simple, Rationalist-inspired Gaiety School of Acting (1996) by

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Paul Keogh, and the Ark Children's Cultural Centre (1995) by Shane O'Toole & Michael Kelly—defines another major new external space, Meeting House Square. Planned by Paul Keogh, the new square is conceived as an outdoor venue for multiple forms of contemporary culture, such as theater and music performances. The Gallery of Photography's abstract, asymmetric composition adjoins an earlier O'Donnell and Tuomey project, the Irish Film Centre and Archive (1992), an inventive remodelling of a 17th-century Quaker meetinghouse.

To the west of Meeting House Square lies a new curved pedestrian street formed on either side by two buildings that share a common palette of austere materials and neo-Corbusian forms. On the south side is Shay Cleary's Arthouse Multimedia Centre (1995), founded to explore the potential of the computer in the arts. On the north side is Temple Bar Music Centre (1996), designed by McCullough Mulvin Architects. Adjoining this is the Printworks (1994), an urbane mixed development of shops and residential flats designed by Derek Tynan. Such mixed-use projects are crucial to the renewal of the area because they generate a living community, rather than a commercial ghetto, and thus serve as models for the repopulation of Dublin's inner city.

The Temple Bar redevelopment provided a significant stimulus in Dublin's recent renaissance, but other projects also reflect the city's optimistic spirit. Trinity College, for example, has one of

Ireland's finest assemblies of 18th-century Neoclassical buildings, and over the past five years has updated and expanded its facilities in an ambitious \$240 million building program. Notable new additions are De Blacam and Meagher's spare, refined Beckett Theatre (1993), distinguished by its oak-clad tower, and Grafton Architects' new workshop and teaching block for the Department of Mechanical Engineering (1996). The addition, which easily settled into its historic surroundings, consists of a finely chiseled basalt cube mounted on an irregular granite podium.

Foreign firms are also contributing to the Dublin scene. British architect Allies and Morrison, for example, designed the new British Embassy (1995) in the neighborhood of Ballsbridge south of center city. The construction of a new British embassy in postimperial Ireland is a significant event, and the British government's jury selected Allies and Morrison after an invited competition. Known for their considered, contextual approach, Allies and Morrison reworked the country house archetype through an elegant formality and layering of materials.

The presence of multinational architects reflects Dublin's new global outlook among the clients and the public. Out of the 10 invited entries for the recent National Gallery of Ireland expansion, for instance, seven applied from abroad. British architects Benson + Forsyth won the competition; second place went to Berliner Daniel Libeskind. However, the Irish state planning authority,



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Granite, aluminum, and steel facade of London-based Allies and Morrison's British Embassy (left) reinterprets historic country house.

An Bord Pleanála, forced Benson + Forsyth to revise their original proposal for a new 43,000-square-foot wing to prevent the demolition of a semiderelict Georgian house on the site. London-based MacCormac Jamieson Prichard are currently involved in a \$320-million plan to demolish Ireland's only 1960s high-rise housing estate, at Ballymun in north Dublin. Immortalized in Alan Parker's film *The Commitments*, the dilapidated 1,000-acre estate houses 10,000 people—as well as significant social problems—and will be replaced with low-rise housing.

Croke Park Stadium, home to Ireland's phenomenally popular Gaelic football and hurling, also lies in the northern section of the city. There, local architect Gilroy McMahon is overseeing the stadium's phased modernization. Other recent projects by the firm include a Viking Museum at the west end of Temple Bar, and the restoration and conversion of the Collins Barracks, which now also houses the National Museum of Ireland. Gilroy McMahon has overlaid the existing austere granite barracks—built in 1701 to Thomas Burgh's designs—with a sensitive yet explicitly contemporary identity.

The recycling of obsolete buildings has assumed a new importance in Dublin, as evinced by Temple Bar and other projects. There is now a firmly established interest in restoration, townscape, and urban design as crucial tools in the city's struggle for renewal. This concern for the past is allied with the pursuit of a distinctive Irish identity. Having celebrated its own civic millennium in 1988, Dublin can now look to the future with a renewed sense of hope. *Catherine Slessor*

Catherine Slessor is deputy editor of London-based The Architectural Review.

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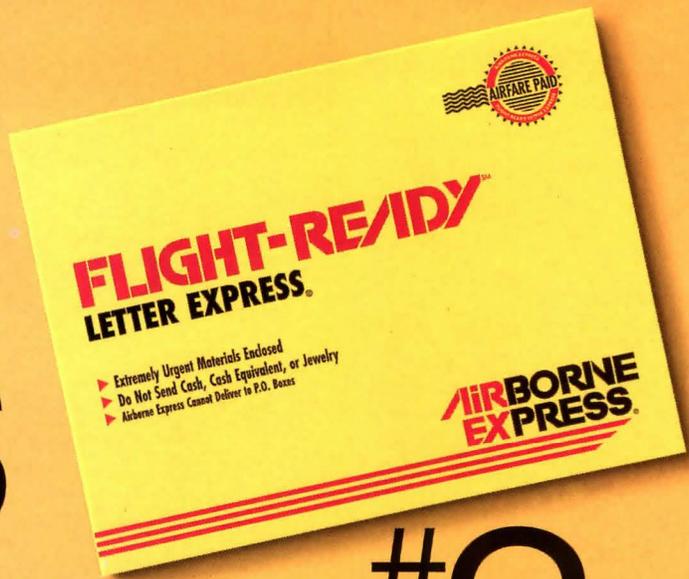
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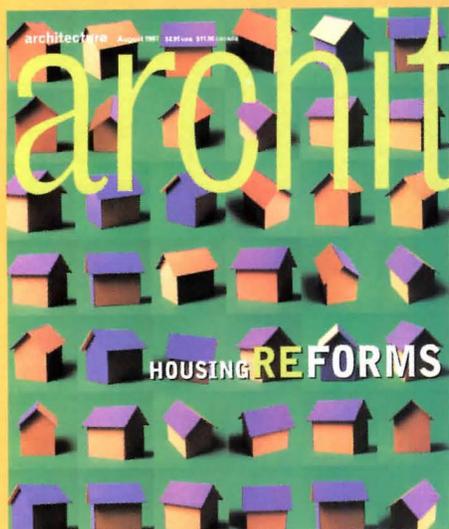


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Dutch Pavilion, Expo 2000 Hannover, Germany MVRDV, Architect

The Dutch invented the word "landscape," which literally means shaped or created land, and have always excelled in artificially producing land—the whole country was reclaimed from the sea and the Rhine River delta, starting in Roman times. Now the Rotterdam-based architecture firm MVRDV (the name is an acronym for the initials of the partners' last names: Winy Maas, Jacob van Rijs, and Nathalie de Vries) is summing up the tradition of polders and dikes in a building that is a vertical layer cake of artificial nature. Designed to be the Dutch pavilion for the upcoming Expo 2000 world's fair in Hannover, Germany, "New Nature" will present seven different landscapes where technology and greenery are not only symbiotic, but inseparable.

MVRDV is an offshoot of the Office of Metropolitan Architecture (OMA) and Mecanoo, and continues those firms' faith in high Modernism. While MVRDV's partners avoid the delirious diatribes for which OMA's principal, Rem Koolhaas, has become famous, one can recognize some of OMA's signature formal elements in the 7-year old firm's work. For instance, the concrete "C" that seamlessly melds together two floors into a continuous plane appears in both OMA's Educatorium (*Architecture*, March 1998, pages 136-143) and MVRDV's VPRO building (1997), the headquarters for the Netherlands' hippest broadcasting company. The busy firm, which operates on the edge of Rotterdam's harbor, now has two dozen employees, and is currently designing a Swiss furniture factory, several university buildings, and public and private housing projects around Europe.

For the Hannover pavilion, MVRDV decided to produce an argument for exploiting the ability to control nature through technology. The firm claims that by literally stacking slices of landscape, mankind can derive both pleasure and products from the land more efficiently. The architects mock buildings that merely look organic, favoring systems that act in an ecologically responsible way: The pavilion is a machine that provides multiple green spaces in an environmentally sound manner. It sports windmills on its roof to generate electricity, cools water underground, and then pumps it around exhibit levels to provide



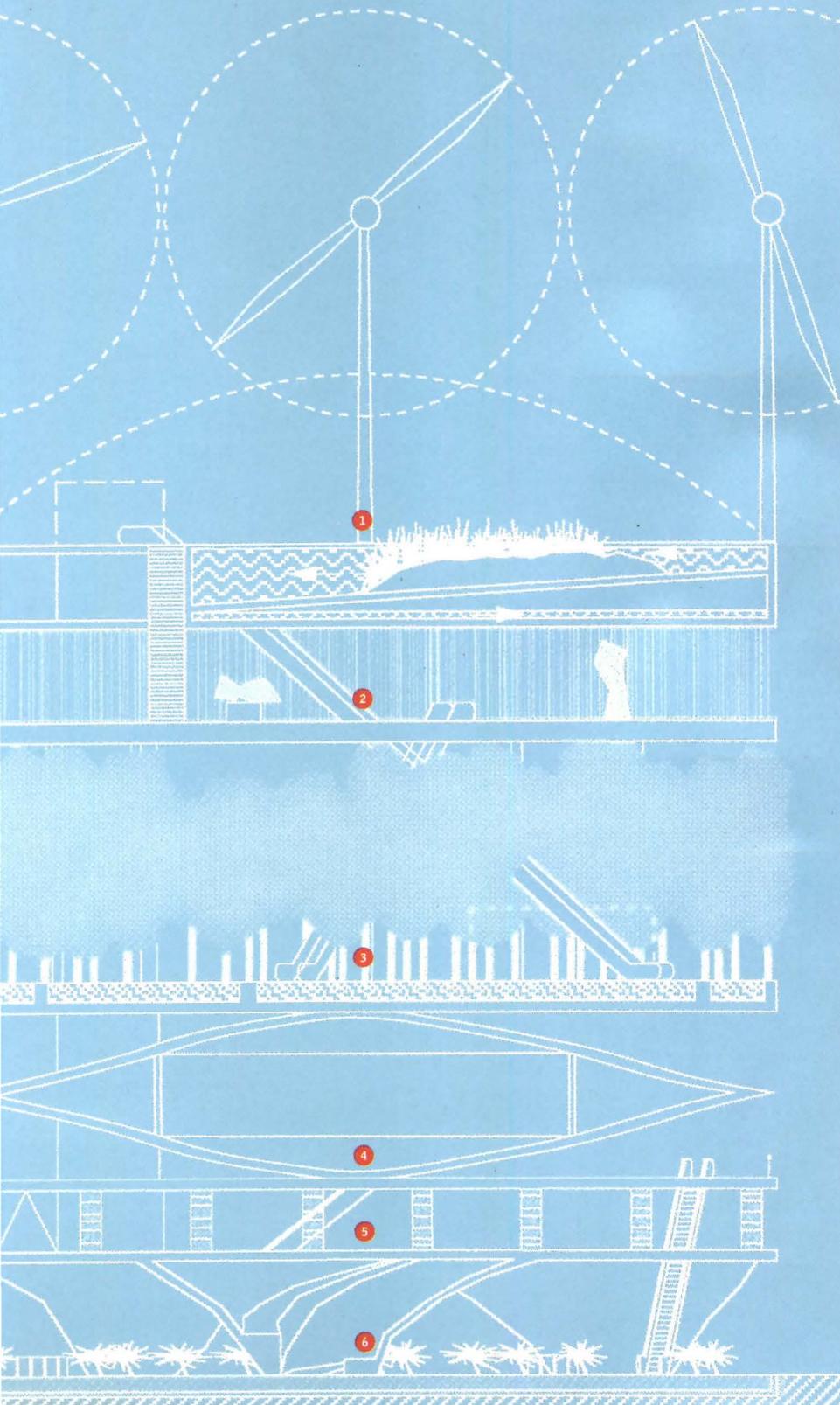
1 WATER: Restaurant overlooks artificial lake on roof deck. Windmills on grass roof deck generate electricity.



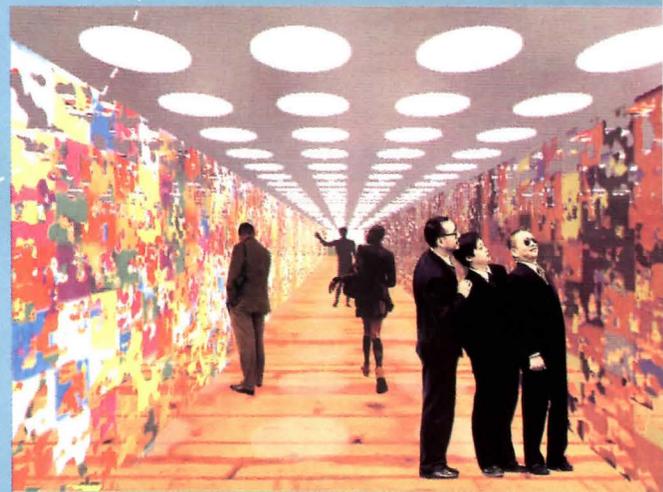
2 RAIN: Sheets of running water circulate through interior and exterior enclosure of exhibit space.



3 FOREST: High-powered lights illuminate mature trees indoors.



4 DYSTER: Auditorium features 360-degree projection screen.

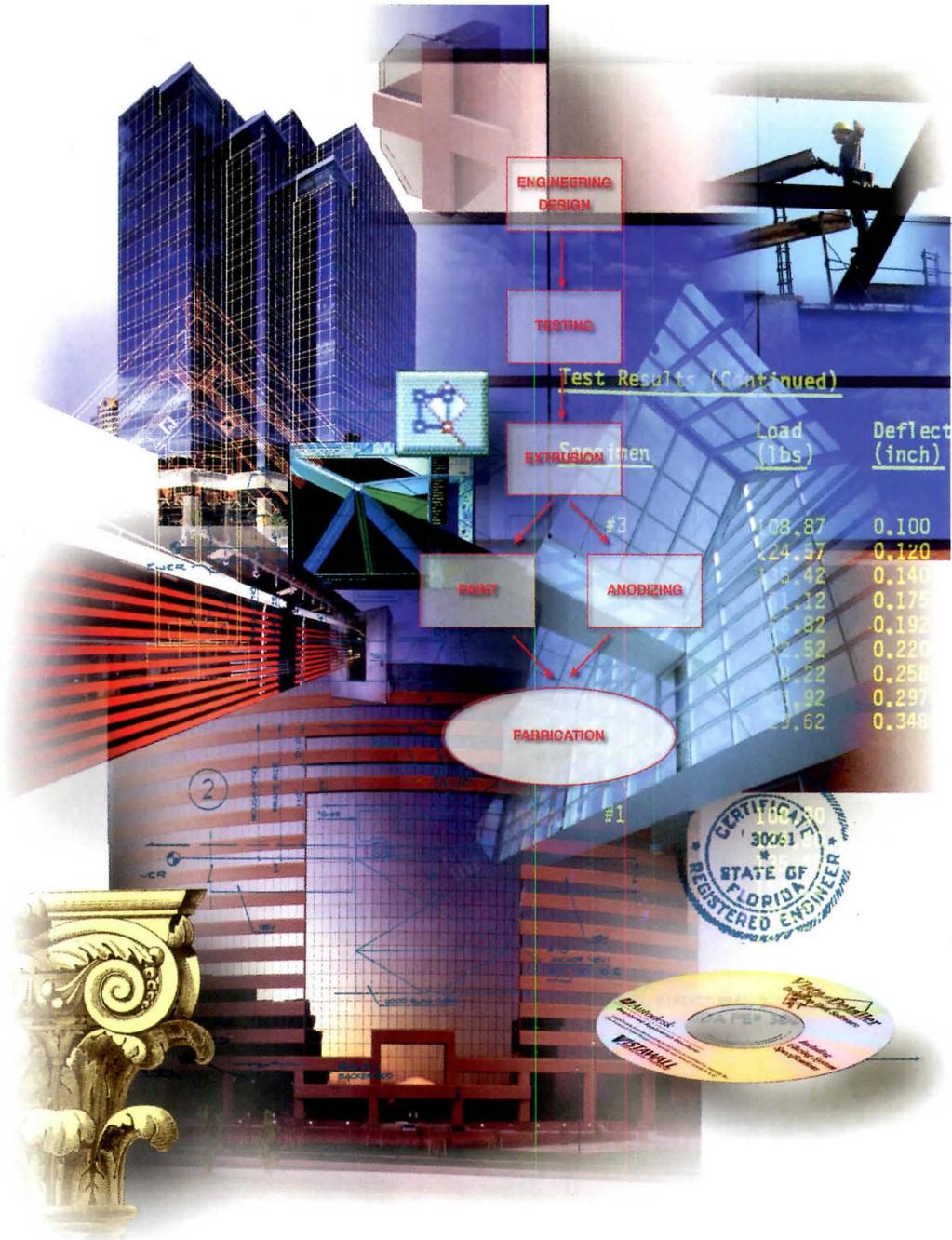


5 AGRICULTURE: Small greenhouses shelter thousands of plants.



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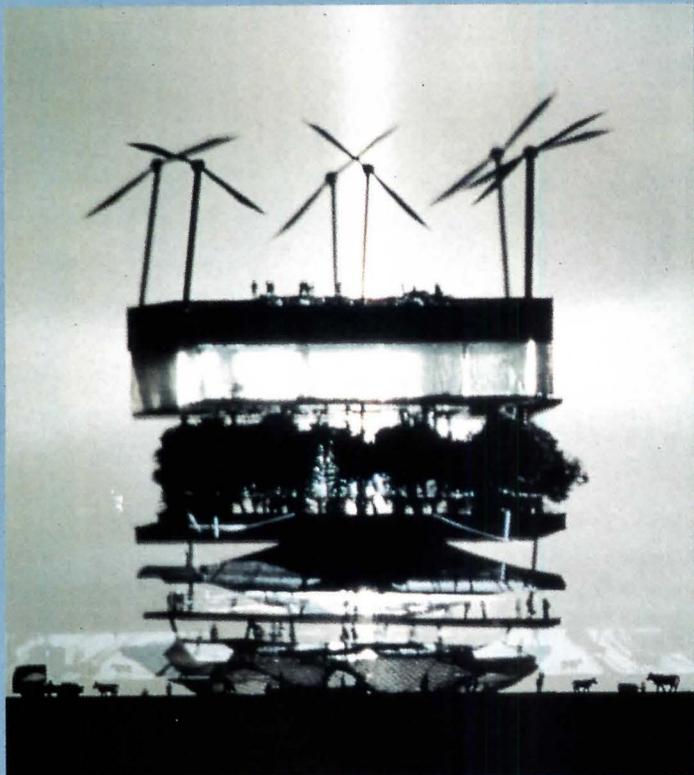
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air conditioning, and uses the warmth that emanates from the bodies of people gathered in the auditorium to heat other parts of the building.

MVRDV employs both metaphors and fragments of nature to argue for the interweaving of the manmade and the natural. Visitors will be able to roam around a gridded forest three stories above ground, wander through a maze of greenhouses whose plans recall formal Italian gardens on the second level, and enjoy a cup of coffee while looking out over a small lake that occupies most of the sixth floor. The third-floor auditorium represents an "oyster," while the entrance is a "grotto," and a water-cooled facade represents rain. Visits will culminate on the roof with an open grass plane over which the windmills will hold sway.

The Hannover pavilion thrives on contradictions: It celebrates nature with machinery that is clearly visible—an integral part of the building's appearance, in fact. It represents a notoriously flat country with a vertical structure. It also fragments nature into different layers to celebrate the coherence and interdependence of a biosystem. The architects claim that these are not contradictions, but expressions of a fundamental social fact: Human beings manipulate nature to feed themselves, to heat and cool themselves, and to represent beauty. Exhibiting the uses rather than the raw materials of nature lets visitors observe both how we depend on our environment, and how we adapt it to fit our needs. The architecture of the Dutch pavilion gives a light and modern form to that interdependence of man and nature which is achieved through technology. *Aaron Betsky*



Quirky tower displays (from top to bottom) rooftop windmills; water-filled facade; indoor forest; mollusk-like auditorium; greenhouses; and ground-floor grotto.



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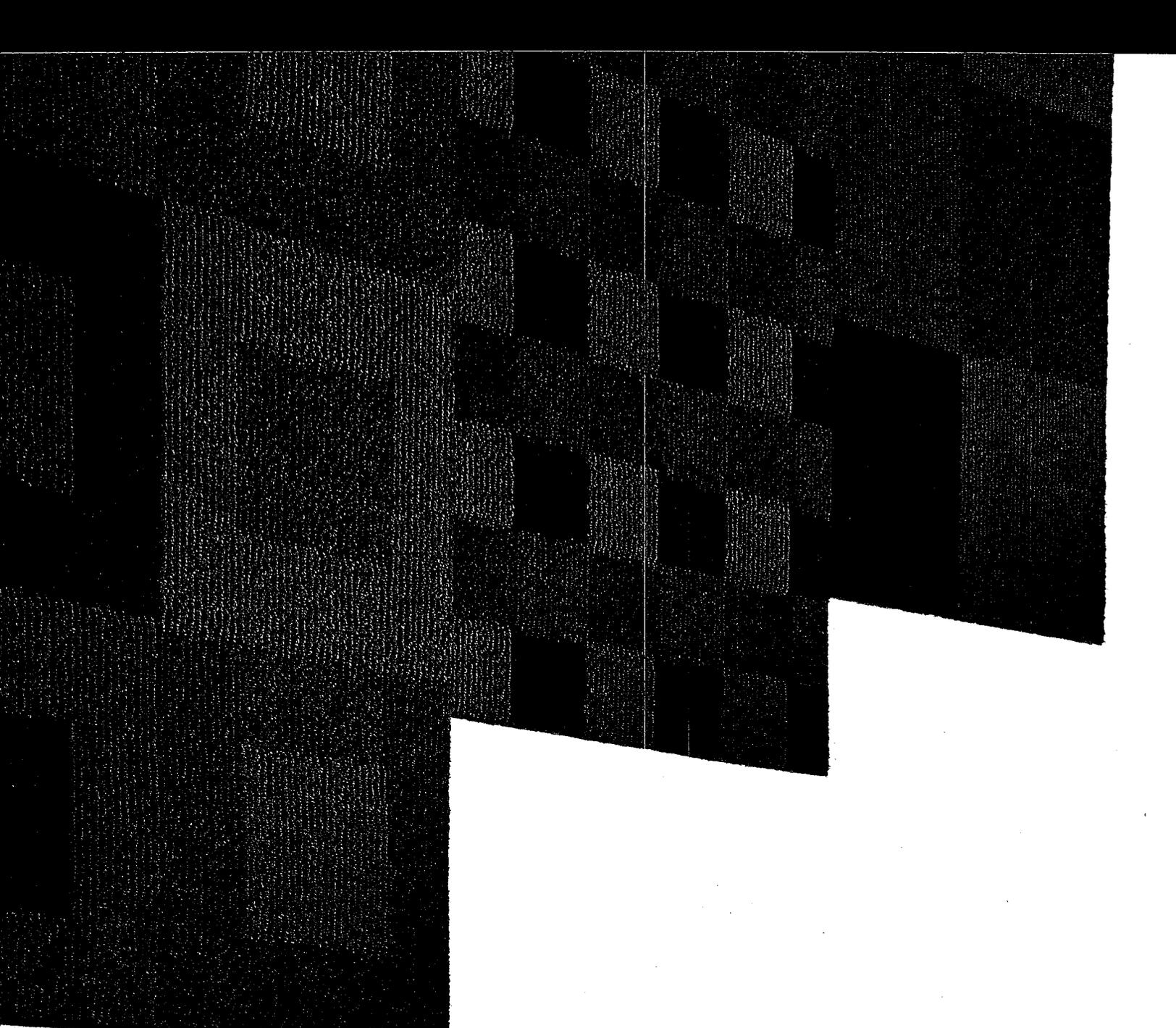
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Spirit and Sensibility

Australian architect Glenn Murcutt ruminates on ethics, influences, and the high price of fame.

Since images of Glenn Murcutt's delicate Modern houses first appeared outside of his native Australia in the early 1980s, the architect has gained near-mythic renown as a lone practitioner with an almost spiritual integrity about such issues as culture, climate, and tectonics. Despite the rewards success brought the 62-year-old Australian, such as the 1992 Alvar Aalto Prize, the resulting demands on his time nearly capsized his solo practice. Murcutt now reflects on the current state of his practice, and the steps that led him there.

ARCHITECTURE: Why do you work with no staff?

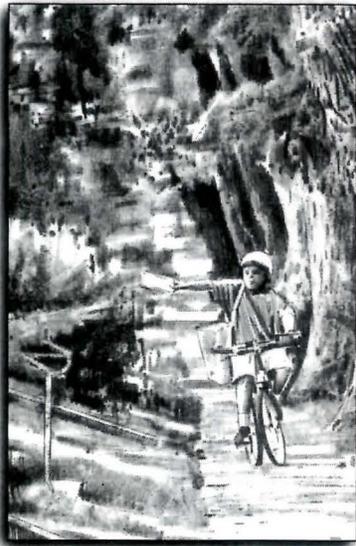
GLENN MURCUTT: Until 1969 I worked in offices, where I saw architects lose control of their practice because of success. Being a very independent person, I liked the idea of being the master of my own destiny, so I felt I could go out on my own. I found it so rewarding to just think, and doodle, and work without a whole lot of confusion around me.

I also needed changing parameters in my practice: in place, building types, climatic conditions, and clients. I wasn't going to be like the other mosquitos—they'd come down, bite, and fly up again—damaging the world.

Teaching and lecturing in Europe, North America, South America, and Australia gives me tremendous diversity. I need that stimulus. It also means that I am not in my office more than 60 percent of the year, and that is no way to run a practice with a staff.

Many people outside Australia ask you to do projects for them. Why have you turned them down?

Culturally, the world is getting closer, and this may eventually determine what makes architecture change. But for now, cultures



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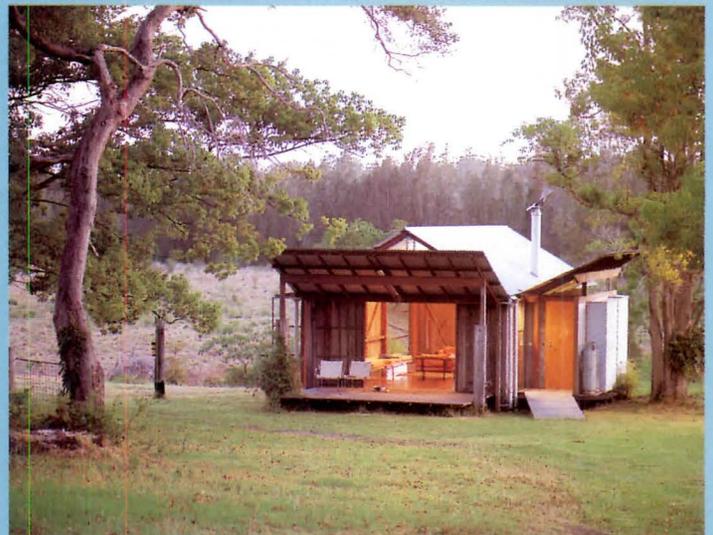
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Mercutt designed Marie Short House (1975, top) for client north of Sydney, then bought and expanded it for himself in 1980. He subsequently designed wood and corrugated-iron guest studio on property (1992, center and above).

are still quite different. Teaching in Tucson, Arizona, for example, I detected enormous cultural differences between the Spanish, the Mexicans, and the Americans. To be able to respond to such differences properly, I need to be in these places for a long time. Working with the Aborigines in Australia took years of communication, cohabitation, observation, and discussion. Most of us will drop into foreign projects without fear. That's why we get buildings by the same architect that, whether they're built in Barcelona or New York or Helsinki, look the same. We should exercise greater caution.

You've become a major influence on other people's work.

My father said, "In life, most of us are going to do ordinary things. The most important thing about doing ordinary things is to do them extraordinarily well, and be able to go to the beach and have nobody know who you are." That was very powerful to me: Ego isn't central. I couldn't care less about notoriety.

The success might sound glorious, but there are times when I'm almost crying on the inside from the pressure. I deal with the builders, the clients, the subcontractors, the visiting students and architects and university staff who want to take them to buildings. The international recognition has all but killed me as a practicing architect, because I can get 40, 50 phone calls a day. I have to spend one day every month trying to respond to the letters I get.

I still work like a student at the age of 62. It's plain hard work. I've always tried to approach work from principles. The "-isms" I find really extraordinary, this sort of cult which inevitably ends up in dogma. We're all influenced, that's how learning takes place. The important thing is to choose one's influences carefully, by understanding the principles behind what people do.

What have been the major influences in your life?

I'm powerfully influenced by my parents. My father was getting *Architectural Forum* from the United States, documents on Philip Johnson's house, a whole issue on Frank Lloyd Wright. I'd go through these with him and we'd discuss the buildings. I was also interested in the California architect, Craig Ellwood. I still remember one beautiful house tucked against a hillside.

Building boats with my father—racing skiffs, canoes, kayaks, and sail boats was another influence. Reading a book about the principles of flight, and what creates positive and negative pressure, and how this pressure differential can be applied to architecture. These are very vital: to understand timber, the grain, which way you plane, whether you put timber on a wall horizontally or vertically, what the weathering patterns are, what the durability is, which timbers are for inside and for outside. These are the vocabularies that I absorbed as a kid.

I also read Henry David Thoreau, which addresses the first question you asked me. Thoreau said that the mass of men lead lives of quiet desperation: Their resignation is confirmed desperation. I didn't want that quiet desperation. I have to be able to see positive things.

A building construction teacher I had at university in my first year asked us to discuss continuity in nature: why bamboo

the Designer is in



Neil Frankel,
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In addition to sharing design advice, Frankel invites you to submit your own questions, which may appear in a future column.

Q: What advice do you give people redesigning their office environments?

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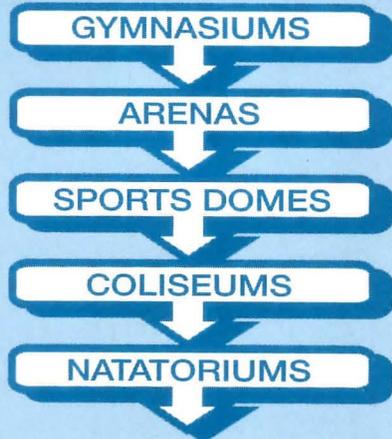
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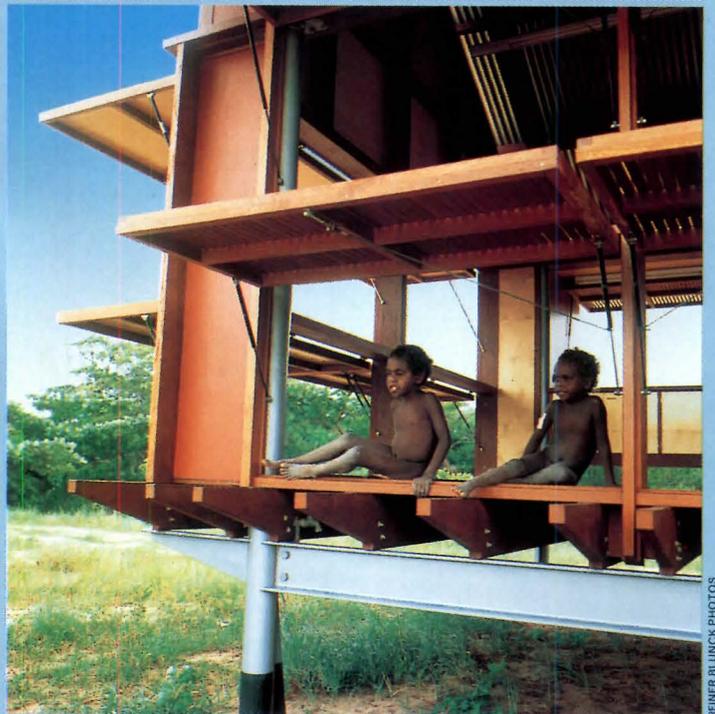
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Simpson-Lee House (1994, top) and Marika-Alderton House (1994, above) demonstrate Murcutt's concern for climatic and cultural context through use of vernacular forms, simple materials, shading devices, and natural ventilation.

REINER BLURCK PHOTOS

stands up. We had to get sticks of bamboo, cut them into sections, and discuss them. The next term we described how works of art, architecture, and engineering adopted the principles of nature. It was right up my alley.

Another influence is the Australian landscape. Life is so clear in most parts of this country. Drought is a big issue, as is flood, and the trees have adapted. They track the sun throughout the day. They turn dense foliage against the shade, but there is also a translucency in the foliage. We can see through the landscape. Light serves to separate the landscape in Australia, as compared with places in the northern hemisphere, where light connects the landscape. I look at the way the landscape feathers at the edges. The flora is so powerful and yet so delicate. I love strength and delicacy as an architectural combination.

Frank Lloyd Wright and Ludwig Mies van der Rohe made a powerful impression on me at university. I saw the Maison de Verre in 1973, and for the first time I saw Modernism without dogma—rationale and poetry as inseparable. I also saw the work of Alvar Aalto, who understood his culture in an extraordinary way.

What are the principles that you work with?

One has to look at location: humidity, temperature, light, seasons. Then comes landform, water, drainage, available materials, structure, and how structure is organized in relation to scheme. The client's brief, the building's flexibility, the ability to open and close, the ability to take in light and exclude light, are very important factors. Other factors are the typology, morphology, scale, and materiality of a building in relation to its cultural context. Then comes tactility, proximity, spatial dimension, height, width, volume. Then the quest for privacy, refuge, and prospect.

You have very strong ethics. How do you maintain both your ethics and your practice?

If I operate ethically I don't have to think about it. I am so isolated in so many ways that I have no need for favors from anybody. For example, I can serve on the vice-chancellor's building committee at the University of Sydney and say what I think, because I'm not there to befriend or make enemies with anybody. I'm not there looking for work, so I don't have to think about the consequences. That's a very privileged position.

I won't sit on a jury if I think the principles are wrong, such as changing Jørn Utzon's Opera House around. I feel ashamed of the way my profession has treated Utzon over the years.

What do you see as the relation between design and technology in architecture?

How can you separate structure, design, and technology? I know architects who say they are working on either solar technology or solar buildings. If they only work with a single issue, they can end up with the most horrible piece of architecture. They can't simply work with one element as if it's independent of the other. That's just nonsense. There's an inevitability about the way wind works over an airplane's wing. You can't talk about the airplane's wing as separate from the wind. They're totally integrated.

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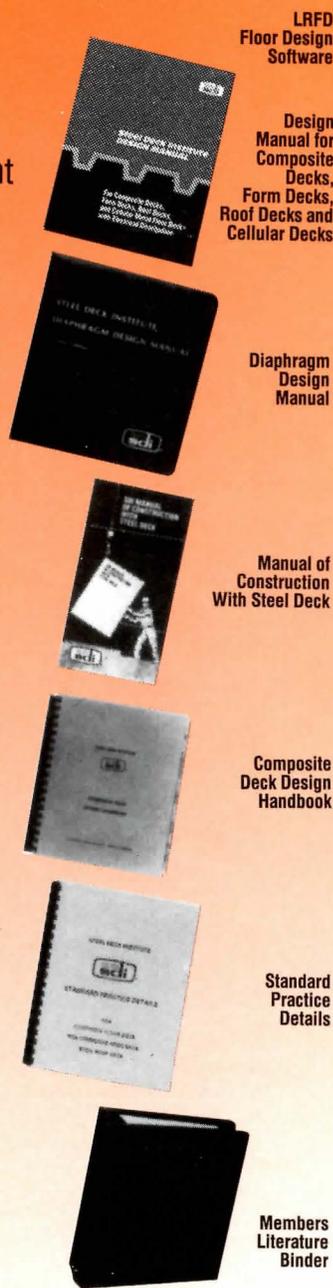


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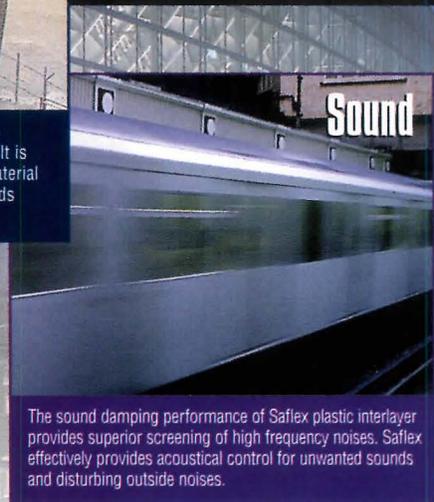
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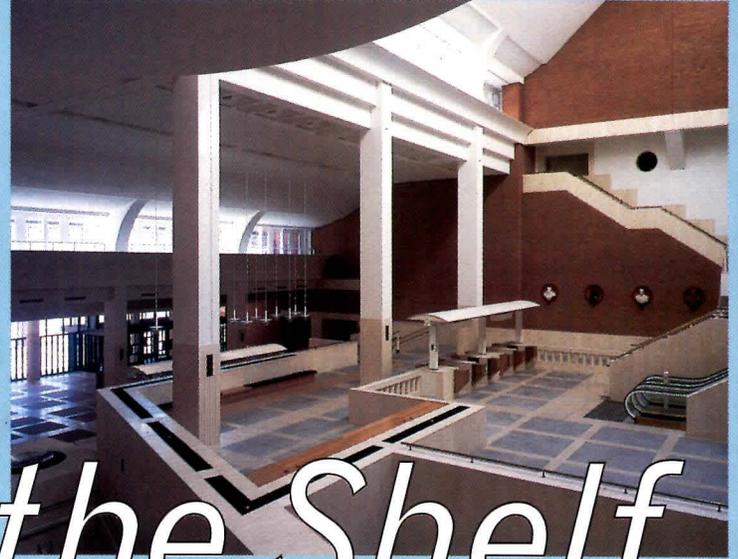
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Off the Shelf

Colin St. John Wilson's new British Library is hardly worth the 30-year wait and \$800-million price tag.

The road to the new British Library is paved with good intentions. Indeed, these intentions motivated the ambitious plan to relocate and expand one of the world's finest book and manuscript collections from its home at the British Museum to a tract next to St. Pancras station in north London. Along the way, the project nearly collapsed as a result of bureaucratic floundering.

The library's massive collections had resided in the British Museum's splendid repose since 1753. By the 1960s, however, the library was bursting at the seams, which required books to be stored improperly at remote locations. In 1964, Architects Leslie Martin and Colin St. John Wilson submitted a proposal for a new building, which would be located down Great Russell Street near the museum. Opposition declared this plan disruptive, and in 1973, Wilson, by then in his own practice, submitted a new plan for a smaller building adjacent to the museum. When local opposition nixed Wilson's second scheme, the British government acquired land next to St. Pancras station.

Sadly, the story got even worse from there. In 1977, a series of bureaucratic snafus and political maneuvering worthy of a Swiftian satire began: The government allocated, then withdrew, library funds; it divided construction into phases, then subdivided. New architectural plans were approved but not funded. Governments came and went, each taking feasibility studies with them. More agencies joined the fray and issued more reports. Phasing split again into substages. Work on the building's foundation finally began in 1982, but bureaucrats and advisers spent most of the rest of the 1980s conducting audits and restructuring management, rather than building.

British Library (left) sits behind desolate plaza in shadow of St. Pancras station. Turnstiles and stairs (right) sit on elevated level in entrance hall.

The three-decade wait for the library has hardly been worth it: Visitors enter the 1,080,000-square-foot building off Euston Road through a boxy brick gatehouse into a soulless plaza paved in brick and travertine. They are greeted by Eduardo Paolozzi's William Blake-inspired statue of a slumped-over Isaac Newton, apparently despairing of ever escaping the barren court. Instead of ascending a grand staircase worthy of a revered institution, visitors descend diagonally through the plaza toward the library entrance, a dark hole identified by only a canopy and a few flags.

Patrons emerge from this darkness into a cavernous hall with all the charm of a prosaic airline terminal, where a bland, canopy-covered information kiosk greets them. Three floors of stacks and reading rooms open into a scaleless, brick and plaster canyon with thin railings as undistinguished as motel balconies. Here and there, leather-wrapped door pulls and warm oak soften the building's austerity, but they're no substitute for articulate detailing.

Oddly enough, a hint of the ceremonial approach missing from the exterior shows up inside: Travertine stairs rise through the great hall to a *piano nobile* leading to galleries and specialized reading rooms. However, the grandeur ends there: Where one might expect a majestic reading room after such a self-conscious ascension, there is, instead, a public restaurant. Even in Britain, commerce has apparently supplanted scholarship.

Home to one of the world's greatest collections, the British Library deserves more potent symbolism. Wilson's building pleases few, and critics have been vocal. Traditionalists are appalled by the bland Modernism; futurists, envisioning a digital library, think it's a waste of space. The war is over, and the greatest casualty is the loss of a renowned institution's dignified image. In its new incarnation, it's merely a warehouse. *Sara Hart*

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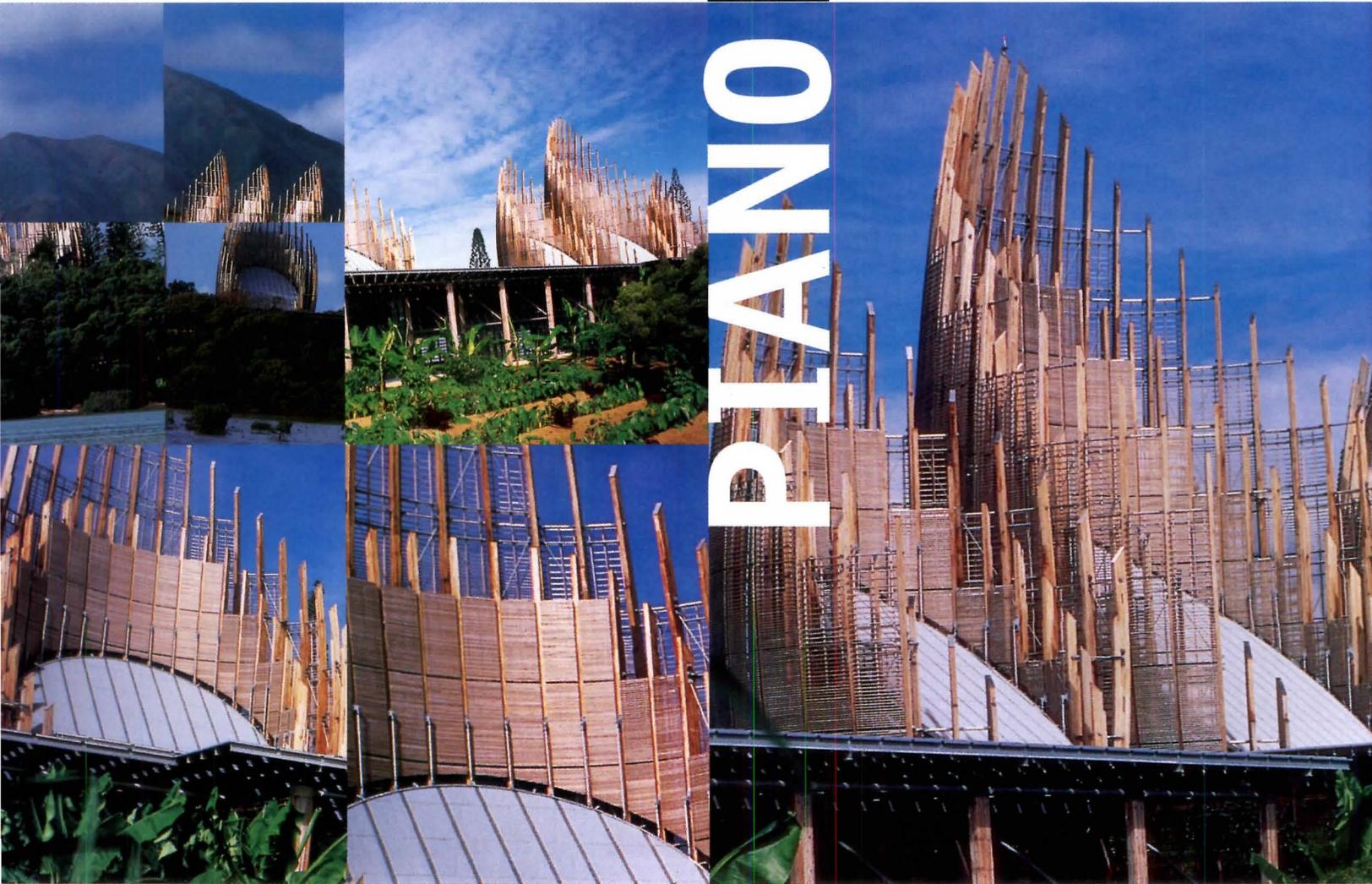
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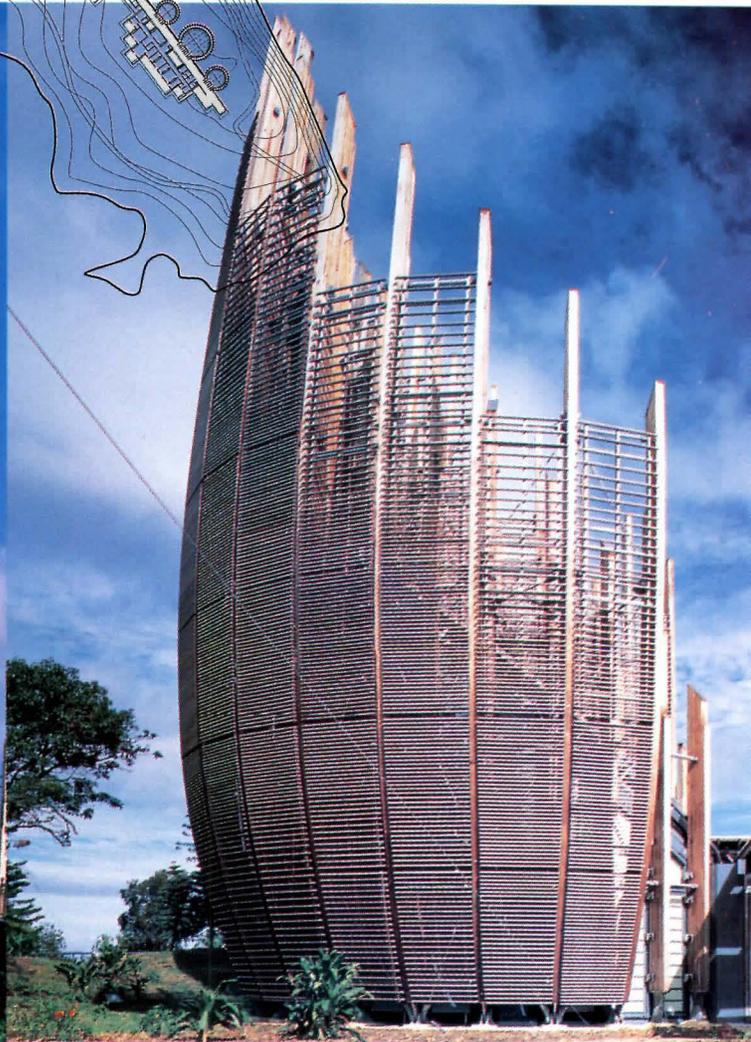
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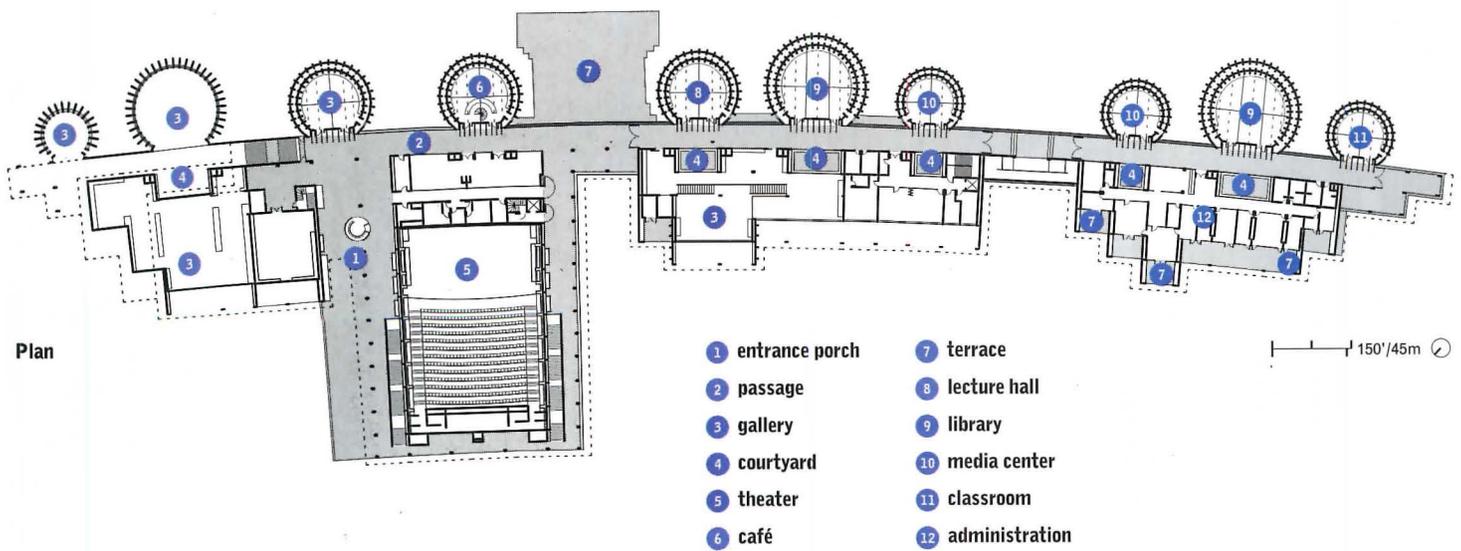
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Site plan 90°/27m





Wood cases of Tjibaou Cultural Center (previous pages) bow out toward bay; their glue-laminated ribs rise over flat-roofed structure and surrounding gardens and lagoon.



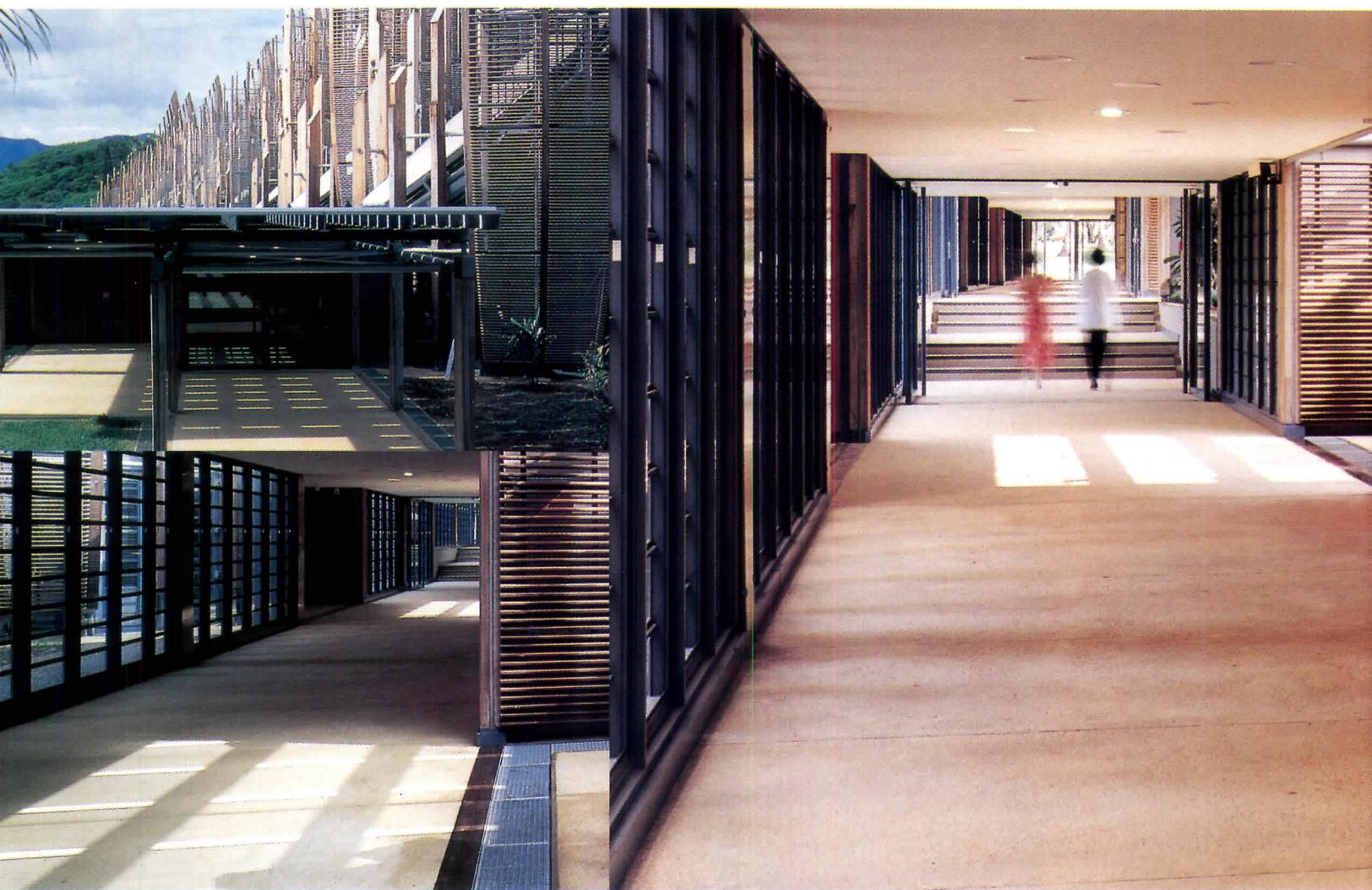


Conical cases (above), like those adjacent to center (foreground), inspired Renzo Piano's contemporary counterparts. City of Nouméa is visible on mainland coast (background).

The mysterious forms of Renzo Piano's Jean-Marie Tjibaou Cultural Center are at once unexpected and beautiful. Rising from tropical vegetation to brush the sky, the center's swelling wooden shapes seem simultaneously alien and indigenous, as impressive as the landscape that surrounds them. Sited in New Caledonia, a French territory in the South Pacific, the building's facades speak of the structural rigor for which Piano, the 1998 Pritzker Laureate, is renowned, as well as a formal inventiveness that borders on the willful. In cultural terms, however, this is a subtle and generous work, a model of diplomacy, and a compelling contribution to New Caledonia's native Kanak people.

The result of an international design competition held in 1991, the \$33.4 million arts and education complex has neither the picturesque nostalgia nor the Eurocentric arrogance often associated with projects for native peoples. The Tjibaou Cultural Center is also a departure from earlier projects by Piano's Building Workshop. According to the architect, "It was not feasible to offer a standard product of Western architecture, with a layer of camouflage over the top: It would have looked like an armored car covered with palm fronds." Piano's Kanak clients inspired him to design forms that are both original and symbolically resonant with local tradition. Building on the high-tech idiom for which he is known, Piano transformed traditional Kanak structures in a way that parallels the cultural aspirations of these Melanesian people, who, after nearly 150 years of colonial rule, are committed to preserving and advancing their traditions, while integrating with the predominantly French milieu of New Caledonia and the international community beyond their shores.

Sited on the outskirts of Nouméa, New Caledonia's prosaic capital city of 70,000, Piano's building occupies the Tina Peninsula, a 20-acre finger of land that protects a placid lagoon from the sometimes fierce



Thousand-foot-long covered passage (above left and center) extends length of cultural center. Porch at peninsula end of passage (top left) has steel roof structure on African

THE KANAK CHRONICLES

Where is New Caledonia? This French overseas territory comprises a series of islands (the largest is about 300 miles long) at the western edge of Oceania, about 1100 miles east of Sydney, Australia. When Captain James Cook first arrived in New Caledonia in 1774, the Melanesian people of the island, the Kanaks, spoke 27 distinct languages.

The history of the Kanak people after European contact is shamefully similar to the stories of other indigenous peoples worldwide. Initially curious about foreigners, the islanders turned hostile when the presence of Europeans led to decimation of the population by introduced diseases, removal from ancestral lands, desecration

of sacred sites, political disfranchisement, confinement to reservations, and destruction of cultural artifacts and traditions.

The Kanaks had a warrior tradition; there were armed, bloody conflicts and revolts, especially after the island group became the French colony of New Caledonia in 1853. While the plight of the Kanaks improved somewhat after World War II, history and racism continued to plague their position.

A scattering of violence in 1988 almost led to civil war. It was narrowly averted by the Matignon Accord of 1988, which stipulated a vote on independence in ten years, and the support of Kanak culture as an integrated part of the then predomi-

nantly French New Caledonian culture. The Agency for the Development of Kanak Culture, which runs the Tjibaou Cultural Center, was an outgrowth of the accord.

The independence vote was to occur in 1998. However, the new Nouméa Accord was signed coincidentally with the opening of the Tjibaou Cultural Center in June. It extends the principals of the Matignon Accord, delays the question of a split from France, and puts in place a series of measures toward increasingly independent rule. It finally protects and enhances the citizenship status of the Kanak people, so that they may fully participate, along with citizens of other ethnicities, in the government of what was once their land.

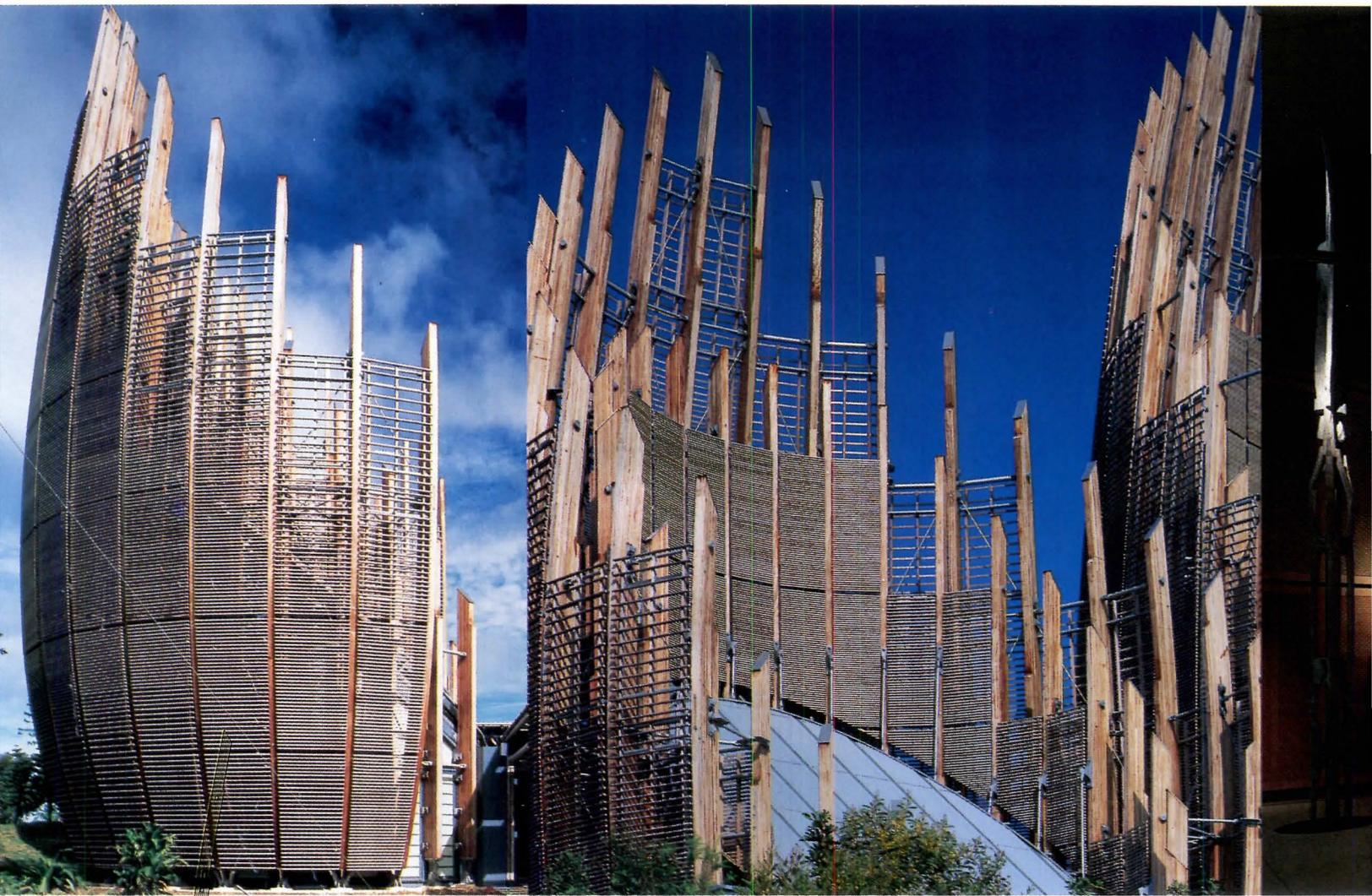


hardwood columns. Double-height gallery overlooks gardens and lagoon (top right); single-story gallery (above right) containing Kanak art exhibitions is visible through glazed wall.

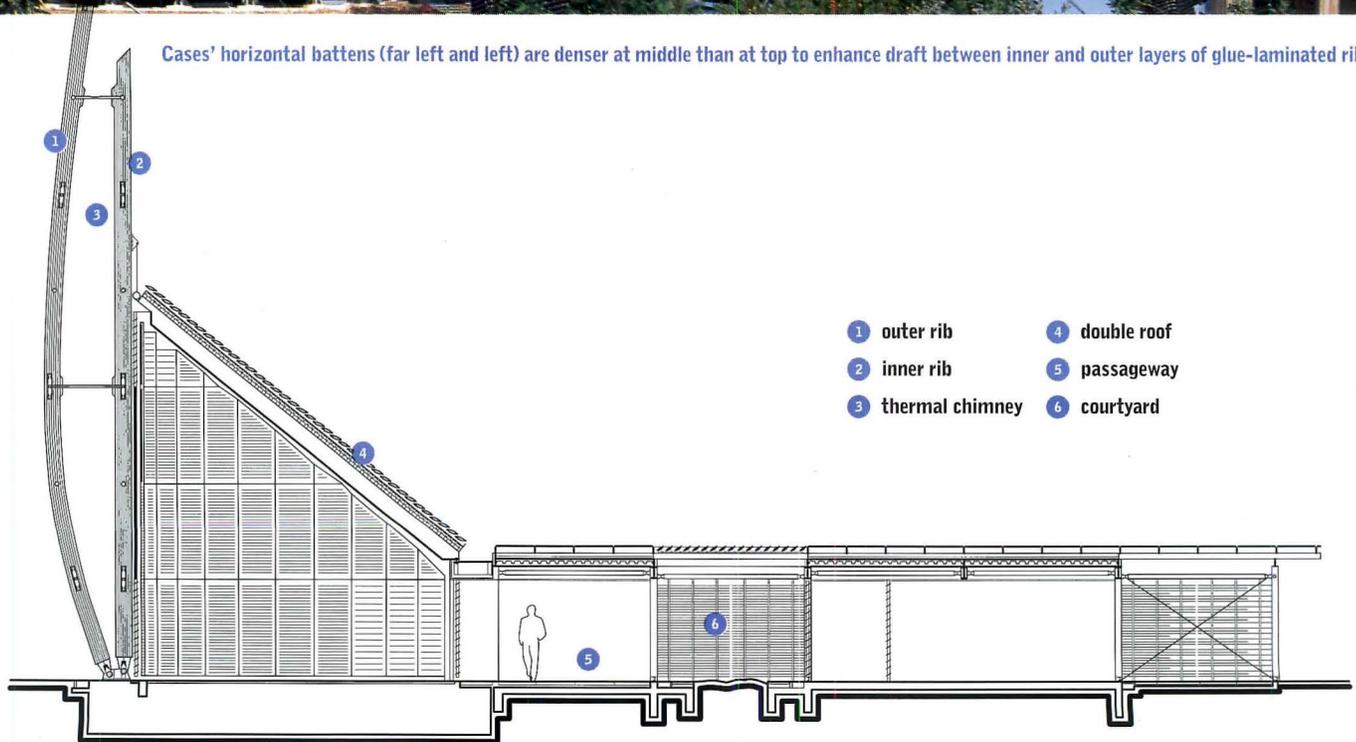
winds and waves of the bay beyond. Piano positioned the circulation spine of his building, a 1000-foot-long passage, in a line that runs along the peninsula's ridge. This unenclosed hallway demarcates two architectural vocabularies: On the slightly sloping lagoon side, four Modernist, flat-roofed glass and steel pavilions dock along the hall, with landscaping between each pavilion. On the steeper bay side are 10 soaring wood cases—a European word once used to describe traditional South Pacific huts. Piano's latter-day cases turn their curved and slatted facades to the wind and stretch their exposed structure to the sky.

Piano avoided segregating traditional Kanak activities to the cases. As if to integrate past and present, he divided the entire 81,000-square-foot complex into three sections, or "villages" along the hallway, each a composite of pavilion and transformed cases. Public spaces—the entrance, theater, exhibition spaces, café, and gift shop—are on the landward end of the circulation spine. The middle section contains offices for visiting scholars, a library, a computer and media room, and more exhibition spaces. Near the tip of the peninsula are administrative offices and educational facilities; service spaces are fully underground. The site includes an interpretative landscape path, a gathering of traditionally constructed cases, a restaurant, a dormitory for children from remote villages, workshops for visiting artists, and two outdoor performance spaces: one seating 1,000 people, and one seating 2,000. On a nearby hill, a statue of Jean-Marie Tjibaou, a visionary Kanak leader assassinated in 1988, and the center's namesake, gazes down on the building.

The entrance to the complex is not at the landward end of the hallway, where conventional Western architectural logic would have it. Instead, one follows a path that swings toward the lagoon, up a small rise, then turns toward the building to enter under a wide porch along the northwestern side. In Kanak tradition, an



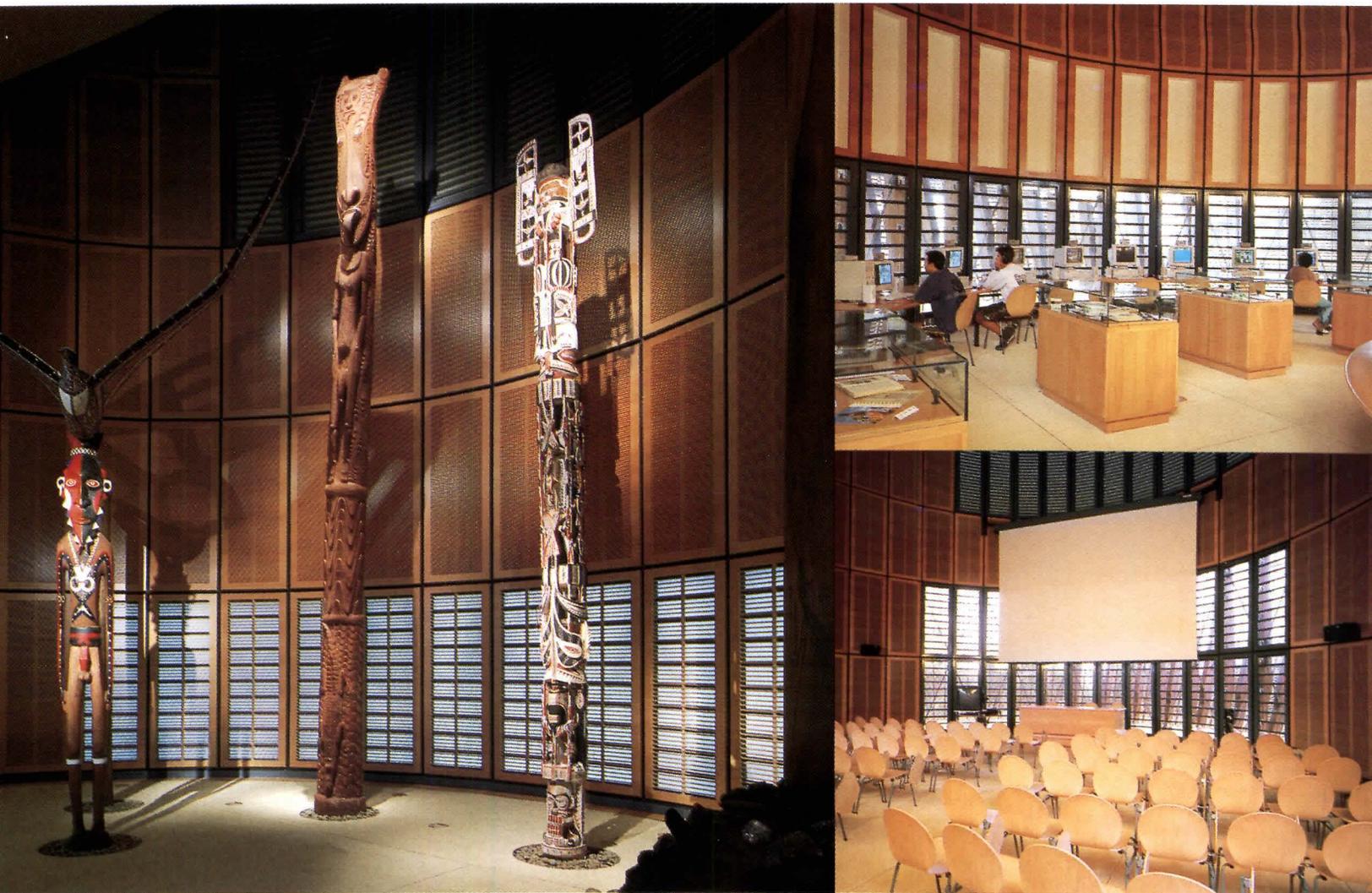
Cases' horizontal battens (far left and left) are denser at middle than at top to enhance draft between inner and outer layers of glue-laminated ribs; slanted



- ① outer rib
- ② inner rib
- ③ thermal chimney
- ④ double roof
- ⑤ passageway
- ⑥ courtyard

Northeast-southwest section

60'/18m



roofs are sheathed in aluminum. Paneled gallery walls (center) admit minimal daylight. More generous glazed rooms function as media center (top right) and lecture hall (above right).

indirect path is the proper way to approach a dwelling. On the center's opening day, non-Kanak visitors searched in confusion for the entrance, while Kanak visitors wandered calmly to it.

One of Piano's challenges was to make a large institutional building welcoming to the nonurbanized Kanak people. To this end, the pavilions and cases, interspersed by the landscape, appear as a collection of small pieces gathered along the long hall. In the passage, the ceiling height is a domestically scaled 8 feet. Its roof extends over the glass and steel pavilions; in large rooms, such as the raked theater and the double-height galleries, much of the interior volume is below grade, to sustain the low roofline. Views and easy access to the landscape, along with natural ventilation, keep visitors in constant contact with the outdoors. The center seems firmly rooted in its site, and feels like a structure that evolved over many decades.

From a distance, the eerie forms of the cases give the project a surreal character, particularly at night, when they are lit from the exterior. They rise from the landscape in three different sizes, ranging in height from 65 to 91 feet. As one approaches the center, they loom overhead, curving to meet the sky with feathered fingers that resemble the upper branches of the columnar pines growing on the site.

At close range, the technical rigor of the Piano Building Workshop becomes apparent. Traditionally, wooden cases are built on an earthen base. Pole rafters rest on exterior walls and converge at the top of a towering central pole; cross pieces, lashed between wall posts and between rafters, support deep exterior thatch. Interiors are left unfinished. Through a series of study models, Piano stripped transformed cases of thatch and substituted battens of iroko (an African wood) for the cross pieces. They removed the central

pole and spread open the rafters like the petals of a flower. With tips no longer meeting, the rafters become upright structural ribs, fabricated of glue-laminated iroko.

A double skin system, supported by double rows of ribs, allows the curved exterior batten wall to shade the vertical interior wall with space for a thermal chimney in between. Wind tunnel tests revealed that orienting the cases' tall sides toward the prevailing breezes is structurally optimal for high winds, and promotes natural ventilation. Galvanized steel connectors brace the glue-laminated iroko to form three-dimensional circular trusses strong enough to withstand hurricanes. Finally, Piano extended the kit-of-parts construction method to extraordinary lengths: Fabricators constructed the parts in France with exacting levels of precision, and then shipped them to the site for assembly (see accompanying technical article on pages 152 to 156).

The poetry of the sophisticated case exteriors belies the less inspired, though no less refined, interiors. Each of these circular rooms, open to the hallway, is topped by a flat, disc-shaped ceiling tilted up from the entrance. Walls are finished with wood and glass; computerized louvers maximize natural cooling. While these climatic strategies are effective, Piano's truncated spaces lack the power of the dimly lit, lofty interiors of their predecessors. They are the only disappointment in an otherwise exceptional work of architecture.

Piano's links to Kanak culture did not stop with formal affinities. Several Kanaks contributed to the center's design: Octave Tonga, the director of the center, and Marie-Claude Tjibaou, president, and Jean-Marie's widow, among others, were part of the project team. It also included Alban Bensa, an ethnologist with knowledge of Kanak culture. One of the most tangible results of Kanak contribution is the center's landscape design. The agrarian Kanaks attach practical and cultural significance to a wide range of plants: as food and

Slain Kanak leader Jean-Marie Tjibaou (far left), for whom cultural center was named, stands behind Kanak sculpture. Workers thatch roof on traditional case (below left);



medicine, and as markers of boundary, entrance, greeting, and occupation. This affinity with the land is revealed in the Kanak Path, a sequence of landscapes between the center and the lagoon that refers to Kanak myths of creation and the cycles of life, death, and rebirth.

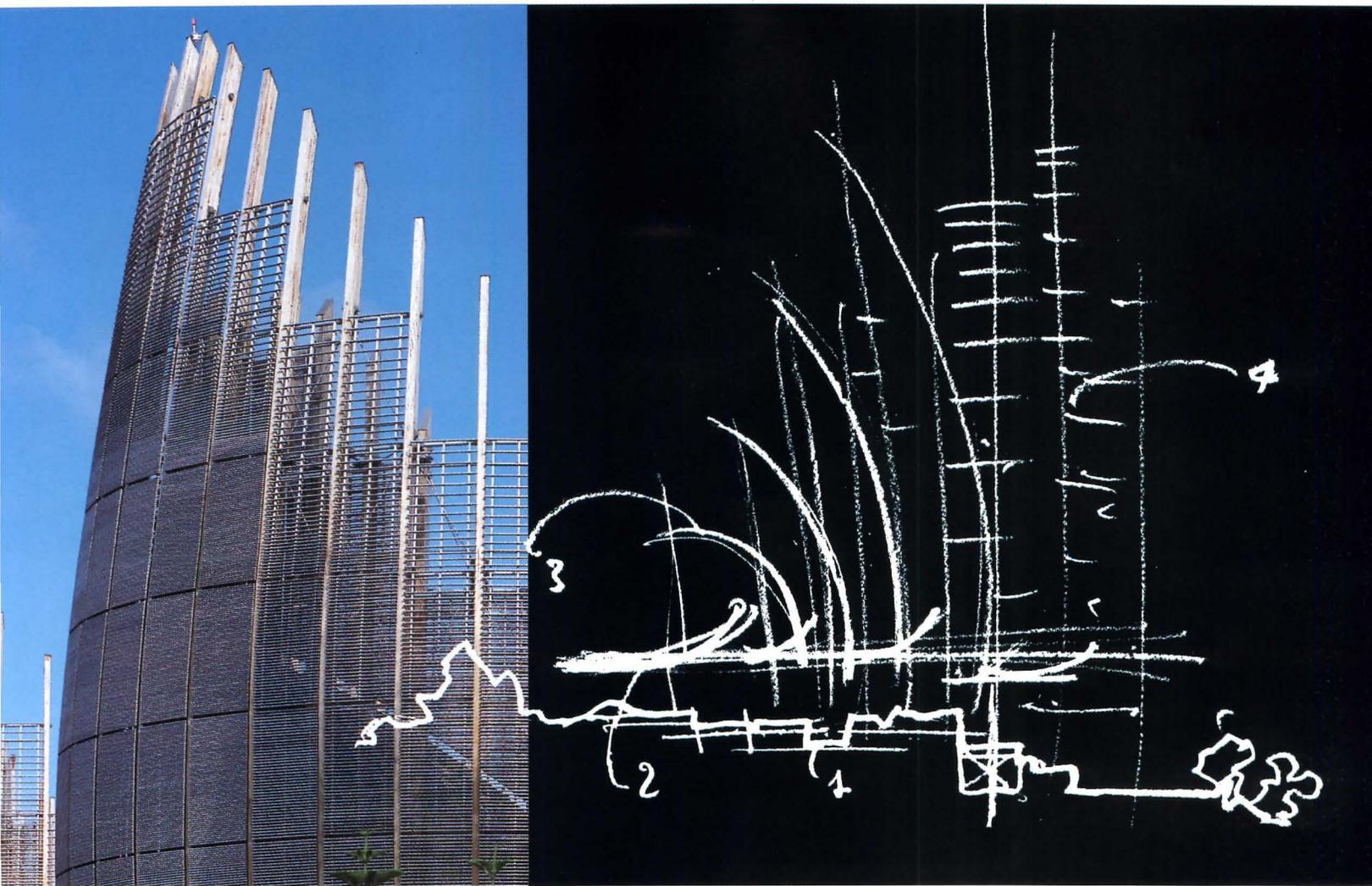
The Tjibaou Cultural Center's true connection to the Kanak people will have to be tested over time. An auspicious comment was made during its opening week, however: Emmanuel Kasarherou, cultural director of the center, observed, "When people arrive here, they understand that the building is unique in both form and sense. They know that it is modern, yet they feel it is deeply rooted in our history." One of Europe's most progressive architects has provided a place for Kanaks to continue their cultural development. Their regeneration would fulfill Piano's mission of honoring the past without reiterating its architecture.

Oakland, California-based architect L. R. Findley teaches at the California College of Arts and Crafts.

JEAN-MARIE TJIBAOU CULTURAL CENTER, NOUMÉA, NEW CALEDONIA

CLIENT: Agency for the Development of Kanak Culture—Marie-Claude Tjibaou (president) **ARCHITECT:** Renzo Piano Building Workshop, Genoa, Italy—Renzo Piano (principal), Paul Vincent (associate-in-charge), William Vassal (architect-on-site), Antoine Chaaya, Alain Galissian, Marie Henry, Charlotte Jackman, Robert Keiser, Gianni Modolo, Joost Moolhuijzen, Jean Bernard Mothes, Marie Pimmel, Sophie Purnama, Dominique Rat, Anne Hélène Téménidès (design team), Olivier Dozy, Andrea Schultz (modelmakers) **ENGINEERS:** Ove Arup & Partners; Agibat (structural) **CONSULTANTS:** Alban Bensa (ethnologist); CSTB (climate control); Desvigne and Dalnoky; Végétude (landscaping); GEC Engineers (cost control); Integral (graphics); Peutz (acoustics); Qualiconsult (security); Scène (scenography) **GENERAL CONTRACTOR:** Glauser International **COST:** \$33.4 million **PHOTOGRAPHERS:** Hans Schlupp, Architekturphoto, except as noted

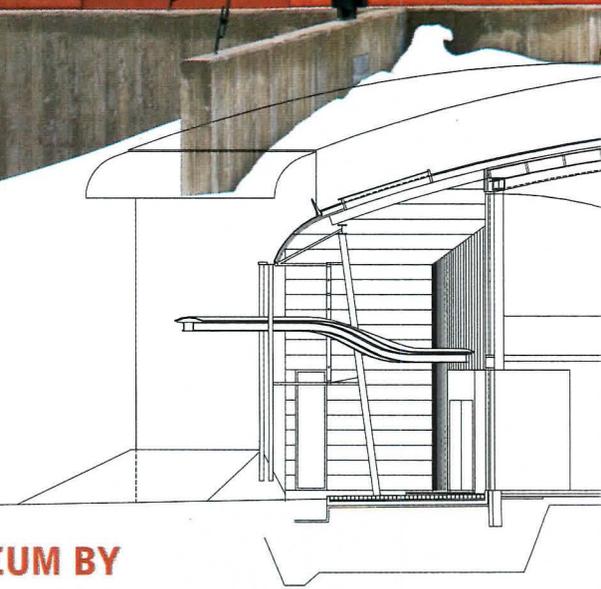
conical profile of thatched case roof (bottom left) influenced shape of Piano's design (center). Architect's conceptual sketch (right) depicts profile of cases in site's pine grove.

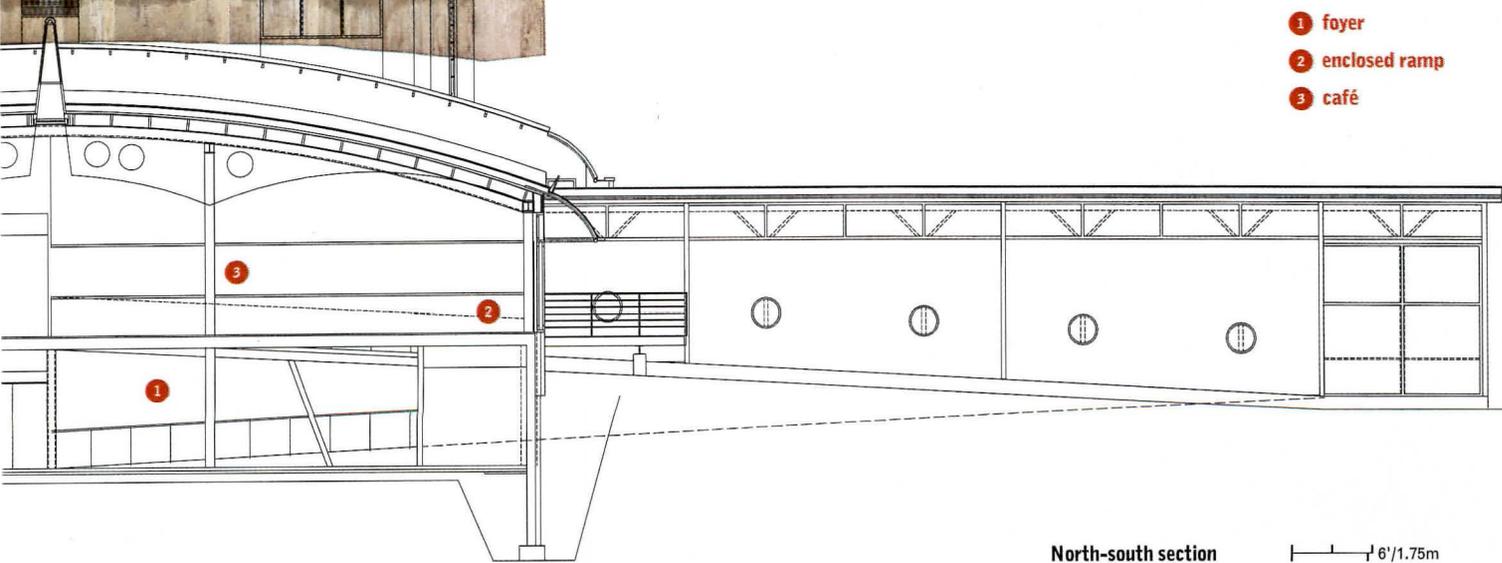




NORDIC TRACKS

A MUSEUM BY
JUHANI PALLASMAA
INTERPRETS
LAPLAND'S LOST
VERNACULAR.





- 1 foyer
- 2 enclosed ramp
- 3 café

North-south section

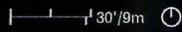
6/1.75m



- 1 Sámi Museum and Northern Lapland Visitor Center
- 2 Sámi Outdoor Museum



Site plan





MATTI SILVENNOINEN



RAUNO TRASKELIN

BY JOSEPH GIOVANNINI

Known to most of the outside world as Lapps, the once nomadic Sámis of Lapland, in Northern Finland, live in a magnificent landscape streaked with hundreds of lakes. It is barren of old structures, however, even though the Sámis began building log cabins in the manner of their Finnish neighbors in the 17th century. Only two dozen of those are preserved on 17 acres behind the new Sámi Museum and Northern Lapland Visitor Center in Inari, 150 miles north of the Arctic Circle. During World War II, efficient German troops with torches left almost nothing standing as they retreated from Finland.

Sámi culture today is alive and well, protected by the Finnish state. When the Finnish forest service and the Museum of Sámi Culture asked Juhani Pallasmaa to design a joint facility, however, the Helsinki architect and professor had little context to respond to, other than the existing houses, outbuildings, and huts in the museum's backyard. Like Stephen Dedalus in James Joyce's *Portrait of the Artist as A Young Man*, forging the "uncreated conscience of my race," Pallasmaa had to be novel or at least architecturally evocative and highly sensitive to the landscape in order to capture the sense of a people intimately and directly tied to a violent and fragile natural realm. The design demanded architectural character that was as strong as the old farm structures: simple materials, simply fitted to their function. It had to be a direct and unpretentious invention with strong cultural recall.

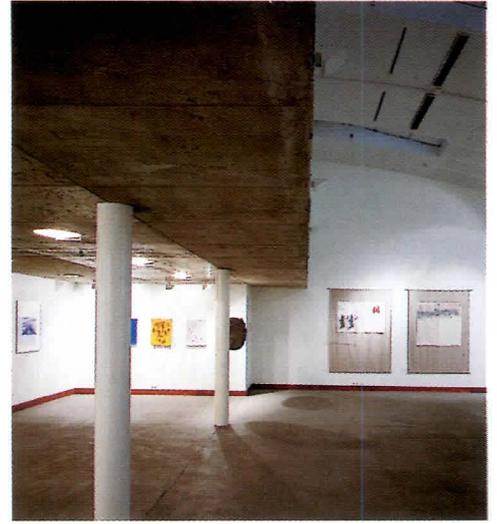
The 30,000-square-foot, \$6.5 million complex Pallasmaa designed is both unique and strangely familiar. Finished this past spring, it comprises four voluminous wood-sided sheds—two long and two short—angled like a wagon train or a collection of Nordic farm buildings.

The two shorter structures (one of them is a caretaker's house) are service buildings for the two-story, two-sided museum, which is bent in the middle and stepped in elevation. Each of the volumes is clad in stained pine. The main entrance is a two-story portico, articulated with two screens of red-stained wood studs and a sloped wood canopy cantilevered from the entrance. The roll of the roof, the fragmentation of the mass, and the variety of the parts minimize any monumentality; wood siding keeps the architectural expression both domestic and casual.

All of the museum's architectural components—roof vaults, skylights, corridors, stairs, ramp, lights, and column grid—converge in its complex, two-story foyer. The program also comes together in the foyer—information desk, coat room, auditorium, café, library, galleries, and exhibition halls—resulting in a space that summarizes the interior organization and orients the visitor.

A round reception desk of mahogany and concrete sits to the right of the wood laminate entrance doors, with a gallery and a 70-seat auditorium to the left, and storage rooms beyond. Straight ahead, a long ramp leads toward the back of the building through a grid of pipe columns. The ramp breaks through the rear facade, forming a glazed landing that overlooks the Sámi Outdoor Museum, a village of transplanted wood structures established in 1959. The ramp then rises back to the main body of the

East facade of Sámi Museum (previous pages) is built of concrete and clad in orange-stained pine; narrow skylight at midpoint of bowed roof extends length of building. Enclosed ramp (at right) runs north-south, allowing visitors views of adjacent log cabins. Glazed landing of ramp (facing page) enables visitors to see cabins en route from first floor to main exhibition areas on second floor. Sámis in traditional coats (above left) walk from patinated copper main entrance of museum's two large sheds (above right); stained pine screens, braced by pipe columns, are suspended in front of entrance.



building, ending at a café with a terrace facing the village. A corridor leads from the ramp and café to the main exhibition spaces and an outdoor ramp on the second floor.

Lapland, of course, experiences extremes of light, from two months of semi-dark days during the winter to the white nights of summer. Pallasmaa developed several sources of natural and artificial light to compensate for and complement dramatic environmental shifts. Skylights punctuate the darkest areas to create what the architect calls “the miracle of light” during dark periods of the year. Uplift curved ceilings feather the light evenly, while hanging lamps form a virtual ceiling plane at an intermediary level.

These multiple light sources reveal the spatial layering of the ramp, pipe columns, light fixtures, and structural grid, as well as the variety of materials: concrete, copper, plaster, glass, and various woods. “I use materials to create spatial depth, like Alfred Hitchcock used color to clarify spatial depth,” says Pallasmaa. “I’m interested in humanistic space, how the position of things in space—below, above, low, high—relate back to the body.” The structure demonstrates issues of phenomenology that Pallasmaa has developed in his writings and in other designs. Every time the hand touches the building—a door pull, a handrail, a door or window frame—it touches wood. “Architecture is a tactile phenomenon,” he says. “Tactility imparts a sense of intimacy, protection, and welcome.”

The sheds’ public spaces and the procession through them are so tectonically active and engaging that one hardly notices that the main exhibition space is basically a black box: The spatial and formal layering, the richness of materials and light, and the dramatic ramp all provide sufficient stimulation to sustain the visitor’s senses during a tour of the dark exhibition space.

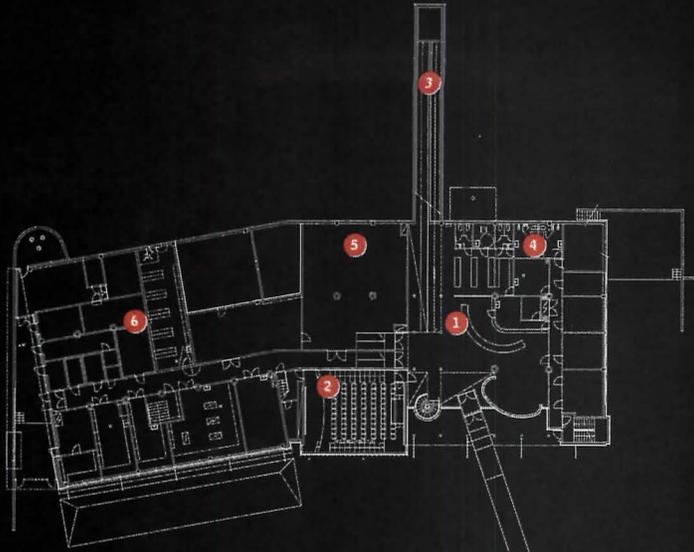
In the end, it is difficult to pinpoint exactly why Pallasmaa’s design is so appropriate for Sámi culture and Finnish environmentalism. The use of wood speaks of vernacular architecture without being imitative; the siting of the four buildings on the grounds echoes the loose arrangement of buildings on Sámi farms and reindeer ranches without being literal. The bowed roofs, which minimize the mass of the volumes, recall surrounding hills, and the proliferation of different light sources responds to seasonal extremes, underscoring the special meaning of light in this environment. While the design is an act of architectural abstraction, the result is concrete and palpable.

Pallasmaa’s sense of tactility and architectural presence lends his design the immediacy exhibited by the Sámi farm structures. The presence of the genuine articles in the village would have exposed a more precious museum, but they underscore the authenticity of Pallasmaa’s complex. His building is a genuine salute to Sámi culture, and an architectural paradigm for how Lapland can further develop, in modern terms, its interrupted architectural legacy.

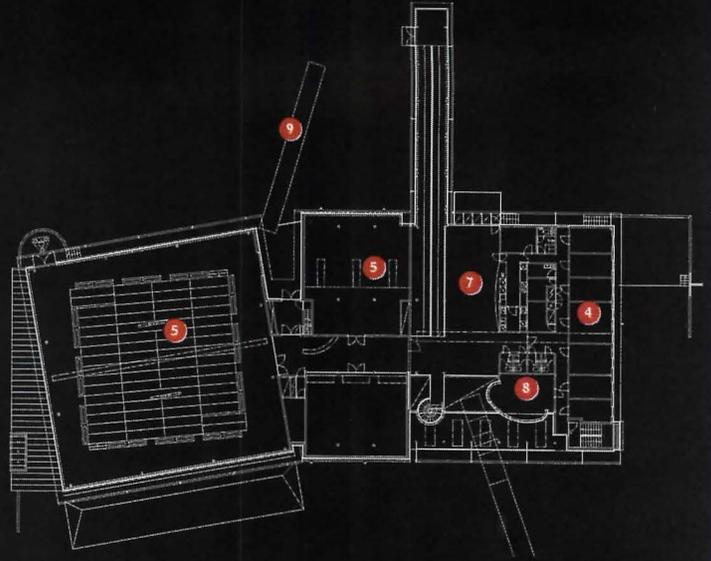
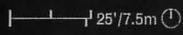
Ramp (above left), flanked by Sámi boat, returns from glazed landing to second floor café. Undulating ceiling creates plenum beneath overarching curve of roof. Temporary exhibition area (above right) with dropped horizontal ceiling sits between café and main exhibition space (facing page), where displays follow sequence of seasons. Artifacts mounted on floor and in freestanding vitrines present culture of Sámi people; photo murals on outer wall illustrate nature of Lapland. Tilted steel columns flank skylight that bisects dropped ceiling.

INARI SÁMI MUSEUM AND NORTHERN LAPLAND VISITOR CENTRE, INARI, FINLAND

CLIENT: Finnish Ministry of Education **ARCHITECT:** Juhani Pallasmaa Architects, Helsinki, Finland—Juhani Pallasmaa (principal), Marianna Verhe (project architect), Antti Varkemaa (assistant project architect) **ASSOCIATE ARCHITECT:** Design Tapio Wirkkala, Helsinki, Finland **ENGINEERS:** Rovasuunnittelu Consulting Engineers (structural); Vidén Engineers (mechanical); Esko Laakso Engineers (electrical); Rovaniemen Engineers (civil) **CONSULTANTS:** Teatek (lighting, audio); Hedengren (lighting) **GENERAL CONTRACTOR:** Levi-Rakennus **COST:** \$3.9 million **PHOTOGRAPHERS:** Jussi Tiainen, except as noted

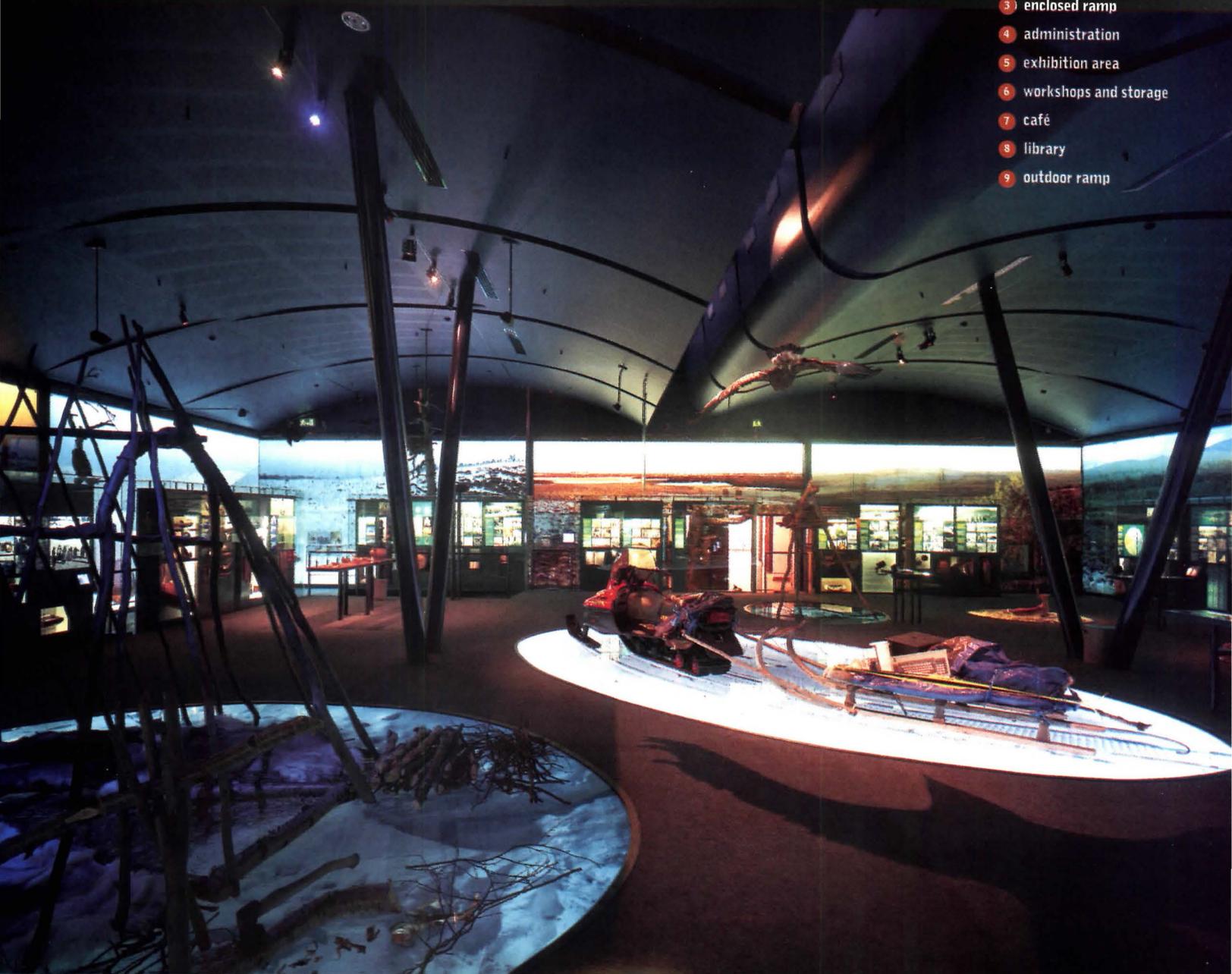


First-floor plan



Second-floor plan

- 1 foyer
- 2 auditorium
- 3 enclosed ramp
- 4 administration
- 5 exhibition area
- 6 workshops and storage
- 7 café
- 8 library
- 9 outdoor ramp



A photograph of the interior of a modern church. The space is characterized by its minimalist design, featuring white walls and a high ceiling. A large, tall wooden door stands open, allowing bright light to stream in from the outside. A person is seen standing in the doorway, looking out. In the foreground, several rows of simple wooden chairs are arranged on the floor. The overall atmosphere is serene and contemplative.

DEVOUTLY MODERN

A whitewashed church by Álvaro Siza provides a serene space for both private meditation and communal worship. By Catherine Slessor

Throughout the ages, attitudes towards two distinct but related subjects—the nature of sacred space, and the interaction between humankind and the divine—have shaped religious structures. The great Gothic cathedrals, early manifestations of the celestial city, symbolize theocentric medieval Europe, for example. Renaissance churches likewise reflect the rational, humanist thinking of the 15th and 16th centuries. In 20th-century Europe, the gradual dissolution of liturgical conventions and an increased communal spirit have inspired a marked swing away from an architecture redolent of past theological glories in favor of more liberated and abstract forms.

Álvaro Siza's Santa Maria Church in the small Portuguese town of Marco de Canavezes joins the growing lineage of contemporary ecclesiastical buildings that insert a powerful sense of the spiritual into the everyday. Housing a church and a mortuary chapel, Siza's exquisitely austere building is the first phase of a new parish complex for the growing market town. A community center and parish residence will be added eventually around a new plaza at the church's west end. Funding for the project is divided equally among the European Union, the town government, and the religious community.

Perched high on a ridge above the Douro River, Marco de Canavezes sits some 18 miles east of Porto, Portugal's second city, and Siza's home base. Santa Maria Church lies on the outskirts of town, on a plateau raised 13 feet above a curving road lined with suburban villas. The church's main volume is at the plateau level, sitting atop the mortuary chapel, which is placed at road level, partly dug into the hillside. At present, the plateau is a piece of scrubby land that forms a kind of plaza, but once the parish residence and community center are in place, it will assume a more formal urban character. A small 15th-century chapel is located on the plateau to the north of the church.

Siza's design exploits the topography: By placing the mortuary chapel at the lower road level, and the main worship space above, the church enjoys extensive views south and west across the Douro Valley. Wrapped in a rough-hewn carapace of local granite, the mortuary chapel forms a rusticated plinth for the surgically white stucco box of the worship space above. The plinth incorporates a broad external stair that winds through a cloistered courtyard beside the mortuary chapel. This promenade leads up from the road level to the plaza level, and the church's main entrance.

With its stark geometry and absence of applied decoration, Santa Maria appears to be the antithesis of Portugal's lavish, Baroque churches. Instead of ornamentation, Siza harnesses the essential materiality of form and light to evoke the holy. The barest details articulate the church's white volume: A horizontal strip of glass incised at eye level into the long flank of the south wall creates a narrow band of light. Three large clerestory windows punctuate the upper reaches of the gently curving north wall. The building's boldest gesture, a towering ceremonial doorway, dominates the main west-facing elevation. A pair of rectangular towers flank the 33-foot-high, wood-paneled doors. One tower houses a standard-sized side door for daily use and an internal stair leading to an organ loft and belfry; the other tower is hollow with a clerestory at the top, creating a huge light well over the baptistery.

The church's interior is equally spare, but no less dramatic in its simplicity. The plan is essentially rectangular, with a pair of inward-curving walls at the east end. The sacristy is located in a narrow strip running along the north side of the nave. The nave is a single, soaring volume measuring 74 feet long, 56 feet high, and 54 feet wide. A delicate luminance washes into the cavernous space through the north wall's square clerestory windows and the

glazed strip on the south wall. Behind the altar, a skylight on the east front admits light into the sanctuary and illuminates the mortuary chapel through two cut-outs in the floor.

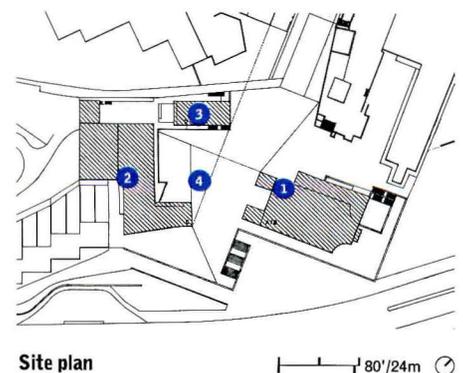
Fittings and furniture designed by Siza are simple yet elegant. The congregation faces the chancel, represented by a simple altar of white marble on a slightly raised dais. Solid marble also forms the chunky baptismal font in the north tower. A tall crucifix sits asymmetrically under one of the east elevation's convex bays, which has been truncated to create a transitional space between the nave and the adjoining sacristy. A faded plaster and gilt Madonna, positioned on the southeast corner of the nave, is the only obvious remnant of ornamentation. Instead of heavy pews, there are serried rows of blond wood chairs equipped with kneelers. The serene, meditative atmosphere is transformed on Sundays and holy days, when the ceremonial doors are thrown open, filling the nave with people and sunlight.

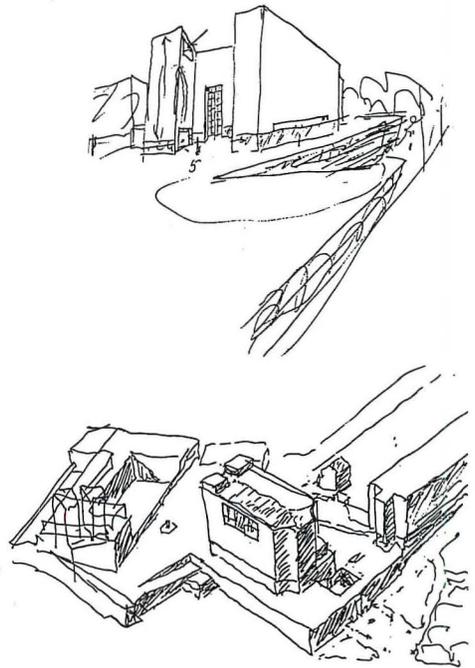
Elegantly reconciling the needs of individual contemplation and community prayer, Santa Maria Church is clearly popular with its parishioners. At a morning communion on an unremarkable summer Sunday, churchgoers filled every single seat, and many stood in the aisles. The congregation sang lustily during mass, and later spilled out onto the plaza at the end of the service to mingle and catch up on town gossip.

In attempting to define what constitutes a sacred space, 19th-century German philosopher Georg Wilhelm Friedrich Hegel cites a couplet from his fellow countryman and contemporary, the writer Johann Wolfgang von Goethe: "What is the sacred? That which unites many souls." In his church at Marco de Canavezes, Siza's rigorous yet sensuous architecture provides a fitting, modern gathering place for the immemorial communion between God and humankind.

London-based Catherine Slessor is Deputy Editor of *The Architectural Review*.

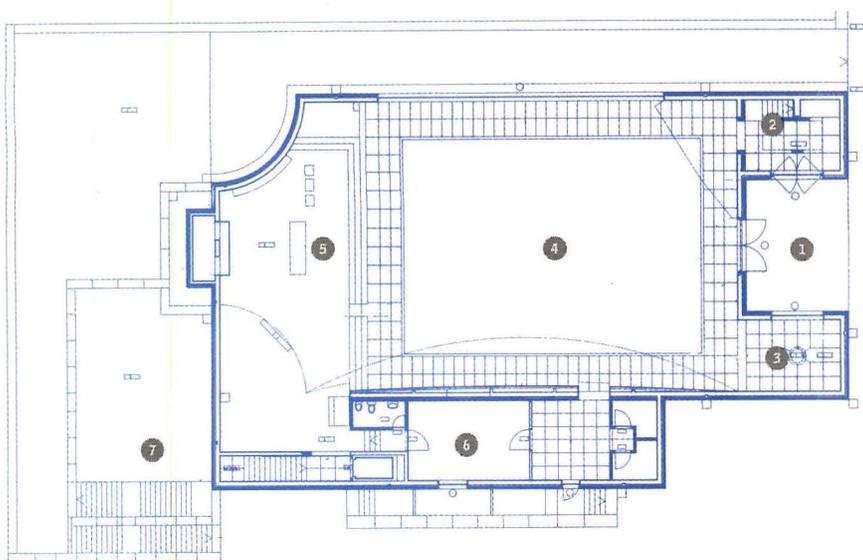
- 1 church
- 2 proposed community center
- 3 proposed parish residence
- 4 plaza





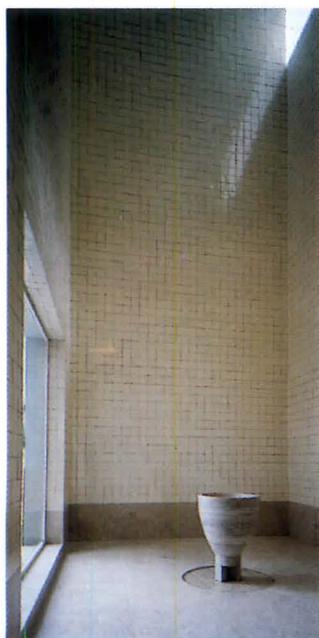
Stark stucco box sits on granite-clad plinth. Rectangular towers (facing page and top) flank entrance on west elevation. Clerestory windows (center) above sacristy cut across north elevation. East elevation's tripartite composition (bottom) and curved surfaces allude to Baroque churches; portals lead into courtyard and mortuary chapel. Siza's sketches (above) depict church and proposed community center and parish residence that frame plaza.





Main-floor plan 1" = 15'/4.5m

- 1 entrance
- 2 stair
- 3 baptistery
- 4 nave
- 5 altar
- 6 sacristy
- 7 cloister below

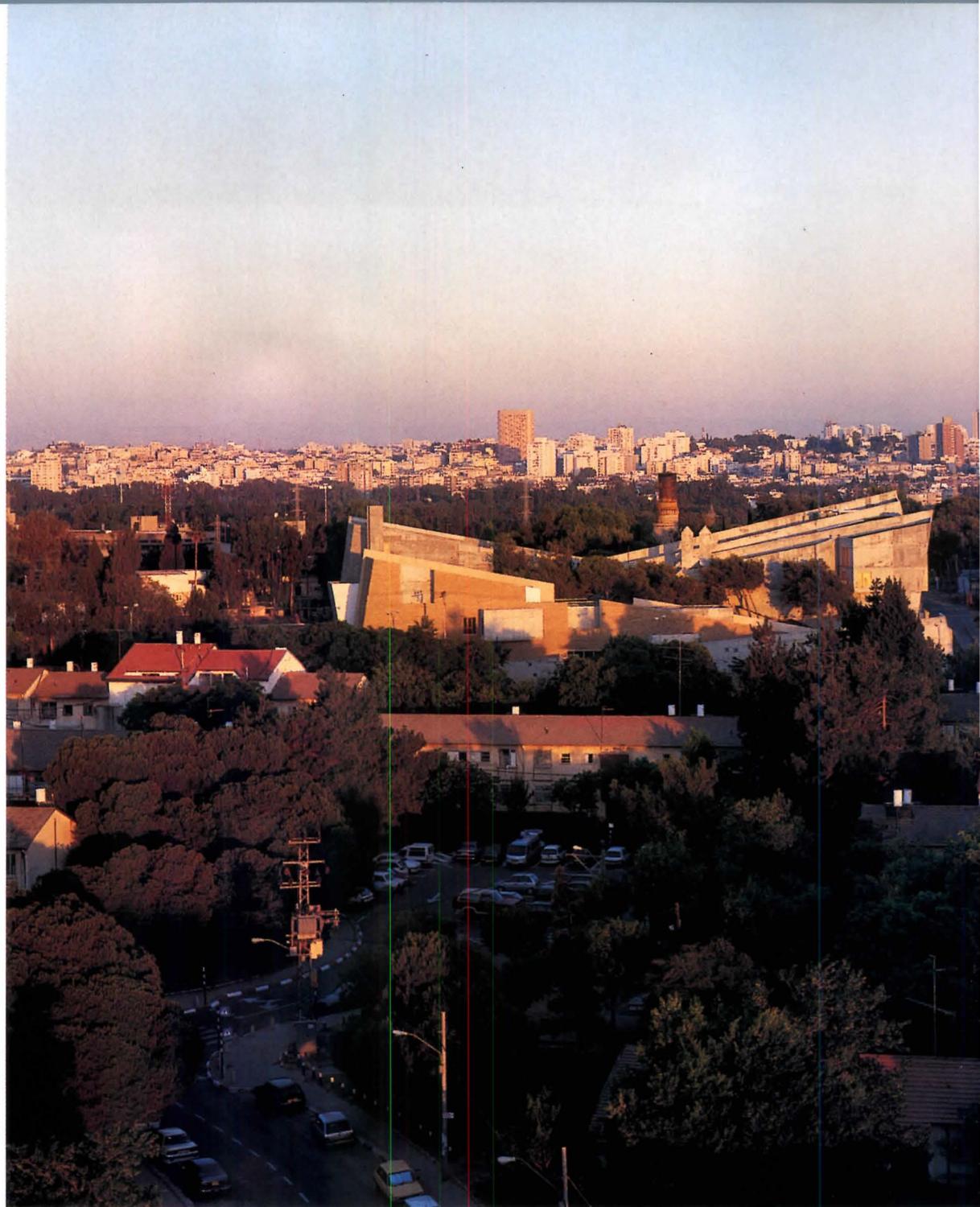


Stair (above left) descends to cloister outside mortuary chapel beneath church's east end. Light floods tall, tiled baptistery tower (below left) that contains marble font. Siza exaggerated scale of clerestory windows and triple-height ceremonial doors (left) in nave. Architect designed blond wood seating and altar furnishings (facing page). Undulated rhythm of convex walls behind altar breaks from church's otherwise rigid geometry.

SANTA MARIA CHURCH, MARCO DE CANAVEZES, PORTUGAL

CLIENT: Marco de Canavezes Citizens Organization **ARCHITECT:** Álvaro Siza Architects, Porto, Portugal—Álvaro Siza (principal), Edite Rosa (principal-in-charge), Rui Castro, Tiago Falcão, Miguel Nery, Paul Scott, Helena Torgo (collaborators) **ASSOCIATE ARCHITECT:** Rolando Torgo, Porto **LANDSCAPE ARCHITECT:** João Gomes Da Silva **ENGINEERS:** Office of Works and Projects (structural); Office of Technical Studies (mechanical) **GENERAL CONTRACTOR:** Casais **COST:** \$1.3 million **PHOTOGRAPHER:** Duccio Malagamba





ZVI HECKER'S PALMACH MUSEUM IN TEL AVIV GIVES

ROUGH CUTS

Palmach Museum, composite of multistory slabs around shaded courtyard (below), is in a fashionable suburb of Tel Aviv, Israel, amid eucalyptus and pine trees (facing page). Beach cliffs north of city (facing page left) find their counterpart in museum facades, veneered in sandstone slivers set in mortar of tar and sand.



FORM TO MODERN ISRAEL'S TURBULENT MILITARY PAST. BY PETER COOK

In Europe, the notion of the museum is coming under increased scrutiny: Should it move away from merely exhibiting history and become more user-friendly, entertaining, full of experiences and interactive delights—surely with a well-stocked gift shop? In the United States, a museum must represent the cultural ambition of its community, and often that of the family that funded it. In each case, a smooth operation is required: smooth message, smooth circulation, smooth communication and, most of all, smooth material.

Israel isn't like that. Despite a noticeable upswing in the standard of living during the past decade, a sense of threat remains: It

still seems necessary to cling to territory using muscles, intellect, and fingernails. Presentation of culture through any application of smoothness would cause irritation and seem effete, especially in a museum that celebrates the formation of the Palmach, an underground army (with Yitzhak Rabin, among others, in its ranks) that fought British rule and later became part of the Israeli army.

That memory is now invoked by a *jagged insertion* into a steep embankment located in one of Tel Aviv's most desirable suburbs. The insertion, the Palmach Museum, presents its roughest wall to the street: The 55,000-square-foot building is uncompromising. The con-

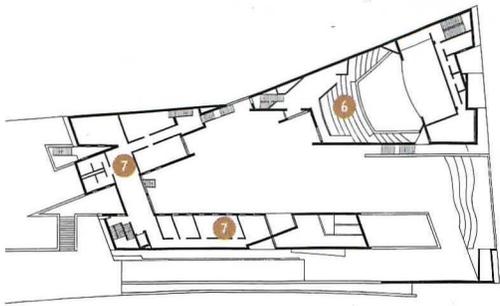


crete is pockmarked and slurped over. The many apertures scored into it are functional, but at the same time reminiscent of an attack. Yet the walls' diagonal profiles seem more liberating than oppressive, and the sight of trees rising from a courtyard reassures uneasy viewers.

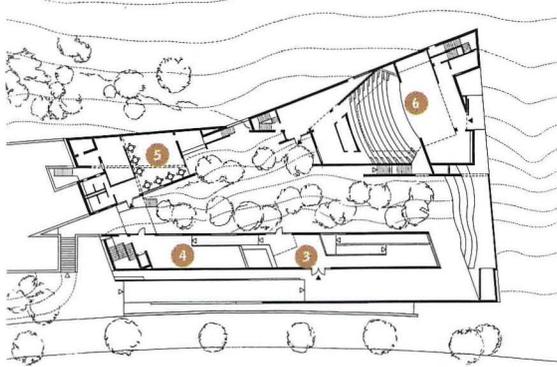
Zvi Hecker, the museum's architect, works in Berlin more than in Israel, but his architecture seems rooted in the latter. He emigrated to Israel from Kraków, Poland, a year after commencing his architectural studies and joined the Technion, the nation's premier architecture school, in Haifa. He became a protégé and later a partner of Alfred Neumann, who was a key link between European Modernism and the search for an appropriate Israeli vocabulary. Much of that search seems to have revolved around the use of repeated triangular and

hexagonal geometries. Hecker, too, found inspiration from this pursuit. In 1985 he designed *The Spiral*, an apartment house in Ramat Gan, Israel, that swirls up eight floors. He sliced through the building's fundamental geometry with a series of almost freestanding steel slashes, daggerlike balconies covered in a kitschy stone craze, violating the standards not only of "nice" architecture but also of his own geometric ordering systems.

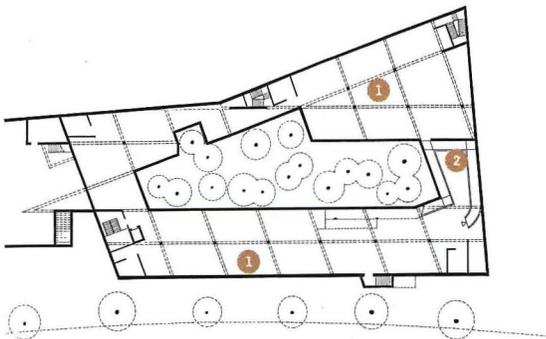
The Palmach Museum shows greater discipline: It comprises strips of building framed by parallel walls. Its character is more decidedly Israeli; the building seems to have captured the inherent toughness and nervousness of the culture. It need not rotate or fly outward; instead, it seems to slash its roadside embankment. According to



Second-floor plan



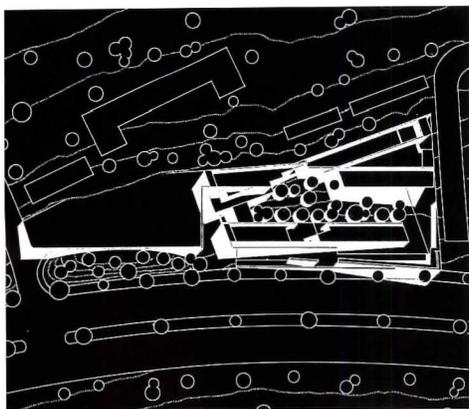
First-floor plan



Basement plan

1/40' / 12m

- 1 exhibition gallery
- 2 Palmach memorial
- 3 foyer
- 4 temporary exhibitions
- 5 cafeteria
- 6 auditorium
- 7 administration

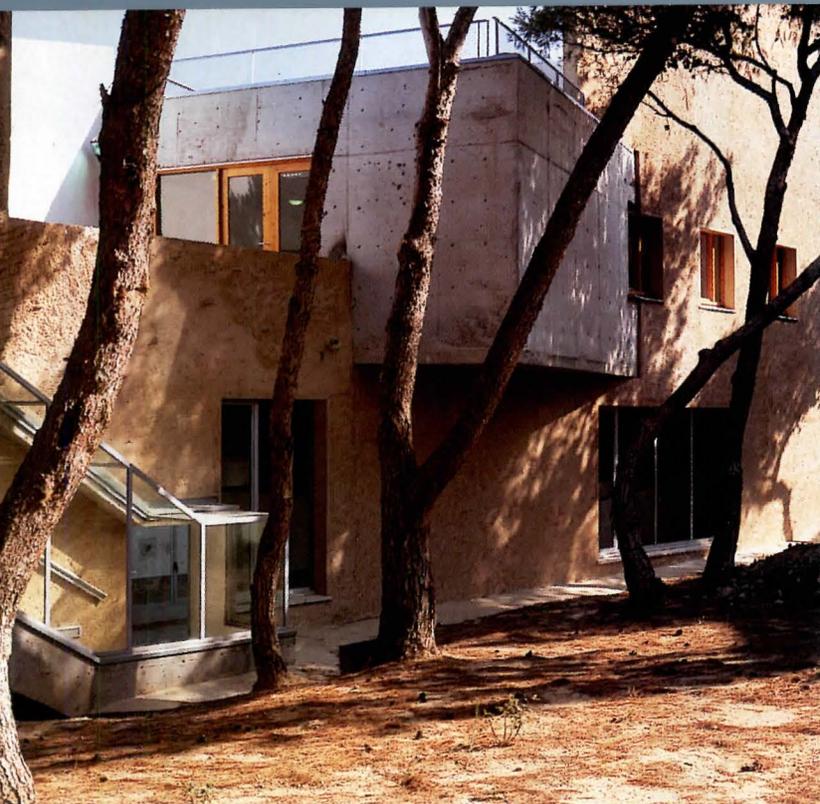


Site plan

1/85' / 25m



Ramp from sidewalk (facing page) inclines to museum entrance, which protrudes from sandstone wall, one floor above street level. Flanked by reinforced concrete wall, ramp (top) extends length of museum and leads to courtyard at level of entrance. Balcony on courtyard level (above) extends between converging slabs at narrow side of museum, accessible from temporary exhibition area.



Museum entrance foyer ramp (facing page) below half-height wall (foreground) leads to permanent exhibit on history of Palmach army one floor below. At far side of entrance foyer, ramp leads up to temporary exhibition area. Cafeteria is visible through foyer window, across courtyard. Seen from courtyard, entrance foyer (left) is surmounted by administrative offices and balcony that cantilevers at an acute angle.

- 1 exhibition gallery
- 2 auditorium



Northeast-southwest section | ——— | 5'/1.5m

PALMACH HISTORY MUSEUM, TEL AVIV, ISRAEL

CLIENT: Palmach Veterans Association **ARCHITECT:** Zvi Hecker, Rafi Segal, Architects, Tel Aviv, Israel—Zvi Hecker, Rafi Segal (partners-in-charge), Rina Hering, Shai Kaana (collaborators) **LANDSCAPE ARCHITECT:** Tichnun Nof **ENGINEERS:** Waintraub-Naginski-Zeldin (structural); Papish Engineers; Ophir-Ronen Associates (mechanical); Tal-Cohen Associates (electrical) **CONSULTANTS:** M.G. Acoustical (acoustics) **GENERAL CONTRACTOR:** Solel Boneh **COST:** \$7 million **PHOTOGRAPHER:** Yael Pincus

Hecker, placing the display areas underground and subsequently exposing the more celebratory areas above, closer to the sky, is symbolic of the history of an underground army that eventually became part of an established military force.

The museum's lower level consists of one rectangular chamber and two triangular chambers, where visitors can follow tableaux describing the Palmach's campaign from 1941 to 1948. These exhibition areas, directly connected to the museum's circulation route, are divided into pockets that accommodate displays around the nonorthogonal shaded courtyard. The whole building preserves the natural character of the site: It comprises three slabs that extend on two sides of the leafy courtyard. Visitors ascend to this open core

along a ramp that flanks the street. One floor up, Hecker creates a sense of visual nervousness where the slabs encroach the courtyard, which is flanked by the auditorium on one side and the museum on the other. On this level, visitors can see temporary exhibitions, descend to the historical display on the lower level, or walk beneath the trees to the auditorium and cafeteria, which will be completed when the Palmach Veterans Association raises more funds.

Hecker knows when to turn up or down the interpretative heat. He avoids bland concrete surfaces: His walls are sometimes made up of sandstone slivers that recall the shallow cliffs by the beaches north of Tel Aviv, as well as the digging-in of desert battles. Hecker turns the architectural heat down in the wooded courtyard, which is curiously



reminiscent of the small public open spaces created by architects in Tel Aviv in the 1930s. The heat is up again on the topmost floor, in the cafeteria and the meeting room, where the raking roofs and parapets of the slabs cut through the treetops, and a giant window grins in the direction of nearby Tel Aviv University.

Hecker's ongoing conceptual explorations may be due to the fact that most of his Israeli friends are artists; he often shows his own drawings and paintings in galleries. Israelis regard him as an experimenter. It is said that he destroyed the windows of an early building because they were constructed incorrectly. Such determination is best appreciated by the thoughtful younger architects of Israel, such as Rafi Segal, his partner on the Palmach design.

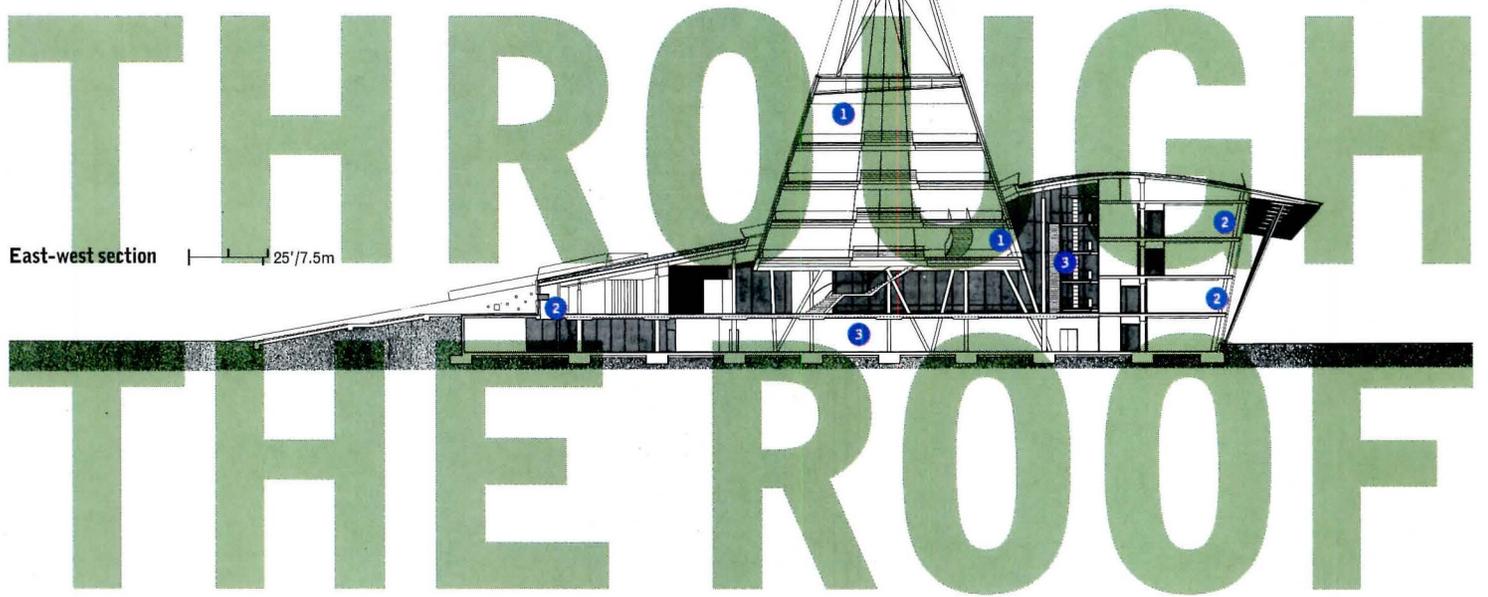
Hecker seems intent on exploring the parti he initiated at the Palmach Museum. His next building, in Duisberg, part of the German Ruhr, has a plan comprised of strips that fan outward, which suggests that Hecker uses the strip as a generator of architectural form. At the Palmach Museum, Hecker is tougher than he has been in other buildings; he also displays the tightest range of elements. It presents a jagged, almost raw challenge to the Postmodern and commercially driven buildings in Tel Aviv.

Peter Cook is a London-based writer and architect. He is also chairman of the Bartlett School of Architecture. As a member of Archigram, he designed several projects, most notably Plug-in City (1964).

Adjoining Brutalist assembly building in foreground, concrete cone (facing page) enclosing reading rooms penetrates library's sloped grass roof. Bermed entrance at left leads directly to ground floor reading room; angled glass wall encloses administrative offices. Paved walkways intersect on rooftop lawn.

- 1 reading rooms
- 2 offices
- 3 stacks

IN HOLLAND, MECANOO BUILDS A LIBRARY FOR THE DIGITAL AGE. BY AARON BETSKY



Even though technology's much-heralded liberation of humankind from the workplace still seems the stuff of science fiction, the computer has, at least, begun to free up space in all kinds of buildings. Rather than utilizing this spatial windfall with reinvented program, though, we seem to be intent on shrinking our buildings instead. However, in the new main library at the University of Delft in the Netherlands, newfound space is celebrated in a structure that resurrects the grand notion of a public edifice. This is a library where books are secondary in the act of gathering knowledge. "Give us a square, a piazza, a public place," begged the university when they developed their library program in 1992. Mecanoo, a local Delft firm of 61 people that for the last 20 years has transformed Modernism into something heroic and playful, responded with a building that

doesn't resemble a building. Instead, it is an undulated lawn sheltering a vast space in which students gather to learn.

When he wrote the brief for the \$30 million structure, University Librarian Leo Waaijers envisioned a place to house a million books, as well as an equal amount of microfiche, several thousand magazines, and a small collection of rare documents. The library is also a central repository for technical information in the Netherlands. Waaijers wanted almost all of this plentiful material placed in dense storage, where it would not take up space and could be efficiently retrieved by staff when patrons requested it.

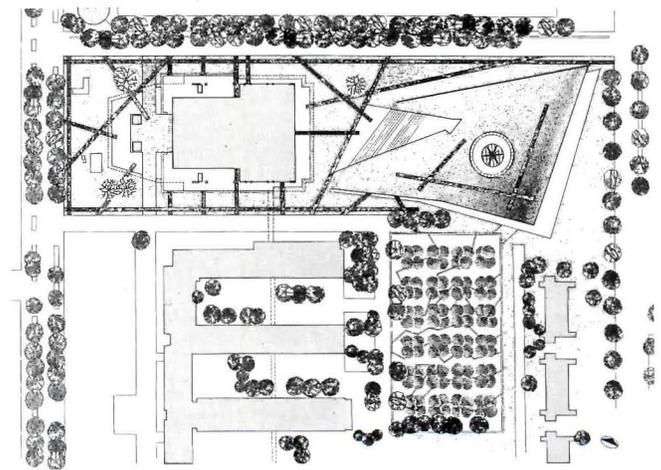
What mattered more to Waaijers than the physical objects containing knowledge was how patrons would gather and use that knowledge. Thus, he wanted the new building to facilitate—as well as





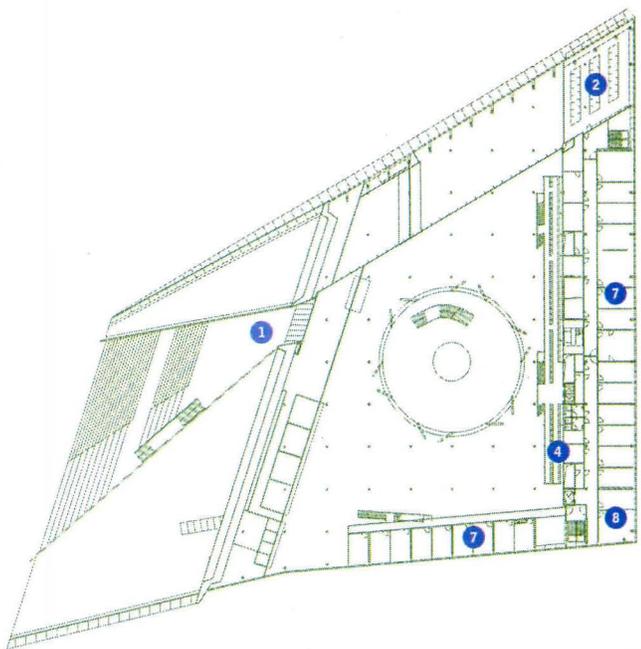


Seen across irrigation canal adjoining campus, Mecanoo's library (facing page) appears as sloping glass wall rising out of parking lot. Wildly canted, glass-sheathed east facade (above) encloses four levels of offices and storage. Site plan (below) highlights angular plan of library, tucked into northern corner of campus quadrant.

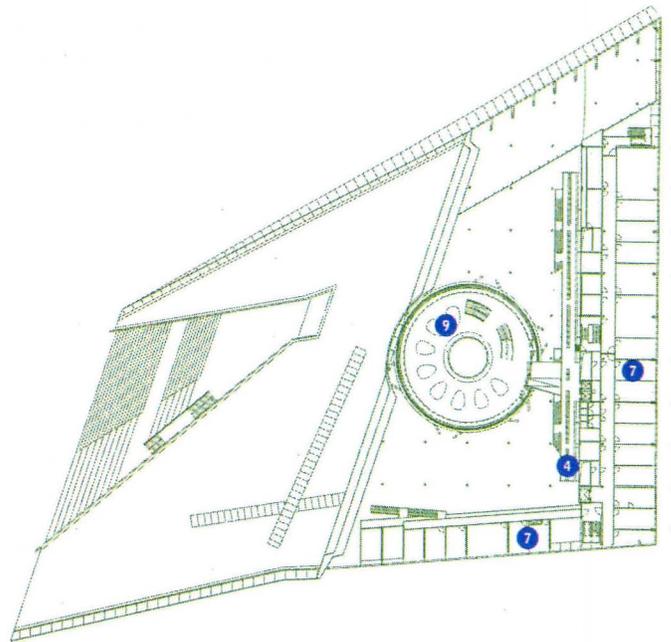


Site plan

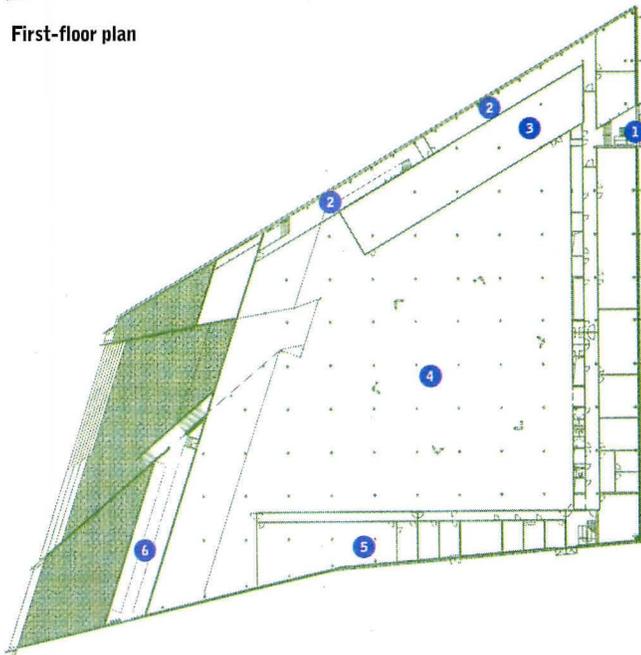
250'/75m



First-floor plan



Second-floor plan



Ground-floor plan

1"=50'/15m

- 1 entrance
- 2 study carrels
- 3 storage
- 4 stacks
- 5 bindery
- 6 bicycle storage
- 7 offices
- 8 conference room
- 9 reading room

Perforated roof overhang (facing page), supported on stilted tubular steel struts, contrasts with staid profiles of neighboring houses. Bed of small stones creates two-dimensional plinth for building.

represent—the process of information retrieval and perusal. Waaijers envisioned “something more like a train station or an airport than a traditional library.” Mecanoo’s design delivers exactly what Waaijers was after: a building that rejects the typically static spatial configuration of most libraries in favor of a dynamic gestalt.

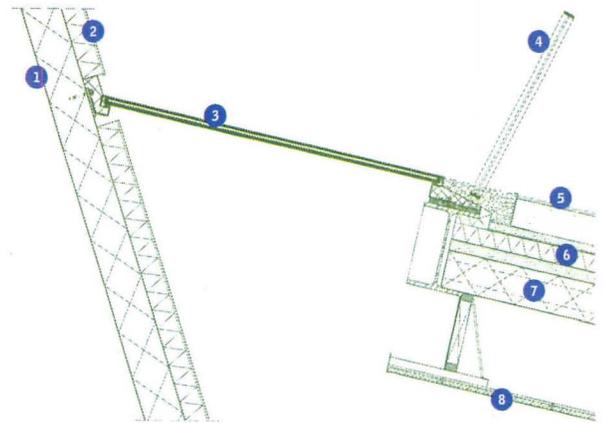
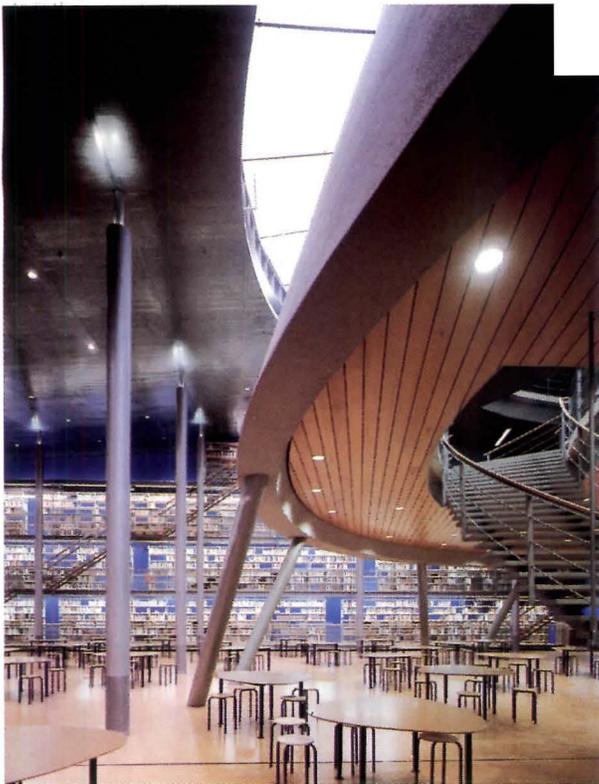
To win the design competition, Mecanoo Partner Francine Houben drew on her memory of Delft’s postwar campus, where she studied architecture in the early 1970s. It is a place of modern monuments, but it is also a patch of green sliced by the irrigation ditches of Holland’s polder landscape. The library’s site lay opposite the Brutalist bulk of Van den Broek & Bakema’s 1955 Assembly Building.

Houben proposed a carpet of green that ascends into the air: a grass roof that starts at ground level opposite the Assembly Building, and curves up to a height of about 40 feet. (Grass roofs

have become increasingly popular in northern Europe because they provide good insulation from both extremes of temperature and noise; they also look as green as their performance suggests.) The sod-covered roof turns its back on a difficult neighbor and melds structure and nature in one form. It also provides a public lawn on which students can gather, as they do in the library below.

This grassy roof shelters a vast reading room with 1,000 seats. Glazed on its three exposed elevations, the reading room takes up most of the building’s main floor, while the books and microfiche repose a floor below it. On the building’s eastern and southern sides, glass facades thicken into three stories of administrative offices, while to the north glass shelters the reading room’s computer wing. Horizontal slits between panes of glass provide ventilation while breaking down the scale of and enlivening the facades.





Wall-roof detail 10"/25cm

- | | |
|----------------------------|--------------------------------|
| 1 precast concrete panel | 5 grass roof |
| 2 facade insulation system | 6 roof insulation |
| 3 laminated glass panel | 7 precast hollow concrete slab |
| 4 steel railing | 8 acoustical steel ceiling |

Houben nailed the whole structure down to the earth with one symbolic element: a cone that rises up from the interior reading room through the center of the glass roof. This cone replaces a traditional bell tower as the building's signifying element. It also provides four rings of smaller reading rooms that surround its open center. Houben claims the white, stucco-clad concrete cone and its metallic point, which stand out against the smooth surface of the grass, "symbolize the technical nature of the information stored beneath; it is a beacon visible from a great distance." Whether or not one believes that, the cone is the one moment of willful construction that brings the whole amorphous nature of this library into focus.

The cone, however, like every other element in the 160,000-square-foot building, simultaneously asserts itself and blends into the background. The building's grassy field cuts the cone in half, so that an observer can never experience its full thrust or its full 150-foot height from one angle. Seen from the residential neighborhood to the east, the library itself appears as a sleek glass facade in contrast to the large institutional buildings filling the rest of the campus. Seen from the campus to the west, the structure is a wall of grass that obliterates that neighborhood and confronts the sky. The building's three glazed facades appear to be the public face of the building, yet to enter, one must climb a grand stair along what appears to be the library's back, where the grass field lifts off the ground. The stair also carves away at the otherwise continuous sloping plane of grass. Thus the architects assert the sense of importance of each facet of the building, but cut and undercut their honorific elements of cone, facades, and landscaped mass at every turn.

After ascending the concrete steps and passing a narrow vestibule, one enters a 15,000-square-foot room as vast in its expanse as Henri Labrouste's Bibliothèque Nationale (1854-75) in Paris, or Erik Gunnar Asplund's Stockholm Public Library (1920-28). Instead of this being a space that the architect has defined by either structure (as Labrouste did) or geometry (in the case of Asplund's large cylinder), it expands in all directions. The reading room, which

provides about 500 seats, takes up most of the library's main floor; its only focal point is a three-story blue wall opposite the entrance. There, the 80,000 books students and faculty request most are on display in metal cages that stretch the room's full 100 feet.

Beyond a glass dividing wall to the north is another room, filled with over 300 computer terminals. On the central space's south side is a wall of offices that acts as a transparent screen to the outside. In the middle of the main reading room, above a snaking checkout desk where librarians distribute books kept in the basement, the cone reaches up through the ceiling and out of sight. Its form fills the heart of the room, though it is not centered. Everything in this *piano nobile* is slightly off-center and without a clearly delimited edge. Only the blue wall with its neat rows of caged books reminds you of the building's purpose and boundaries.

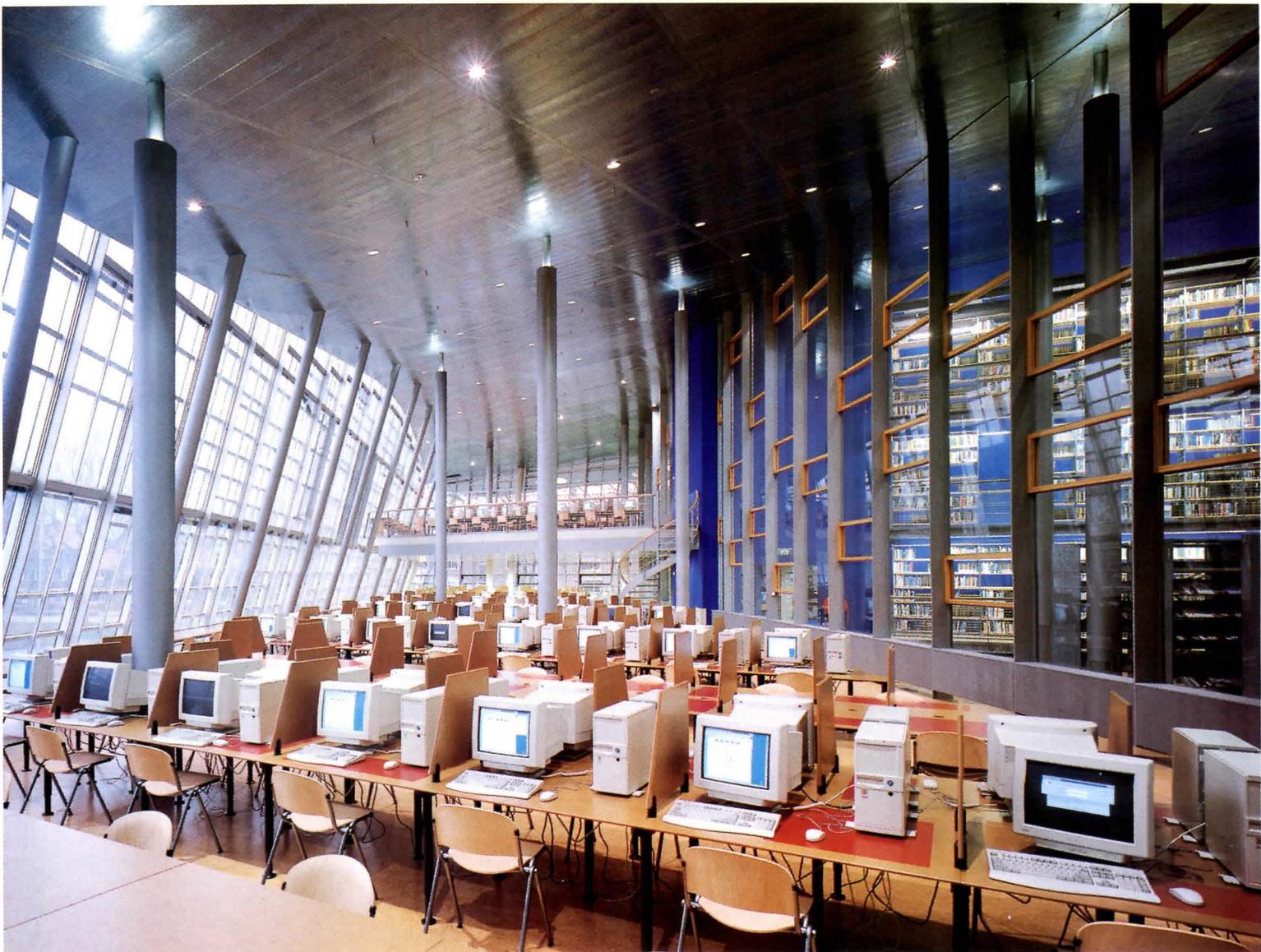
The reading room's point is that it has no single function. Instead of imposing an abstract order, Mecanoo opened up a terrain, marked its center of gravity, and gave it light. Just as the outside is a grand monument, yet no more than a grassy field, so the reading room is also just an open space.

The way in which Mecanoo assembles the pieces of this seemingly random space is what makes it work. The materials (plywood planes on most of the walls that are not glass or exposed, articulated steel structural elements) give warmth and declare their functions without overwhelming occupants. The visibility of each functional and structural element, from glass walls to connecting devices to the geometry of cone and cage, orients patrons by allowing them to see each of the functions they might use. Further, every construction element comes together with the discipline one expects from a firm carrying on the tradition of Dutch Modernism.

The architects deliberately chose to create grand yet unconventional monumental spaces. The esthetic at work is one that gives form to a shapeless world where digital technology becomes visible. The elements of Mecanoo's architecture transform themselves into nodes of coherence in a continuous, undulating field of knowledge.

Cone of learning (facing page) hovers over main reading room on canted legs.
Both enigmatic and welcoming, it seduces readers up into additional reading room tiers along grand-staircase. Computer lab (below) on north flank of first-floor reading room overlooks multilevel stack area. Steel acoustical tiles comprise computer room ceiling.

The reading room's point is that it has no single function. Instead of imposing an abstract order, Mecanoo opened up a terrain, marked its center of gravity, and gave it light.

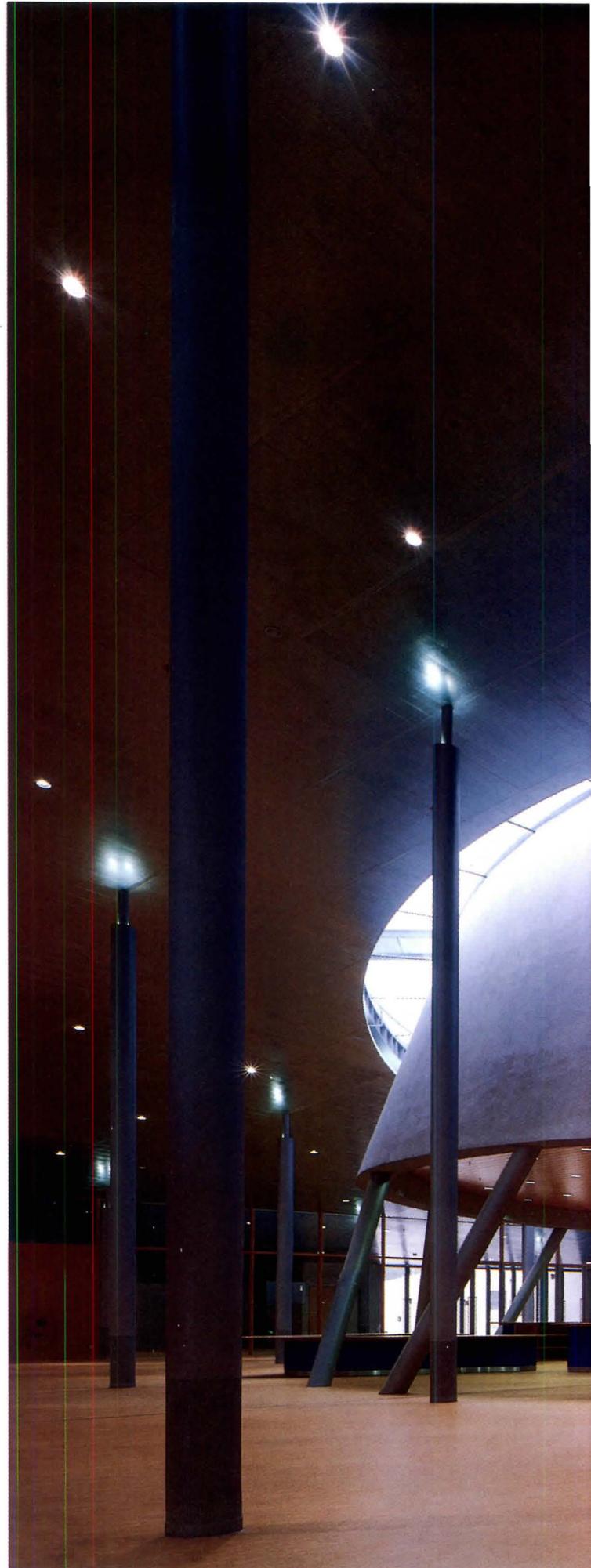




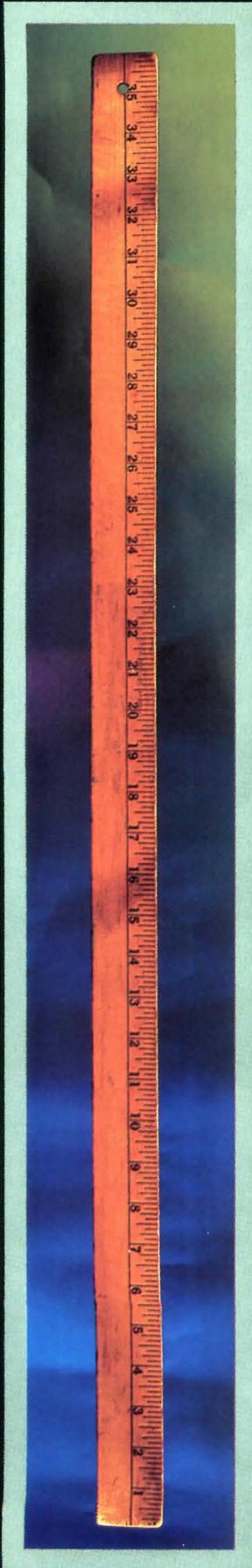
LIBRARY, TECHNICAL UNIVERSITY, DELFT, THE NETHERLANDS

CLIENT: International Netherlands Group Real Estate Development **ARCHITECT:** Mecanoo Architects, Delft, the Netherlands—Francine Houben, Chris deWeijer (project architects), Erick van Egeraat (assistant architect), Aart Fransen (project manager), Monica Adams, Marjolijn Adriaansche, Jan Bekkering, Carlo Bevers, Birgit de Bruin, Ard Buijsen, Katja van Dalen, Annemiek Diekman, Ineke Dubbeldam, Alfa Hügelmann, Axel Koschany, Theo Kupers, Maartje Lammers, Paul Martin Lied, Bas Streppel, Astrid van Vliet (project team), Henk Bouwer (modelmaker), Gerrit Bras (site supervision) **ENGINEERS:** Ketel Consulting Engineers (mechanical); Deerns Consulting Engineers (electrical) **CONSULTANTS:** Advisors for Building Technology (construction); DHV AIB (acoustics); Peutz (acoustics, climate control); Environmental Research Design Office (environmental); Oranjewoud (sod roof) **GENERAL CONTRACTORS:** Van Oorschot-Versloot Construction; Boele van Eesteren **COST:** \$30 million **PHOTOGRAPHER:** Christian Richters

Ramps (above) connect stacks of library's most popular books to reading areas contained within cone. Checkout desks (facing page) sit beneath cone's floor. Ring of glass that circumscribes cone washes cone's stuccoed surface with daylight, creating soft glow at heart of vast reading room.







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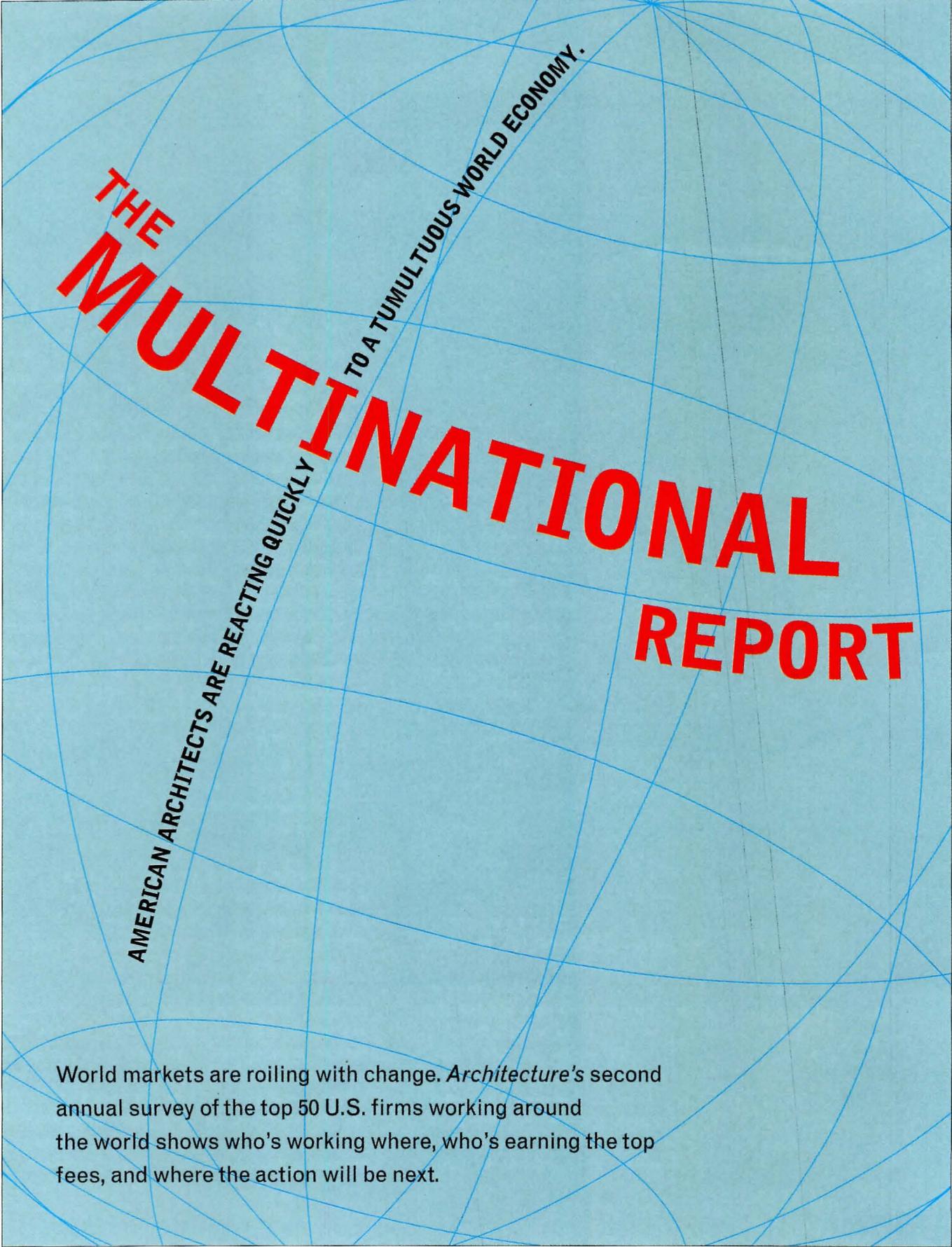
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**THE
MULTINATIONAL
REPORT**

AMERICAN ARCHITECTS ARE REACTING QUICKLY TO A TUMULTUOUS WORLD ECONOMY.

World markets are roiling with change. *Architecture's* second annual survey of the top 50 U.S. firms working around the world shows who's working where, who's earning the top fees, and where the action will be next.

Shifting Ground

The top 50 U.S. multinational architects recover from a rough year with just a little more dough to show for it.

By Bradford McKee

Everybody take a deep breath. Architects have had a wild year overseas. Since *Architecture* published its first annual survey of the top 50 multinational firms last October, what seemed a boundless office-construction market in Asia practically collapsed overnight, leaving a tsunami of losses in its wake. Architects living off the heady economies of Thailand, the Philippines, Malaysia, Indonesia, and South Korea have seen projects vanish from the boards; they've had work in progress either stop suddenly or grind to a torturous crawl; and watched as hot prospects along the Pacific Rim ice up for the foreseeable future.

It's hangover time for many firms who got too giddy over pan-Asian growth—lots of fees have gone uncollected, thanks to bank failures, devalued real estate, and broken currencies. Taiwan, Hong Kong, and Singapore appear to have withstood the financial catastrophe better than their once high-growth neighbors, and firms such as NBBJ and Wimberly Allison Tong & Goo say they're "shifting" toward these countries. China, which came out the second-fastest growing market last year, tops this year's list of expected up-and-comers. Many architects are bullish on India, where high-tech U.S. manufacturers have flocked in search of cheap labor, but at least one architecture firm reports that the perception of nuclear tension between India and Pakistan could stall economic growth on the subcontinent. The rest of Asia, unfortunately, is glummer than glum. For American architects, Jakarta is no longer the next Jidda.

As much of Asia teeters, this year's Multinational Report shows a significant shift taking place that last year's survey only hinted at: the rise of the Latin American market. In our 1997 survey, only one of the top seven countries architects listed as the fastest-growing were in Latin America; this year, that number rises to four: Brazil, Argentina, Chile, and Mexico, where growth in gross domestic product has recently been running from 4 percent (Brazil) to nearly 7 per-

cent (Chile). One firm in particular, Spillis Candela & Partners of Miami, is poised to reap the Latin American bounty: Thirty-two percent of its overseas work is in Argentina, 25 percent lies in Brazil, and 10 percent resides in Panama.

Firms also continue to hunt new work in Russia and eastern Europe, but Russia's economy in particular is in worse shape than anybody imagined since the devaluation of the ruble in August; it is unlikely to be the seventh fastest-growing construction market by this time next year. Eastern Europe, where many architects saw rainbows in the mid-1990s, now hardly registers on architects' rosters of current work, with the exception of Berlin, which is in the midst of rebuilding an entire city center. The collapse of communism hasn't produced a long-awaited boom in construction.

Many firms, such as top-dog Hellmuth, Obata & Kassabaum (HOK) of St. Louis, and Princeton, New Jersey's The Hillier Group, appear to be stacked up with multinational U.S. clients building abroad, particularly high-technology and service companies. It seems a safer strategy, for now, than hooking up with a risky developer in Asia, but even domestic markets look to be at risk over the coming year; Wall Street has been flirting with a correction in its hyperinflated stock market. Some economic forecasters, moreover, suggest that a world recession could be on its way as a delayed result of the Asian crisis. If it comes, the effects would likely be felt harder—and longer—in the global construction industry.

This year's survey results however, show nominal—but only nominal—growth in foreign revenues over last year among U.S. multinational firms. Domestically, fees on projects rose 17 percent, while average gross multinational fees among the top 50 multinationals barely rose at all: to \$7.8 million from \$7.5 million. The fact that the figure did not go down suggests that revenues from newly growing markets are supplanting the losses many firms report having suffered in Asia.

Titan globetrotters

While market changes have been rocky, the placeholders at the top haven't changed much. HOK is still number one—the \$240 million, 2,000-person firm, with more than 1,000 architects on staff, made \$75 million working in about 50 countries in 1997; the firm's 1998 non-U.S. projections reflect a 22 percent decrease in overseas fees, to \$58 million. NBBJ rose into third place from fifth, with 419 architects and \$20 million in non-U.S. fees. This year's dark horse is SmithGroup of Detroit, formerly Smith, Hinchman & Grylls, which through recent acquisitions has nearly quintupled the size of its architectural staff to 354, and projects about \$4 million in foreign fees.

Sheer volume doesn't tell the whole story, however. A firm's foreign workload has got to be sustainable or it threatens the stability of the entire business. Often, firms can succeed if they are intimately familiar with a particular overseas market. Murphy/Jahn Architects, which had the greatest percentage of work abroad among the top 50—with 95 percent, owing to principal Helmut Jahn's connections in his homeland of Germany—has the highest ratio again this year, though the firm has reduced that figure somewhat over last year, to 78 percent. Other firms thrive on shallow penetration in a wide swath of markets: Hotel specialists Wimberly Allison Tong & Goo of Honolulu seem to go just about anywhere, from Jordan to Sri Lanka, with a foreign work ratio of 57 percent. Pei Cobb Freed & Partners Architects has cut its foreign ratio from a hot-zone 60 percent to 45 percent. "The current Asian economic crisis has had a direct impact on the firm," reports partner George Miller, "both in terms of new work and the collection of outstanding receivables." Other firms are more purposefully cautious. "We have experienced a minimal effect on actual work in Asia," says Thomas Yee, principal of Studios Architecture in San Francisco. "We try to control the amount of revenue associated with Asian work."

Architecture is the franchise

The service spectrum among the top 50 hasn't changed at all since last year's survey; American architects are overwhelmingly wanted overseas for their architecture, and, to a lesser extent, for their interior design. The average firm in the study makes 12 percent of its total fees providing architectural services abroad; about three percent of its overall workload is invested in interiors. Services such as engineering, planning, and fac-

ilities management are less in demand among multinational clients; design expertise remains American architects' major franchise.

The work remains heaviest in commercial office markets; office buildings make up about 20 percent of projects reported by the top 50 firms, followed closely by retail, manufacturing, higher education, health care, and hotel and resort projects. Clients are mostly private sector; only about 18 percent of projects by U.S. architects abroad are for government purposes.

If the world economy seems dicey, the political and social environment is even more so. On the list of challenges they face on overseas projects, nearly 20 percent of firms cite political and environmental problems as significant, while another 20 percent report having trouble with cultural and communicational protocols.

Financially, the rush to work overseas has always seemed a little masochistic. It's always been hard to collect money from foreign clients, owing to currency shifts, the speculative nature of projects, and plain old botched expectations. The Asian crisis has made it all the harder to profit overseas. RTKL Associate's billings in Asia "have significantly reduced over the past year," says Senior Vice President and CFO Kenneth V. Moreland. Nadel Architects of Los Angeles reports that its Korean work "disappeared immediately," and that "collecting money owed has been slow." A spokesperson for TAMS Consultants is more blunt about the Asian economy's effect on collections: "We took a bath."

Fixed outlook

It's time for a lot of firms to dry off. The past year's traumas have brought a chastened, sober mindset to former international swashbucklers. Firms are watching whom they work with and negotiating their fees more carefully, insisting on more money up front from clients.

Things are not all sour, however. Confidence in the global scene remains strong among firms who started flying around the world to escape the early 1990s domestic doldrums. Nearly 63 percent of firms expect "some growth" in their non-U.S. revenues; only about 14 percent foresee "high growth." Very few (2 percent) expect a "large decrease" in work overseas. The good news is that the market at home is pretty hot for the time being, which will likely keep firms fat until something like the shattered Asian engine revs up again somewhere else. Most principals see this as a time not to retreat from foreign frontiers, but a chance to diversify their international portfolios.

80° 85° 90°

THE MULTINATIONAL REPORT

40°

Global Giants: The Top 50 U.S. Multinational Architects

Firms ranked by number of architects on staff

RANK	1997 RANK	FIRM	CITY	NUMBER OF EMPLOYEES	TOTAL ARCHITECTS
1	1	HELLMUTH, OBATA & KASSABAUM	St. Louis	2,008	1,004
2	2	SKIDMORE, OWINGS & MERRILL	Chicago	761	497
3	5	NBBJ	Seattle	766	419
4	3	GENSLER	San Francisco	1,450	410
5	4	ELLERBE BECKET	Minneapolis	743	369
6	16	SMITHGROUP	Detroit	771	354
7	8	RTKL ASSOCIATES	Baltimore	608	263
8	14	CALLISON ARCHITECTURE	Seattle	391	232
8	21	PERKINS EASTMAN ARCHITECTS	New York City	285	232
10	6	HKS	Dallas	410	216
11	10	PERKINS & WILL	Chicago	390	207
12	11	LEO A DALY	Omaha, Nebraska	730	206
13	13	CANNON	Grand Island, New York	385	196
14	NA	LOCKWOOD GREENE	Spartanburg, South Carolina	3,500	187
15	12	WIMBERLY ALLISON TONG & GOO	Honolulu	256	182
16	19	KAPLAN MCLAUGHLIN DIAZ	San Francisco	205	172
17	NA	EINHORN YAFFEE PRESCOTT ARCHITECTS & ENGINEERS	Albany, New York	403	164
18	20	KOHN PEDERSEN FOX ASSOCIATES	New York City	209	151
19	24	ANSHEN + ALLEN ARCHITECTS	San Francisco	184	136
20	NA	CORGAN ASSOCIATES	Dallas	222	131
21	9	THE HILLIER GROUP	Princeton, New Jersey	392	128
22	26	SPILLIS CANDELA & PARTNERS	Coral Gables, Florida	261	126
23	NA	HARDY HOLZMAN PFEIFFER ASSOCIATES	New York City	148	115
24	31	BRENNAN BEER GORMAN/ARCHITECTS	New York City	160	110
25	NA	ARQUITECTONICA INTERNATIONAL	Miami	132	102
26	NA	GOULD EVANS AFFILIATES	Kansas City, Missouri	231	94

95°

100°

105°

110°

RANK	1997 RANK	FIRM	CITY	NUMBER OF EMPLOYEES	TOTAL ARCHITECTS
27	35	LEGAT ARCHITECTS	Waukegan, Illinois	106	82
28	NA	LANGDON WILSON ARCHITECTURE PLANNING	Los Angeles	100	80
29	22	HLW INTERNATIONAL	New York City	289	76
29	47	LOEBL SCHLOSSMAN & HACKL/HAGUE RICHARDS	Chicago	96	76
29	24	STUDIOS ARCHITECTURE	San Francisco	135	76
32	NA	BURT HILL KOSAR RITTELMANN ASSOCIATES	Butler, Pennsylvania	318	73
33	NA	POLSHEK AND PARTNERS ARCHITECTS	New York City	87	69
34	32	SWANKE HAYDEN CONNELL ARCHITECTS	New York City	210	65
35	NA	THE BENHAM GROUP	Oklahoma City	837	64
36	30	ALBERT KAHN ASSOCIATES	Detroit	330	63
37	41	DAVIS BRODY BOND	New York City	80	61
38	23	ARROWSTREET	Somerville, Massachusetts	156	57
39	27	PEI COBB FREED & PARTNERS ARCHITECTS	New York City	135	55
40	35	GWATHMEY SIEGEL & ASSOCIATES	New York City	64	54
41	43	BERGMEYER ASSOCIATES	Boston	72	49
42	50	FRCH DESIGN WORLDWIDE	Cincinnati	177	46
43	NA	TSOI/KOBUS & ASSOCIATES	Cambridge, Massachusetts	88	45
44	34	MURPHY/JAHN	Chicago	77	44
44	NA	TAMS CONSULTANTS	New York City	450	44
46	NA	ALTOON & PORTER ARCHITECTS	Los Angeles	450	44
46	NA	ODELL ASSOCIATES	Charlotte, North Carolina	54	42
48	28	PAYETTE ASSOCIATES	Boston	130	38
48	NA	THE LEONARD PARKER ASSOCIATES	Minneapolis	53	38
50	NA	MICHAEL GRAVES, ARCHITECT	Princeton, New Jersey	75	37
50	46	NADEL ARCHITECTS	Los Angeles	156	37

NA indicates firm either did not make the top 50 ranking in 1997 or did not participate in last year's survey

100°

105°

110°

115°

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30°

35°

40°

THE MULTINATIONAL REPORT

Exchanging Currency:
Who's Making the Most Money Overseas?

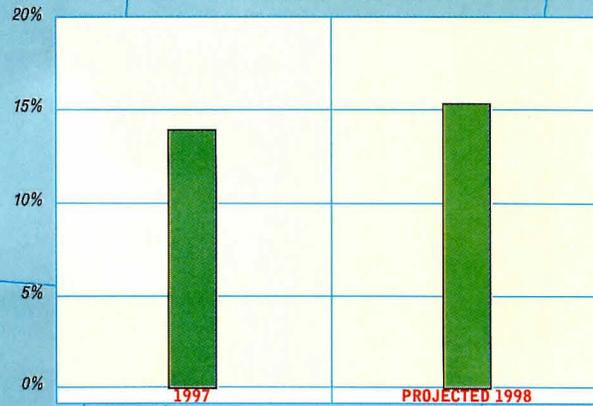
RANK	RANK 1997	FIRM	NON-U.S. BILLINGS	RANK	RANK 1997	FIRM	NON-U.S. BILLINGS
1	1	HELLMUTH, OBATA & KASSABAUM	58.8	18	16	KAPLAN MCLAUGHLIN DIAZ	5.5
2	3	RTKL ASSOCIATES	30	19	28	THE HILLIER GROUP	5.2
3	5	WIMBERLY ALLISON TONG & GOO	26	20	18	FRCH DESIGN WORLDWIDE	4.2
4	10	GENSLER	20	21	17	BRENNAN BEER GORMAN/ARCHITECTS	4
4	NA	THE BENHAM GROUP	20	21	26	SMITHGROUP	4
4	6	NBBJ	20	21	NA	ALTOON & PORTER ARCHITECTS	4
7	7	ELLERBE BECKET	17.6	24	21	CANNON	3.9
8	NA	LOCKWOOD GREEN	16.5	25	NA	LANGDON WILSON ARCHITECTURE PLANNING INTERIORS	3.8
9	8	MURPHY/JAHN	14	26	39	DAVIS BRODY BOND	3.5
10	4	KOHN PEDERSEN FOX ASSOCIATES	12	27	30	ALBERT KAHN ASSOCIATES	3
11	NA	TAMS CONSULTANTS	9	28	NA	MICHAEL GRAVES, ARCHITECT	2.8
12	11	PEI COBB FREED & PARTNERS ARCHITECTS	8.7	29	35	PAYETTE ASSOCIATES	2.7
13	19	SWANKE HAYDEN CONNELL ARCHITECTS	8	30	31	SPELLIS CANDELA & PARTNERS	2.4
14	38	ANSHEN + ALLEN ARCHITECTS	7.7				
15	NA	ARQUITECTONICA INTERNATIONAL	6.9				
16	NA	GOULD EVANS AFFILIATES	6				
16	14	PERKINS & WILL	6				

U.S. dollars in millions, projected for 1998

Measures of Risk: The Top 20 U.S. Firms Ranked by Percentage of Fees

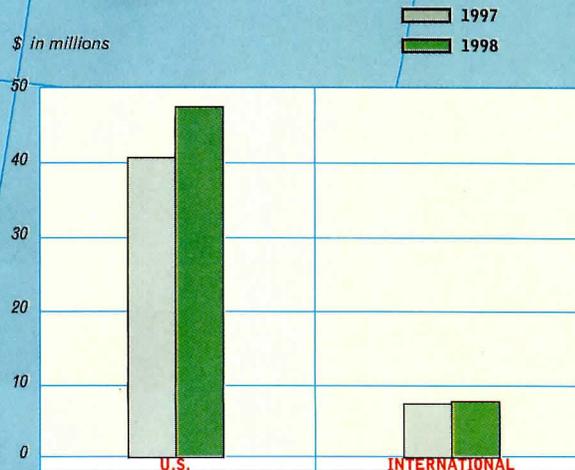
RANK	RANK 1997	FIRM	INTERNATIONAL FEE VOLUME AS PERCENTAGE OF TOTAL FEES
1	1	MURPHY/JAHN	78.8
2	3	WIMBERLY ALLISON TONG & GOO	56.5
3	NA	ALTOON & PORTER ARCHITECTS	55.5
4	3	PEI COBB FREED & PARTNERS	45.3
5	7	SWANKE HAYDEN CONNELL ARCHITECTS	40
6	6	RTKL ASSOCIATES	36.4
7	NA	MICHAEL GRAVES, ARCHITECT	31.4
8	6	THE LEONARD PARKER ASSOCIATES	30
9	NA	ARQUITECTONICA INTERNATIONAL	27.1
10	NA	ANSHEN + ALLEN ARCHITECTS	26.7
11	2	KOHN PEDERSEN FOX ASSOCIATES	26.6
12	NA	DAVIS BRODY BOND	25.9
13	7	FRCH DESIGN WORLDWIDE	20
13	NA	THE BENHAM GROUP	20
15	7	HELLMUTH, OBATA & KASSABAUM	19.6
16	NA	LANGDON WILSON	18.7
17	10	STUDIOS ARCHITECTURE	17.3
18	NA	PAYETTE ASSOCIATES	17
19	NA	GOULD EVANS AFFILIATES	16.6
20	10	KAPLAN MCLAUGHLIN DIAZ	15.9

Percentage Growth In Non-U.S. Fees of Multinational Firms



Figures represent the average for responding firms

Gross Annual U.S. vs. Non-U.S. Fees of Multinational Firms

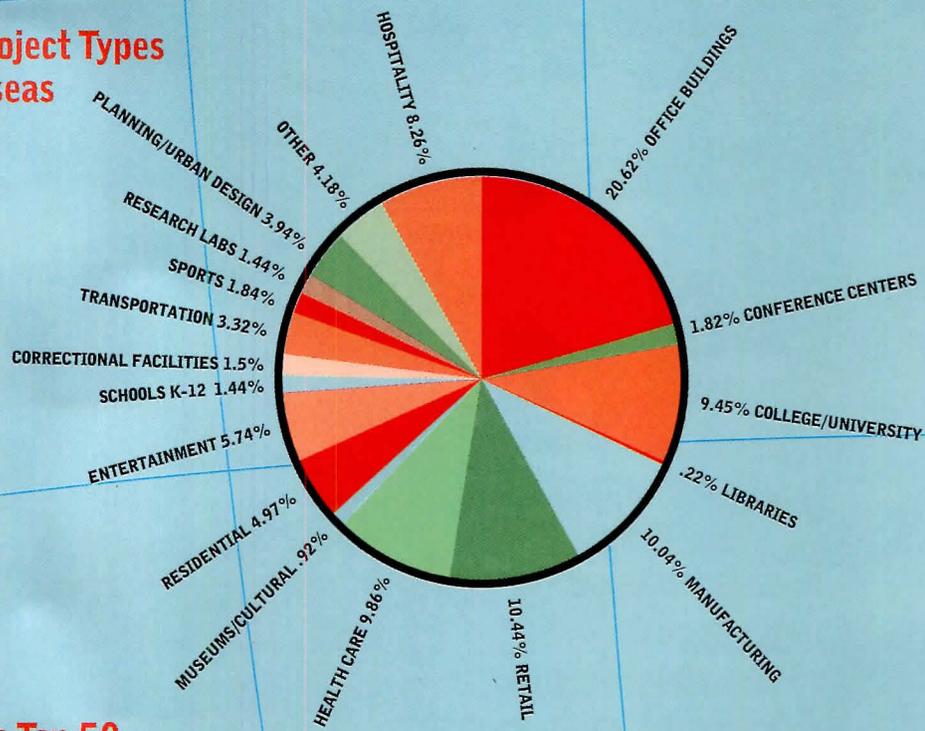


Figures represent total of all reported fees by responding firms

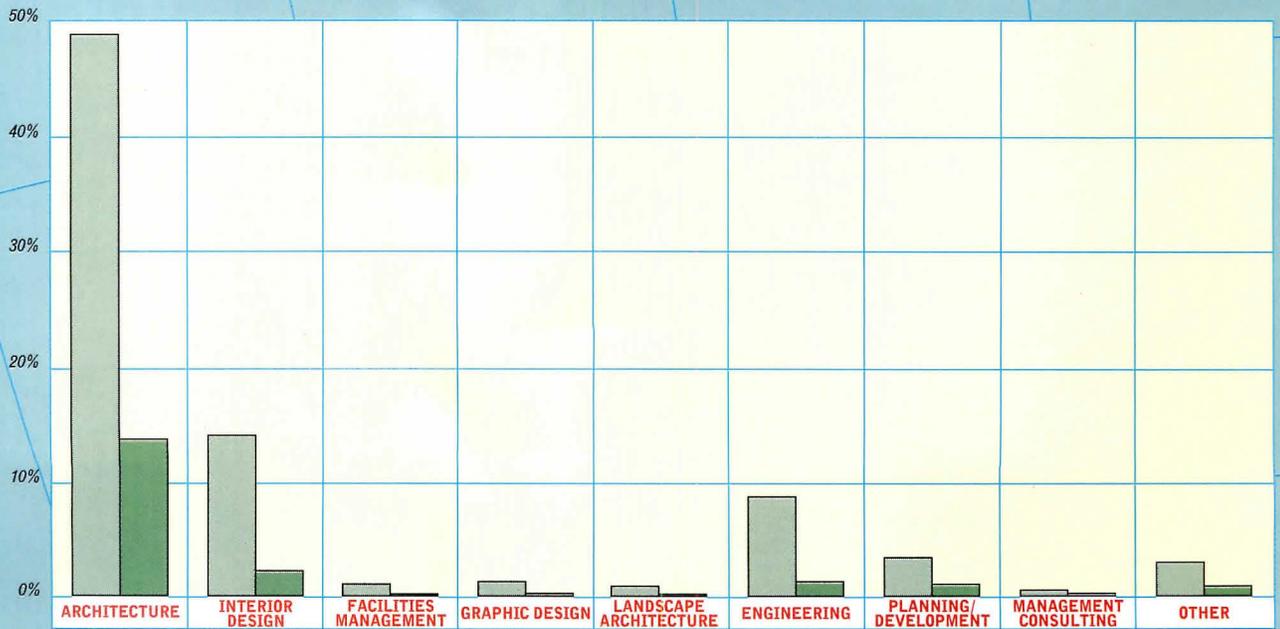
THE MULTINATIONAL REPORT

What Goes Up: The Project Types Most in Demand Overseas

Shown as percentage of multinational projects reported

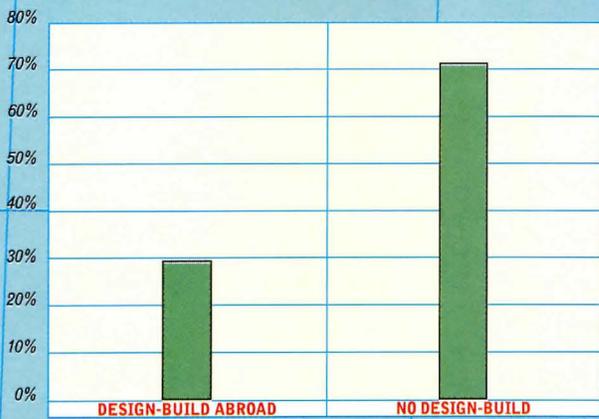


A La Carte: Services Offered by the Top 50, U.S. Projects vs. Non-U.S. Projects

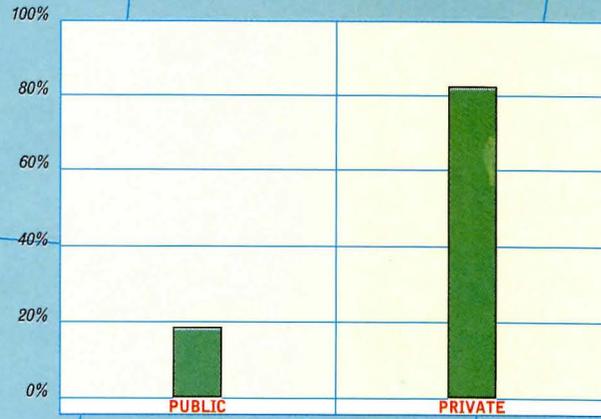


Breakdown by percentage of average respondent's workload; total averages exceed 100 percent

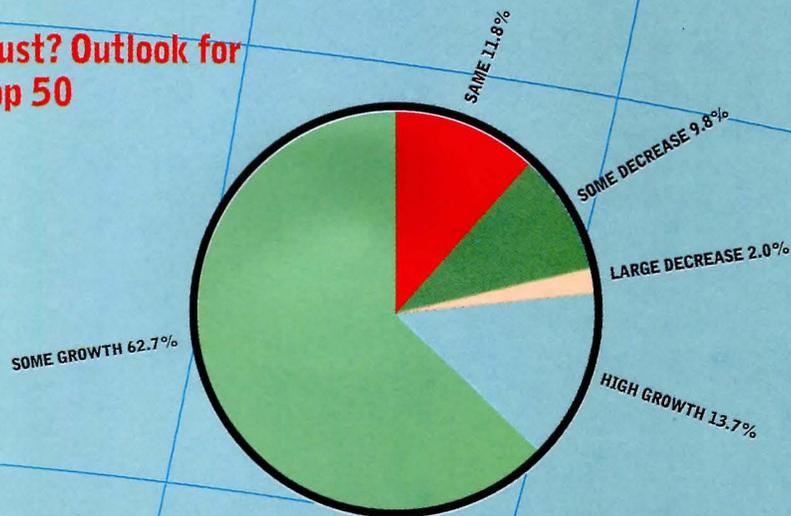
**Design-Build Abroad:
Percentage of Firms Involved in
Design-Build Outside the U.S.**



**Public or Private:
Percentage of Work That Is for
Government vs. Private Clients**

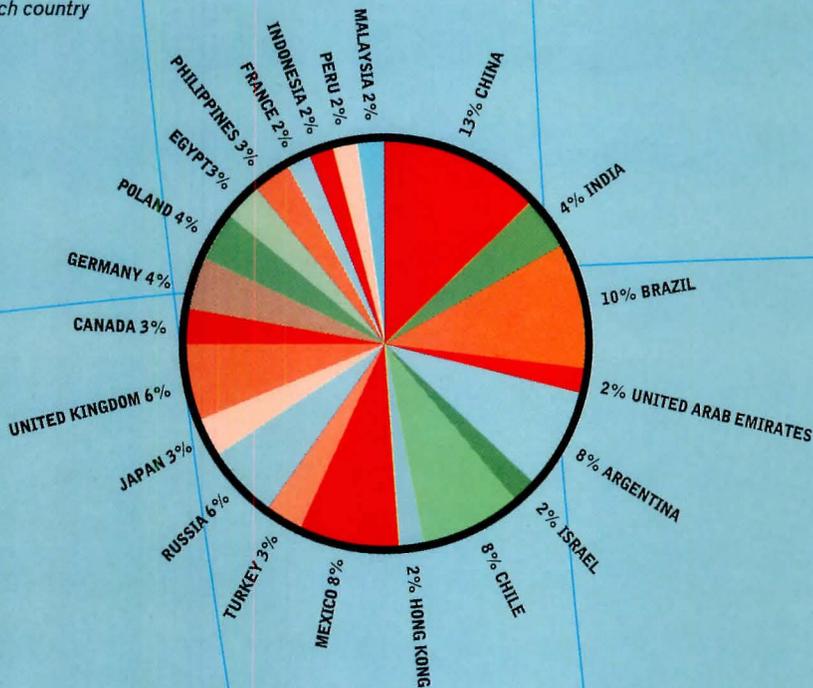


**On the Horizon:
Is A Boom Coming—Or A Bust? Outlook for
Non-U.S. Projects by the Top 50**



Latin America: The Next Gold Rush? Countries Where the Top 50 Firms Expect the Most Opportunities in the Coming Years

Percentage indicates number of firms citing each country



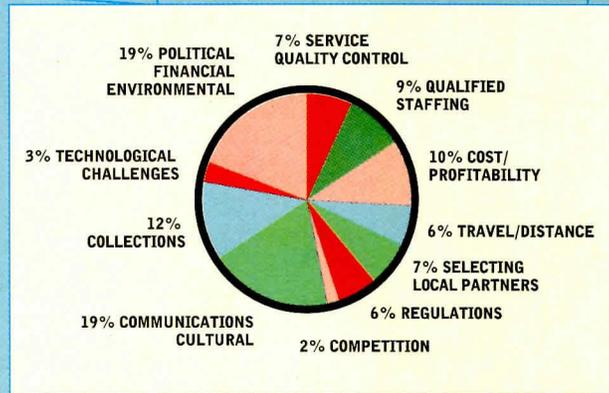
Vital Signs: Profiles of the Leading Growth Countries for American Architects

RANK	RANK 1997	COUNTRY	POPULATION	GDP GROWTH	GDP PER CAPITA	INFLATION RATE
1	2	CHINA	1.25 billion	8.0 percent	\$900	9 percent
2	6	BRAZIL	159 million	3.9 percent	\$5,100	7 percent
3	NA	CHILE	14.7 million	6.7 percent	\$5,900	4.7 percent
4	4	MEXICO	97.5 million	4.5 percent	\$4,560	12.5 percent
5	NA	ARGENTINA	35 million	5 percent	\$9,530	4.5 percent
6	1	UNITED KINGDOM	60 million	2.1 percent	\$22,300	2.9 percent
7	NA	RUSSIA	150 million	2 percent	\$3,250	13 percent

GDP: Gross Domestic Product; all economic indicators are annual

Bumps Along the Way: Major Challenges Cited by the Top 50 Multinational Firms

Percentage indicates number of firms citing a specific problem



Fat Passports: Who's Working in the Most Countries and Where?

HELLMUTH, OBATA & KASSABAUM
(50 COUNTRIES)

Argentina, Australia, Belgium, Bolivia, Brazil, Canada, Chile, China, Czech Republic, Egypt, France, Germany, Guam, Hong Kong, Hungary, India, Indonesia, Ireland, Israel, Italy, Japan, Korea, Kuwait, Malaysia, Mexico, the Netherlands, New Zealand, Oman, Panama, Peru, Philippines, Poland, Portugal, Puerto Rico, Qatar, Russia, Saudi Arabia, Singapore, Slovenia, South Africa, Spain, Sri Lanka, Taiwan, Thailand, Tunisia, Turkey, United Arab Emirates, United Kingdom, Venezuela, Vietnam

RTKL ASSOCIATES
(33 COUNTRIES)

Argentina, Australia, Belgium, Brazil, Canada, Chile, China, Egypt, France, Germany, Hong Kong, India, Indonesia, Japan, Kenya, Korea, Lebanon, Malaysia, Mexico, Peru, Philippines, Poland, Portugal, Saudi Arabia, Singapore, South Africa, Spain, Taiwan, Thailand, United Arab Emirates, United Kingdom, Uruguay, Vietnam

SKIDMORE, OWINGS & MERRILL
(30 COUNTRIES)

Argentina, Belgium, Brazil, Canada, Chile, China, Egypt, Germany, Guatemala, Hong Kong, India, Indonesia, Israel, Japan, Korea, Kuwait, Macau, Malaysia, Mexico, the Netherlands, Philippines, Portugal, Saudi Arabia, Singapore, Thailand, Taiwan, Turkey, United Arab Emirates, United Kingdom, Vietnam

KOHN PEDERSEN FOX
(29 COUNTRIES)

Azerbaijan, Argentina, Belgium, Brazil, Canada, China, Cyprus, Denmark, Germany, France, Hong Kong, Indonesia, Ireland, Israel, Italy, Japan, Lebanon, Malaysia, the Netherlands, New Zealand, Philippines, Poland, Russia, Singapore, South Korea, Taiwan, United Arab Emirates, United Kingdom, Vietnam

WIMBERLY ALLISON TONG & GOO
(25 COUNTRIES)

Antigua, Bahamas, Egypt, Ethiopia, Greece, India, Indonesia, Ireland, Jordan, Korea, Malaysia, Maldives, Mauritius, Mexico, Philippines, Saipan, Scotland, Singapore, Spain, Sri Lanka, Tahiti, Taiwan, Thailand, United Arab Emirates, United Kingdom

EINHORN YAFFEE PRESCOTT
(24 COUNTRIES)

Argentina, Australia, Bangladesh, Belgium, Colombia, Costa Rica, Czech Republic, China, Egypt, Lebanon, Germany, Honduras, Indonesia, Italy, Philippines, Russia, Senegal, South Korea, Spain, Switzerland, Tanzania, Thailand, Turkey, Uganda

FRCH DESIGN WORLDWIDE
(22 COUNTRIES)

Argentina, Australia, Austria, Belgium, Brazil, Canada, Chile, China, Hong Kong, Indonesia, Israel, Japan, Korea, Lebanon, Mexico, Panama, Saudi Arabia, Singapore, South Africa, Taiwan, Thailand, United Kingdom, Venezuela

GENSLER
(19 COUNTRIES)

Austria, Belgium, Brazil, France, Germany, Hong Kong, Indonesia, Israel, Italy, Kuwait, Malaysia, Philippines, Puerto Rico, Russia, South Korea, Spain, Taiwan, United Arab Emirates, United Kingdom

ARQUITECTONICA INTERNATIONAL
(18 COUNTRIES)

Brazil, China, Colombia, France, Hong Kong, Indonesia, Japan, Luxembourg, Mexico, the Netherlands, Panama, Peru, Puerto Rico, Philippines, Portugal, Singapore, Spain, Venezuela

CALLISON ARCHITECTURE
(18 COUNTRIES)

Australia, Canada, Chile, China, Hong Kong, Indonesia, Japan, Korea, Kuwait, Malaysia, Philippines, Poland, Peru, Russia, Singapore, Taiwan, Thailand, United Arab Emirates

THE MULTINATIONAL REPORT

What's Cooking?

Top 50 firms report projects in the following countries:

HELLMUTH, OBATA
& KASSABAUM

Nortel, Brampton, Canada; Ernst and Young, Manchester, England; Bank of America, Mexico City

SKIDMORE, OWINGS
& MERRILL

Jin Mao Building, Shanghai, China; Citibank, Manama, Bahrain; Mirmann 24, Santiago, Chile

NBBJ

Samsung, Chonwon, South Korea; Telenor Headquarters, Fornebu, Norway; Kangbuk Hospital, Seoul, South Korea

GENSLER

McKinsey & Company, London and Tokyo; CS First Boston, Seoul, South Korea; Sidley & Austin, London

ELLERBE BECKET

Hae Song Corporation, Seoul, South Korea; Bank Bahari, Jakarta, Indonesia; Alpha Arbar Center, Moscow

SMITHGROUP

American School, Bucharest, Romania; Foreign Buildings Office, U.S. Embassy Compound, Moscow; Weyerhaeuser, Silao, Mexico;

RTKL ASSOCIATES

Bovis, London, England; Daewoo, Warsaw, Poland; Daeha Business Center, Hanoi, Vietnam

CALLISON ARCHITECTURE

Samsung, Seoul, South Korea; Hang Lung Development, Hong Kong; Seibu, Tokyo

PERKINS EASTMAN
ARCHITECTS

Half Century More, Tokyo; Emerald Corporation, Beijing; Respol, Madrid

HKS

Rivera Project, Mexico City; Azcarraga, Mexico City; Sun International, Bahamas

PERKINS & WILL

LG Group, Seoul, South Korea; Samsung, Seoul, South Korea

LEO A DALY

Repsol Technology Center, Madrid, Spain; Cheung Kong Center, Hong Kong; Zadc/GASCO Headquarters, Abu Dhabi, United Arab Emirates

CANNON

Janssen Pharmaceutical, Beerse, Belgium; Sabanci Holdings, Istanbul

LOCKWOOD GREENE

Sonoco Products, Mechelen, Belgium; Procter & Gamble, Hamilton, Ontario

WIMBERLY ALLISON
TONG & GOO

Four Seasons Hotel, Dublin, Ireland; Golden Pebble Beach Resort, Dalian, China; Atlantis Paradise Island, Bahamas

KAPLAN MCLAUGHLIN DIAZ

3M, Mexico City; Daewoo Technologies, Seoul, South Korea; Barra Entertainment Center, Rio de Janeiro, Brazil

EINHORN YAFFEE PRESCOTT
ARCHITECTURE AND
ENGINEERING

U.S. Chancery Master Plan, Brussels, Belgium; U.S. Energy Survey, Bogota, Columbia

KOHN PEDERSEN FOX

The Mori Building Company, Tokyo; Hines, Paris; AIG, London

ANSHEN & ALLEN,
ARCHITECTS

Aetna, Asia Pacific Operations, Manila, Philippines

CORGAN ASSOCIATES

Chase, London

THE HILLIER GROUP

SmithKline Beecham, Harlow, England and Brussels, Belgium; Sprint, Toronto, Ontario, Canada

SPILLIS CANDELA
& PARTNERS

Grupo Pellas, Nicaragua; Ford Motor Company, São Paulo, Brazil

HARDY HOLZMAN
PFEIFFER ASSOCIATES

Campus Rose Hotels, Singapore; The Westin Stamford and Westin Plaza, Singapore

BRENNAN BEER
GORMAN/ARCHITECTS

Conrad International Hotel, Jakarta, Indonesia; Marriott International, Chennai, India; Grand Hyatt Hotel, Taipei, China

ARQUITECTONICA
INTERNATIONAL

Swire Properties, Hong Kong; Far East Operations, Singapore and Hong Kong; Philippine Realty, Manila

GOULD EVANS AFFILIATES

AMC Theatres, Ontario, Canada

LEGAT ARCHITECTS

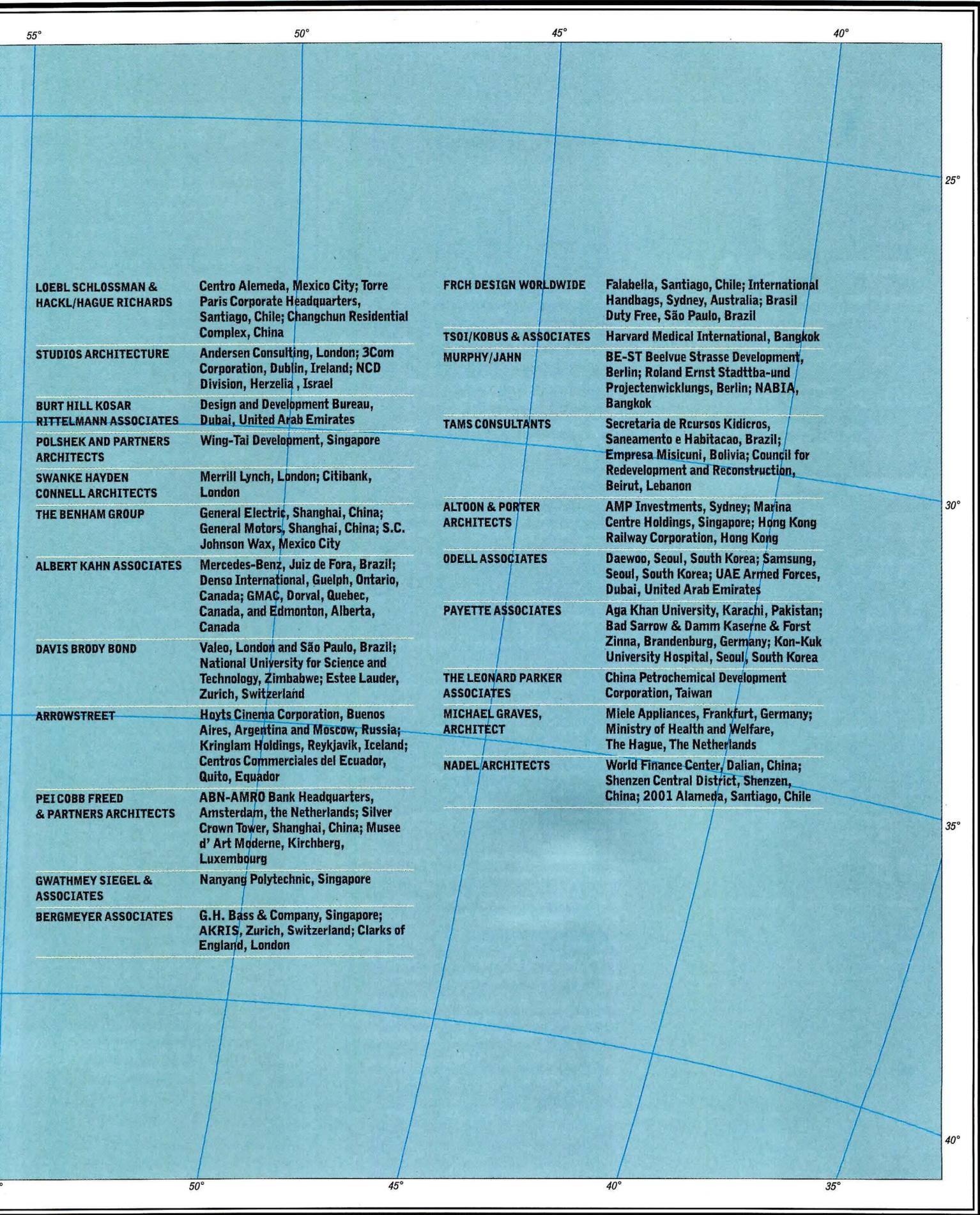
Baxter World Trade Corporation, Istanbul, Turkey and Shanghai, China

LANDGON WILSON
ARCHITECTURE PLANNING

Beijing Yuan Property Development, Beijing; Koll International, San Jose del Cabo, Mexico; Parson International/Kuwait Oil, Kuwait

HLW

Sultan bin Abdulaziz Health Buildings, Riyadh, Saudi Arabia



LOEBL SCHLOSSMAN & HACKL/HAGUE RICHARDS

Centro Alameda, Mexico City; Torre Paris Corporate Headquarters, Santiago, Chile; Changchun Residential Complex, China

STUDIOS ARCHITECTURE

Andersen Consulting, London; 3Com Corporation, Dublin, Ireland; NCD Division, Herzelia, Israel

BURT HILL KOSAR RITTELMANN ASSOCIATES

Design and Development Bureau, Dubai, United Arab Emirates

POLSHEK AND PARTNERS ARCHITECTS

Wing-Tai Development, Singapore

SWANKE HAYDEN CONNELL ARCHITECTS

Merrill Lynch, London; Citibank, London

THE BENHAM GROUP

General Electric, Shanghai, China; General Motors, Shanghai, China; S.C. Johnson Wax, Mexico City

ALBERT KAHN ASSOCIATES

Mercedes-Benz, Juiz de Fora, Brazil; Denso International, Guelph, Ontario, Canada; GMAC, Dorval, Quebec, Canada, and Edmonton, Alberta, Canada

DAVIS BRODY BOND

Valeo, London and São Paulo, Brazil; National University for Science and Technology, Zimbabwe; Estee Lauder, Zurich, Switzerland

ARROWSTREET

Hoyts Cinema Corporation, Buenos Aires, Argentina and Moscow, Russia; Kringlam Holdings, Reykjavik, Iceland; Centros Comerciales del Ecuador, Quito, Ecuador

PEI COBB FREED & PARTNERS ARCHITECTS

ABN-AMRO Bank Headquarters, Amsterdam, the Netherlands; Silver Crown Tower, Shanghai, China; Musee d' Art Moderne, Kirchberg, Luxembourg

GWATHMEY SIEGEL & ASSOCIATES

Nanyang Polytechnic, Singapore

BERGMEYER ASSOCIATES

G.H. Bass & Company, Singapore; AKRIS, Zurich, Switzerland; Clarks of England, London

FRCH DESIGN WORLDWIDE

Falabella, Santiago, Chile; International Handbags, Sydney, Australia; Brasil Duty Free, São Paulo, Brazil

TSOI/KOBUS & ASSOCIATES

Harvard Medical International, Bangkok

MURPHY/JAHN

BE-ST Beelvue Strasse Development, Berlin; Roland Ernst Stadtba- und Projectenwicklungs, Berlin; NABIA, Bangkok

TAMS CONSULTANTS

Secretaria de Rcurso Kidicros, Saneamento e Habitacao, Brazil; Empresa Misticuni, Bolivia; Council for Redevelopment and Reconstruction, Beirut, Lebanon

ALTOON & PORTER ARCHITECTS

AMP Investments, Sydney; Marina Centre Holdings, Singapore; Hong Kong Railway Corporation, Hong Kong

ODELL ASSOCIATES

Daewoo, Seoul, South Korea; Samsung, Seoul, South Korea; UAE Armed Forces, Dubai, United Arab Emirates

PAYETTE ASSOCIATES

Aga Khan University, Karachi, Pakistan; Bad Sarrow & Damm Kaserne & Forst Zinna, Brandenburg, Germany; Kon-Kuk University Hospital, Seoul, South Korea

THE LEONARD PARKER ASSOCIATES

China Petrochemical Development Corporation, Taiwan

MICHAEL GRAVES, ARCHITECT

Miele Appliances, Frankfurt, Germany; Ministry of Health and Welfare, The Hague, The Netherlands

NADEL ARCHITECTS

World Finance Center, Dalian, China; Shenzen Central District, Shenzen, China; 2001 Alameda, Santiago, Chile

Top Internet Resources for Multinational Firms

Commerce and Trade Law

INTERNATIONAL TRADE LAW
www.itl.iry.uif.no/trade_law

Large collection of conventions, treaties, international organizations, model laws, and more.

U.S. STATE DEPARTMENT TRAVEL WARNINGS
www.travel.state.gov/travel_warnings.html

The most recent travel warnings. Also contains country information and consulate addresses.

U.S. NATIONAL TRADE ESTIMATES
www.ustr.gov/reports/nte/1996/contents.html

Search by country and locate foreign blocks that affect U.S. exports of both goods and services.

U.S. TRADE POLICY AGENDA & ANNUAL REPORT
www.ustr.gov/reports/tpa/1996/contents.html

A very complete resource covering all aspects of trade negotiations.

Regions and Countries

FINANCIAL TIMES ONLINE
www.ft.com

The European Community's daily business newspaper. Contains pan-Europe business and financial news.

IPAN ONLINE
www.ipan.com

India's public affairs and business journal on the Web.

NEGOCIOS
www.negocios.com

The latest economic and business news from Spain and Latin America.

SINGAPORE BUSINESS TIMES ONLINE
www.sph.com.sg/biztimes

Business news from Singapore. Updated daily.

PHILIPPINE BUSINESS ONLINE
www.eiger.ch/eiger/pbo/quick.htm

Very complete source of business news and information from the Philippines.

KOREA ECONOMIC WEEKLY
www.eco.ked.co.kr/h-kew.html

South Korea's largest circulation daily business publication.

MEXICO BUSINESS
www.nafta.net/mexbiz

An excellent on-line resource containing information on doing business in and with Mexico.

RUSSIAN BUSINESS LAW JOURNAL
www.spb.su/rulesreg/index.html

Information on changes affecting business and law in Russia.

ARAB WORLD ONLINE
www.awo.net

Comprehensive information on the Arab world with many business-related directories, links, and news items.

JAPAN EXTERNAL TRADE ORGANIZATION
www.jetro.go.jp

A site promoting trade and economic relations between Japan and other countries.

KPMG CANADA
www.kpmg.ca

Originated by the global accounting and consulting firm KPMG, this Web site contains a large amount of information about doing business in Canada.

ASIA INC. ONLINE
www.asia-inc.com

Contains articles about Asia, an Internet directory searchable by country, and business news and market closings from Knight-Ridder and Lippo Securities.

THAI INDEX
www.thaiindex.com

Lots of information about Thailand with business news and Thai companies organized by category.

For more information and sites, contact The Greenway Group, Inc., Washington, D.C. (800) 726-8603, www.di.net

HOW OUR SURVEY WAS CONDUCTED

ARCHITECTURE's survey of the top 50 multinational architects was conducted by Counsel House Research, part of the Greenway Group of Washington, D.C., and Brandt Resources of New York City. In April, Counsel House mailed surveys to more than 500 architecture firms nationwide, including all firms that took part in last year's survey ranking, those that almost made the ranking, and additional firms whose names were gathered from the ProFile Directory of Architecture Firms published by CMD Group, from DesignIntelligence databases, Brandt Resources databases, and other publications that report firm rankings. The research team contacted all firms by telephone to encourage response within the study's time frame. The response rate of those eligible exceeded 90 percent.

The survey solicited firm profile and history, including partners and/or principals, date founded, location of offices in the U.S. and abroad, as well as staff size. Firms were asked to provide documentation of staff names for size verification. To complete the rankings, firms were asked to provide data on professional services they offer as percentages of total billings; percentage of changes in foreign fees generated from 1996 to 1997, and 1997 to 1998, as well as a variety of other data indicating multinational activity. Firms qualified for the list if they earned either at least \$400,000 in non-U.S. fees, or 1.5 percent of total fees overseas. The primary ranking ran according to the number of architects in the firm.

Ranking by number of architects alone is but a limited way of deriving such a list; thus, firms have been ranked by a variety of criteria. While no system of rankings can be perfect, ARCHITECTURE believes the 1998 Multinational Report is comprehensive, fair, and reliable.

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Technology+Practice



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Technology

Double Indemnity

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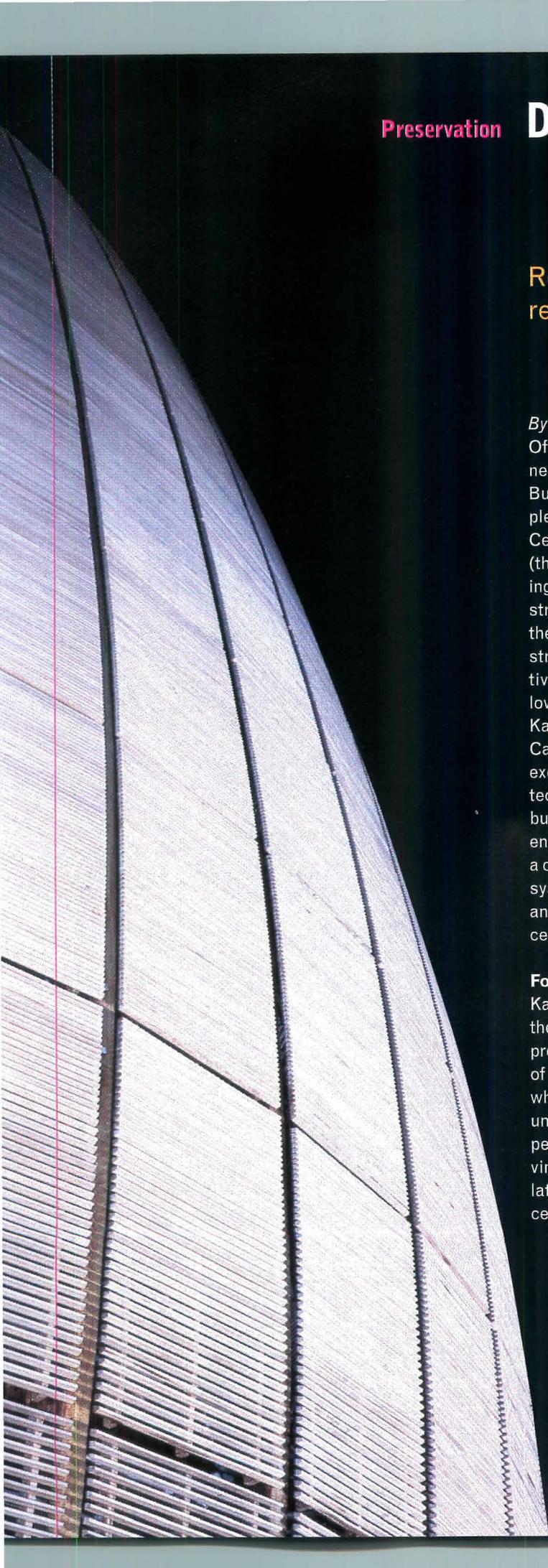
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Preservation **Double Indemnity**

Renzo Piano's double-shelled structures recall ancient forms and ensure cultural continuity.

By Sara Hart

Of the many architectural components that make up the Renzo Piano Building Workshop's recently completed Jean-Marie Tjibaou Cultural Center in Nouméa, New Caledonia (this issue, pages 96-105), the soaring, conical, double-shelled wood structures called *cases* are perhaps the most remarkable. Physically striking and technologically innovative, the *cases* are clearly kin to the low-tech, rural dwellings of the Kanaks who have inhabited New Caledonia for centuries. Piano's exotic creation deftly balances technological innovation and modern building systems—including highly engineered structural shells and a computer-controlled ventilation system—with native materials, and the Kanaks' gentle landscape-centered planning.

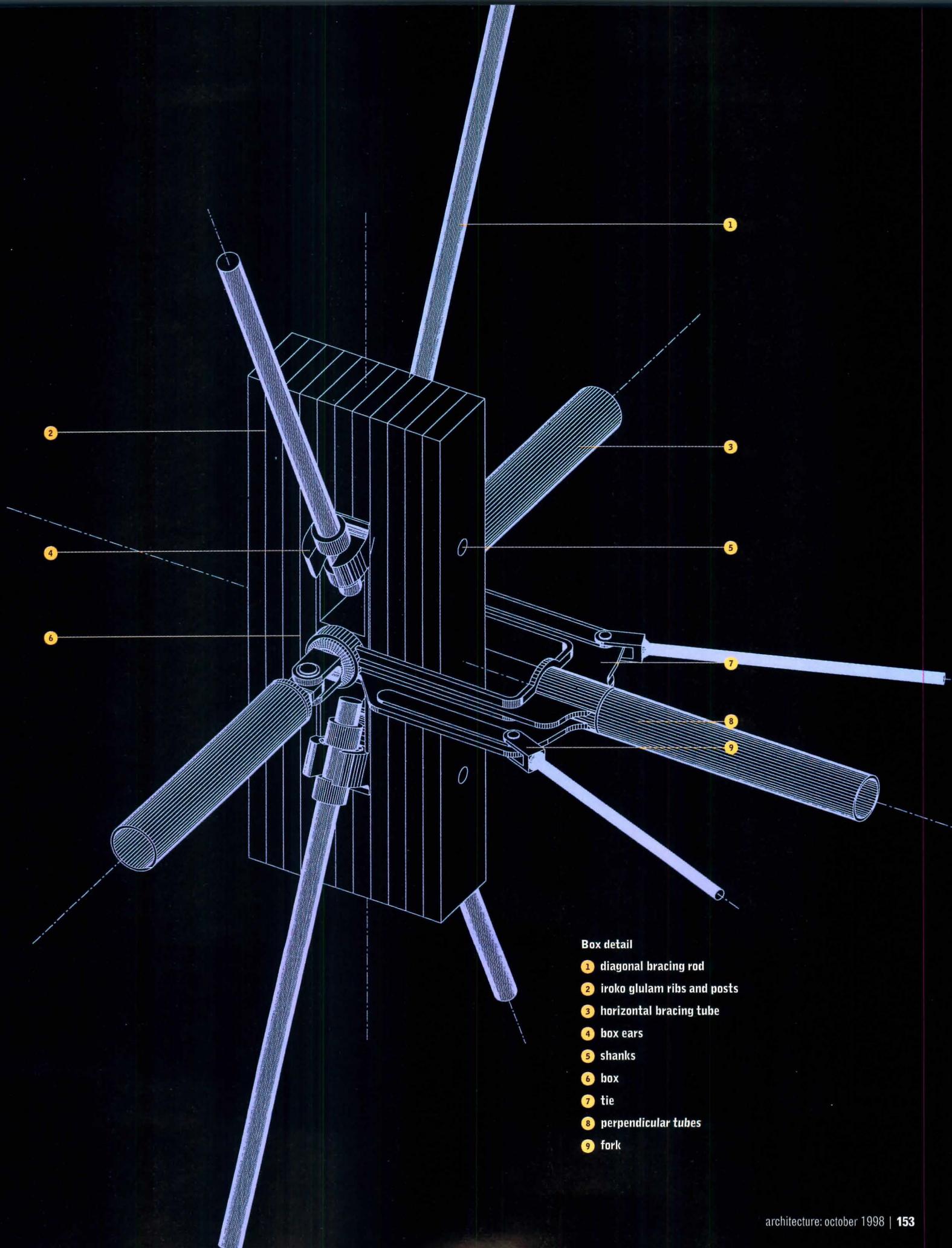
Form follows culture

Kanak culture is deeply immersed in the medicinal and religiously symbolic properties of the abundant flora of their tropical home. The huts in which the Kanaks live are simple, unadorned cylinders constructed of perishable materials, such as palms, vines, and local vegetation. Piano's latter-day *cases* abstract their predecessor's center-post-and-spoked-

beam structure into a double-shelled system: The beams are rotated vertically 90 degrees to create the bowed ribs that form the outer shell; the Kanak center-post becomes a series of straight vertical members that form the inner shell. Steel tubing then stiffens the two shells and ties them together as well. Horizontal lath forms the skin of the outer shell, which is bolted to the towering curved ribs; Piano spaced the strips at the top and bottom of each case openly, and closed them in the middle. The careful spacing allows aluminum louvers along the bottom of the inner shell to draw fresh air into the building. The transparency of the lath also creates an impression that the *cases* are lightweight when, in fact, they are strong enough to withstand the region's frequent typhoons, and packed with the tools needed to run a modern cultural center: a multimedia library, networked computers, and advanced telecommunications capabilities.

Piano decided early in conceptual development that the ribs, lath, and inner-shell posts of the *cases* would be constructed of wood as a reference to the natural plant fibers used in native construction. After studying numerous wood samples from around the world, the architect settled on iroko, an African hardwood that is termite-resistant and easy to maintain. It appealed to Piano esthetically as well, since untreated iroko would blend with surrounding vegetation with age: A weathered wood sample matched the

Case skin (left) is iroko lath attached to bowed glulam ribs.



Box detail

- 1 diagonal bracing rod
- 2 iroko glulam ribs and posts
- 3 horizontal bracing tube
- 4 box ears
- 5 shanks
- 6 box
- 7 tie
- 8 perpendicular tubes
- 9 fork



Piano's exotic creation balances technological innovation and modern building systems with native materials, and the Kanak's landscape-centered planning.

Cases (facing page, below) feature glulam ribs and posts in steel anchors. Steel tubes and rods (left) crisscross between posts and ribs in thermal chimney. Ventilation louvers (in closed position) are visible between ribs.

grayish bark of nearby coconut trees. Finally, because iroko is a relatively plentiful timber, the client was able to bid competitively.

By building and testing several full-size prototypes of iroko and steel, the London office of Ove Arup and Partners, working in collaboration with the French engineering firm Agibat, rationalized the complex geometries that Piano's competition-winning scheme envisioned for the ten cases.

With the structure refined, Piano selected the French steel contractor Parisot to manage fabrication. The company designed and built all of the structural steel, and also traveled to Ghana to select the best iroko boards, which were harvested, dry-cured, and cut into planks. Parisot in turn subcontracted Mathis, one of only a handful of large-scale wood laminators in the world, to laminate boards into posts and tall bowed ribs. The structure's complexity required great manufacturing precision, something Nouméa could not offer. Therefore (and also to accommodate French building officials), case fabrication took place in France. Contractors then shipped the completed sections to Nouméa for assembly.

Structure in a box

A tremendous amount of steel bracing is needed to maintain Piano's soaring ellipsoidal forms, which range in height from 65 to 91 feet. Running string courses of horizontal steel tubing, vertically spaced at 7 1/2-foot intervals, stiffen the bowed ribs of the outer shells, which sit in cast-steel anchors. Lateral tubes with steel ties on either end connect the outer ribs to the inner shells' wood posts, which creates a rigid ellipsoidal cage. Diagonal steel rods provide cross-bracing in both shells. Tubes and rods intersect in steel boxes [Box detail, p. 153] embedded in the "neutral fiber" section of the posts and bowed ribs: This is the

point in both members that is in neither tension nor compression. (In a bow, bending stresses occur in the outer fibers, leaving the central axis neutral.)

According to William Vassal of the Renzo Piano Building Workshop, this box assembly is the single most important feature of the bow-and-post structure. "This is a dual structural system where horizontal and vertical elements operate independently but depend on each other in order to perform," explains Vassal. The ribs carry only the weight of their iroko lath; the steel bracing keeps the ribs vertical and rigid; and the lateral bracing, attaching the inner and outer shells, transfers the wind loads to the inner shell's posts and down to the steel anchors that are countersunk in a heavily reinforced concrete foundation.

Harnessing the breeze

The size and distinctive shape of the cases raised serious questions about their wind-load tolerances, especially in light of the hurricanes that regularly batter the archipelago in which New Caledonia rests. The Scientific and Technical Building Center (CSTB), an engineering firm in Nantes, France, conducted wind tunnel tests with detailed 1/50 scale wooden models of the cases—built by the Piano Workshop—to study the effects of hurricane-force winds on the structures, and also to evaluate the performance of the building's proposed passive ventilation system [Wind diagram, p. 156].

The Building Workshop makes meticulous models for these purposes. As Vassal is quick to point out, "Our models are *never merely design presentations*: In our model shop, every effort is made to create a functioning miniature of the real building so that test results will be as accurate as possible."

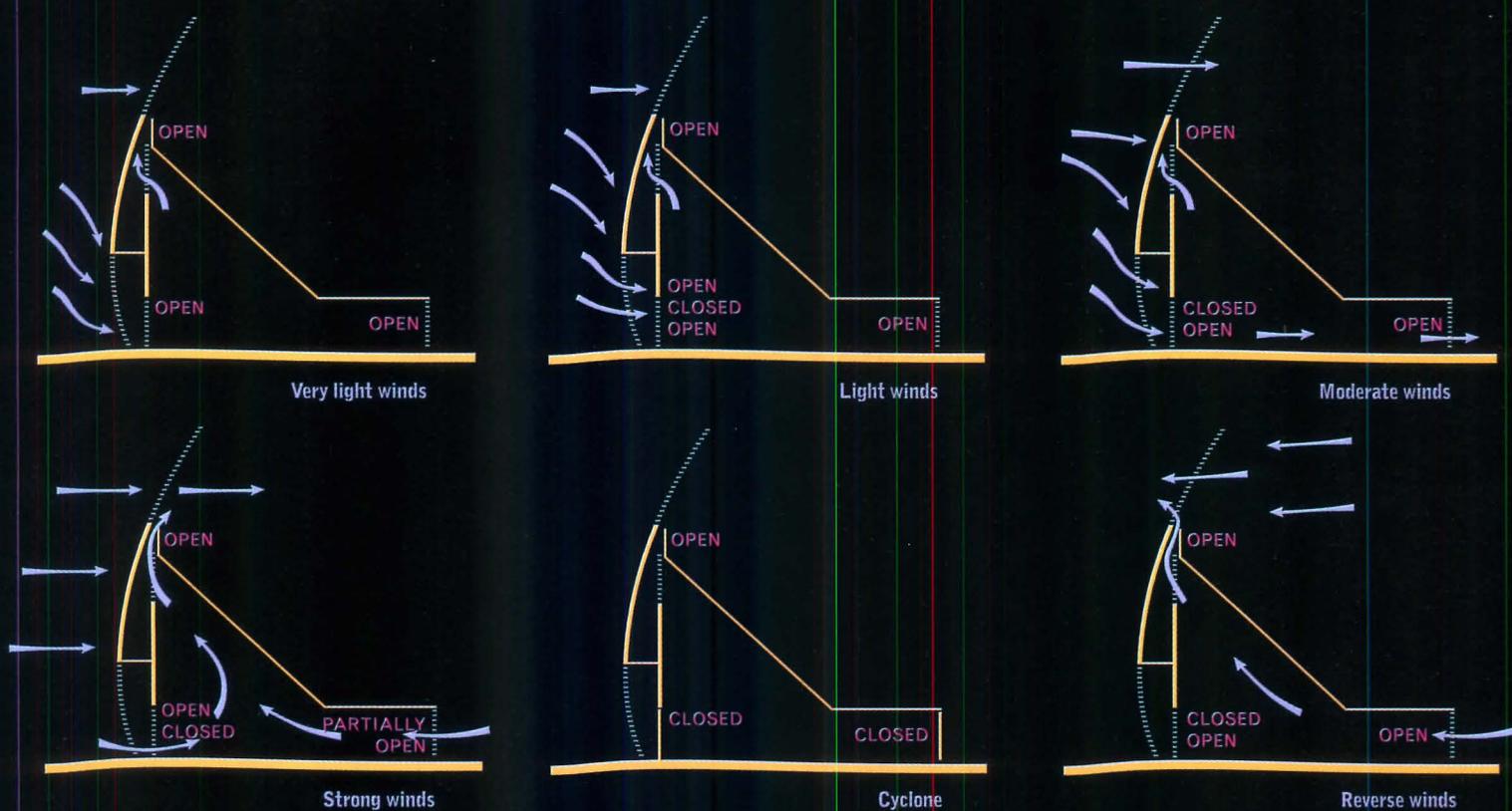
In the tests, blowers directed air at the model's outer face, where engineers spaced the outer shell's wooden laths more openly to



1991 competition scheme for double-shelled cases

- 1 iroko glulam ribs
- 2 glass and aluminum louvers
- 3 iroko sunshade
- 4 cast-iron footings
- 5 poured sand and coral concrete floor





Wind diagram Prevailing winds provide natural ventilation in cases. Louvers' position adjusts according to wind strength.

increase air flow. Initially, the tests were disappointing: Sensors placed within the model registered no significant air movement entering the interior space through the openings in the shells. CSTB engineers surmised that an additional opening would draw air through the space and out; in a subsequent test, a hole cut in the roof of the model achieved the desired cross-ventilation. Rather than penetrate the aluminum-clad roof disks, however, the architect added small, interior patios across the building's central walkway from the cases to induce the desired cross-breezes. The dramatic profile of the cases also functions as a sunshade for the roofs, screening them during the hottest part of the day.

Fresh air is not forced mechanically into the buildings, as in most modern HVAC systems, but rather depends on the louvers in the inner shell that respond to climatic changes. Like a thermostat, computers register changes in convection

currents and temperature and respond by opening or closing the louvers. For example, when light breezes blow, the louvers open up to encourage ventilation. As winds grow stronger, they close sequentially from the floor up. In typhoon conditions, the computers close all operable louvers.

The space between the inner and outer shells of the cases serves an additional purpose: It acts as a thermal chimney that exhausts hot air out of the interior through open louvers at the highest point in the inner shell wall, in the same way a fireplace flue draws smoke up a chimney. During a typhoon depression it works in reverse, and admits pressure-equalizing winds into the interior. Infrequently, winds also blow in from the lagoon side, entering through the open patios, moving across the walkway, and into the cases.

Putting it together

The cases travelled in sections by ship to Nouméa, and flatbed trucks transported them to the site. Large cranes lifted the sections, placed

them into the waiting cast steel anchors, and the construction crew aligned the spacing to within a one-millimeter margin of error. Vassal was present for this assembly, as well as the rest of the three-year construction phase. Two typhoons occurred during this period, one after the completion of the cases. Vassal reports that the shells performed as designed with no damage. To ensure this will always occur, Piano's workshop will administer annual inspections of the double-shelled structures before typhoon season.

The project is another impressive example of Piano's ongoing and fastidious investigation of form and technology. Always searching for new ways to use materials that are harmonious with their surrounding environment, his projects depend less on ideology and more on learning by experimentation. The result, however, is not originality for its own sake, but appropriate, integrated solutions for every part of the program.

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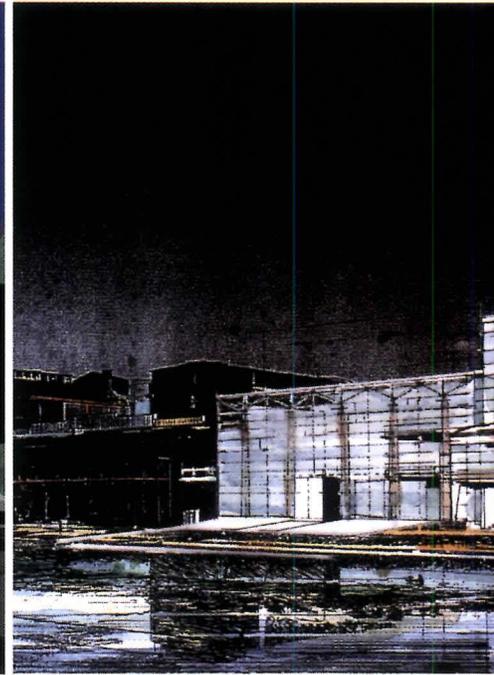
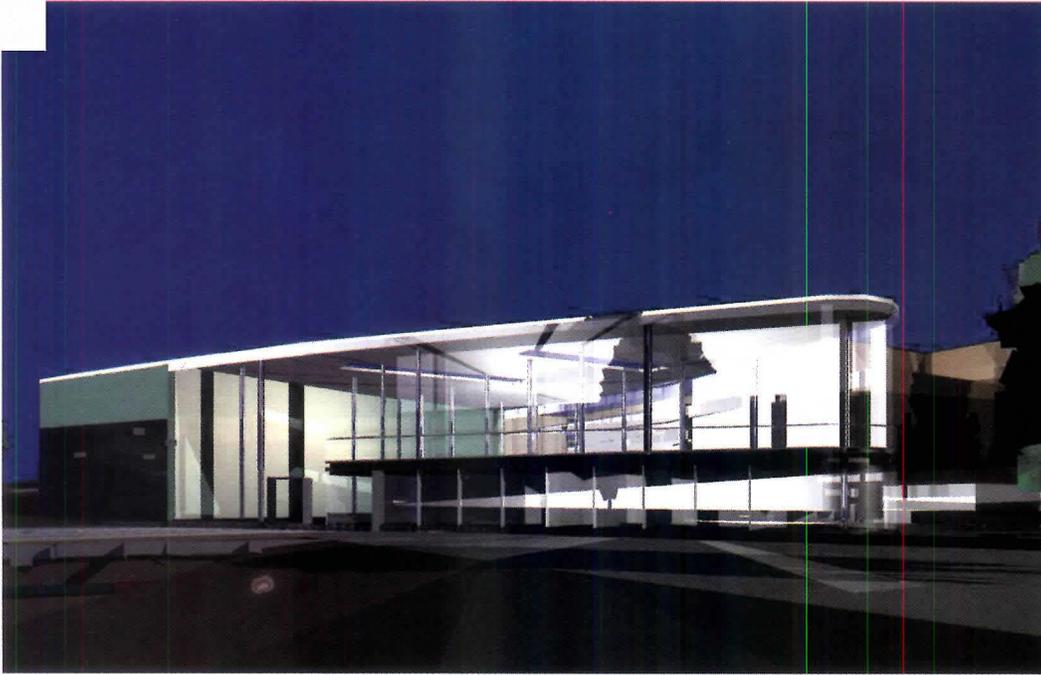
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Practice Winner's Circle



Finland's highly evolved and regarded architectural competition process helps assure fairness and building quality. It can also make or break a career.

By Eric Adams

In Helsinki, Finland, a young architecture firm led by four talented designers is causing a considerable stir. Artto Palo Rossi Tikka Architects has in its mere five-year existence won six major architectural competitions, including a congress and concert hall, a library, a 3.5 million-square-meter urban design project, and, perhaps most significantly, a prestigious commission for a prominent lakeside park and cultural center in downtown Helsinki.

The firm is clearly on a roll, and principal Hannu Tikka has a deceptively simple explanation for their success: "If you dream of starting your own practice here," he explains, "you enter competitions."

In few other countries around the world, least of all the United States, is it possible to launch a career in this manner. But in Finland, archi-

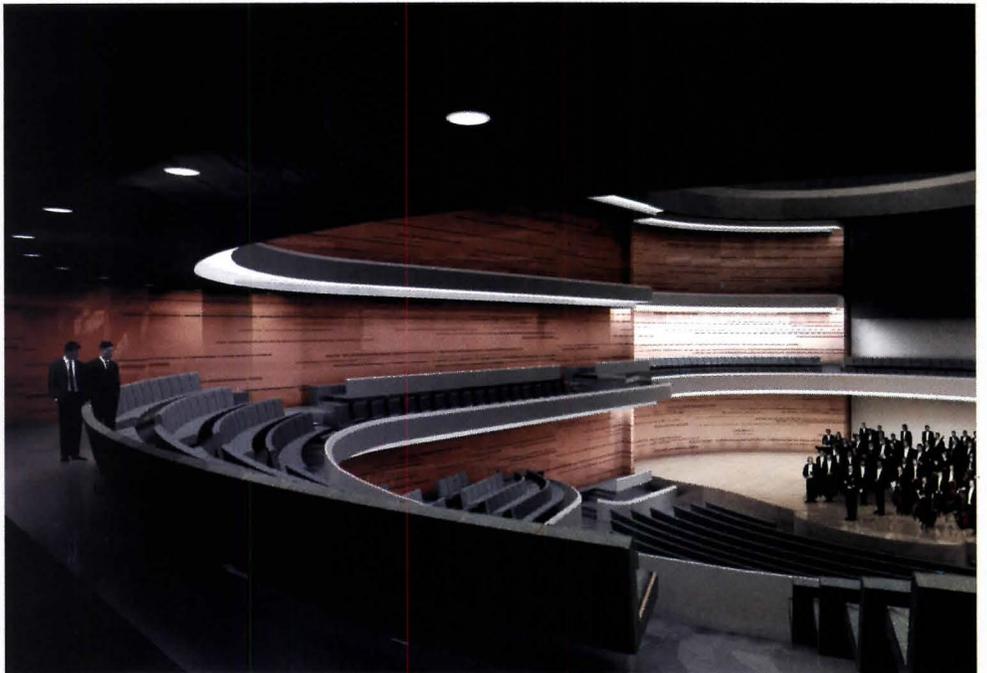
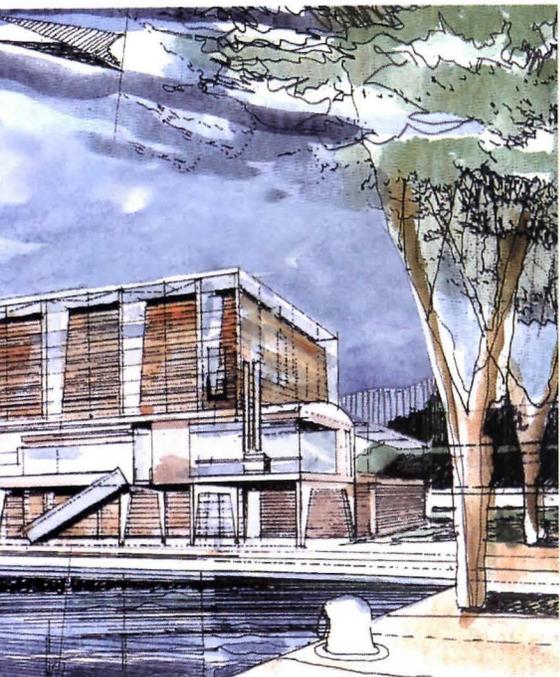
tects are born, live, and die by anonymous competitions, and designers both young and old adopt them as a way of life. "If you don't win competitions, you're nobody," says Kaarin Taipale, director of Helsinki's Building Control Department. "But if your name is in the papers for winning, then you're somebody."

While Taipale's comments may sound exaggerated, they ring true for Finnish architects. All prominent firms can trace their early—and continuing—success to competitions. "We wouldn't be here without the competition system," says Mikko Heikkinen, whose esteemed Helsinki-based firm Heikkinen & Komonen Architects won its first competition, for the Heureka Science Center in Vantaa, Finland, in 1986. "Everything that is happening to us now is more or less a result of that competition."

Indeed, for a small country, Finland offers its 2,400 architects lots of opportunity to create similar results: Most major public and

private projects in this easternmost Scandinavian nation are decided by competition. The Finnish Association of Architects (SAFA), which oversees and regulates virtually all architectural competitions held there, conducted 11 open and 26 invited competitions last year alone—a number typical of most years. It received more than 900 entries for all of them combined and estimates that Finnish architects rack up more than 200,000 unpaid hours every year preparing entries.

By contrast, competitions in the United States are considerably less institutionalized, and the quality of their rules varies because there is no regulating body: Clients and independent advisors largely determine how they will be conducted. Most commissions in the U.S. are instead awarded via referrals and through request-for-qualifications and interview processes.



Young Finnish firm Artto Palo Rossi Tikka Architects won six competitions in last five years, including glass-enclosed main entrance building at Lappeenranta University of Technology (above left), and glass- and wood-dominated Lahti Congress and Concert Hall (above). In concert hall (above right), laminated wood paneling covers wooden girders and enhances room's acoustical qualities.

A refined process

Finland's 100-year-old competition process—which other European countries frequently emulate—is valued by architects, clients, and the public because it awards commissions based on design talent rather than professional contacts, previous experience, or, worst of all, fees. In the Finnish opinion, this creates a high standard of design quality in all types of projects. Though debate often springs up over competition results—American Steven Holl winning Helsinki's recently opened Museum of Contemporary Art in 1993, for example, caused Finns to fret over a major commission going to a foreign architect—few would have things any other way. “There is no doubt that competitions contribute to the architectural quality in Finland,” says architect Anna Brunow, who chairs the SAFA competitions committee and has been involved in competitions as both juror and participant. “We are convinced that we might not have had Eliel Saarinen or Alvar Aalto without these competitions.”

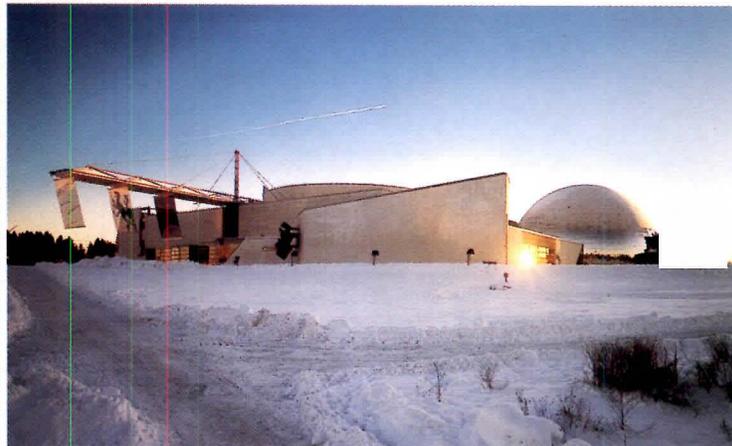
SAFA has put considerable effort into refining the rules and guidelines

over the years. When administering competitions—which are categorized as domestic, Scandinavian, or international—Brunow's committee closely adheres to four main principles: conditions must be equal for every competitor; competitors must be anonymous; entries must be judged by competent architects who are reimbursed sufficiently; and cash prizes, which are separate from the contract and awarded at multiple levels, must meet a minimum standard.

Public and private clients who approach SAFA wishing to conduct a competition are first evaluated to ensure that their needs are clearly defined and that they have an appropriate budget and planning and construction schedules. SAFA helps determine the cost of the competition, based on the number of prizes to be awarded, and eventually receives 7 percent of that budget to cover administrative expenses.

SAFA then gives careful attention to the selection of the jury, which must prepare written critiques for each entry. They choose two archi-

In few other countries around the world is it possible to launch a career in this manner. But in Finland, architects are born, live, and die by anonymous competitions.



archs for the panel, usually one experienced in competition judging, and another younger architect who is learning the process, and the client chooses the rest of the jurors, the majority of whom must be in the planning or construction fields.

Architects consider jury service to be a privilege. "It's an honor and a duty," says Heikkinen & Komonen's Markku Komonen, who stresses that the architect's role on the jury is not only to evaluate the designs, but also to explain them to non-architects on the panel: "It's a lot of work, because we take it very seriously."

Competitions typically take from six months to one year to initiate and conclude, with two to three months—100 to 300 hours—of that time spent in jury deliberations. After the deliberations, winners are announced, and cash prizes are awarded. (Total prize sums range from \$70,000 to \$250,000.) SAFA then publishes the results of the competition, making it public.

The first prize-winning architect then proceeds with the design and construction of the project. According to SAFA, the resulting relationships more often than not produce deeply satisfied client-architect teams. "For the client," Komonen says, "competitions can be especially educational, because it is often the first time that they really think about what they're doing."

Influence and experience

Like most public efforts with high stakes, architectural competitions still produce controversy and strong emotional responses. Chief among these are bad feelings from losing architects. Some feel the competitions are biased toward, as Brunow says, "good drawings;" that the winning design contributes to superficial fashions; or simply that bad choices are made.

Clients, too, are sometimes wary of competitions. Brunow explains that while clients know that competitions can bring publicity to their companies and good solutions for their projects, they are also afraid of getting the "wrong" architect, of losing control over the planning process, and getting an overpriced solution. "Because of this, clients usually prefer invited competitions to open ones," Taipale says. "But clients also know that without open competitions, you cannot find new talent."

Another client concern is that the winning architect might be too inexperienced to execute the work. Tikka says his firm encounters this bias frequently. "There are many rumors about us winning so many competitions. People think we have enough to do," he observes. "That's why we don't get direct commissions."

Finally, there is the cost competitions exact on participating architecture firms. It is very expensive and time-consuming for architects

American Steven Holl won competition for Helsinki's Museum of Contemporary Art (1993, above left), known as Kiasma, causing controversy over major commission going to foreign architect. Competition for Heureka Science Center (1996, above right) in Vantaa, Finland, won by Heikkinen & Komonen, launched firm's career.

to enter competitions, and they must work on as many direct commission projects as possible to keep their practices going.

Rewarding talent

Finnish architects stress that their concerns are generally minor compared with the benefits of the system; overall, they are quite happy with competitions. Heikkinen's firm, which has so far won six competitions, is currently preparing entries for four more—all invited—and is enjoying the luxury the anonymous process affords. "One is able to get through the whole design process in a limited time, whereas in a direct commission, one is expected to show up every two weeks with drawings," explains Heikkinen, whose firm completed the Finnish Embassy in Washington, D.C.—a direct commission—in 1994.

Satisfaction within the Finnish system is so high, in fact, that SAFA's main concern these days is merely the occasional substandard competition conducted by unenlightened clients. "The most common version of this is an invited competition without fees, prize money, or a qualified jury," Brunow says. "But we hope that a SAFA member never takes part in one of these."



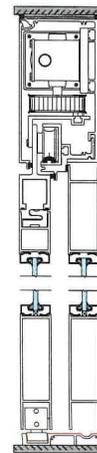
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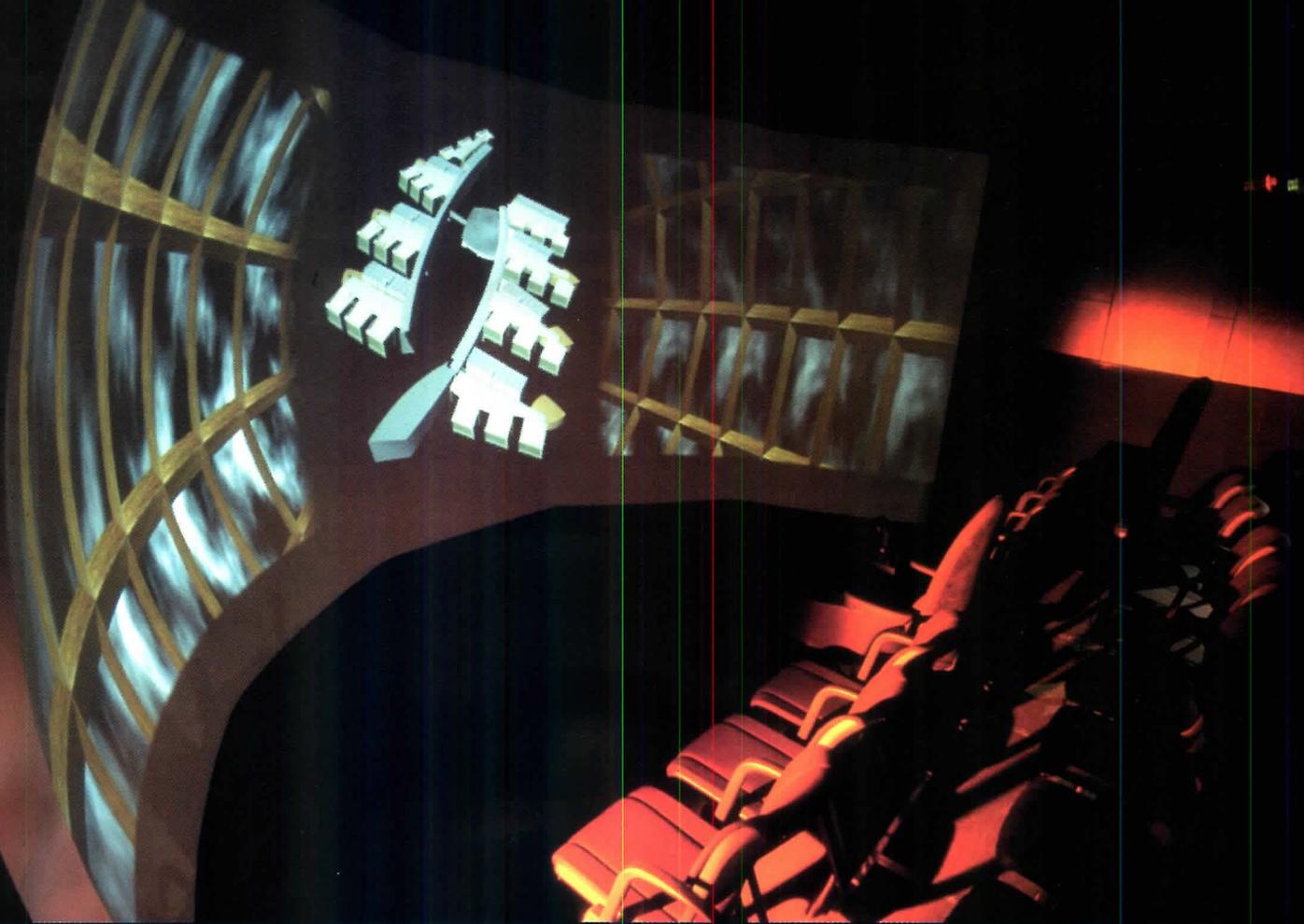
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Computers Making Virtual Reality Real



New advances in virtual reality technologies make computer visualization increasingly viable and valuable.

Virtual reality (VR) in architectural presentation is becoming de rigueur. Planning review boards often request computer renderings for environmental impact studies to be presented in full-motion video, and clients increasingly look for interactive three-dimensional models to review their own projects. With VR demonstrations becoming not only more sophisticated but also easier to create, even the smallest firms can produce web- and CD-ROM-based virtual reality presentations. On the opposite end of the scale, firms

with larger budgets can rent theater-like facilities to present their 3-D walk-throughs to small audiences.

Many firms now rely completely on computerized simulations of architectural environments to convey design concepts to their clients. "Virtual reality levels the playing field between big firms and small firms by allowing clients to experience spaces as architects develop designs," says Philadelphia-based architect Mike Rosen of Mike Rosen & Associates.

This is not science fiction, but technology being developed today in universities, architecture firms, and even by some high-tech clients.

How architects can take advantage of this technology depends on their needs, their computer savvy, and, yes, definitely their pocketbooks.

A broad scope

In its simplest form, VR is a way of viewing a three-dimensional model in a computer. The interface might be a control panel on the computer screen, a head-mounted display, such as a helmet, or a theater. Unlike standard computer animations, which present preprogrammed travel paths to viewers, virtual reality allows users to explore and discover environments at their own pace and according to interest. Real-time rendering allows designers to adjust geometric forms, lighting, and finish materials as they view them with their client. Because architects often



assume that clients understand much more about design concepts than they actually do, VR helps improve communication, especially when clients have their hands on the controls.

Production and presentation facilities run the gamut in terms of cost and quality. A major VR facility with a curved screen and overlapping images, which offers the most immersed experience and the highest resolution, can cost millions; flat screens with seams between images can cost hundreds of thousands of dollars; and multiple monitors or head-mounted displays can cost tens of thousands of dollars. However, web-based, QuickTime VR can be achieved for only a few hundred dollars. The return on the investment comes as clients make comprehensive decisions as a result of thoroughly understanding the building designs. Using these tools at the beginning of the project can save many costly changes—and change orders—late in the design and construction process.

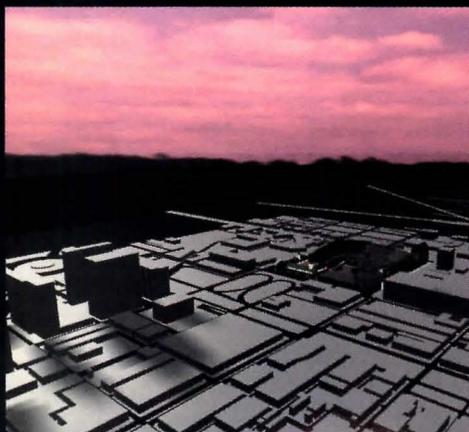
Creating VR models generally takes no longer than any other computer modeling: Most of the massing of a large project can be completed in only a few days. The rendering method is different with VR, but it takes about the same amount of time as rendering an animation. A typical VR rendering is done with three-dimensional geometric information produced by CAD software, but the surfaces are embedded in the mesh of the 3-D model so the user can navigate through and view finished surface from any direction. Sometimes architects create the model geometry in a computer, but hire experts to render the models in a VR format. Rendering programs are available on PCs, Macintoshes,

and Unix machines, and are frequently part of any high-end rendering software.

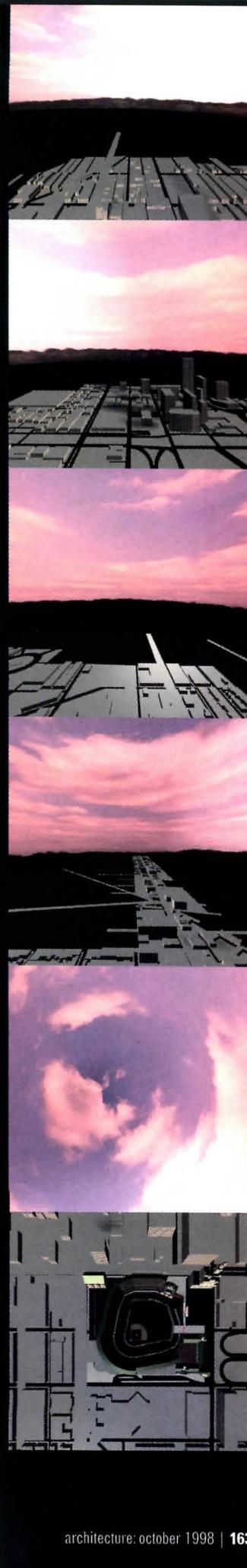
Tools for visualizing space

Although many virtual reality applications are similar to more familiar architectural software, such as CAD and 3-D modeling, some go a step further and actually immerse the user into the design itself. A “visionarium,” a state-of-the-art demonstration center with multiple projection displays that create an integrated interactive environment, is one way to visualize space.

The Norwegian telecommunication giant Telenor has invested millions of dollars in computer technology to aid in the design of their new corporate headquarters



In Telenor's multimillion-dollar visionarium (facing page) in Oslo, Norway, curved screen gives audience feel of occupying virtual world. Visionarium operator uses joystick (above left) to move up to 25 viewers through proposed design. In Philadelphia Virtual Reality Center's smaller-scale visionarium, proposed models are inserted into navigable urban context. Fluid 360-degree motion allows viewers to study project from all angles (right, top to bottom, and below left), and evaluate its relationship to surrounding environments.





Few firms can afford expensive screening rooms, but most can afford new Web tools that start the process.

located in Oslo, which will consolidate 40 local Telenor offices and 6,000 employees into one complex. Seattle architect NBBJ and the Norwegian firms HUS Sivilarkitekter MNAL and Per Knudsen Arkitektkontor AS (PKA) will design the new facility. In this combined effort, the architects create rendered models on Silicon Graphics workstations with Alias modeling software, and Telenor animates the models with their own software so they can be interactively viewed.

Telenor has constructed an elaborate visionarium in their current headquarters in Oslo that employs a curved screen onto which three projectors with overlap capabilities transmit one continuous image. The subject appears to wrap around the viewer, producing a virtual reality environment. As a result, the client can participate in an easy-to-grasp architectural walk-through before construction begins, speeding up the design process and streamlining decision-making. Meanwhile, the architects extract the two-dimensional working drawings from the three-dimensional imagery by a process in which they cut sections from the 3-D model geometry.

VR for firms

Firms can create visionariums on a smaller scale. Rosen, who heads the Philadelphia Virtual Reality Center,

has built a less expensive, but still formidable version by angling three standard flat screens and eliminating the overlap between projectors by butting the three images together. Very little of the realistic experience is lost, and the Center keeps costs down by avoiding a great deal of precise and expensive screen and projector alignment. Hardware costs, though, still keep the price over \$1 million.

Incorporating a three-dimensional sound system—using multiple speakers with the projectors—extends the audience's sensory experience so that music and narration seem to have a source within the scene being viewed. A group of five people can stand at a focal point in the room and feel as if they are in the building or space. Rosen's firm offers design services to museums and architecture firms trying to create their own visionariums, but it also uses the visionarium at the Virtual Reality Center to present their own projects to clients. Beyond client presentations, architects also use this facility for in-house design review.

In collaboration with Prosolvia, a Swedish corporation with a network of 15 VR facilities worldwide, Rosen rents his facility to other firms for marketing presentations. Though these rooms are particularly useful for group presentations, placing a pair of monitors side by side and linking them together can be effective for single viewers. This is essentially the idea behind VR helmets seen in

game arcades: A motion sensor in the helmet reacts to the user's movements and changes the view. Likewise, a control glove lets the user interact with the surrounding environment. (Of course, it can be difficult to carry on a group discussion using this kind of equipment.)

Affordable VR

Few firms can afford expensive screening rooms, but most can afford new Web tools that start the process. Several CAD packages create virtual reality modeling language, or VRML, files, which can be interactively viewed with a web browser.

With QuickTime VR, a software program created by Apple computers, and available for both Macintosh and PC platforms, a 360-degree view is rendered in the same amount of time that it would take to render a single view. The presentation is surprisingly effective, and the navigation is as simple as pointing a mouse. As the pointer goes over a link to another space, it changes shape, and with a click transports the

Resources

Apple QuickTime VR

www.apple.com/quicktime/qtvr/index.html

Digital Media Interactive

www.dmix.com/products01.html

Live Picture

www.livepicture.com/products/

Prosolvia

www.prosolvia.se/pab/index.htm

Philadelphia Virtual Reality Center

www.phillyvrc.com

Links from this article to related information can be found at

www.architecturemag.com

user to another room. Some VR rendering programs even animate the transition between spaces.

Certain CAD programs, foremost among them Graphisoft's ArchiCAD, can produce QuickTime VR or Live Picture files. Bentley's MicroStation offers a free add-on that will create a VRML file, which can be viewed on a Web site with a free browser plug-in. Additional add-on software, such as Lucidity RT from Digital Media Interactive, acts as a plug-in interface to 3D Studio MAX and 3D Studio VIZ. With Lucidity RT, architects can create interactive environments that retain all of the detail available with 3D Studio's production rendering. These special effects include reflections, transparency, translucency, volumetric effects, particle systems effects, and most animation effects—all of which are intended to create a realistic scene, thus improving the client's understanding of space.

The future of architecture

The industrial design and automobile industries regularly use virtual reality viewing spaces, and the video game industry continues to produce better and cheaper tools to create VR space. Consequently, prices will continue to drop for these rendering tools, viewing equipment, and rental theaters, while quality will improve.

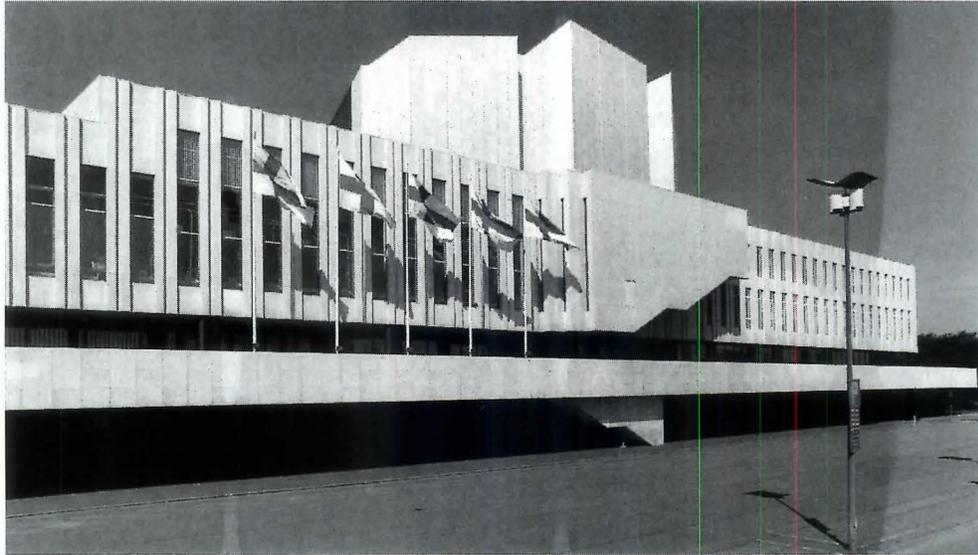
As more CAD vendors provide tools for creating and viewing three-dimensional models, clients will come to expect to review designs this way. The movie and computer game industries have created an expectation in the client's mind, however, that still may take firms some years to match. [Editor's note: NBBJ recently hired the author.]

Patrick Mays is a principal and chief information officer for NBBJ Seattle and co-author of Construction Administration: An Architect's Guide to Information Overload.



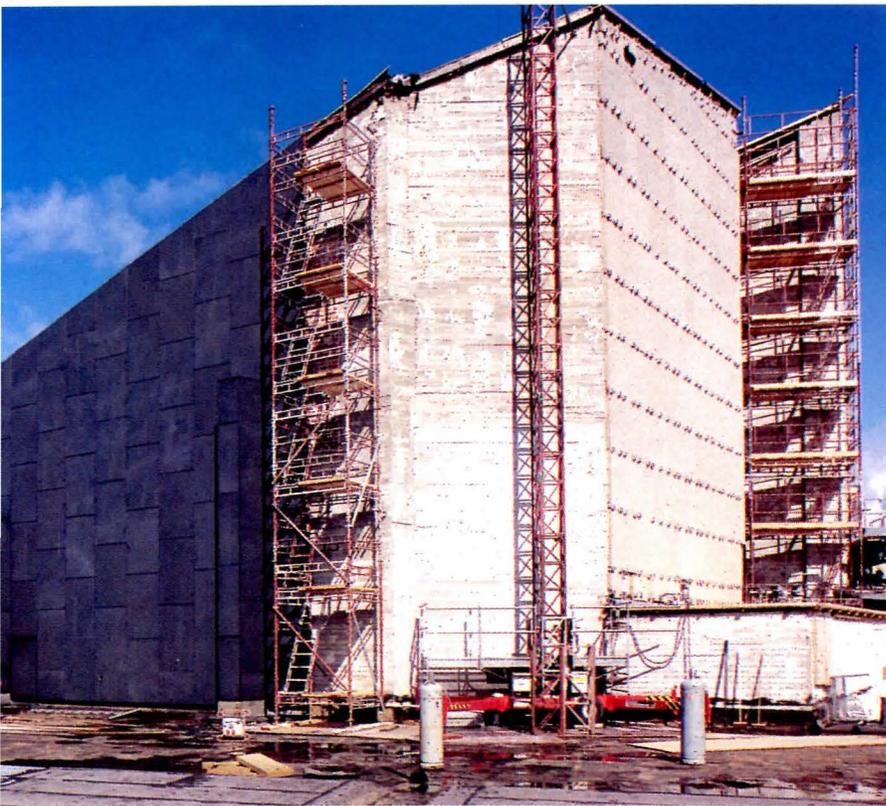
Unwrapped QuickTime VR image (facing page) demonstrates how individual rendered images are joined to form 360-degree scene. Walk-throughs produced with QuickTime VR (above and right) permit movement through virtual architectural environment and views from any angle and position in room.

Preservation **Wintry Discontent**



EERO VENHOLA





In mid-1970s, marble on Finlandia Hall (facing page, top) was smooth and undamaged. Pollution and inadequate fasteners caused marble to warp and separate from substrate (facing page, bottom). On tower above main auditorium, marble panels are removed

(left) while original granite remains in place. Conditions prior to deconstruction show difference between damaged marble and intact granite of same age (below), supportive evidence for granite advocates.

After more than a decade of heated public debate over damaged marble on Alvar Aalto's Finlandia Hall, Finns reject the easy way out.

By Eric Adams

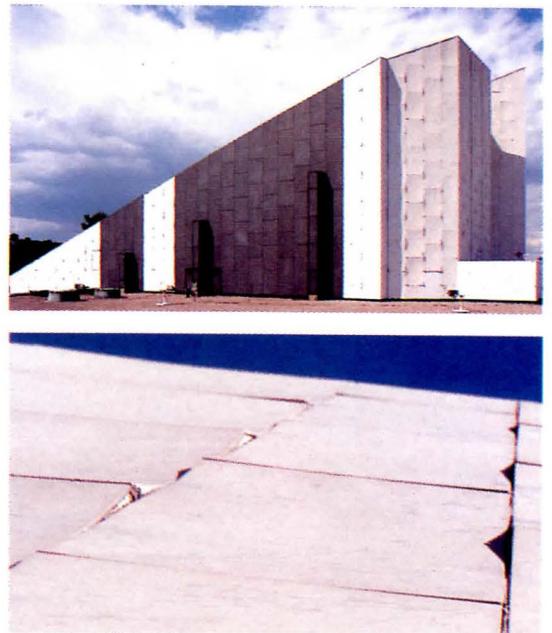
It came down to marble or granite, and if you asked anyone on the streets of Helsinki what you were referring to, chances are that they would not only know, but also have an opinion. A recently resolved, decade-long public debate over how to re-clad Alvar Aalto's beautiful but ailing masterpiece Finlandia Hall thrust architectural preservation in general and Aalto's legacy in particular into the spotlight, and few Finns remained indifferent to the crisis.

The Hall is a Finnish treasure. Completed only a few years before Aalto's death in 1976, it was one of his last works. The 20,000-square-meter lakeside congress and concert hall is home to the Helsinki Philharmonic Orchestra, as well as international congresses and corporate meetings, and has become a

popular tourist destination—more than 20,000 visit annually just to squint at the bright-white Carrara marble that enriches Aalto's Functionalist design.

Though it is less than 30 years old, Finlandia Hall has been afflicted for most of its life with a heartbreaking disorder: Within a few years after its completion, the building's white marble panels began, because of pollution and inadequate anchoring, to warp severely, ruining the building's clean lines with a scalloped pattern of extruding panel edges. Nor was the damage merely cosmetic—the panels physically separated from the building and were in danger of failing.

The city of Helsinki, the owner of the building, initiated a public discussion in the mid-1980s about possible repair solutions, and then controversy swirled. Citizens divided over whether to replace the damaged stone with more durable granite, or with a modified but historically



appropriate version of the same marble that, while sturdier, would still be susceptible to other damaging influences and, within a few decades, might need to be replaced yet again. The battle put historic preservationists and Aalto devotees on the offensive, became fodder for local newspapers, and at times felt utterly hopeless to everyone involved.

Combined causes

Several factors contributed to the cladding failure; foremost is Helsinki's pollution. The acidic quality of the industrial city air weakened and corroded the marble. "It's the same problem that other European cities have encountered with marble," explains Tapani Mustonen, an architect with the Alvar Aalto Foundation, who was consulted on the repair work. "Compounding this is the fact that the marble panels are, in this polluted environment, too thin for their dimensions. But no one had ever studied what happens to marble in these conditions."

Additionally, the original installation method proved inadequate. The stone panels were connected not only to the building, but to each other as well, which exacerbated their warping by allowing the panels to move—and fail—together. There were generally too few connectors for each panel, which individually averaged more than 100 pounds.

Controversy

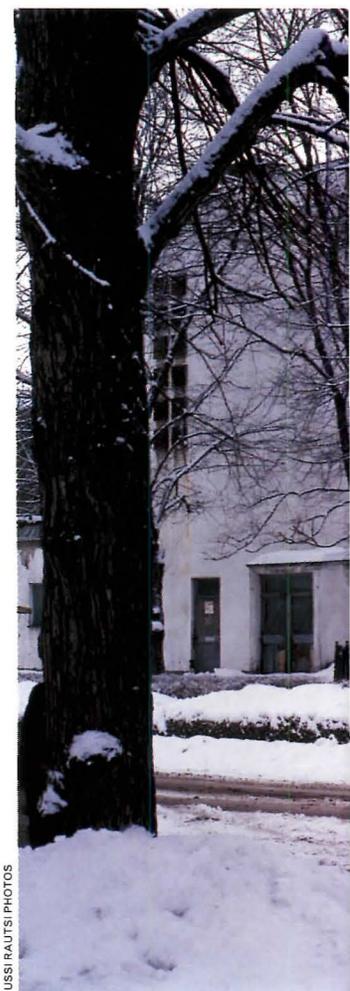
Finding the proper solution to these problems proved considerably more challenging than actually executing the work. When the city realized the short life span that marble had in Helsinki, it was eager to pursue alternatives. The one argued for most aggressively was white granite, which the city saw as a permanent solution: a stone that offers greater durability and, over the long term, lower costs. (Granite is more expensive than marble, but would cost less because there would be no replacement cost.)

To those wanting to preserve the building's intended appearance and historic significance, however—a group that included Aalto's widow



Old marble connectors were insufficient in number, strength, and method, and contributed to cladding's failure. In new attachment system, each panel will be affixed independently with new

brackets (top) supplemented by elongated steel extrusions (center). Mineral wool insulation (above) separates marble from concrete substrate.



JUSSI RALUTSI/PHOTOS

Since 1992, restoration committees have been able to raise enough funds for emergency repairs and reconstruction of Viipuri Library's glass wall at main entrance (above left). Although brick is in good condition throughout building, plaster that covers it is crumbling both inside and out (above right).



In Viipuri, another Aalto treasure crumbles

Not far from Helsinki, in a small but culturally significant Russian city that until the end of World War II belonged to Finland, an International Modernism landmark sits rotting after years of neglect. Alvar Aalto's Viipuri Library, known for its undulated lecture hall ceiling, round skylights, massive glass window-wall, and *bilevel* lending room, is in critical disrepair, and concerned Aalto historians are frantically trying to save it.

Opened in 1935, the building became instantly famous as one of the world's best library designs. "Aalto moved away from the dogmas of Functionalism in the way he used materials, and in his elaborate integration of plan and section," says Eric Adlercreutz, a Finnish architect who worked in Aalto's office for six years in the 1960s. "He created a psychological environment around books."

The building sat vacant for 10 years after the world war and, though it has been consistently used for its original purpose since, the Russians were never able to maintain it properly.

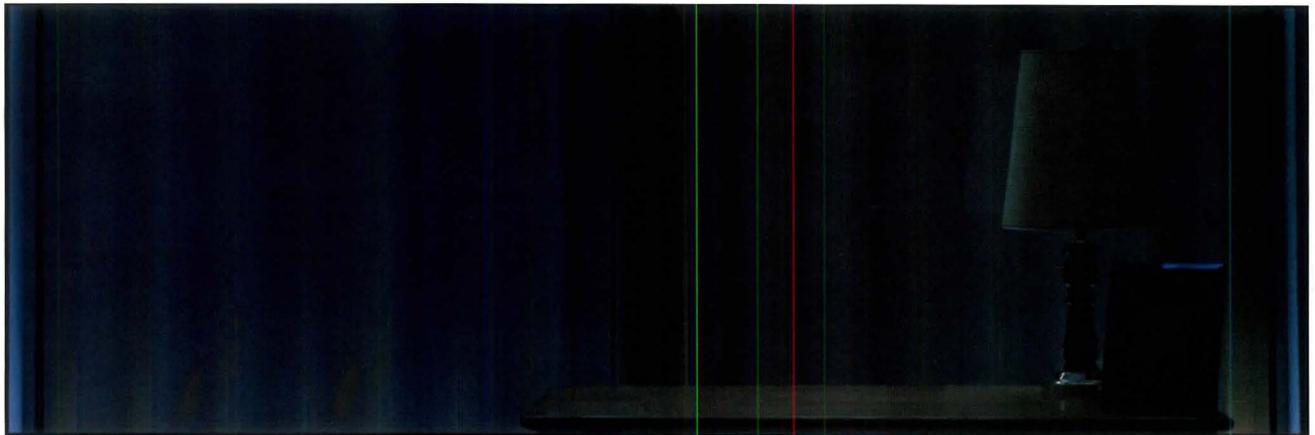
"The main problem right now is lack of money," says Adlercreutz. The Finnish Committee for the Restoration of Viipuri Library—established in 1992 by Elissa Aalto and the Finnish Ministry of the Environment—is working with the city of Viipuri's equivalent committee to raise the \$8 million required for restoration. Russian architect Sergei Kravchenko has been developing plans for the work. So far, restorers have been able to replace the building's main window-wall and complete emergency repairs on the sewage and drainage system. The majority of the work remains, including

replacing piping and electrical systems and repairing structural components and plaster coatings.

Tapani Mustonen, the Aalto Foundation's consulting architect, says that money for the effort is almost nonexistent right now, and they are trying to execute much of this work with tax and tariff funds—an eternal bureaucracy in Russia. But he, Adlercreutz, and their committees are determined. "We have to forgive and forget and fix the library," Adlercreutz says.

For more information about the Viipuri Library restoration, contact the Alvar Aalto Museum, P.O. Box 461, 40101 Jyväskylä, Finland; (358) 14 624 809; (358) 14 619 009 fax; alvar.aalto-museo@jkl.fi; www.jkl.fi/aalto/viipuri/index.htm.

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and design collaborator, Elissa Aalto, who died in 1994—granite wasn't good enough. "People are quite stubborn in Finland," says the Aalto Foundation's Mustonen. "They somehow failed to think of the problem in anything other than a technical manner, without considering architectural or cultural issues." These issues, he explains, are rooted in the city's and Aalto's original motivation for selecting marble: It is a symbolic link to Greek and Roman history and culture revered by the Finns.

Finlandia Hall Executive Director Auni Palo explains that part of the reason it was especially difficult for marble proponents to sway the city in their favor was that Aalto himself utilized granite for part of the building. Black granite highlights sections of the main hall's tower, and it is still in excellent condition—proof, on the building itself, to the pro-granite camp that it was a viable option. What helped the marble advocates was the fact that white marble dominates the interiors. "All around the inside of the building—in the grand staircase, in the piazza—the marble is in perfect condition," Palo points out. "Naturally you would want the exterior to be of the same quality, for both historic and esthetic reasons."

City authorities visited quarries around the world searching for a suitable granite substitute. They considered many shadings of the stone to be "close enough" to the building's original white, and, early last year, Helsinki almost approved white granite from China. "Though they may have been white, the different types of granite we looked at were never white enough to do the building justice," says Eric Pollock, an American architect who has lived in Finland for 25 years. Pollock chairs the Helsinki Public Works Committee, which oversaw the decision to repair Finlandia Hall. "The question then ultimately became, 'What is the historic preservation of a building worth?'"

Though Helsinki became mired in anxiety, it still leaned definitively

In piazza-like lobby (right), work consisted of fresh paint and new carpet, but in main auditorium (below right), renovators installed new sound, lighting, and interpreter booths, restored seats, raised stage, and refined acoustics.



At many points, the architect's wife found herself fighting a solitary battle in favor of recladding with marble.

towards choosing granite. At many points, the architect's wife found herself fighting a solitary battle in favor of recladding with marble.

"Elissa Aalto was quite alone," says Kaarin Taipale, director of Helsinki's Building Control Department.

"People wanted to see what everyone else was going to say. It was quite a dark period."

Other proposed alternatives offered compromises, with the main proposition being a composite of concrete panels surfaced with white marble. The city rejected the idea last year because that type of installation has not been adequately tested.

Finally, in the spring of 1997, considerable lobbying on the part of the

pro-marble camp paid off.

Essentially, Mustonen argues, the building's intended design and purpose won out. "The building should be white marble because that's what the city and the architect originally agreed was best for the project," Mustonen says. "There is a long history of reasons why marble was originally chosen."

In a public vote in May 1997, the city approved the purchase and installation of 7,000 square meters of white Carrara marble from Italy.

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"We feel proud that we finally got the decision right," adds Taipale. "If you're restoring a historic painting of, say, a bird, you would never think of adding a 'modern' color to the bird. Fortunately, people understood that with this building."

Implementing the solution is now comparatively simple. In some parts of the building, the new marble panels will be thicker, at 40 millimeters instead of the 33 millimeters originally

the larger ceiling over the audience seating. Intended to provide longer reverberation times and, thus, better sound quality, the volume never functioned properly and, in fact, worked better closed.

Renovations elsewhere were minimal. Workers updated the HVAC and electrical systems, and modernized the restaurant's kitchen. In the piazza-like lobby space outside the auditorium, where ivy climbs up

The Finns are not only happy about their decision on one of their most treasured buildings, they're also perhaps just as relieved that the fighting is over.

installed. And this time, the blocks will be anchored independently of each other with new, stronger fasteners comprised of steel extrusions bolted to the concrete substrate. Helsinki is aware that the resulting repair work will likely have to be revisited in another 25 or 30 years because the pollution problem remains unresolved. The city hopes, though, that the marble's increased thickness, improved connections, and higher quality will extend the life of the building's cladding to beyond even current life expectancy. Even if it doesn't, the repair cost is relatively low: Only \$4 million of the building's \$10 million renovation budget is going towards replacement of the marble.

Interior work

The remainder of the budget went to interior renovations, which were quietly conducted while the controversy raged about the marble exterior. Completed this past spring, the interior work in the spectacular main auditorium included raising and resurfacing the stage, adding new hoisting equipment beneath the stage, repairing seats, and adding interpreter booths and lighting and sound control rooms.

In addition, renovators improved the acoustics in the main auditorium. This included reshaping the ceiling above the stage and, more significantly, sealing the high volume above

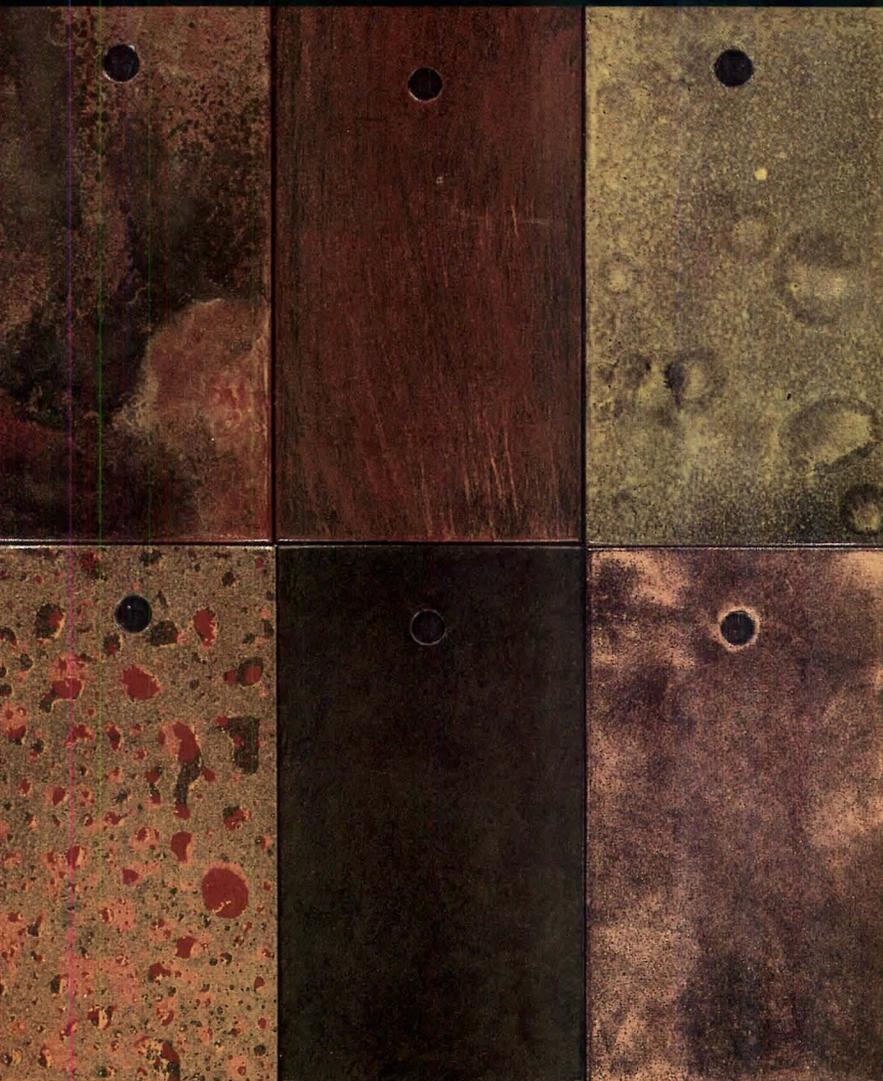
the mullions of a window-wall facing the lake, all that was necessary was new carpet and paint.

Right track

Since the city made their decision about the marble last year, work has progressed, but in fits and starts. Last fall, the contractor removed the failing marble from the tower section, then installed new mineral wool insulation and vertical steel studs for attaching the new marble. Work then stopped for the winter because the contractor went out of business. A new contractor has now resumed work on the building, which is scheduled to be completed by next summer.

Construction currently consists of removing the marble that remains on the building, and preparing the surface for the new panels. Once the panels are attached, Finlandia Hall will have a new quarter-century lease on its historically appropriate cladding. That suits the residents of Helsinki just fine; they are not only happy about their decision on one of their most treasured buildings, they're also perhaps just as relieved that the fighting is over. "Right now, the Carrara marble is being cut and shipped to Helsinki," Pollock says. "After 10 years of bickering, we are finally on the right track."

Products Planar Geometry



1

1 Patinas

Canadian lighting manufacturer Lumid originally created these enamel finishes for custom-made outdoor lighting fixtures.

Pigment-based paints are applied by hand, combining craftsmanship with technology, then baked for a durable finish. This process may be applied to other materials such as plaster or wood.

Circle 295 on information card.

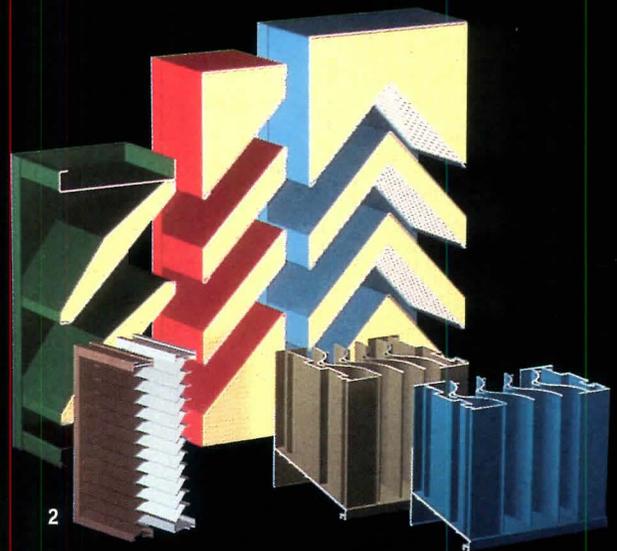
2 Blade Design

Greenheck has added three new designs to its selection of architectural louvers for interior and exterior applications. Thin line stationary louvers (at left) with narrow profiles are ideal for curtain and window wall systems. Acoustical louvers (at middle) with J and airfoil profiles dampen sound. Rain-resistant louvers (at right) incorporate a drainable head, vertical blade, and sloped sill that protect air-intake and exhaust openings in exterior walls.

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3

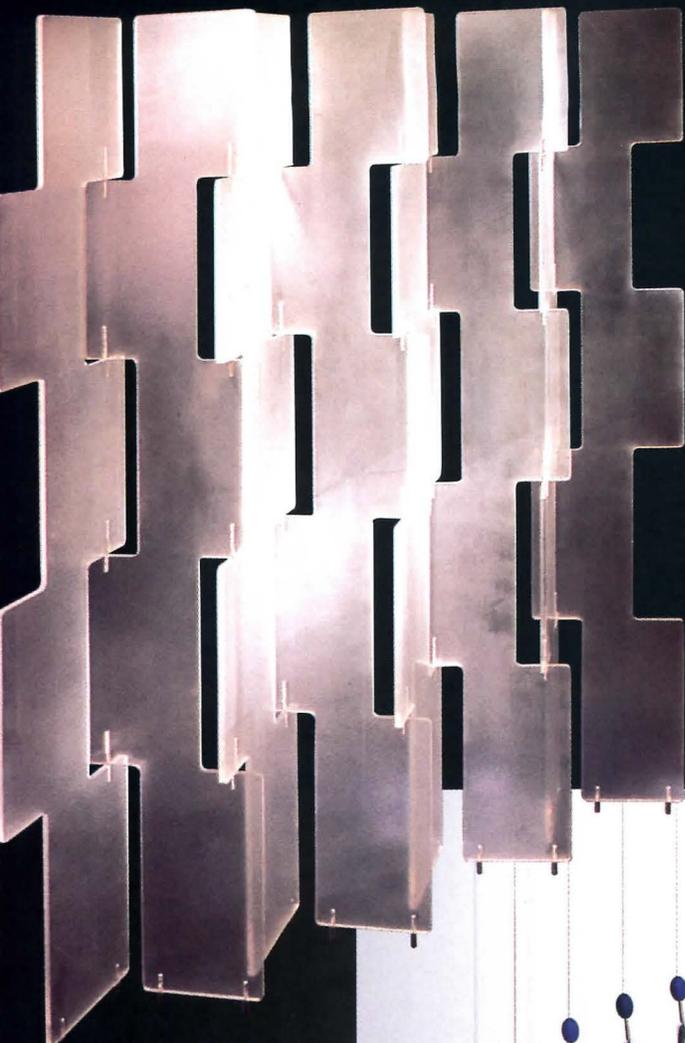


2

3 Tread Lightly

Flooring manufacturer Congoleum designed its new product, "The Quiet Laminate," to look like wood without sounding like it. The surface is vinyl, unlike other melamine laminates, making it much quieter to walk on. The collection comes in a variety of dimensions and colors, and is moisture-resistant for use in kitchens, bathrooms, and entryways.

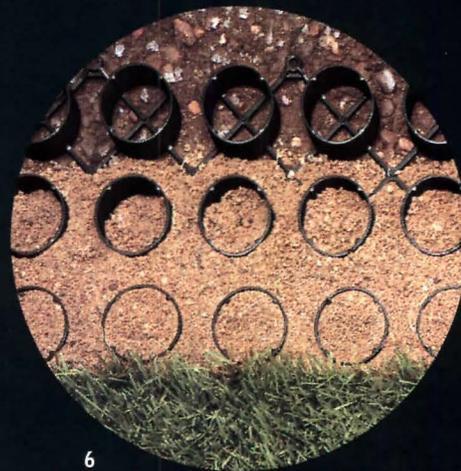
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4

4 Folding Screen

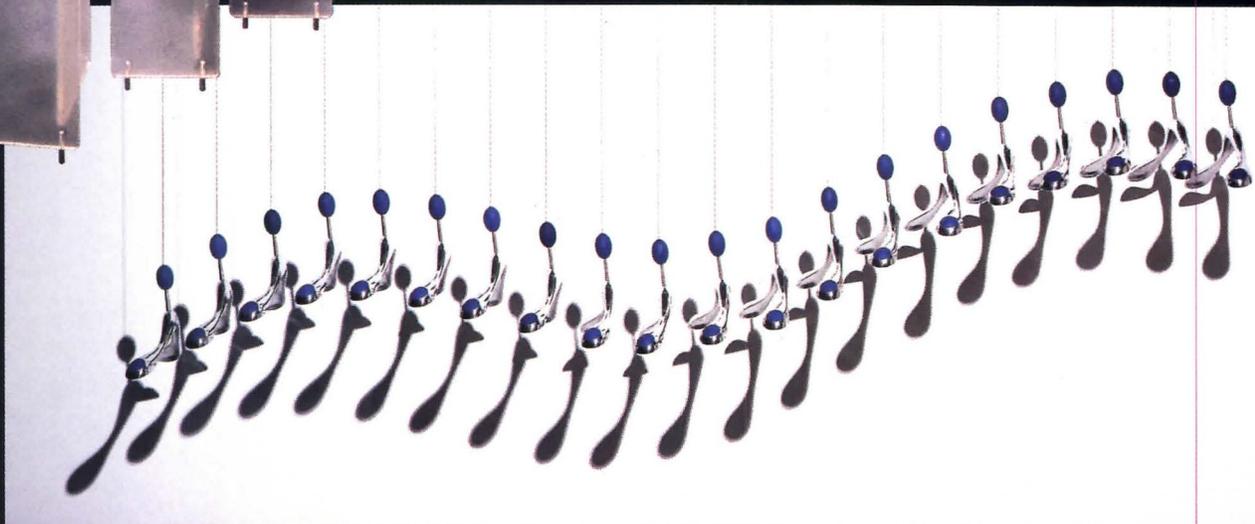
London-based designer Andrew Tye has fabricated the S3 screen, made of translucent acrylic panels. The room divider features detachable panels that can be interchanged or expanded with such materials as birch plywood, multicolored recycled plastic, and light or dark woods.
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6

6 Tuff Turf

Invisible Structures has created a durable landscaping subsurface that is strong enough to drive a vehicle on. Grasspave² is a ring and grid system made from recycled plastic that is rolled out before seeding. The porous surface aids in root development, reinforcing the lawn's durability.
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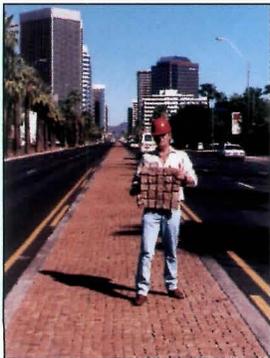
5 Back Support

The HeadHanger, from London-based furniture designers Gabbertas, is a lively reinterpretation of the traditional coat hanger. Made from aluminum, it mimics the human form using rubber shoulder inserts to prevent clothes from slipping, and a high neck that enables it to be hung from the ceiling, or attached to a wall bracket.
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The Literature offered on these pages (with rare exception) are free for the asking. Simply fill out one of the postage paid reader service cards located elsewhere in this issue, circle the appropriate numbers and drop it in the mail.

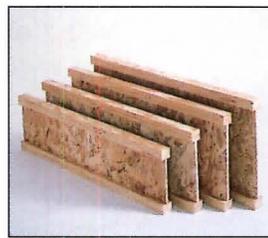
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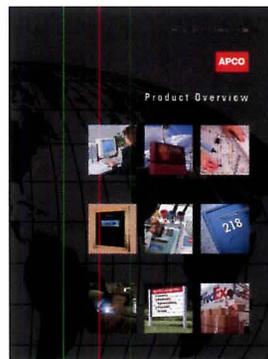
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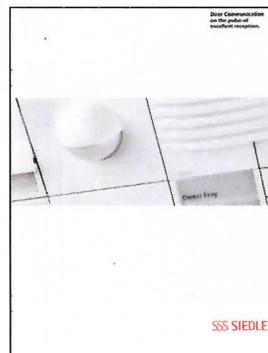
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Dallas	70.76	70.31	73.76	72.36	119.70	117.03
Kansas City	80.42	77.62	82.19	79.56	133.38	128.67
Los Angeles	90.46	90.39	94.25	93.04	152.94	150.47
New York City	109.16	109.12	114.82	112.31	186.32	181.63
Phoenix	73.58	72.88	76.71	75.50	124.49	121.31
St. Louis	83.72	83.16	87.25	84.54	141.59	138.43
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Each month Architecture takes a snapshot of U.S. construction – looking at average costs and upcoming projects for different building types. News on projects is provided by Construction Market Data and cost information by R.S. Means – both CMD Group companies.

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

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UPCOMING PROJECTS

Maravilla Senior Housing/Assisted Living

Location: 5486 Calle Real, Goleta, Santa Barbara County, CA
Project Value: \$40 million
Size: 200,000 sq ft, 3 floors above grade, 4 structures
Contract Type: Invited Bidders
Current Project Stage: Planning; Schematics
Status: Schematics in Progress; Bid Schedule Not Set
Project Scope: 369-Unit Senior Housing & Assisted Living Units Including a Day Center, Dining Facilities and 2 Swimming Pools
Owner: Wynmark Company; 6500 Hollister Avenue, Suite 100; Santa Barbara, CA 93117
Phone: 805.685.4470; **Fax:** 805.685.7971
Architect: Cearnal/Ehlen Associates; Brian Cearnal; 521 1/2 State Street; Santa Barbara, CA 93101
Phone: 805.963.8077; **Fax:** 805.963.0684

Adult Living Facility

Location: 25th Street, Ft. Pierce, Saint Lucie County, FL
Project Value: \$2.4 - \$2.5 million
Size: 40,000 sq ft, 2 floors above grade, 60 units, 1 structure
Contract Type: Invited Bidders
Current Project Stage: Planning; Masterplanning
Status: Masterplanning in Progress; Bid Schedule Not Set
Project Scope: Construction of New Building
Owner's Representative: Conklin Porter & Holmes Engineers; Melissa Cousins; 3569 SW Corporate Parkway; Palm City, FL 34990
Phone: 561.283.8704; **Fax:** 561.283.4681
Architect: O'Keefe Architects; Jerry Fassnacht; 2424 Curlew Road; Palm Harbor, FL 34683
Phone: 813.781.5885; **Fax:** 813.781.0255

Islander Hotel & Casino

Location: Sunset Road & Boulder Highway, Henderson, Clark County, NV
Project Value: \$100 million
Size: 11 floor above grade, 3 structures
Contract Type: Negotiated
Current Project Stage: Planning; Design Development
Status: Design Development in Progress; GC to take Subbids Approx 10/98
Project Scope: 240 Room, 11 Story Hotel, 60,000 Square Feet
Owner's Representative: CMR Construction Inc.; Michael Rallo; 8500 Eager Road; St. Louis, MO 63144
Phone: 314.962.3600; **Fax:** 314.962.5522
Architect: Thalden Entertainment Architects; Barry Thalden; 4330 Valley View, Suite 136; Las Vegas, NV 89103
Phone: 702.384.4884

Resort & Recreation Development

Location: Portsmouth, Newport County, RI
Project Value: \$50 million
Size: 14 floors above grade
Contract Type: Negotiated
Current Project Stage: Planning; Schematics
Status: Schematics in Progress; Subbid Schedule Not Set; Bids Due 9/1/98
Project Scope: Redevelopment of Former Aluminum Plant on Aquidneck Island; Conversion of Tower Building into 128 Room Hotel
Developer: Portsmouth Development Associates; Andrew Patykewich; 300 Willow Lane, PO Box 626; Portsmouth, RI 02871
Phone: 401.845.9684; **Fax:** 401.874.9307
Architect: Frederich St. Florian Architect; Steve Stobbe; 122 Union Street; Providence, RI 02903
Phone: 401.831.8400; **Fax:** 401.831.8688

Gurnee Bank

Location: Gurnee, Lake County, IL
Project Value: \$5 million
Size: 46,000 sq ft, 3 floors above grade, 1 structure
Contract Type: Invited Bidders
Current Project Stage: Planning; Working Drawings
Status: Working Drawings in Progress; Bid Date to be Set Approx 9/98
Project Scope: New Bank
Owner: First Midwest Bank; Craig Wilson; 300 Park Boulevard; Itasca, IL 60143
Architect: Henneman Raufeisen & Associates Inc.; Bob Kapolnak; 1605 S State, Suite 101; Champaign, IL 61820
Phone: 217.359.1514; **Fax:** 217.359.9354

Fox Valley Bank

Location: Main Street & Tyler Road, St. Charles, Kane County, IL
Project Value: \$1 million
Size: 7 acres, 5,500 sq ft, 1 floor above grade, 1 structure
Contract Type: Invited Bidders
Current Project Stage: Planning; Working Drawings
Status: Working Drawings in Progress; Bid Schedule Not Set
Project Scope: New Free-Standing Bank Branch
Architect: Hestrup & Associates; James Hestrup; 525 Tyler Road, Suite A; St. Charles, IL 60174
Phone: 630.377.0414; **Fax:** 630.377.7852

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The founding myth of the city of Prague is about a war between women and men, wherein the men force Princess Libuse, the tribe ruler, to take a husband, causing the women to revolt. The ensuing Maidens' War lasted a good while. Many wives slaughtered their husbands in bed, while other wives lured their husbands into the woods, where they dispatched of them. The men eventually killed all the rebellious women, and the Premyslid dynasty that followed ruled for 600 years. There are two consequences of this myth for modern-day Prague; namely, Art Nouveau, and the physical predicament of young Czech women who must compete with it.

Below these establishments, animated ideologues, visionaries, and activists occupy intellectual dives.

The buildings of Prague have survived unscathed through much of the city's bloody 1200-year history. The Council of Constance burned Protestant leader Jan Hus at the stake in 1415 in the Old Town Square. The cobblestones of Prague have been recycled for barricade-making in popular revolts from 1848 to 1968. The windows of important buildings have seen various undesirables thrown out of them in a uniquely local political activity called defenestration. Some buildings are celebratory, like the 1912 Obecní Dum

Prague Eros Report

Prague's architecture fights in the battle of the sexes.

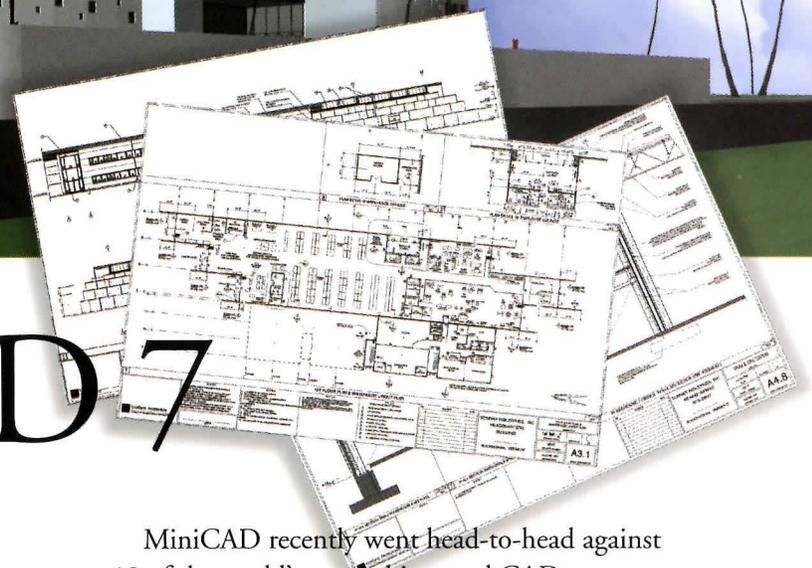
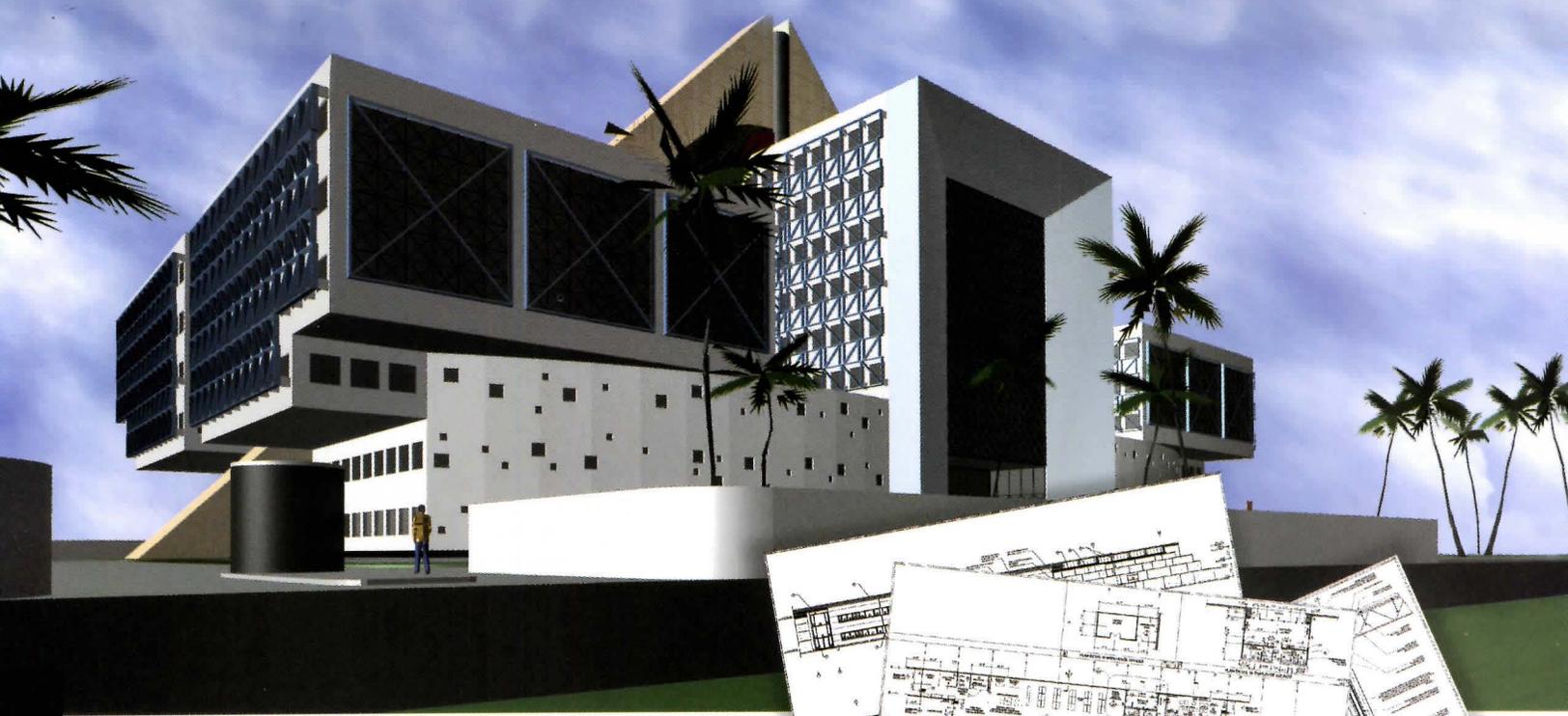
Sculptures of naked women crowd the frontispieces of Prague buildings, which range from Gothic to Art Nouveau. There are also a goodly number of frolicking Baroque putti and some very muscular socialist realist men, but women make up the majority of the "stone people" of Prague. Art Nouveau, or "the Czech national style," as native historians fondly call it, has produced a profusion of (barely) mythical females whose flowing shapes are seductive, languorous, and aroused. A century of Czech schoolchildren—and minority Jewish, Gypsy and German schoolchildren—have gazed at them while waiting for Austro-Hungarian trams, concentration camp trains, and socialist-era subways. Contemporary Czech women, dressed in minimal skirts and platform shoes that emphasize their long, near-Art-Nouveau legs, try in vain to compete with the stone women of the Czech past. The living have only two months of summer to provide an argument for the flesh, while the stones are naked year-round and have been there for centuries.

The nation's qualities as narrated by her buildings are best seen in this light, at the intersection of history, architecture, and grumpy present-day inhabitants. At this intersection one can also find many cafes and beer joints where the former *nomenklatura* is thinking up nouveau ways to recapitalize the disgruntled proletariat.

(Municipal House), birthplace of Czech nationalism, and the site of Alphonse Mucha's Art Nouveau consecration. Frank Gehry's "Fred and Ginger" building danced through the short-lived euphoria of post-communism. These festive expressions are outnumbered by far, however, by various pompous royal, imperial, communist, and administrative structures that rely only on decorative (nude) women to put folks at ease.

Prague is now the central European city par excellence where it was once only a provincial rival of Vienna or Budapest. Nation-loving Czech writers advanced the notion of central Europe, trying to stake an intellectual claim in the debris of the collapsed Red empire. Czech nationalists who preceded them made the same claim to centrality during the collapse of the Austro-Hungarian Empire. But does Europe have a center? NATO redrew the line that separates Western and Eastern Europe to pass between the recently torn Czech and Slovak republics. This is as arbitrary a division as the center is illusory. What we do know for sure is that people in the flesh will never outclass the people in stone. But Prague is fun to visit while the contest is on.

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



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