

75TH ANNIVERSARY YEAR

IPAA

Progressive Architecture

A Penton Publication April 1995

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THE NEW EXAM



• Will it Change the Profession? •

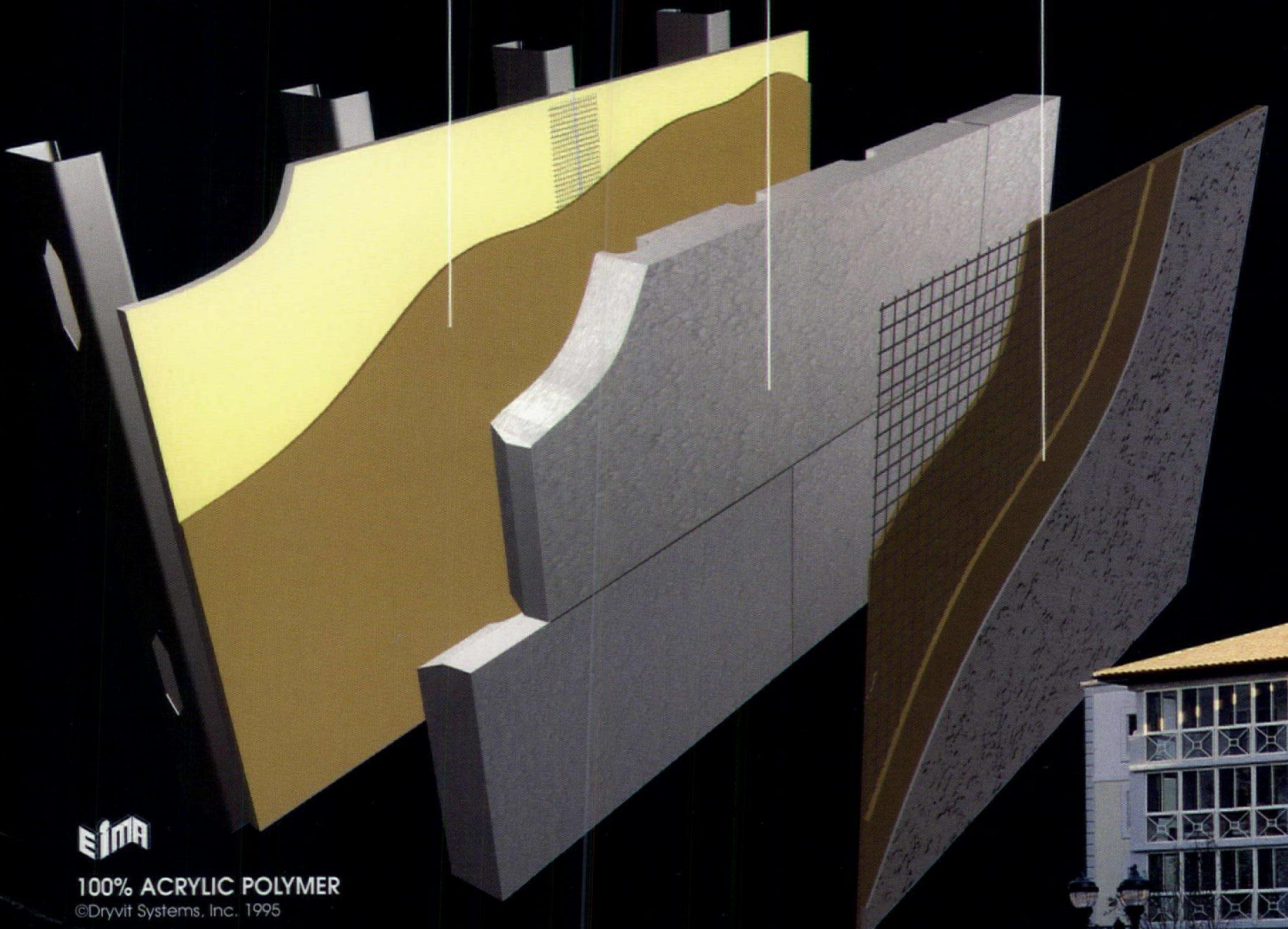
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The Time Squeeze on Design

As computers have begun to increase the pace of producing contract documents, a similar time squeeze is being applied to the design phases of projects. Many architects report that clients are asking that designs be produced with ever greater speed, raising some difficult questions for the profession.

First, how fast can the design process go? As one architect recently put it, "we can draw faster with CAD, but it can't help us think faster." Unfortunately some clients don't want us to think, at least at the pace we are accustomed to, which is why there has been such a rapid rise in the number of alternative forms of delivering projects: design/build, industrialized building, and various types of packaged projects where buildings are assembled from pre-designed units. Apparently in some of these, design is thrown in "for free."

This may not be architecture, but it is taking an ever larger bite out of the potential market for architectural services, and we should be worried.

There are two directions we might go in responding to this time squeeze. One would be to continue to find ways of making the design process more productive. In doing so, we might look to other fields, such as journalism and popular criticism, where creative work is done under very tight time pressures. Those fields have accommodated the time squeeze not only with technology, such as laptop computers and modems, but by eliminating steps in the editing process that had more to do with tradition than anything else.

There are, no doubt, equally expendable traditions in the design process. Certainly one of these is the tradition of using the least productive people – graduates right out of school – to help design, grossly overworking them (without overtime pay or, in some cases, any pay at all), and bringing in a new crop when they demand more money. Apart from being exploitative and, in some cases, illegal, this is not a way of making the design process more efficient.

A second and equally important response to the squeeze on the design process is to demonstrate to clients that designers, given adequate time, will produce better results. Unfortunately, there are too many examples of just the opposite, where architects were given the time and support they

needed to design and still produced buildings that were much worse – much less useful, less durable, and less visually appealing – than those that clients could have gotten from a commodity producer.

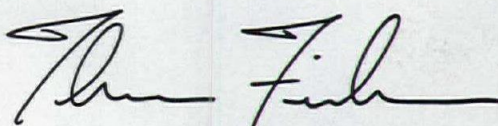
Here, the scientific community offers some useful lessons. It has succeeded, where we have not, in convincing employers that the experimental process must be given time to run its course if its results are to be reliable. Scientists certainly have time pressures and are not above occasionally taking short cuts or faking results, but the healthy skepticism with which they greet each other's claims and the lengthy evaluations they make before accepting anyone's work have enabled the standards of science to remain high, have kept impatient employers at bay, and have prevented alternative forms of science from becoming a threat.

Design, of course, is not a science and it will never be as systematic or as quantifiable. Still, science shows that clients will adequately support an investigative process, of which design is surely one, if they believe that the chances are good that it will produce something better and more reliable. Most design does produce such results, but we have been lax in demonstrating that to people outside our field. If anything, we have tended to recognize and honor projects that, whatever their formal brilliance, have obvious flaws in areas that matter most to clients and building users.

That is one tradition that may have to change if we are to convince clients that adequate design time is worth their investment. Another is the tradition of jumping on design bandwagons before they have withstood the test of time. Were we to subject design ideas to the same skepticism with which scientists greet each other's work, I suspect that the canon of good architecture would be smaller than it is now, and would probably be more useful in proving our case to clients who do not share our gullibility.

At stake here is not just the health of the architectural profession, but of the design process itself. We must defend what we do with all the hard evidence we can muster. And we must become better at what we do, more productive at design, and more skeptical as designers. □

As clients increasingly demand that we speed up the design process, we have done too little to defend its value and to make ourselves more productive designers.



Thomas Fisher

The Ghirardo-Eisenman Debate

I was initially a little shocked back in November upon reading Ms. Ghirardo's challenge to Peter Eisenman's professional *raison d'être*. Its thrust seemed a little too personal, and theoretical considerations aside, actually had me wishing I possessed his acumen for self-promotion. If he can now convert his standing as an upper-atmospheric guru into success at marketing professional services to actual clients interested in constructing real buildings, more power to him. On that level, Ms. Ghirardo and P/A may be playing right into his strategy.

Thanks to P/A's apparent doctrine of fairness, we have now all had a chance to witness a dazzling parry (Feb. 1995, p. 88) as Eisenman rallied his coterie, some of which was brilliantly ethereal. I have always marveled at the capacity of both architectural critics and theoreticians to say so much about so little. Such palaver is, of course, their right, even their obligation, and now and then an entertaining relief from the banalities of daily practice.

However, reliance on aesthetic theory as a primarily intellectual diversion trivializes the whole notion of "theory" within a profession that claims full status as such. Ego and verbal genius alone are an unstable foundation for reputation unaccompanied by built enclo-

tures for human activity. The real trick for us architects is to get clients to put their money where our mouths are, whereby we tend to leave our clients and the community stuck, for better or worse, with our work standing in full public view. Therefore the ethical dimensions of both practice and theory must inform the design process, and deliberately include social, political – and economic – concerns.

Gary R. Collins, Costa Mesa, California

Government Hoops

P/A's February article "Government Hoops," although very descriptive of current procurement methods and especially GSA's "design excellence" program, fails to describe the major pitfall of that program, i.e., the inability of the program to identify strong regional designers. Recently, GSA selected two New York firms for two major Arizona courthouses, Hardy Holzman Pfeiffer for Tucson and Richard Meier for Phoenix.

At least for the important commissions, the program only seems capable of premiating the same tiresome list of big names. It would be nice if once in a while a "safe" decision was ignored and an important project given to a regional designer – by so doing we all might have the feeling that the jury really did study the entries and was not mesmer-

ized by the "stars."

This may sound like sour grapes – and it is! The RFP for the two Arizona courthouses explicitly asked for a 1,500-word essay regarding the cultural and urban design issues in our community. The short-listing and final decision making occurred in a remarkably brief time – it is hard for me to understand how the jury could have given thoughtful consideration to this requirement. Without question, cultural matters and, I dare say, many urban design issues, are best understood by local talent. To have placed so much emphasis upon this intimate level of understanding and then to have awarded the contract to two firms who have not yet demonstrated their capacity to deal with the Southwestern context of issues, is to ignore the very qualifications that were asked for in the RFP.

No one can seriously object to improving design excellence. To date such programs do not seem to foster a broadening of the pool of available talent but, rather, they seem to further institutionalize excellence as a commodity only available at a handful of addresses located in New York, Boston, or Philadelphia. Stephen Bayley, in his book *Taste*, concludes his chapter on architecture with the following: "... Clients buy big name architects rather than (continued on page 30)

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Capitol Architect to Quit

George M. White, FAIA, who was criticized in Congress for his performance as Architect of the Capitol, will step down when his term ends on Nov. 21. White, 74, is the only registered architect in 130 years to have held the post, supervising a largely blue-collar work force of 2,300 who perform custodial, mechanical, structural, management, and other tasks; about a dozen architects are on his staff. He has been Architect of the Capitol since 1971.

Last year Senator Barbara A. Mikulski and members of the Congressional Black Caucus pressed him to leave, after the General Accounting Office described the working environment under White's supervision as "demoralized and distrustful" and found minorities and women underrepresented in higher-paying jobs. White's administrative assistant has emphasized that the Comptroller General's office identified no intentional discrimination, and said an "affirmative employment" program is being established.

Some time ago the AIA adopted a resolution in White's support, but Congressional reaction was vehemently critical. AIA Grassroots delegations who visited the Hill in January were blindsided by hostility. Afterward AIA President Chester Widom apologized to the AIA volunteers, saying, "We underestimated the lingering effect of the negative press the incumbent incurred in 1994 and did not weigh heavily enough the residual anger among members of Congress and their staffs, who had been seriously inconvenienced by all the office moves occasioned by the transition in the majority party status."

Terrence M. McDermott, CEO of the AIA, maintains that White "demonstrated innovative management ideas, improved the efficiency of the Capitol infrastructure, and restored and preserved its historic integrity." Congressional leaders will recommend at least three individuals for the job, and one will be appointed by the President to a ten-year term, with the consent of the Senate. □



YERBA BUENA CENTER, SAN FRANCISCO: GARDENS (FOREGROUND), VISUAL ARTS CENTER (CENTER), THEATER (RIGHT) AND MUSEUM OF MODERN ART (BEYOND, WITH CYLINDRICAL TURRET).

Perretti & Park Pictures

Incoherence by the Bay

The opening of Mario Botta's San Francisco Museum of Modern Art (P/A Feb. 1995, p. 37) has made the flaws of the Yerba Buena Center project, in which it sits, more glaring than ever. MOMA's powerfully symmetrical presence on Third Street practically demands a strong axis extending from the museum's front door into the portion of the complex on the opposite side of the street. But instead of a well-defined axis, visitors to Yerba Buena encounter a shapeless, irregular space between James Stewart Polshek & Partners' Yerba Buena Theater and Fumihiko Maki and Associates' Visual Arts Center. The planners' idea of placing the theater, the Visual Arts Center, and other attractions on top of the Moscone Convention Center's meeting facilities – thus above street level – brings an array of activities close together, but it violates San Francisco's most rewarding design tradition: that of having continuous buildings face the sidewalks, enlivening the pedestrian's experience. Maki's silvery, aluminum-clad Arts Center (above) turns its

back on the passing city. There are few clues to the existence of a much-needed park (with a mounded, rolling, almost suburban character) on the interior of the complex. A pleasant fountain and a café in the park's upper reaches come as a surprise to those who happen to stroll through. Alas, visitors who decide to sit outdoors on the café's terrace get a panoramic view dominated by the downtown Marriott, known as "the Wurlitzer" because this monstrosity from the 1980s, topped by glass-and-metal semicircles, looks like a PostModern jukebox. A multiscreen cinema, another hotel, a skating rink, and additional elements are yet to be built. The outcome, though, is clear enough: Yerba Buena is an arts-and-entertainment machine whose gears don't mesh. "Working design professionals have a lot of misgivings," says San Francisco urban design consultant Robert Bruce Anderson, noting that in a 30-year tug-of-war like the planning of Yerba Buena, "process is the tail that wags the dog." Philip Langdon □

A Crossroads of Transportation and Culture, Too

The huge Palais des Beaux-Arts in Lille, France, built in 1882, is to be renovated and expanded by French architects Jean-Marc Ibos and Myrto Vitart. Seeming to have bought wholesale the questionable assertion that Lille, embarkation point for Chunnel trains to London, is now or

will soon become a major crossroads for Europe, the architects say they will restore to Lille an art museum worthy of its name. "Lille," they say, "wants also to be an international capital city of culture." Not likely, but the museum plans look nice. □

ARCHITECTURAL RESOURCE CENTER
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Books



New York 1960: Architecture and Urbanism between the Second World War and the Bicentennial by Robert A.M. Stern, Thomas Mellins, and David Fishman, *The Monacelli Press, New York, 1995, \$125.*

This third volume in a series by Stern and collaborating writers closely follows – and improves upon – the format established in *New York 1900* and *New York 1930*. Like them, this one focuses only loosely on the evocative title year, actually covering the 30 years from 1945 to 1975. It is handsomely produced, with fine photographs – all black-and-white – though few drawings. The writers deftly relate politics, business, and cultural aspirations with architecture, and the evolution of complexes such as the U.N. Headquarters and Lincoln Center is traced in text and illustrations. Shrewdly chosen excerpts from critical writing of the time enliven the book. Altogether, this is an impressive architectural history that academy-bound authors could learn from. But the sheer heft of the 1,374 pages is daunting, not to mention its investment-grade price tag. (Shown above: Proposal for the Seagram's Building by Pereira & Luckman that preceded the design by Mies van der Rohe.)

Modernism at Mid-Century: The Architecture of the United States Air Force Academy edited by Robert Bruegmann, *University of Chicago Press, Chicago, 1995, \$70.*

The essays in this book document and illustrate the conceptualization of the Academy as an institution equal to West Point and Annapolis; the search for an architectural firm; the ideological debate that influenced the design and development stages; the project's integration into the rugged landscape of Colorado Springs, Colorado; and the use of relatively new construction techniques and materials. There is also an interview with SOM design partner Walter Netsch conducted shortly after the Academy opened in 1958. The essays are competently written, but add little critical perspective to the subject.

Ordering Space, Types in Architecture, and Design edited by Karen A. Franck and Lynda H. Schneekloth, *Van Nostrand Reinhold, New York, 1994, \$39.95 paper.*

This collection of essays focuses on the value of types in the study of architecture rather than on types themselves, and so it is more a book for academics and theorists than for practicing architects. Nevertheless, it is generally clearly written and it offers an excellent overview of current thinking on a topic that is absolutely central to the creation of what the editors argue is "a more socially just, ecologically sound, and life-enhancing built environment."



Adolf Loos by Panayotis Tournikiotis, *Princeton Architectural Press, New York, 1994, \$24.95.*

Succinct, affordable, and, best of all, published in English, this small-format monograph provides thorough documentation and analysis of the work of the Austrian Modernist. The book, published in French in 1991 and translated into English last year, is divided into sections on Loos's life; writings; renovations, apartments, stores, and cafés; private houses; mixed-use buildings and workers' housing; large-scale projects; an analysis of his architectural ideas; and a bibliography. It is a valuable addition to the libraries of students and practitioners alike. (Shown above: Loos's Steiner House of 1910, view from the garden circa 1930.)

Briefly Noted

The Architecture of Richard Rogers by Deyan Sudjic, *Abrams, New York, 1995, \$39.95.*
Covers the English architect's 30-year career, placing him in the context of the times.

Design with Nature by Ian McHarg, *Wiley, New York, 1995, \$39.95 paper.*
Classic treatise of the first environmental movement, now in a 25th-anniversary edition.

Facility Management Technology: Lessons from the U.S. and Japan by Eric Teicholz and Takehiko Ikeda, *Wiley, New York, 1995, \$44.95.*
Technical and procedural guide to computer-aided facility management (CAFM) systems.

Inside the Large Small House: The Residential Legacy of William W. Wurster by R. Thomas Hille, *Princeton Architectural Press, New York, 1994, \$24.95 paper.*
Essays on the Bay Area regionalist's interpretation of Modernism and photos and plans of 13 well-illustrated projects.

Educators Honored

Henry N. Cobb, FAIA, a founding principal of Pei Cobb Freed & Partners and former chairman of the Architecture Department at Harvard Graduate School of Design, will receive the ACSA/AIA 1995 Topaz Medallion for Excellence in Architectural Education at the ACSA's annual meeting in Seattle March 18–21. Cobb's "intellectual legacy at Harvard GSD greatly enriched and inspired both students and faculty, raised the general level of architectural discourse, and trained some of the most promising young professionals in the field today," said the Boston Society of Architects/AIA in nominating him for the award.

Architectural historian Vincent Scully has been chosen by the National Endowment for the Humanities as the 24th Jefferson Lecturer in the Humanities, the highest honor bestowed by the federal government for distinguished intellectual achievement in the humanities. Scully, Sterling Professor of the History of Art Emeritus at Yale, will deliver his lecture May 15 at the John F. Kennedy Center for the Performing Arts in Washington and will receive a \$10,000 honorarium. Those interested in attending should call (202) 606-8400.

The AIA has also selected three innovative courses in U.S. architectural schools for 1995 education honors. They are "Architecture, Health, and Society: A Framework for Interdisciplinary Seminar Education," taught by Stephen Verderber at Tulane University; "Comprehensive Design Studio and Advanced Technology" courses taught by William Bechhoefer, Amy Gardner, Frank Schlesinger, FAIA, and Gregory Wiedemann at the University of Maryland; and "Environment and Buildings I," taught by Mark DeKay at Washington University. The recipients will be honored and will present their courses at the AIA/ACSA 1995 Teachers Seminar at Cranbrook Academy this summer.

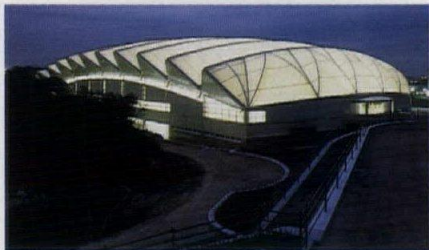
The University of Virginia will receive a 1995 Honor Award during the AIA national convention in Atlanta May 5–8 for its program to preserve and restore its original "academical village" by Thomas Jefferson. □

Fine Arts Appointee

Harry G. Robinson III, FAIA, has been appointed by President Clinton to the U.S. Commission of Fine Arts, which advises the government on matters such as architectural development of the capital. Robinson is dean of Howard University's School of Architecture and Planning, a trustee of the Cooper-Hewitt National Museum of Design, and a director of the Vietnam Veterans Memorial Fund. In 1992 he was the first educator elected president of the National Council of Architectural Registration Boards. □



DENVER INTERNATIONAL AIRPORT



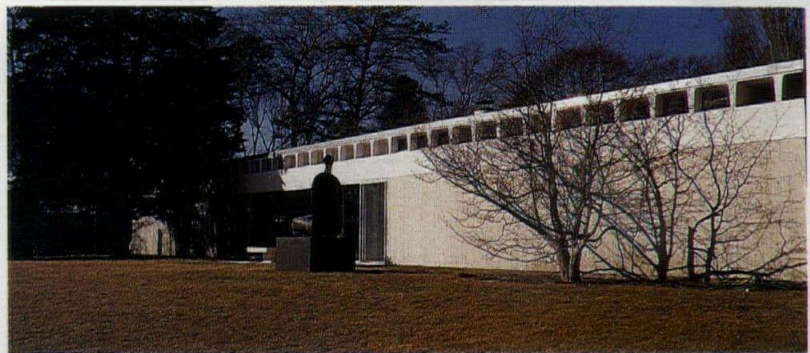
OCEAN DOME

Raise High the Roof Mast

The Great Hall of the Denver International Airport, which opened Feb. 28, has won an Outstanding Achievement Award for Birdair of Amherst, New York, in the annual competition of the Industrial Fabrics Association International. The peaked, white tensile membrane roof, which resembles either tepees or the Rocky Mountains, depending on your taste in allusions, extends over an area about 180' x 900', supported by 34 steel masts. It was designed by architect Curtis Worth Fentress of C.W. Fentress J. H. Bradburn and Associates, Denver. The airport, which opened 16 months behind schedule and cost \$4.9 billion, is the first major new airport in the U.S. since Dallas-Fort Worth International in 1974. Jurors in the industrial fabrics competition awarded first place among air and tension structures of more than 30,000 square feet to the Ocean Dome in Miyazaki City, Japan, designed by K. Tohata & Associates for Taiyo Kogyo Corporation. Its roof echoes the shape of paragliders, in the "paraglider center of Japan," while flooding the interior with light. □

A Prize for Portland Planning

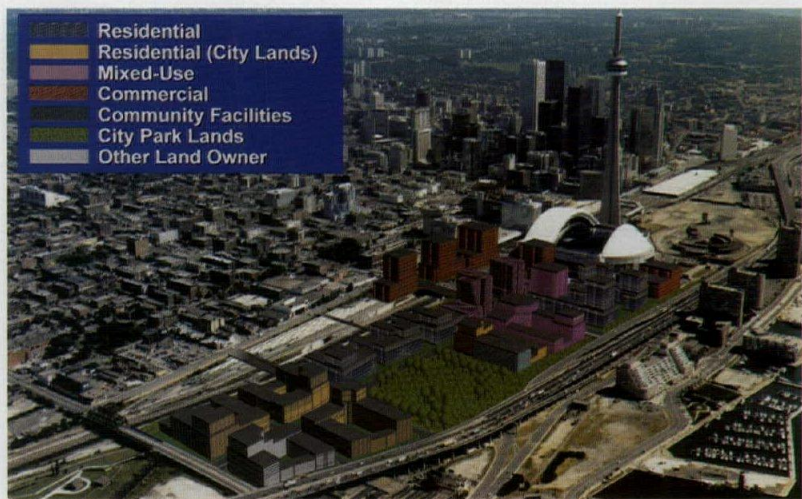
The Seaside Prize, given yearly by the Seaside Institute in Florida, will be presented May 6 to the City of Portland, Oregon. The Institute says Portland's city plan, rather than being reactive, anticipates and shapes development. Portland's mixed-use, pedestrian-friendly urbanity, exemplary mass transportation system, and urban growth boundaries "make it work better for its citizens than almost any other city," according to the Institute. The prize will be accepted by Mayor Vera Katz, accompanied by other officials, including former mayor Neil E. Goldschmidt, under whose administration much of Portland's recent progress was begun. The ceremony will be part of a May 4-6 conference, "Making Florida Home: A Heritage of Life and Landscape." □



Gordon Bunshaft Living

Three bidders, including Charles Gwathmey, tried to buy the classic Modern house of the late Gordon Bunshaft in East Hampton, New York. For a little more than \$3 million, the winner was Martha Stewart, America's queen of cooking, decorating, and entertaining. The only house Bunshaft ever designed, the elegant 2,600-square-foot dwelling was completed in 1963. Prestressed concrete T-beams support its flat

roof; walls primarily of glass on the east, south, and west face Georgica Pond and the Atlantic Ocean. Bunshaft died in 1990, his wife Nina died in 1994, and the two-bedroom house was bequeathed to the Museum of Modern Art. Real estate sources say Stewart, publisher of *Martha Stewart Living*, intends to do little more to the house than restore it to pristine condition. □



Building on Toronto's Rail Yards

Eighty-five acres in downtown Toronto – part of a 200-acre expanse of vacant railway land that is said to be the largest single undeveloped urban site in North America – will see major construction later this year, ending years of waiting. CN Real Estate, the development arm of Canadian National Railways, is preparing to build its 8-million-square-foot CityPlace project, split equally between residential and commercial development. In the first phase, CN plans to build a 400,000-square-foot office building and condominium towers containing 3,500 residential units, says Bud Purves, vice president for development in eastern Canada. The city will build 1,500 subsidized housing units on an adjacent 11-acre parcel it acquired from CN. The company will build a road extension,

intersecting with a major Toronto street, that will facilitate pedestrian and vehicular traffic flow across the site and that will act as a "front door" for the CN Tower, which attracts more than 1.6 million visitors a year. CN is also considering entertainment-related development, such as sports facilities, a theme park, and multiscreen theaters. For 20 years the rail lands have remained eerily empty at the base of the Toronto skyline while a combination of intensive planning, citizen protests, municipal demands, and a glut of office space blocked construction. The Ontario Municipal Board recently approved a zoning bylaw that is moving the project forward. CN has invested \$100 million (Canadian) in infrastructure on the site. Architects for the project have not been chosen. □

COMPETITIONS

Mid-Career Research Grants

Deadline, application: May 1
Research grants are available to mid-career professionals in architecture, historic preservation, landscape architecture, urban design, and related fields. Contact James Marston Fitch Charitable Trust, Beyer Blinder Belle, 41 E. 11th St., New York, NY 10003. Tel. (212) 777-7800.

Bioclimatic House

Deadlines, registration: May 2;
Submission: October 6
This is an international competition for the design of a bioclimatic house and visitors center on the island of Tenerife. Contact Colegio de Arquitectos de Canarias, Ramble General Franco, 123-2, 38001 Santa Cruz de Tenerife, Canary Islands, Spain. Tel. (34-22) 271600. Fax (34-22) 242014.

Transportation Awards Deadline Extended

Deadline, submission: July 20
The deadline for submissions to the 1995 Design for Transportation Awards, sponsored by the National Endowment for the Arts and the DOT has been extended. Among the awards categories are architecture, historic preservation, and urban design. Contact Thomas Grooms, Federal Design Improvement, Design Program, NEA, The Nancy Hanks Center, 1100 Pennsylvania Ave., NW, Washington, DC 20506. Tel. (202) 682-5437.

Panelized Building Design

Deadline, submission: May 22
Commercial and residential buildings that use structural insulated panels may be entered in the annual Energy Efficient Panelized Building Design Competition. Contact Shari Bush, Structural Insulated Panel Assoc., 1511 K St., NW, Ste. 600, Washington, DC 20005. Tel. (202) 347-7800.

Ermanno Piano Scholarship

Deadline, application: May 31
Recent graduates of architecture school may apply for the Ermanno Piano Scholarship, which includes an invitation to conduct materials research at Renzo Piano's studio and a \$10,000 grant. Contact Renzo Piano Building Workshop, Piazza San Matteo 15, 16123 Genova, Italy.

Southern Living

Deadline, entry: May 31
The Southern Home Awards is a regional program recognizing residential design. Contact Southern Home Awards, *Southern Living*, Box 523, Birmingham, AL 35201. Tel. (800) 366-4712.

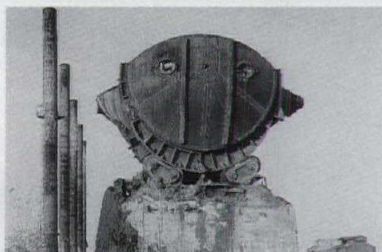
EXHIBITIONS

Two Photo Shows

Through May 7
Columbia University, New York.
"Architecture as Subject: Photographs by Cervin Robinson" (Avery Hall, 400-Level) and "A Recent View of Architecture: Photographs by Paul Warchol" (Avery, 100-Level) are on view.

Ricardo Legorreta

Through May 27
Murray Feldman Gallery, PDC, Los Angeles.
This is a retrospective exhibition of the Mexican architect's work from 1968 to the present.



Industrial Birmingham, Alabama

Through June 4
National Building Museum, Washington, DC.
HAER photographer Jet Lowe documents the history of the iron and steel industry and the current preservation efforts in "Making It in the Birmingham District." (Shown above: Stacks, mixer, and other ruins, TCI-U.S. Steel Open Hearth Steel Mill, Ensley, Jefferson County.)

Building the U.S. Capitol

Through June 24
Madison Gallery, Library of Congress, Washington, DC.
"Temple of Liberty: Building the Capitol for a New Nation" features newly commissioned models and nearly 200 original documents.

Urban Revisions

Through July 16
University Art Museum/Pacific Film Archive, University of California at Berkeley.
Projects for the public realm are on view in this traveling show (P/A, Oct. 1994, p. 41).

CONFERENCES

Tile and Stone Show

April 26-29
Miami, Florida.
Ceramic tile and stone manufacturers will show their wares at this international show and seminar. Contact ITSE '95. Tel. (800) 881-9400/ (407) 747-9400, FAX (407) 747-9466.

AIA National Convention

May 5-8
Atlanta, Georgia.
"Revisioning: Seeing Ourselves as Collaborative Leaders" is the theme of the 1995 AIA national convention and expo. Contact AIA, Convention Hotline (202) 626-7395.

Construction Specifications Seminar

May 10-11
Denver, Colorado.
"Specifications - Principles and Practices for the '90s and Beyond" will cover how to organize and prepare a project manual and how to use computers to do it. Contact CSI's Education Dept. Tel. (800) 689-2900.

International Furniture Fair

May 20-23
New York.
The seventh annual International Contemporary Furniture Fair (ICFF) includes designers and manufacturers of furniture, lighting, flooring, and textiles. Contact ICFF at (800) 272-7469.

Practice Notes

Hot Markets

The January *Marketer*, published by The Society for Marketing Professional Services, lists the fastest growing markets for design services. Hot states in the 1990s: Nevada, Idaho, Alaska, Utah, Washington, Colorado, and Arizona. Hot cities: Charlotte, Orlando, and Provo, Utah, along with Dallas, Atlanta, Washington, DC, Los Angeles, and Houston. Contact SMPS at (800) 292-7677, Fax: (703) 549-2498.

Improving Contract Documents

BSW International, Tulsa, Oklahoma, surveyed contractors about problems in contract documents. Most commonly missing, according to contractors, are details of roof tie-ins and terminations; windows systems, flashing, and closures; coordination among architectural and engineering drawings; utility information; specific finish information; and information on site conditions, soil requirements, and other job-specific problems. The survey was reported in *Chain Store Age Executive*. Contact BSW at (918) 582-8771, Fax (918) 587-3594.

Technics Notes

Glass-Fiber Insulation Dangers

The U.S. Health and Human Services Agency has put glass-fiber insulation on its list of suspected or known carcinogens. A Victor O. Schinnerer & Company newsletter on liability issues says the agency believes the public should not be alarmed if the material is handled and installed properly in a sealed area.

Beam Me Up a Beam, Scotty

In experiments aboard the space shuttle Endeavor, Master Builders, a concrete manufacturer, discovered that concrete will hydrate and harden under zero-gravity conditions. The experiment, conducted in collaboration with the University of Alabama, Huntsville, and NASA, found that concrete mixed in space appears identical to that mixed on earth. It's the perfect material for those occasional clients from another planet.

Transpired Air Heating

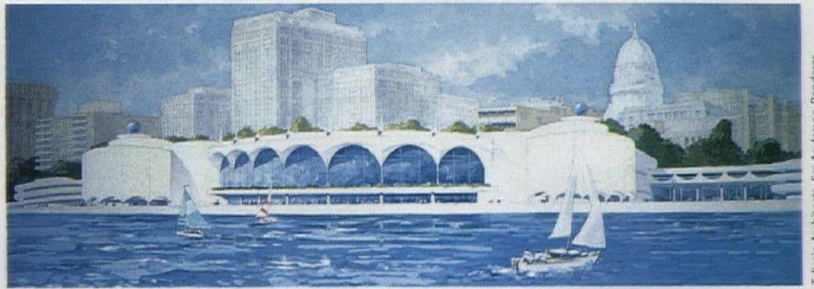
The National Renewable Energy Laboratory has developed a "transpired solar collector," made of dark-painted perforated corrugated sheet metal, that can preheat outside air to 30 degrees Centigrade higher than the ambient temperature. The air can then be drawn into a building for heating. The collector can pay for itself in reduced heating costs in three years. Call NREL at: 303-275-4363.

In the Palace of the Urbanists

The Congress for the New Urbanism, American traditionalists' vehicle for reversing Modernist influence on urban design, has entered a new phase. Peter Calthorpe, the San Francisco architect-planner known for his advocacy of "pedestrian pockets," felt the time for "show-and-tell" conferences had passed, so he organized the Congress's third conference as an outreach effort, inviting speakers not only from among likeminded planners and designers but also from among disparate environmentalists, affordable-housing advocates, community groups, and minority organizations, some of whom have seen the New Urbanism as peripheral to their concerns. The 250 participants, gathering in San Francisco for three days in February, struggled to find points of agreement that would complement the New Urbanists' emphasis on compact, walkable mixed-use communities organized around close-grained networks of streets and squares. Hank Dittmar, director of the Surface Transportation Policy Project, a nonprofit transportation reform group in Washington, D.C., chastised the Congress for meeting in the grand old Sheraton Palace, where the cost of breakfast in the magnificent Garden Court is enough to make a conventioneer's heart stop. "You really ought to think," he said, "about what kind of message you want to send." From its founding two years ago, the Congress has been an invitation-only affair, intended for members who subscribe to its principles. No doubt that has fostered unity. But among those not invited to the conference, the exclusiveness has rankled. Said one uninvited San Francisco urban designer: "There are a lot of us who have been doing this work for a long time, and Calthorpe has made some enemies by choosing whom to invite." □

Adaptable Demonstration House

A 135-year-old tavern and toll house in Gunpowder State Park north of Baltimore has been turned into a demonstration project that presents design ideas and technology capable of helping disabled people to live independently. The nonprofit Volunteers for Medical Engineering has equipped the building, known as "Future Home," with such features as adjustable tabletops and kitchen cabinets, pushbutton water temperature and flow controls, hands-free telephones, "intelligent" lighting, voice-activated controls, and a portable remote control device that allows an occupant to operate equipment throughout the house. Resident curator at Future Home is David Ward, who is quadriplegic as a result of a diving accident. Tours, available only by appointment, can be arranged by calling VME at (410) 243-7495. □

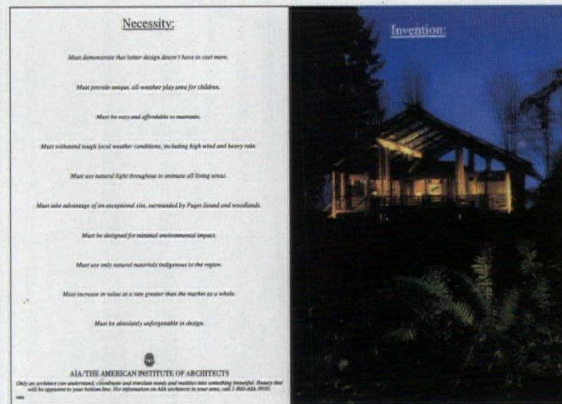


Taliesin Architects, Jim Anderson, Renderer

Resurrection of a Wright Building

Thirty-six years after his death, Frank Lloyd Wright's concept for the Monona Terrace project in Madison, Wisconsin, is under construction, brought forward by Taliesin Architects and by the government of a city that long harbored mixed feelings about Wisconsin's native son. Wright proposed Monona Terrace in 1938 as a combination of city and county government headquarters, courts, jail, auditorium, and railroad station. By 1954 it had been redefined as a civic auditorium. In its eighth version, produced by Taliesin Architects and enlarged about five per-

cent from Wright's last work, Monona Terrace is finally being built downtown on the shore of Lake Monona as a \$54-million convention center. Chief architect Anthony Puttnam says the design of the interior has changed to accommodate a 340-seat multimedia hall and a bigger and more versatile assembly hall. The exterior of the 4.4-acre complex, scheduled to open July 4, 1997, remains true to Wright's vision of "a great civic expression," with fountains, terraces, a rooftop park, and arched openings with large windows looking out on the lake. □



The concluding message: "Only an architect can understand, coordinate and translate needs and realities into something beautiful. Beauty that will be apparent to your bottom line."

Feel Better Faster With AIA Ads

AIA's national advertising campaign on the benefits of its members' services has been kicked off with two-page spreads scheduled throughout the year in *Business Week* (Elite Edition), *Forbes, Inc.*, *Governing*, and *Architectural Digest*. P/A had reported earlier concerns that this campaign might package AIA "like a soft drink" (Dec. 1994, p. 66), and AIA Board members had defended it (Feb., 1995, p. 10). The outcome in print is anything but garish. The first of these two-page ads shows a full-page view of a house in Seattle (Morgan & Lindstrom, Architects) with the heading "Invention." The facing page is headed "Necessity" and lists ten programmatic requirements that presumably shaped the house — among these,

"minimal environmental impact" and, less altruistically, an increase in value "at a rate greater than the market as a whole." All the ads will show buildings that have won national AIA awards; they will vary in scale, but most will feature work that a small or average-sized firm can handle. These two-page messages will establish islands of good taste and good intentions among the other ads in these magazines. Much too sedate to dazzle any high-powered tycoons, they may cause more susceptible members of the public to stop and think. The 800 number the AIA has dedicated to these ads is reportedly generating inquiries; whether these will justify the \$1.5-million-per-year outlay only the members can decide. □

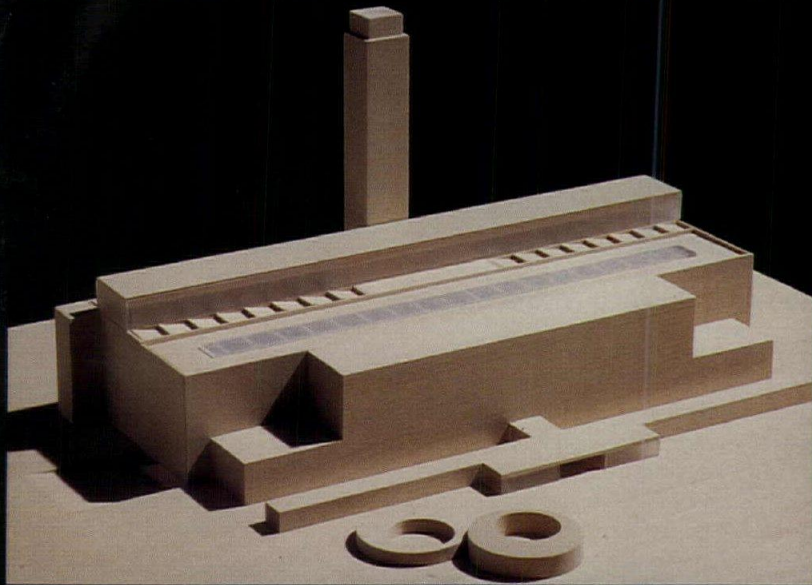
Competition for New Tate Gallery

The winners of an international competition to convert an unused power plant in London into a new Tate Gallery of Modern Art are the Swiss architects Jacques Herzog and Pierre de Meuron (P/A February 1995, p. 93). They beat out a group of tough competitors: Rem Koolhaas, Renzo Piano, Rafael Moneo, Tadao Ando, and David Chipperfield.

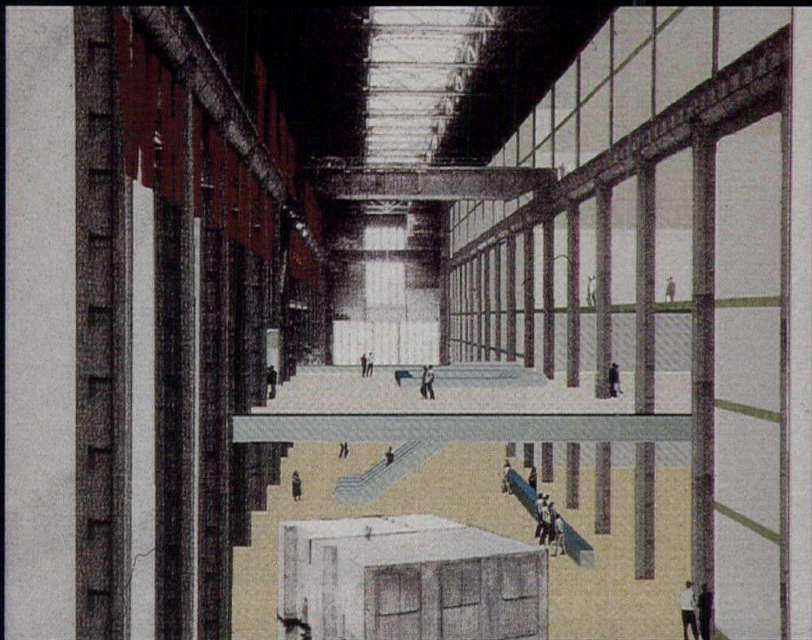
The existing Bankside Power Station, designed by Giles Gilbert Scott in 1963, consists of a large brick-clad turbine hall, with a monumental chimney, on the edge of the Thames and opposite St. Paul's Cathedral. Herzog & de Meuron suggested leaving the turbine hall and chimney untouched, with galleries inserted into the huge volume and a "light yard" at the base of the stack.

Koolhaas's scheme showed a series of levels and ramps culminating in an auditorium that projected above the cornice of the turbine hall. If Koolhaas emphasized an internal promenade through the building, Piano looked at the building's urban connections to the South Bank area as well as across the river, via an inhabited bridge, to St. Paul's. Piano proposed the insertion of a multistory entry hall reached from the bridge or from the street level; from the hall visitors would ascend to exhibition galleries and a rooftop restaurant. Views of the river and the cathedral were a prominent part of Chipperfield's scheme, which consisted of a series of gallery volumes set within the turbine hall, with ramps leading to a viewing platform above the largely glass roof. Moneo's scheme was one of the most carefully worked out, with skylighted galleries standing above a plinth of service spaces, while Ando's scheme, with its large horizontal gallery bars inserted through the turbine hall on either side of the stack, was the most daring.

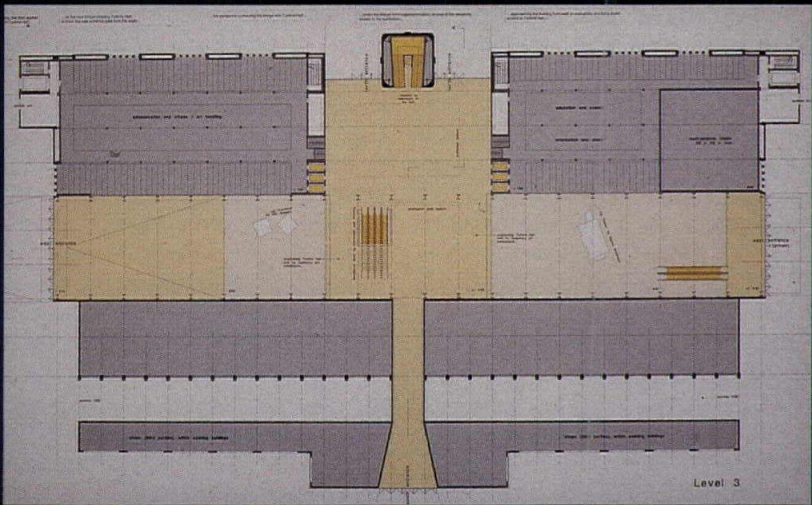
Unlike most recent competitions, this one clearly favored the firms that proposed the least specific designs and that focused, instead, on articulating a general approach. Herzog & de Meuron's design is expected to be completed by the turn of the century.



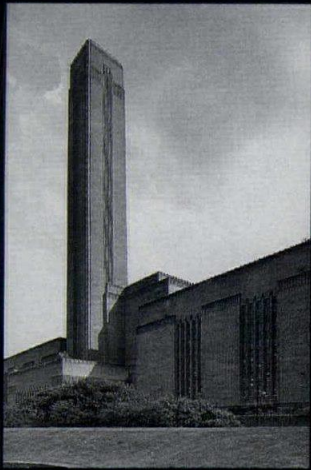
MODEL OF WINNING SCHEME BY HERZOG & de MEURON



VIEW OF TURBINE HALL, HERZOG & de MEURON



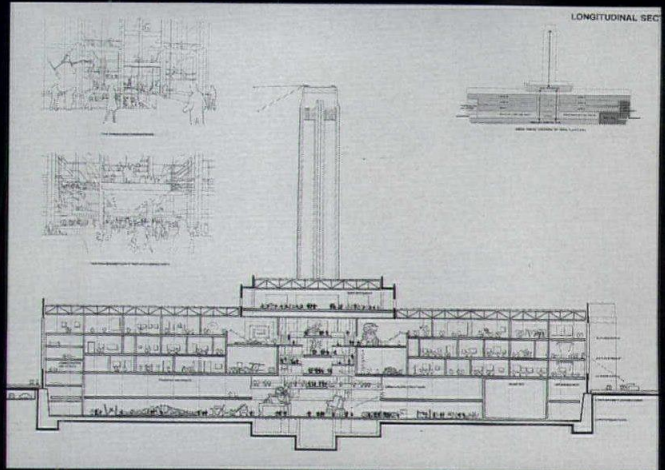
MAIN ENTRY LEVEL FLOOR PLAN, HERZOG & de MEURON



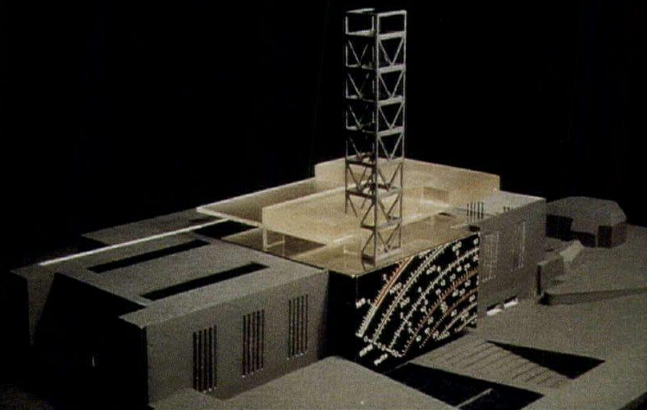
EXISTING BUILDING



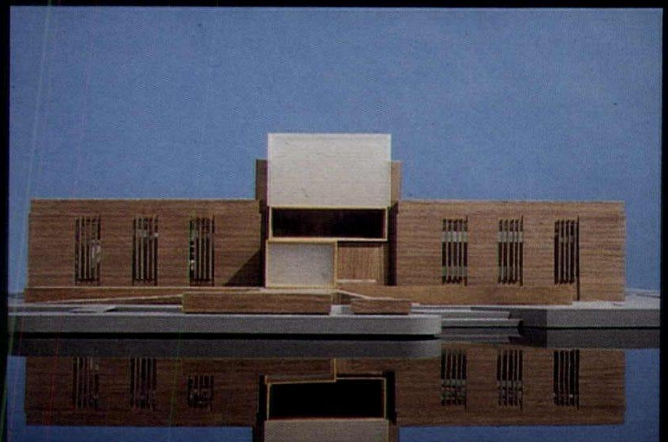
EXISTING TURBINE HALL



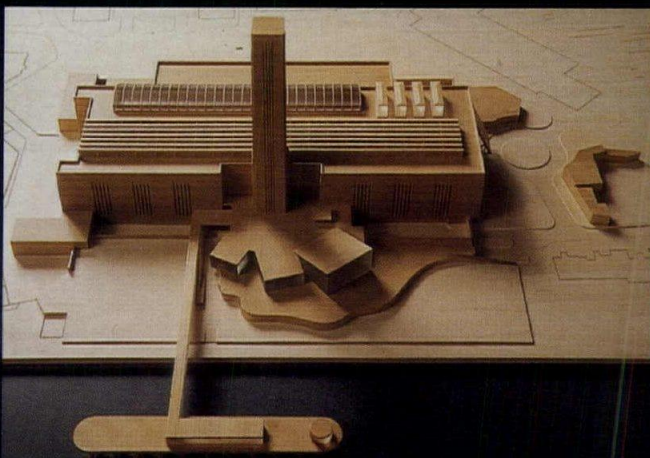
SECTIONS AND PERSPECTIVES BY RENZO PIANO BUILDING WORKSHOP



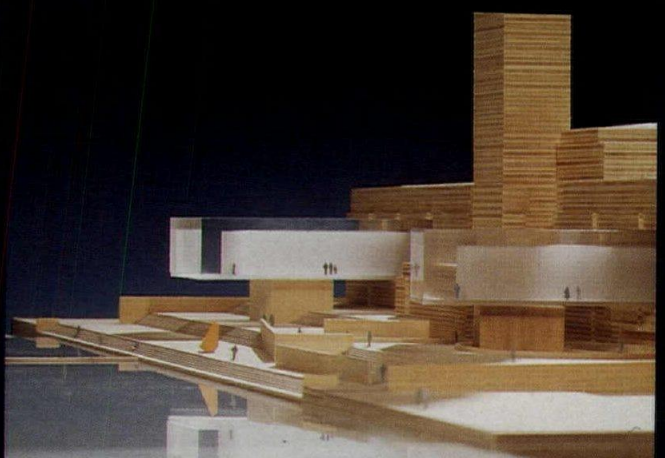
MODEL, REM KOOLHAAS AND THE OFFICE FOR METROPOLITAN ARCHITECTURE



MODEL, DAVID CHIPPERFIELD ARCHITECTS



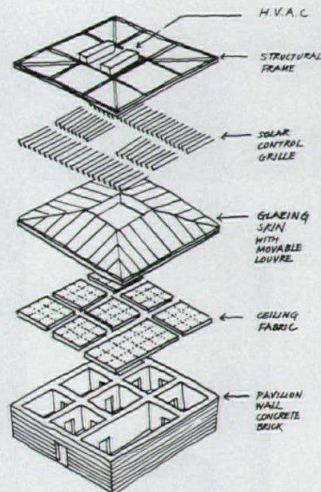
MODEL, RAFAEL MONEO



MODEL, TADAO ANDO & ASSOCIATES



Hickey-Robertson, Houston



CONCEPTUAL DRAWING OF NATURAL LIGHTING SYSTEM

New Houston Gallery by Renzo Piano

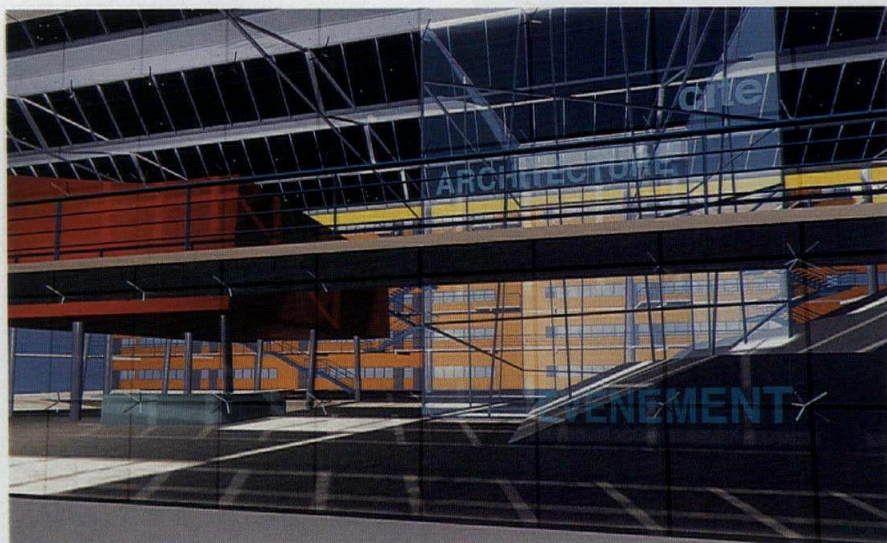
Renzo Piano has once again shown that his technologically expressive architecture can fit into sensitive contexts. On a small lot, among wood-framed houses behind the museum he designed for The Menil Collection in Houston (P/A May 1987, p. 87), Piano has designed a 9,300-square-foot gallery to house the paintings of Cy Twombly. Based on a nine-square grid, the gallery features a series of tall, naturally lighted rooms, one of which is a double

square to accommodate Twombly's larger canvases. The roof structure is a signature effort by Piano and his consultants, Ove Arup & Partners (who were aided by the Houston firms of Haynes Whaley Associates and Lockwood Andrews & Newman). It consists of a white-painted louvered steel structure that filters the light entering the glazed roof; interior fabric ceilings further diffuse the light in the galleries. In contrast, the thick masonry walls,

composed of large, warmly colored and smoothly finished concrete units, are unusual in Piano's work and unexpected in a neighborhood of clapboarded buildings. However, the effect of the light roof and massive walls, like "a butterfly alighting on a firm surface," says Piano, is to create a monumental civic presence that doesn't seem out of place, because of the familiar trellislike forms and concrete-block materials.

A New Architecture School by Tschumi

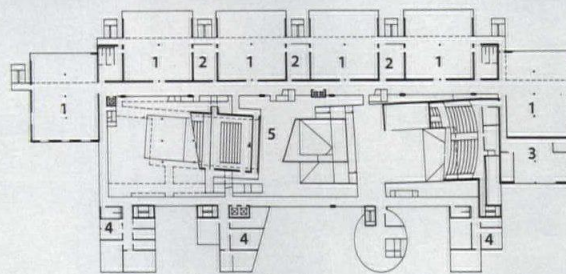
The firm of Bernard Tschumi, Dean at Columbia's School of Architecture, has won a competition to design a new 1,200-student school of architecture in Marne-la-Vallée, near Paris, and it raises important issues about architecture and education. "Conceived for the age of the modem," says Tschumi, the school is like a city, with a wall of loftlike studios and jury rooms along the north side and a series of discrete, sculptural office and administrative blocks along the south side, with a large, unprogrammed central space in between. The central space steps down along the length of the building, with amphitheatres and terraces running over and under enclosed auditoriums.



COMPUTER-GENERATED VIEW OF UNPROGRAMMED CENTRAL SPACE



COMPUTER-GENERATED AERIAL VIEW



SECOND FLOOR PLAN

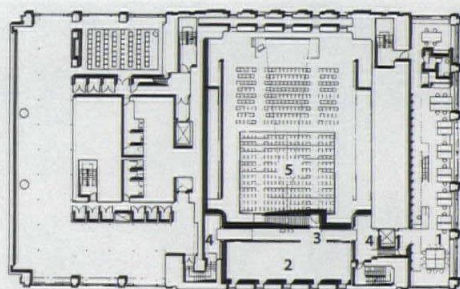
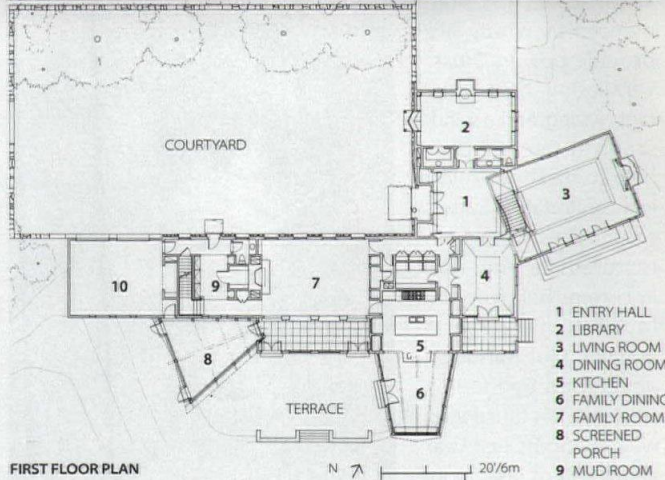
- 1 STUDIO
- 2 JURY ROOM
- 3 MODEL STUDIO
- 4 OFFICES
- 5 CENTRAL EVENTS SPACE

40/12m



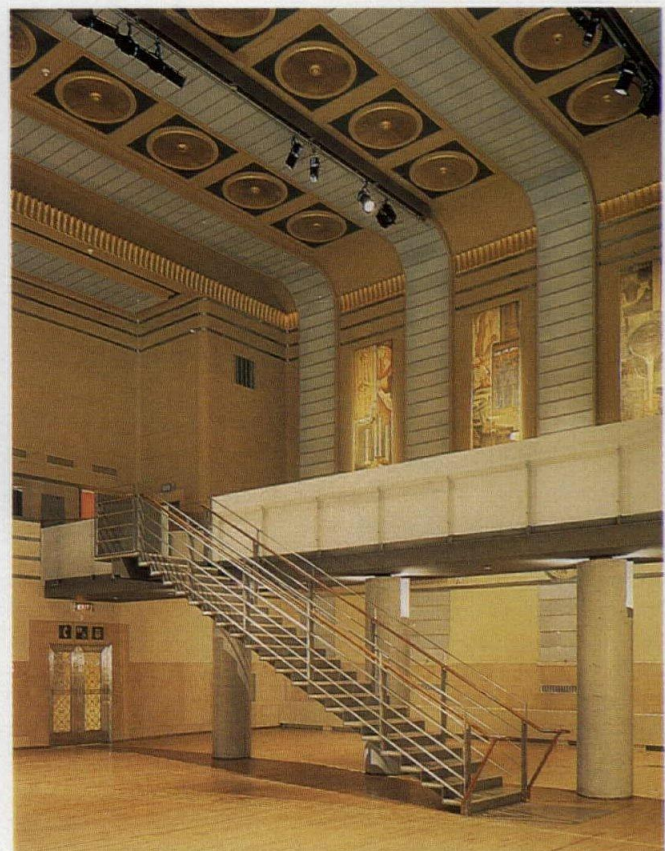
House of Concord

A house in Concord, Massachusetts, by architects Machado & Silvetti Associates of Boston is like a built diagram, but rendered into three-dimensional reality with subtly crafted local materials. It is principally an L-shaped structure wrapped around an entry court, with a distinct courtyard surface of rubble stone and natural wood; the rest of the L is clad in white-painted clapboards. Attached to the outside of the L are three ancillary volumes, variously angled, that project into the landscape. These are clearly differentiated – one formal, one domestic, one rustic – and painted correspondingly in yellow, green, and brown. Windows on the court walls have a regular rhythm, while those on the white outer walls reflect spaces within. The design flirts with being a textbook exercise, but is saved by appropriate helpings of grace and humor.



Designing a Design Center

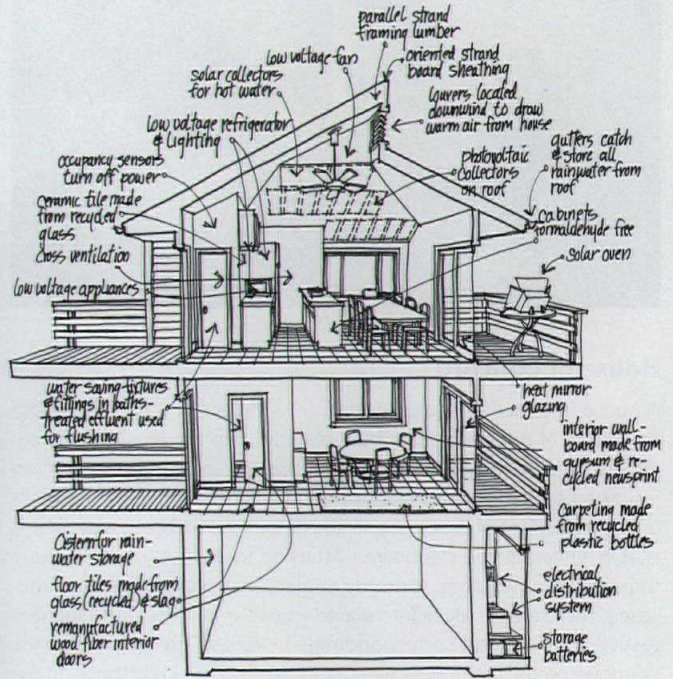
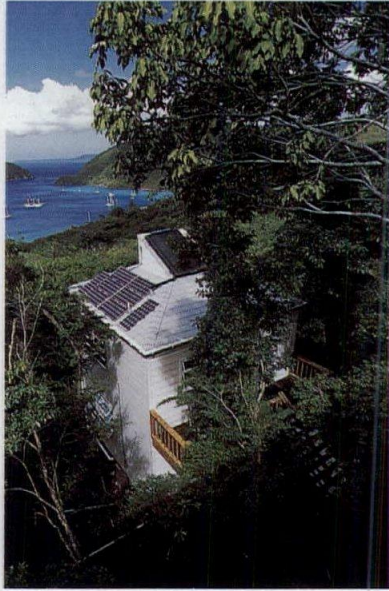
Toronto's new Design Exchange, an institution that promotes the economic and the cultural importance of design, is an appropriately restrained piece of interior architecture by Kuwabara Payne McKenna Blumberg (KPMB). The center is housed in a 40,000-square-foot space that combines the city's Art Deco stock exchange building and the first four floors of the Ernst & Young Tower, part of the expansion of Mies's Toronto Dominion Centre. The architects made strategic insertions to link old and new and to accommodate exhibition spaces, a multipurpose hall, a resource center, a shop, a members' lounge, and seminar rooms. The former trading hall, complete with restored Charles Comfort murals, is the centerpiece of the project. KPMB maintained the integrity of the two-story space, now the multipurpose hall, and inserted a finely crafted stair and a bridge, which connect the hall's existing balconies to the new resource center and to the third-floor exhibition hall in the office towers; the bridge also doubles as an upper gallery for viewing the murals.



VIEW OF TRADING HALL WITH NEW STAIR AND BRIDGE

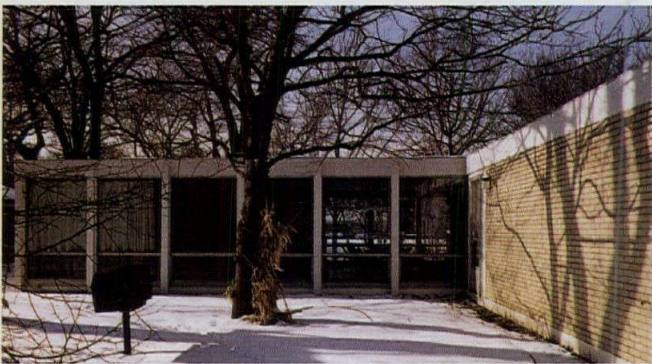
Low-Impact Vacationing

Harmony, a "sustainable resort" on St. John, U.S. Virgin Islands, was designed by James W. Hadley of Wank Adams Slavin Associates, New York, to run on solar and wind power and leave its hilly oceanfront site as undisturbed as possible. The eight two-level guest units feature floor tiles made from slag and discarded glass, carpeting made from last month's plastic bottles, and a series of other components from waste materials. Rooftop solar hot-water and photovoltaic collectors, augmented by windmills, provide power. Cross-ventilation, heat-resistant glazing, and a wind-scoop at the roof peak help to make the interiors comfortable. Gutters catch rainwater, which is stored, for later use, in cisterns built into the foundations. Reports indicate that Harmony, developed by Stanley Selengut, has functioned well during its first year and a half of operation.

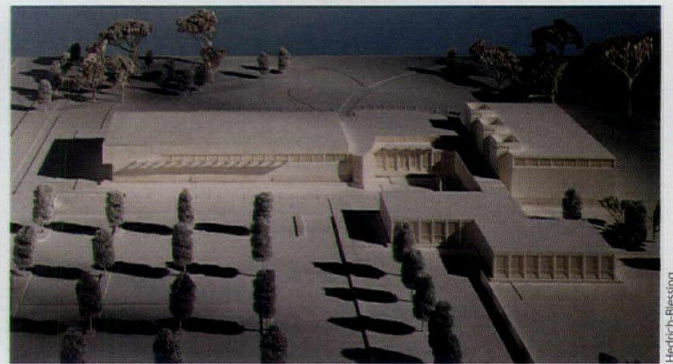


Chip Yvoni

CUTAWAY PERSPECTIVE



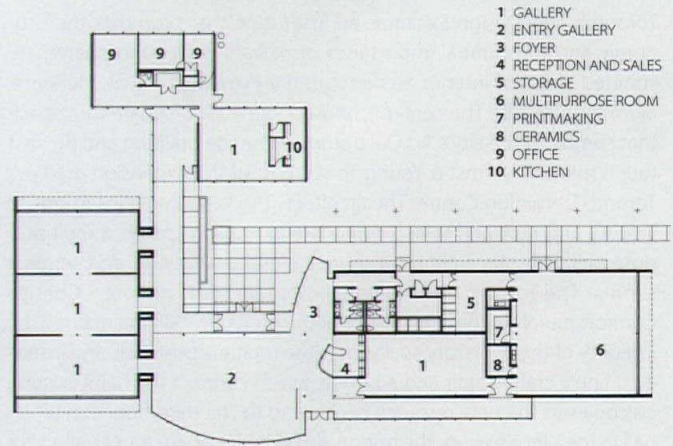
Avram Lothman



Hedrich-Blessing

A Miesian Museum

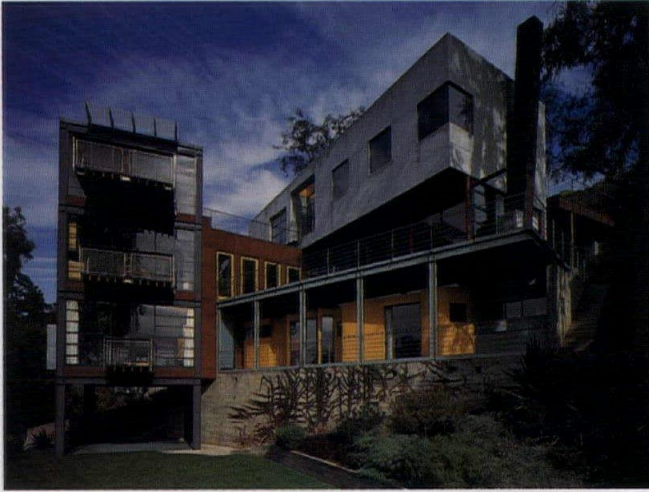
The Elmhurst Art Museum now being built in Elmhurst, Illinois, combines the Robert McCormick house, one of only three houses designed by Mies van der Rohe, and two new pavilions that DeStefano + Partners of Chicago designed in a disciplined Miesian manner. The 2,200-square-foot house, which was in danger of demolition, was moved three blocks and placed toward the rear of the site the Elmhurst Fine Arts and Civic Center Foundation had chosen for the new museum. The museum's three parts – a gallery pavilion, an education pavilion, and the house, which will be used both as an exhibit and as a program and staff area – are organized around a courtyard and are connected by a white-painted steel and glass "cloister." Because the house's welded and finished I-section structure was too expensive to reproduce for the new pavilions, the architects devised a structure of joists and built-up, bolted, plus-shaped columns recalling the Barcelona Pavilion.



GROUND FLOOR PLAN

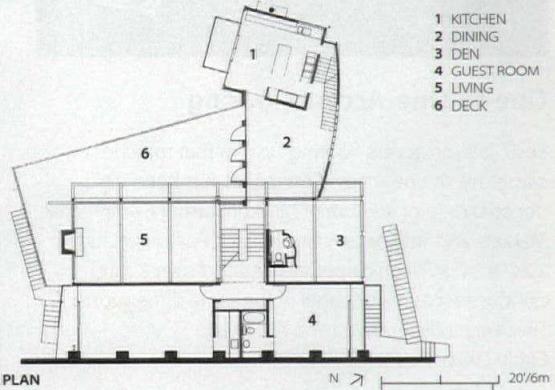
N ← 20'/6m

- 1 GALLERY
- 2 ENTRY GALLERY
- 3 FOYER
- 4 RECEPTION AND SALES
- 5 STORAGE
- 6 MULTIPURPOSE ROOM
- 7 PRINTMAKING
- 8 CERAMICS
- 9 OFFICE
- 10 KITCHEN

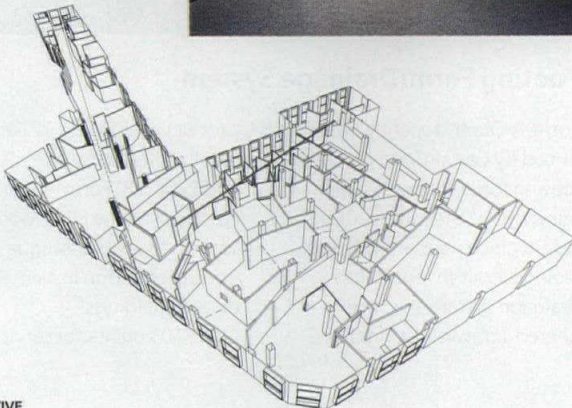


Living on the Edge

The Canyon House was designed by architects Kim Coleman and Mark Cigolle as a live-work space for themselves in Santa Monica Canyon. The house skillfully exploits its steeply sloping site and is organized as a tower, with a rigid steel frame clad in zinc-coated, diamond-shaped "dragon scales," and a block, with gray cement plaster on a bolted steel frame. The lower portion of the tower is rotated to face the ocean. The top portion of the block is positioned parallel to the street and faces the canyon. Each level of the three-story house is assigned a specific program – working, living, or sleeping. These conventionally organized spaces are connected and interrupted by "in-between places," where unprogrammed activities may take place.



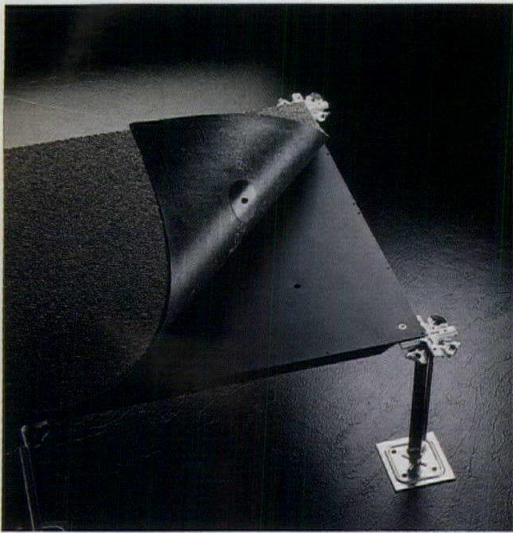
Photos: Paul Werchot



PERSPECTIVE

Nonconformist Architecture

Manhattan's Hetrick Martin Institute (HMI), a drop-in counseling center for gay and lesbian homeless youth, is run by the alternative Harvey Milk High School. In designing the 17,000-square-foot Institute on a restrictive budget of less than \$40 per square foot, New York architects Henry Smith-Miller and Laurie Hawkinson were to provide meeting and counseling spaces within the gutted shell of a loft building. With different geometries coexisting in the plan, the architects hoped to foster an image of diversity counter to institutionalism. Continuous clerestories allow visitors to encompass the HMI at a glance, affording a sense of control rather than intimidation.



One-to-One Access Flooring

PosiTile™, an access flooring system that matches one carpet tile to one access floor panel, has been introduced by a joint venture of Milliken Carpet Commercial Markets and Tate Access Floors. Each PosiTile includes a 24" x 24" Milliken carpet tile installed over a Tate ConCore access floor panel of the same dimensions. Tiles are easily removed and replaced. Circle 100 on reader service card



Practice for the Exam

Bored with plowing through all those textbooks to study for the Architectural Registration Exam? Archiflash may be the answer. Developed by architects Lisa Gilbert and Annaly Bennett, Archiflash is a set of nearly 1,200 flash cards that quiz exam candidates on material for seven sections of the exam: Pre-Design, Site Design, General Structures, Lateral Structures, Mechanical Systems, Materials & Methods, and Constuction Documents. Circle 102 on reader service card



A New Stacker

Italian architect Gianfranco Frattini has designed a new stacking chair for Kron USA. Lalanda is available in two versions: fabric or soft leather upholstery covering polyurethane foam that is bonded to a separately molded, ergonomically formed plywood

seat and back, and a thinner profile that employs heavy saddle leather applied directly to a molded fiberglass seat and back. Both versions have a two-piece, compound-curved, reinforced tubular steel frame. Circle 101 on reader service card



Footing Form/Drainage System

Form-A-Drain® recently introduced by CertainTeed combines footing formwork with a drainage system. The footing forms stay in place permanently, providing a built-in foundation drainage system. It is an engineered, lightweight, rigid PVC

product available in 12' lengths, in full dimensional sizes: 2 1/4" x 6" and 2 1/4" x 8". Form-A-Drain® conforms to the EPA's Model Standards and Techniques for Control of Radon in New Residential Buildings. Circle 103 on reader service card



Compact Fluorescent Luminaires

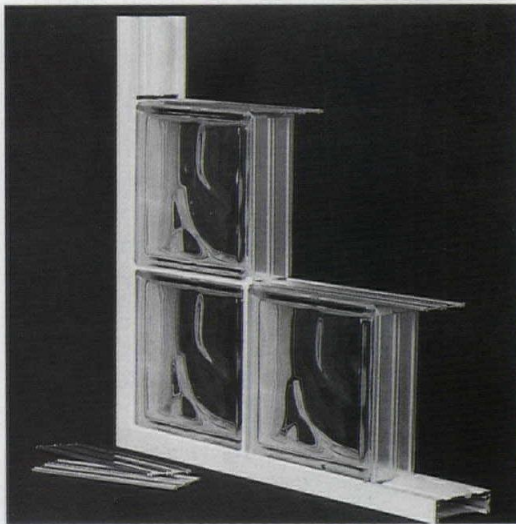
The new 4X™ wall and ceiling luminaires from Elliptipar are said to produce four times as much light per linear foot as conventional T8 fluorescent fixtures. The design incorporates the precise placement of two long twin-tube compact fluorescent lamps in the optical center of Elliptipar's high-performance asymmetric reflector. Circle 104 on reader service card



Hazel Siegel's New Textile Collection

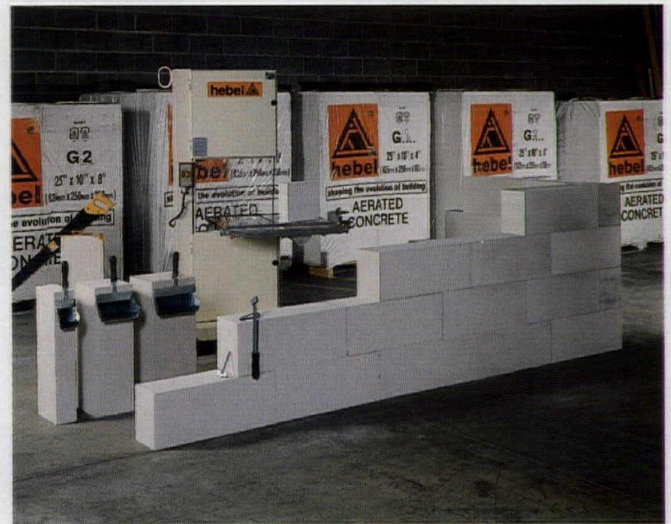
Textile designer Hazel Siegel, who directed design at Boris Kroll, DesignTex, and Knoll, has formed her own company, Textus Group. Her first collection for the new venture includes the three designs shown above. Barocco is an intricately woven cotton jacquard

upholstery fabric in a brocade construction; it is offered in 10 colorways. Beijing is also an intricate brocade construction of polyester and cotton. Empire is a 100-percent worsted wool satin stripe available in 11 colorways. Circle 105 on reader service card



Mortarless Glass Block System

Glashaus has introduced Blokup, a mortarless glass block installation system designed in Australia. Blokup is a silicone installation system that uses aluminum separators for spacing and wind load protection. Circle 106 on reader service card



"Green" Concrete

Autoclaved aerated concrete (AAC) has been used throughout the world for more than 50 years, but has only recently been made available in the U.S. by Hebel Southeast. Made by combining sand, cement, lime, and an expanding agent, the lightweight AAC blocks and panels are non-

combustible and pest-resistant, and they do not rot, rust, corrode, or warp. They can be used for exterior bearing walls and non-bearing curtain walls, basement walls, partitions, floor and roof panels, and other applications. Circle 107 on reader service card

Sustainable Design and Construction Database

The National Park Service's Sustainable Design and Construction Database is now available. It is divided into three sections: building product information (a discussion of sustainable design topics and a listing of environmentally responsible products and contact information); construction site recycling (discussion section and company listings); and resources (books, periodicals, and organizations). The database is currently available on seven 3 1/2" disks, and a CD-ROM version is being developed. Hardware requirements include IBM-format, Windows-based environment and 60MB of free hard disk space. An updated version of the database should be released next September, and eventually, the NPS hopes to get it on the Internet. Meanwhile, make out a check for \$7 (U.S. funds only) to the National Park Service and send it to Sally Small, NPS, PO Box 25287, Denver, CO 80225. FAX (303) 969-2930. E-mail: sally_small@nps.gov.

ADA Signage Booklet

Kroy Sign Systems, a manufacturer of interior signage, has developed an ADA Signage Information Booklet™. It was developed as a tool to guide architects and other specifiers of wayfinding and signage systems through the regulations of the Americans with Disabilities Act. Circle 108 on reader service card

Window Coverings Catalog

The new Sweet's catalog from Levolor® includes the manufacturer's full range of window coverings, the new DustGuard™ line of horizontal blinds among them. Specifications, key features, and detail drawings are provided for each product. Circle 109 on reader service card



"Affordable" Office Chair

The new Soho Chair from Knoll was designed by Roberto Lucci and Paolo Orlandini as an affordably priced chair for small business owners and home office workers. Among its features are a sliding seat with synchronized back tilt; tilt-tension adjustment; upright tilt-lock for fixed back support; and pneumatic seat height adjustment. Six upholstery colors are available and the chair can be ordered with or without arm rests. Circle 110 on reader service card



Mexican-Inspired Floor Tile

To be introduced at this month's International Tile & Stone Exposition in Miami, the Mission tile from Dal-Tile is designed to resemble the tiles of Northern Mexico. The glazed floor tile is available in 12" x 12" and 16" x 16" sizes in five colors (Sand Beige, Salmon, Blush Pink, Pink Salmon, and Mist Green). Circle 111 on reader service card



Natural Solid Surfacing Material

Developed as an alternative to limited or nonrenewable natural materials, Syndecrite is a solid architectural surfacing material that, like concrete, is chemically inert and does not off-gas. According to the manufacturer, Synthesis, it can incorporate 41-percent recycled or recovered materials from industry and post-consumer goods. Aggregates such as metal shavings, HDPE plastic grinds, recycled glass chips, and scrap wood chips are added. Circle 112 on reader service card

Computer Products



Fully Featured Design and Drafting Software

Project Architect, from Intergraph, provides a total solution to architects' needs, allowing the rapid creation of plans and elevations using parametric building components, the developing of construction documents with automatic dimensioning and support of relational databases, and the visualizing of the design in 3D

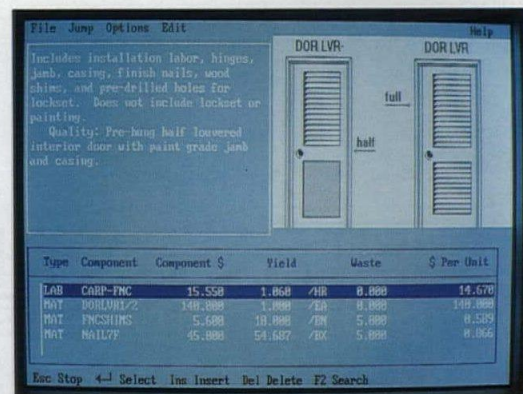
models with user-defined material colors, textures, reflectivity, and transparency. (Image is of Memorial Chapel at Fiske University, by Patrick McMillan of Barge, Waggoner, Sumner & Cannon, awarded Best of Show in Intergraph's International Graphics Users Group Art Contest.) Circle 113 on reader service



Photorealistic Rendering Software

Microstation Masterpiece™ by Bentley Systems, is photorealistic rendering and animation software that includes advanced ray tracing, radiosity, and animations. Users can quickly generate and analyze photorealistic stills or animated images during design. The software runs on most major platforms.

Circle 114 on reader service card



Estimating Software

Xactware has announced Xactimate® 5.4, cost-estimating software for new construction, remodeling, and repairs. Estimates can be prepared from two to five times faster than with other software, and the company provides disaster response centers at the scene of natural disasters to support users.

Circle 115 on reader service card

Super Fast Workstations

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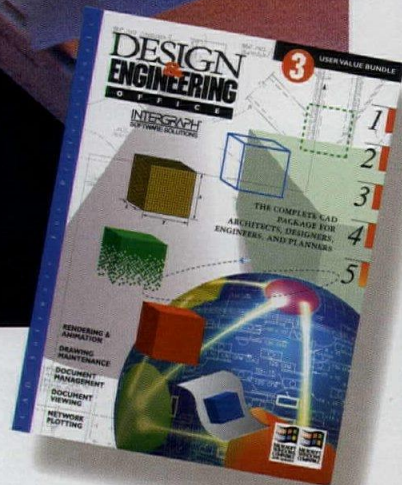
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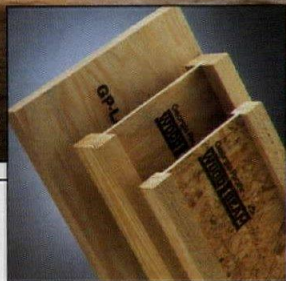
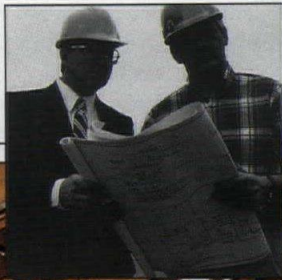


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(continued from page 8) designs; never before have taste and technique been so distinct. Never has the public been so interested in architecture; never has it been so disenchanted with architects."

James A. Gresham, FAIA, Tucson, AZ

Students' Creativity

Ziva Freiman's editorial "Reality Check" (Aug. 1994) addressed several important issues regarding the type of education that architecture students receive today. It seems, though, that the notion of trying to discipline students' creativity as a single issue avoids dealing with the real problem(s) found at the source, the schools and their philosophies toward architectural education. I would agree with Ms. Freiman's contention that there is a discrepancy between the creative freedoms given students in school and the quality of critical checks placed on the fruits of that freedom. Additionally, the widening of this gap seems to be caused, in part, by the trend in architecture schools toward a more theoretical approach to the art of building. Theory, as a component of the studio focus, does have positive implications. It forces students to think through design decisions more thoroughly, and provides an intellectual direction for their work. I

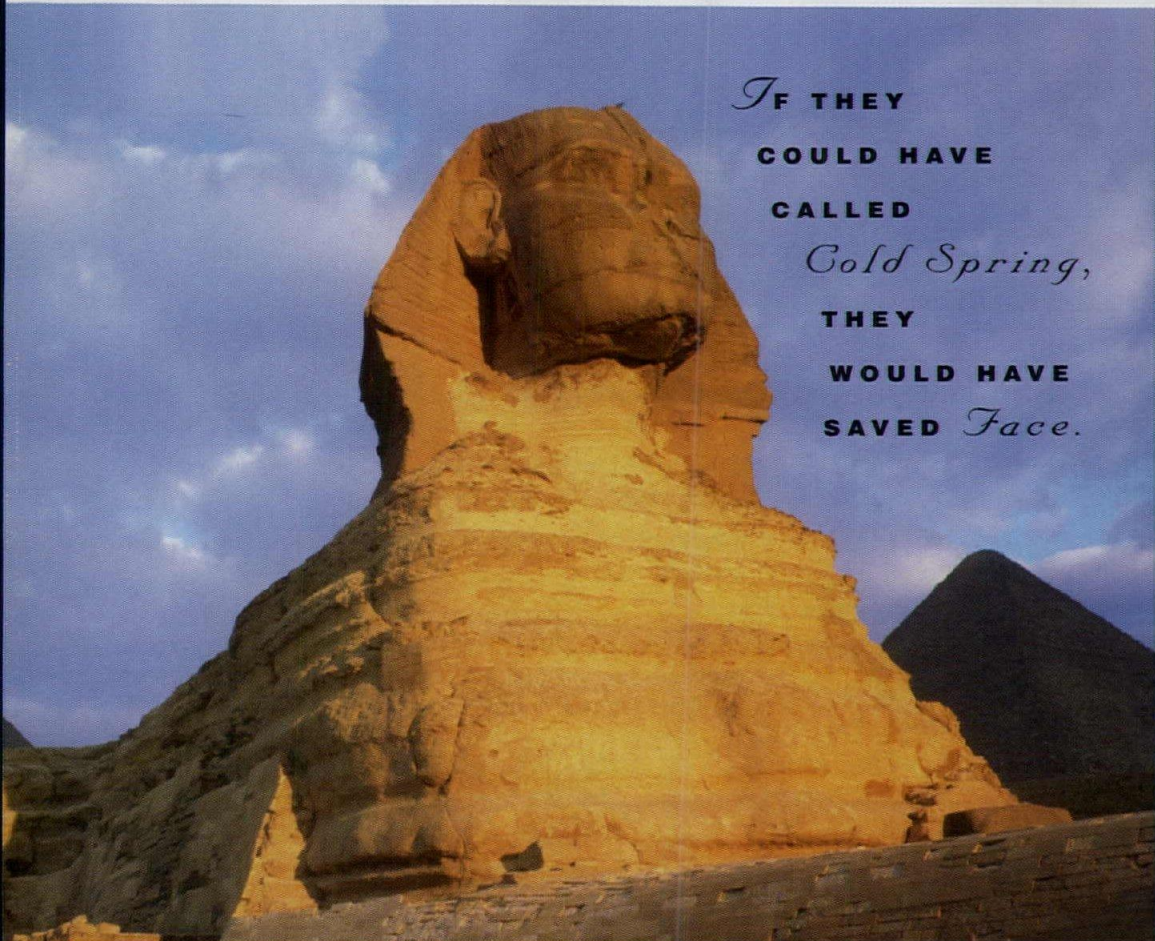
concede, though, the possible negative repercussions of adopting high theory as a school-wide theme, a practice which seems to leave students with challenged minds and a distorted view of architecture and its practice.

Perhaps, a healthier focus might be pursuing the idea of architecture as a craft rather than an art (at least the kind of art that one would associate with a museum). A passion for details and the pursuit of craftsmanship have been the hallmark of great architects throughout history. Unfortunately, that sentiment seems to have lost its fervor in recent years – a fact that may explain some of the deficiencies within many buildings designed and constructed today. The realities of budget and timetable should be used as checks and balances to insure construction efficiency, not as a series of rationalizations and excuses that justify poor design.

In addition to the possible over-application of theory recently, I believe that many school curriculums also concentrate too heavily on strictly architectural and directly related subjects at the expense of other important areas. I realize that in most cases, certainly where I attended school, the architecture school curriculum is nearly overloaded with the necessary requirements, allowing little if any

room for expansion. This problem should not be ignored, though, simply because an expedient solution does not present itself within the confines of the current system. Perhaps such a problem might, instead, challenge schools to reevaluate their existing systems (a challenge that at least a few are already undertaking).

The lack of such an educational approach today is evident in the understanding of another common problem as well. One complaint often voiced in discussions over schools is the endless mantra regarding the travails of the jury system. Is it too intense? Is it not critical enough? Who knows? The answers to these questions vary from school to school, but most do share one common deficiency: that of communication. It was my experience that regardless of the quality of the criticism being given, most students lacked the verbal skills and confidence in their work to engage in a productive discussion of the merits of their designs. Generally, students would give an understated and misdirected explanation of their work, followed by varying levels of criticism, some constructive, some more belligerent. Either way, most students would then respond, in turn, with a (continued on page 34)



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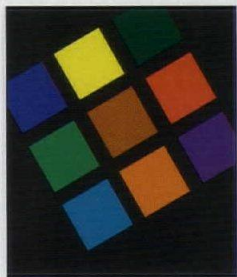
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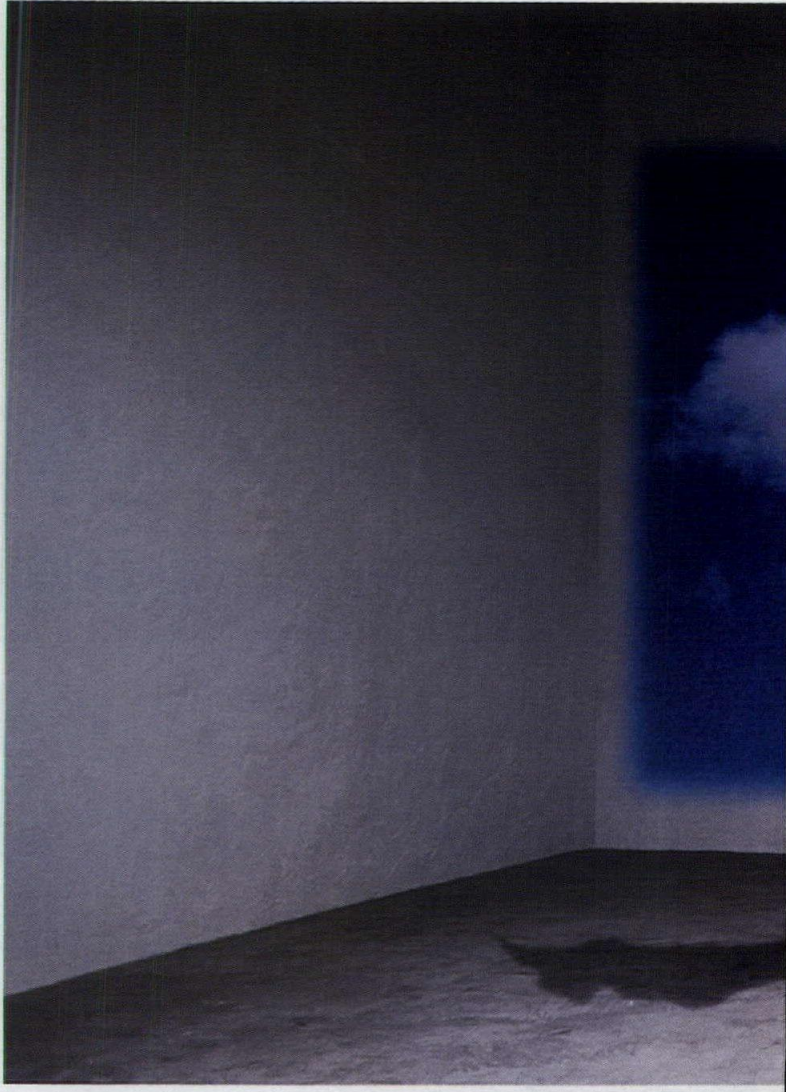
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(continued from page 30) chorus of conciliatory and retractive statements in an attempt to retool their explanation to the jurors' tastes.

The notion of the liberal education of architects is not a new one, I admit, but worth restating. It surprises me that schools can justify depriving architecture students of many core liberal arts requirements, such as Western Civilization and foreign language, while expecting them to be prepared not only to enter the world of nonacademic life, but also to bear the burden of playing a major role in the shaping of our physical environment. Whether it is learning history, French, English, or public speaking, architects need a broader scope of knowledge than virtually

any other specialized field. Correspondingly, it would seem reasonable that a university setting would be the most logical place to initiate this life-long learning process.

Architects, as professionals, play many different roles within the context of any firm. To be successful, architects must, to a certain extent, act as designers, administrators, facilitators, and mediators, as well as teachers. To handle this role, architects must have a greater understanding of how they relate to, and are perceived by, those with whom they have professional contact. Such an understanding requires both education and an open mind.

Jon Taylor, Kansas City, Missouri

CORRECTIONS

Penn Deanship

Regarding the resignation of Patricia Conway from the deanship of the University of Pennsylvania Graduate School of Fine Arts (Dec. 1994, p. 11), P/A has been informed that there was no procedure of voting "no confidence" at Penn. Charges by two City Planning faculty members that Conway had attempted to close that department were rejected by Penn's Faculty Senate Committee on Academic Freedom and Responsibility in a lengthy opinion handed down May 24, 1994. Shortly thereafter Conway tendered resignation of the deanship, but did not step down until mid-October, when Malcolm Campbell, Professor of the History of Art in Penn's School of Arts and Sciences took over as Interim Dean. Conway remains at Penn as a tenured professor of architecture.

Model Photographer

Peter Xiques of Mill Valley, California, should have been credited as the model photographer for the National Museum of Marine Biology and Aquarium, Taiwan (P/A, Jan. 1995, p. 28) and for the Federal Building and U.S. Courthouse, Santa Ana, CA (P/A, Feb. 1995, p. 59).

Sunrise Place Architects

Dauids-Killory were the architects for Sunrise Place (P/A, May, 1994, p. 49), Escondido, CA, winner of a 1995 AIA Honor Award (P/A Feb. 1995, p. 41). Studio E, San Diego, were the associate architects.

P/A Award Winner

In our credits for Mill Road House (P/A, Jan. 1995, p. 61) we inadvertently misspelled the name of Rusty Walker, member of the model-making team. Special thanks should have been extended to Erik Egbertson and Dana Manoliu; Nader Tehrani, principal of the winning firm, Office dA, should also have been listed as Design Critic at the Rhode Island School of Design (Firm Profiles, p. 112).

Rock and Roll Hall of Fame Credit

Craig Rhodes was Senior Associate at Pei Cobb Freed for the Rock and Roll Hall of Fame from 1984 to 1991 (P/A, Feb. 1995, pp. 62-71).

House from Theater Photographer

Alice O'Brien should have been credited as the photographer of architect Gary Glenn's conversion of a former theater in St. Louis. (P/A, Feb. 1995, p. 39).

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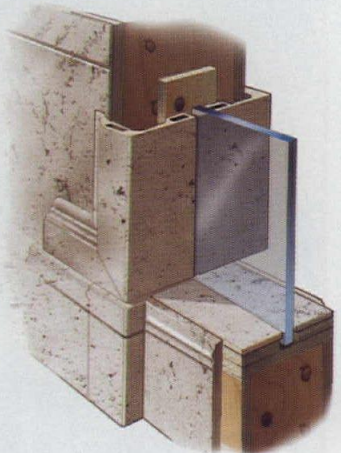
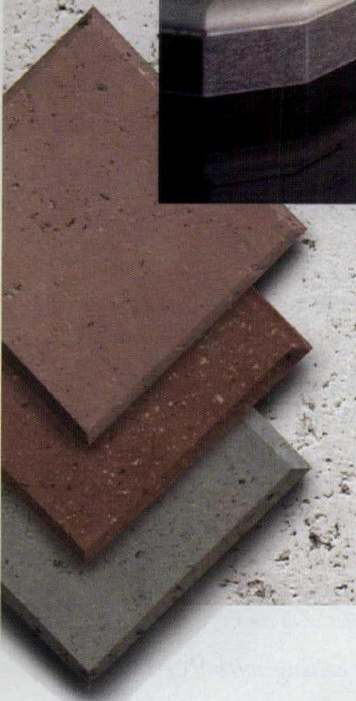
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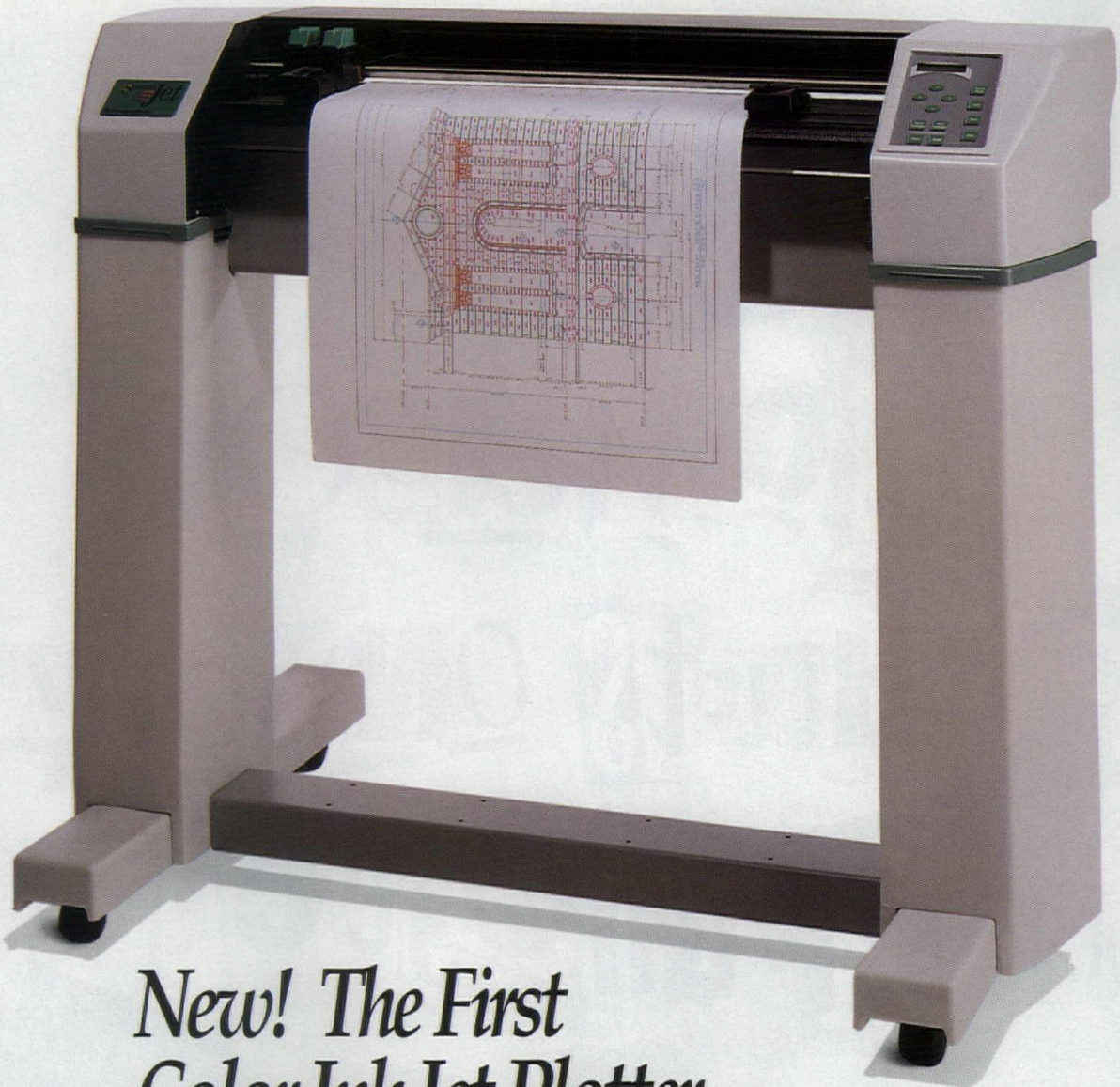
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They All Fall Down

In Chicago even a Mies van der Rohe design isn't enough to stop the wrecking ball. by Cheryl Kent



Lohan Associates Archive



John Vinci

Mies van der Rohe's Arts Club interior (left) is being razed along with the Michigan Avenue buildings shown above.

Chicago is obliterating another piece of its history. Two handsome Neo-Classical buildings at 612 and 620 North Michigan Avenue – and inside one of them, a Mies van der Rohe interior containing perhaps the architect's most ethereal stair – are being demolished for yet another retail complex. The structures going down are among the few remaining Michigan Avenue buildings from the 1920s, when this famous Chicago corridor was merely a wonderful boulevard and not yet one of the most powerful shopping streets in the world, with 2.6 million square feet of retail space.

The loss stings all the more because the architect hired to put a retail and nine-theater movie complex on the site is none other than New York's Beyer Blinder Belle, winner of the AIA's firm-of-the-year award for its preservation of historically significant buildings. Before demolition started in February, several of Chicago's most prominent architects – Thomas Beeby, George Larson, Adrian Smith, Stanley Tigerman, and John Vinci – mobilized to present an alternative, suggesting that the developer, the John Buck Company of Chicago, could accommodate its program while losing neither the Michigan Avenue buildings nor the Mies-designed Arts Club. The five architects proposed preserving the buildings – the Michigan-Ohio Building (1925) by Alfred S. Alschuler and the Erskine Danforth Building (1927) by Philip B. Maher – and razing everything else on the block, after which a new structure would be butted up behind them. The Arts Club interior would still have

to be dismantled because part of it sits inside another, more humdrum building that is being razed. But, the five said, the Arts Club interior could be reassembled in the new building. Their highly schematic design, created in a five-hour charrette, was presented in a public forum attended by, among others, John Beyer, principal in charge of the project. Beyer feels acutely the irony of his position. "No one is more sympathetic to preservation than I am," he says. But his brief was to design a new building, he says, and "It is unrealistic to expect developers to unilaterally protect a building."

The 1920s structures were not buildings of the first order, but their importance increased as representatives of their period on Michigan Avenue became rarer. They demonstrated the gentler urbanism that once held sway here. As elements in a composition, they were tough to match. The Danforth building turned the corner gracefully and used arched windows that fit agreeably with those of the building across the street. The overscaled retail-mall-office-hotel-residence-cinema behemoths that have come to Michigan Avenue since 1969 know nothing about this kind of contextualism, which followed consistent rhythms in fenestration, paid attention to human scale, and relied on unflashy materials like limestone and brick.

A Rare Example of Mies

The Arts Club is in a category of its own. Do we have so much of Mies's work that we can afford to discard this? Joseph Gonzalez, a

Skidmore, Owings & Merrill principal who is a board member of the city's Commission on Chicago Landmarks, says the Arts Club is not Mies's best work, and he voted against even considering it for landmark designation. But whether it is the "best" is beside the point. The Arts Club is the only example anywhere of an interior commissioned exclusively as such of Mies. And it is very good. Chicago's landmark ordinance, for sound reasons, does not require a building to be the best of its type in order to win designation.

Both San Francisco and Boston rank buildings' historic importance. Those with the highest ranking cannot be touched, and those with lesser rankings require reviews. In these systems, it is possible to deal with subtleties like relative values within the urban context and to contrast the existing conditions against what's proposed. Chicago should adopt a similar system, and it should permit designation of interiors. Beyond this, it is absolutely critical that a plan be developed that would help preserve what is left of Michigan Avenue's fast-disappearing character. Such a plan should identify buildings to be protected. Though the fate of 612 and 620 North Michigan and the Arts Club interior has been foreclosed, other buildings, including the McGraw-Hill Building, an Art Deco structure now in danger, might yet be saved.

Smith and preservation architect Vinci say their charrette does not represent the beginning of a new activist movement among architects. Let's hope they're wrong and that this latest loss can be turned to some good. □

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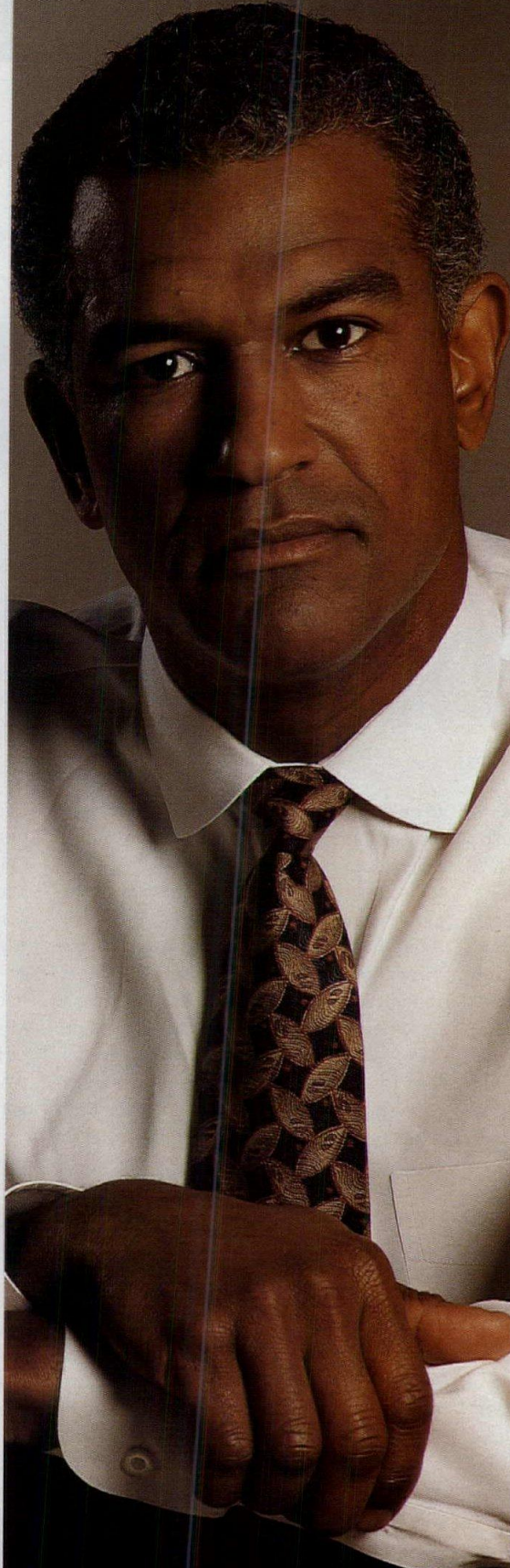
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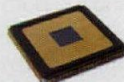
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Walter Betancourt's Quiet Revolution

It is remarkable that one of a country's most talented architects in the 1960s and 1970s could go practically unnoticed. Yet that was the fate of Cuba's Walter Betancourt. *by John A. Loomis*

Velasco is a provincial Cuban village of one-story frame buildings, a place so rough in appearance that it recalls the Wild West of the United States. People get around on horseback, kicking up clouds of dust as they traverse their rudimentary surroundings. When the dust settles, however, something fantastic stands revealed: a structure of brick and terracotta, looming like a castle above its modest neighbors. This elaborate building, animated by Gaudí-like forms, comes as a complete surprise in such a humble setting. It is one of Cuba's most remarkable, though little-known, works of architecture, the Cultural Center of Velasco, designed by a remarkable but little-known Cuban architect – Walter Betancourt.

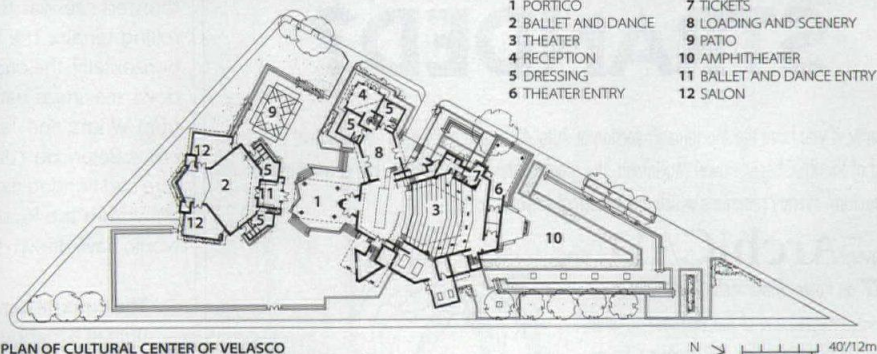
Betancourt's life reversed the usual saga of immigrants moving to the U.S. and becoming Americanized. Born in 1932 in New York to parents of Cuban descent, Betancourt was a man resolved to return to the land of his grandparents. He grew up in relative comfort in the U.S. and studied architecture at the University of Virginia, graduating in 1956. After a brief tour of duty in the U.S. Navy (stationed, ironically, at Guantanamo), he moved to Los Angeles with his young wife, Leonor Fernández. There he worked for Richard Neutra and later for John Lautner, as the Cuban revolution was brewing. Like many politically progressive North Americans, Betancourt felt sympathetic to the rebels, and his Cuban ancestry prodded him further. After turning down an offer from Frank Lloyd Wright to work at Taliesin and then touring the world on freighters and the like, he entered Cuba clandestinely via Mexico, carrying a knapsack with his drafting tools and a change of clothes. He offered his services to the young revolution.

The early years of the Cuban Revolution were times of utopian euphoria and unbridled idealism, when all seemed possible and experimentation was encouraged. Architecture was subject to intense debate. One side rejected the Modern Movement and sought an alternative architecture based on Cuba's unique ecology and its multicultural heritage. That side

John A. Loomis is a Loeb Fellow at the Harvard Graduate School of Design, on leave from the architecture faculty of City College of New York.



John A. Loomis



PLAN OF CULTURAL CENTER OF VELASCO

Betancourt's Cultural Center of Velasco, looking toward reception and dressing areas (photo). Plan reconstructed by Gilberto Seguí Divinó and Alex Brito.

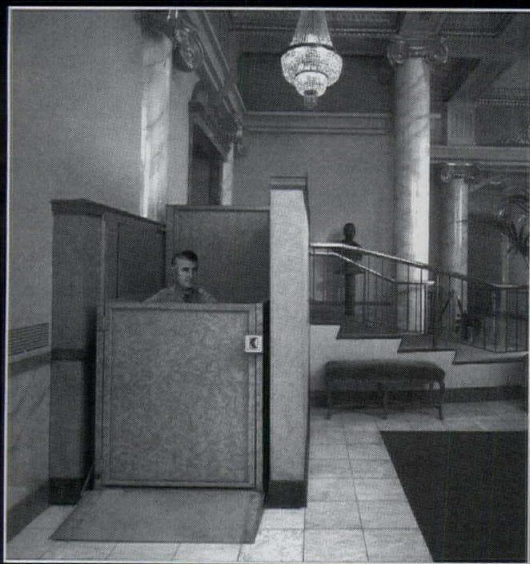
did not prevail against the rationalist position, which advocated prefabrication, industrialized and modular solutions. Betancourt's free spirit, nourished on Wrightian individualism, would not accommodate the approaching centralization and codification of the production of architecture. Consequently, with his wife, who had joined him, Betancourt moved to the country's eastern provinces, eventually settling in Santiago de Cuba. There, far from Havana, bureaucratic epicenter of the Revolution, he would find more latitude to explore and develop his own revolution: organic architecture. By the time of his unexpected death on his birthday in 1978, at the age of 46,

he realized 15 built works and 30 unbuilt projects, an outstanding achievement, considering the economic and administrative constraints under which he had to operate. Of these works, the two most significant are the Forestry Research Station near Guisa and the Cultural Center of Velasco.

Forestry Research Station

High above the village of Guisa, the mountainsides of the Sierra Maestra are a dense carpet of green, broken at one stretch by an undulating mass of terra cotta. These earth-red organic forms, seemingly as much a part of the landscape as the moun- (continued on page 42)

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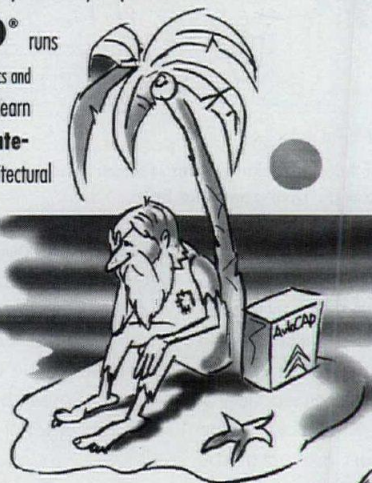
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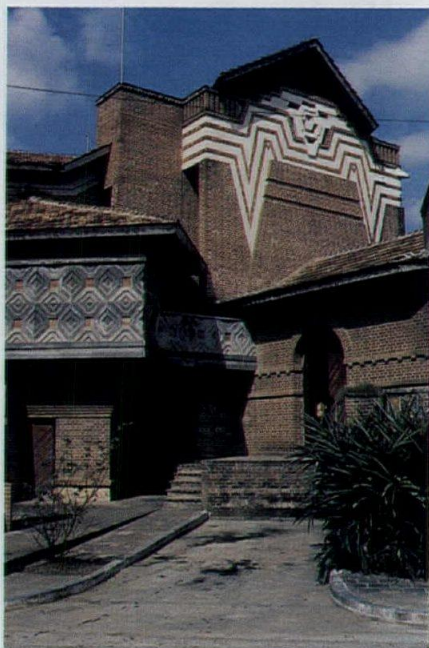
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Betancourt (continued from page 41)



Formal and decorative exuberance are characteristic of the Cultural Center of Velasco, built from 1964 to 1991. This view is toward the theater.

John A. Loomis

tains and trees, reveal themselves to be the roofs, walls, and patios of the Forestry Research Station of Guisa. In 1970 the Food and Agriculture Organization of the UN furnished Cuba a grant to build a forestry laboratory in the Sierra Maestra, and Betancourt had the good fortune to be named its architect. Given the nature of the program, he wanted the project to be respectful of the environment. Not one tree on the thickly forested site was felled, nor was there any cutting and filling of the rolling terrain. The building moves with the land both vertically and horizontally; the orientation of the rooms and the locations of the windows maximize natural ventilation. The complex borrows stylistically from Wright and Taliesin and also shares their comprehensive design ethos: Betancourt designed and oversaw the production of all the furniture and lighting fixtures. Yet the buildings themselves also honor and draw from the local vernacular, the mountain *bohío*, a reference that would have drawn criticism in Havana as a romantic indulgence.

The Cultural Center of Velasco

Built in a manner that is uniquely Betancourt's, the Cultural Center of Velasco consumed much of the architect's life. It began in 1964 and was completed in 1991, 13 years after his own death, thanks to the perseverance of his associate Gilberto Seguí Divinó and the organizational skills of Félix Varona Sicilia, theater director and initiator of the project. Part Joseph Papp, part Don Quixote, Varona passionately believed in the importance of bringing the theater arts to the people and he conceived the impossible dream of creating a major cultural center in his provincial village of 8,000 inhabitants. He found in Betancourt another Quixote, and together they realized the project despite numerous obstacles – financial, bureaucratic, and material.

Another collaborator crucial to the realization of Velasco was a mason, Nicasío Santana. Born in the Canary Islands, he had come to Cuba before the Revolution, having deserted the Spanish army after refusing to serve in colonial Spanish Morocco. Another mason in the Spanish tradition with a command of both the construction aspects and the decorative art of the brick, he had great influence over not only the detailing but also the design of the Cultural Center.

(continued on page 44)

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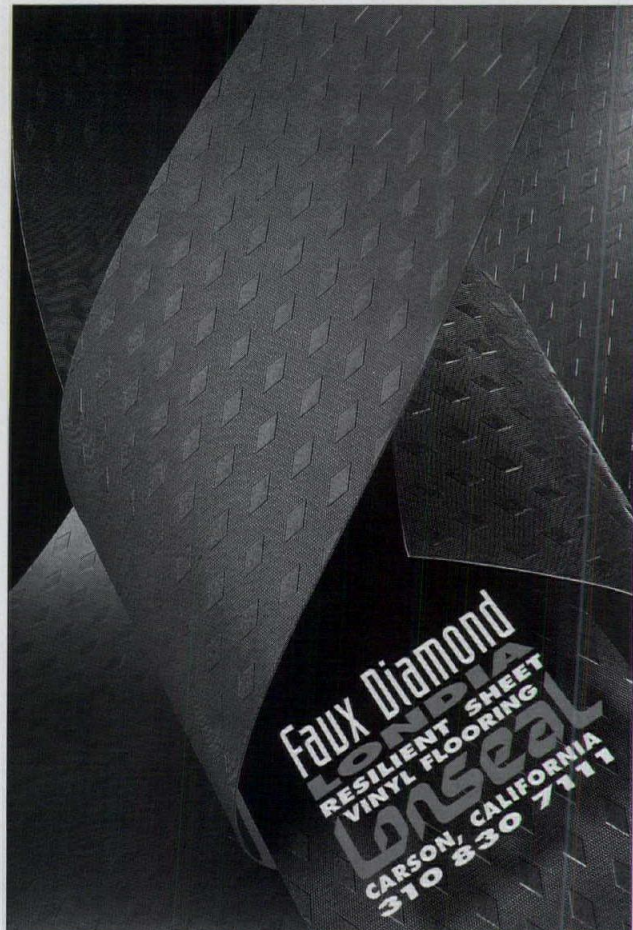
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Reports

Betancourt (continued from page 42)



Ballet and dance quarters stand at a corner of the Cultural Center of Velasco, joined to the rest of the complex by an entry portico.

The Cultural Center of Velasco rises above the town at the convergence of two main roads. It is dominated by the form of its theater. At Varona's suggestion, it was modeled after Elizabethan theater, which he felt was the perfect paradigm for popular theater. Attendant functions are accommodated in expressive structures attached to the body of the theater. A covered portico links it to a dance performance space; both buildings are flanked by outdoor performance areas. The colliding orthogonal and hexagonal geometries create a many-faceted composition. The robust massing of the brick forms is matched by the eclectic details. Redolent of both Gaudí and Wright, exhibiting much pure invention, the Cultural Center of Velasco is a unique work beloved by its community.

A Charismatic Personality

Betancourt's architectural independence reflected his personality. Described by friends and colleagues as "larger than life," a mix of Jack Kerouac and Ché Guevara, Betancourt was a genius at getting his way, whether it required conning bureaucrats or inspiring construction workers. Wedded to his vibrant personality was a modest, almost monastic disposition. Betancourt was deeply devoted to the craft of architecture, and he worked incessantly. He was idealistic, a communist (even though he never joined the party) who renounced his privileges as a foreign resident, preferring to live as simply as any Cuban laborer, hitchhiking instead of driving a car and often sleeping on the ground at a construction site. He never sought commissions through the normal channels of the Ministry of Construction.

It is left to a younger generation, engaged in its own search for an architecture relevant to Cuban culture, to discover Betancourt. To some of this younger generation, who exhibited his work at the Fourth Havana Bienal in 1991, he has become a symbol of an alternative architecture for Cuba, an architecture that addresses more than just the social and functional needs of the Cuban people. For Betancourt demonstrated, against all odds, how the country's multi-cultural heritage and its ecological environment might become the basis for a meaningful architecture. □

Research was supported by the CUNY-Caribbean Exchange Program of Hunter College, the Asociación Hermanos Saiz of the Cuban Ministry of Culture, and the Union Juventud Comunista de Cuba. The author is indebted to assistance from Gilberto Seguí Divinó, Rosendo Mesías, and Eduardo Luis Rodríguez.

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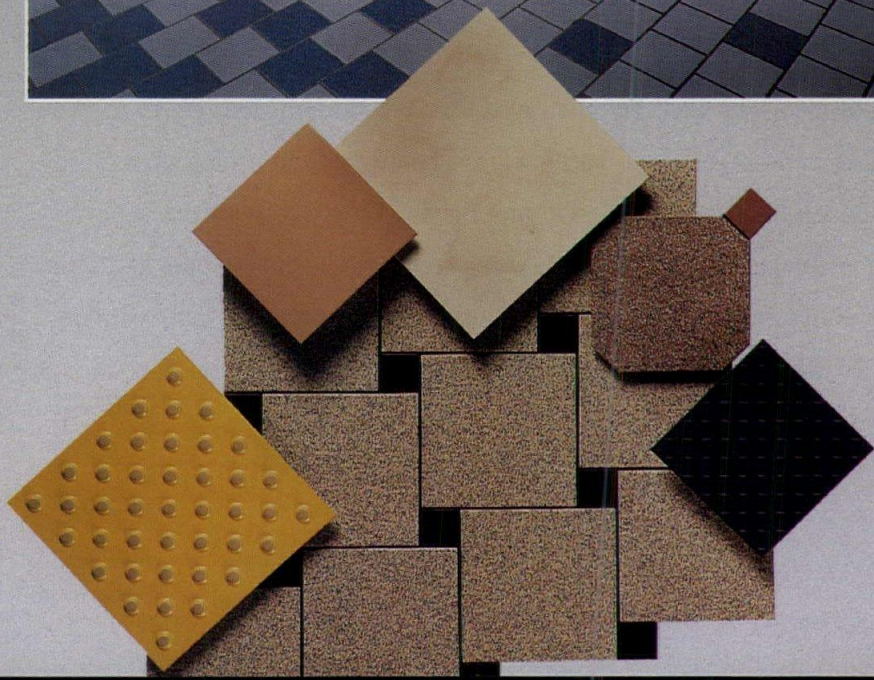
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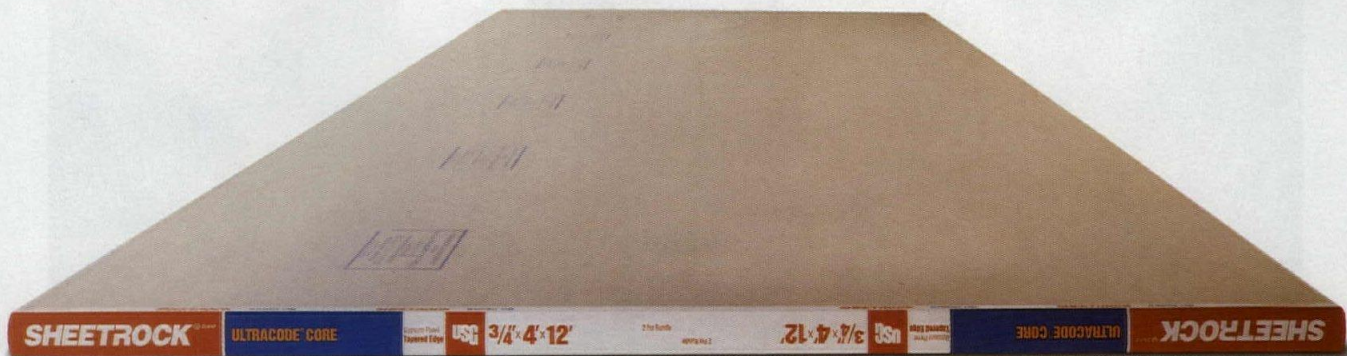
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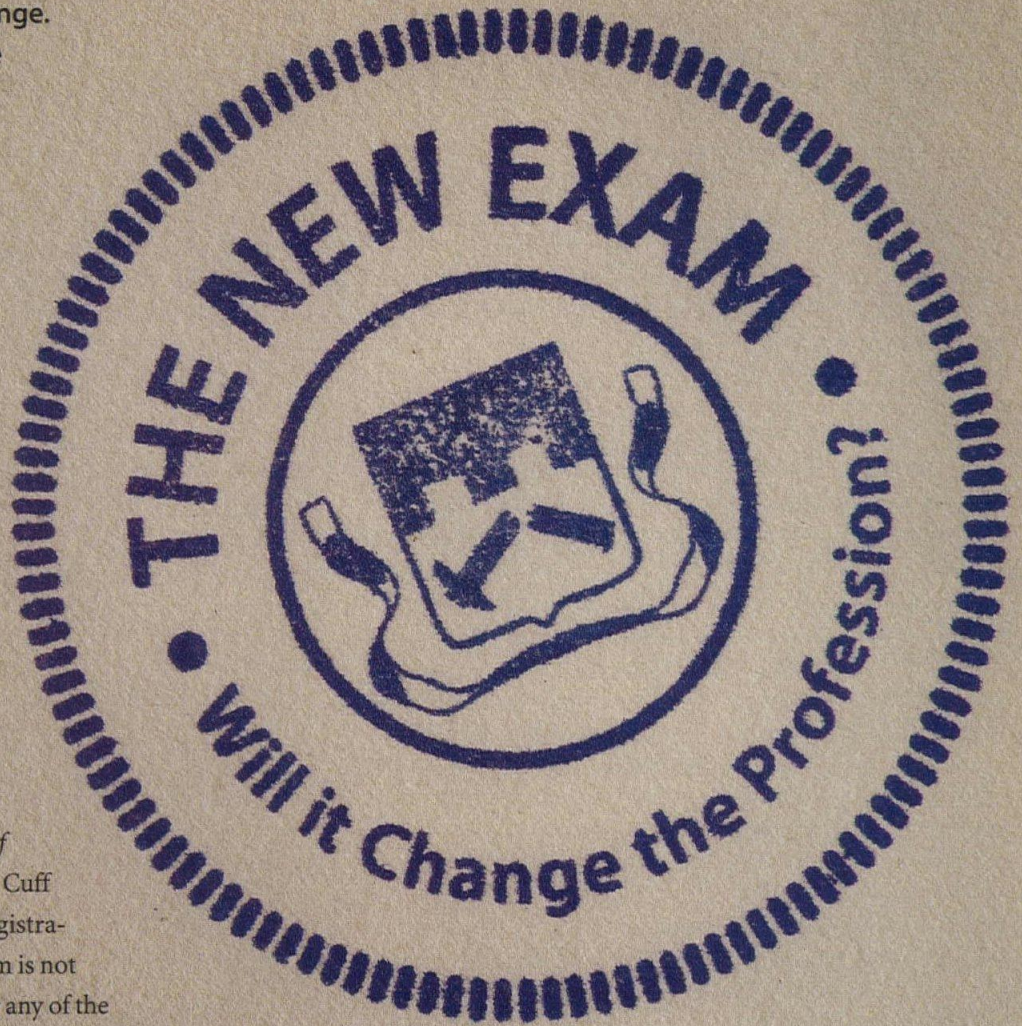
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Architecture's "rite of passage" is undergoing radical change. What does it mean for the profession, and will it challenge the concept of what we need to know as architects?
by Michael J. Crosbie



In her book on the profession, *Architecture: The Story of Practice*, social scientist Dana Cuff appraised the architectural registration exam this way: "The exam is not about design ability, talent, or any of the other mysterious architectural qualities; it is about competence. A brilliant designer will not pass without technical knowledge of construction conventions, graphic standards, and building codes about fire safety, accessibility, and energy." Cuff hit upon the exam's most incredible quality. For most of us, the exam, written by the National Council of Architectural Registration Boards, is the great leveler. It can bring low the exalted designers we knew in school, and raise high those who rarely drew praise in studio.

But the exam is changing. The grueling, macho rite of passage is about to become a thing of the past. While the standards for being admitted to the exam are getting tougher, the new exam and how it will be administered appear to be getting easier and less threatening. Will these changes alter our conception of a registered architect?

Who Can Take the Exam?

Qualifications to sit for the exam vary among the 55 registration boards that belong to NCARB (the 50 states, plus Washington, D.C., Guam, the Northern Mariana Islands, Puerto Rico, and the Virgin Islands). The general drift among the boards is to make admission to the exam tougher. For example, 32 boards now require candidates to have a degree from an NAAB-accredited architecture program or an NCARB-sanctioned equivalent.

The number of boards demanding that candidates complete the Intern Development Program to sit for the exam is also on the rise. Right now, 35 boards require IDP for admission

to the exam. In another two years that number will grow to at least 40 and by the year 2000, NCARB's Executive Director Samuel Balen believes, virtually all the boards will require IDP.

For most intern architects IDP is a blessing and a curse. The program requires that interns document their practice experience in the office of a registered architect for various categories such as schematic design, code research, specifications and materials research, and construction documents. Completion requires 700 IDP "value units," one unit being equivalent to eight hours. The candidate's record-keeping must be verified by an architect within the firm, and be reviewed and approved by an architect-sponsor outside the firm.

Interns complain most about IDP's byzantine recording methods, the paperwork, the bureaucracy, and the cost. Most boards require that NCARB certify the IDP experience. Starting a council record costs \$195 and the annual maintenance fee is \$30. "For an intern, this can be steep," says Elizabeth Koski, vice president of the American Institute of Architecture Students, who sits on NCARB's IDP coordinating committee. Some firms are not keen on IDP, because it requires employers to keep accurate account of intern time and to help the intern complete the program. "More firms are coming around to it," says Koski. "They're finding that, in the long run, people who complete IDP make better employees." Requiring IDP for the exam will continue to have a profound effect on the profession, because it obligates firms to provide the intern with a coherent, well-rounded intern experience. Firms that buck the trend may find interns shunning them.

Once you're qualified to sit for the exam, get out your wallet. The cost of taking the entire exam can run anywhere from \$400 to \$1,100, depending on the registration board (another hit for the lowest-paid members of the profession). That's just to get through the door. There are study guides and seminars that will help the candidate to prepare, and these can cost several hundred dollars. Taking time off for the exam often results in loss of pay, and there are often travel and accommodation expenses.

More stringent requirements, the cost, and (most important) the general state of the economy and the profession have had a devastating effect on the number of people taking the exam. According to NCARB statistics, in 1985 close to 5,500 candidates sat for the exam for the first time. A decade later, that number has dwindled to less than 3,000 nationally.

The Dreaded Division C

The exam is structured in ten divisions: Pre Design (A); Site Design-Written (B); Site Design-Graphic (B); Building Design (C); Structural Technology-General and Long Span (D/F); Structural Technology-Lateral Forces (E); Mechanical, Electrical, Plumbing, and Acoustical Systems (G); Materials and Methods (H); Contract Documents and Services (I). All but two of these divisions are given in a multiple-choice format; candidates answer questions by filling in a gridded answer sheet, just as on the SATs. Site

Design-Graphic and Building Design are tested graphically, with candidates hunched over drawing boards for hours.

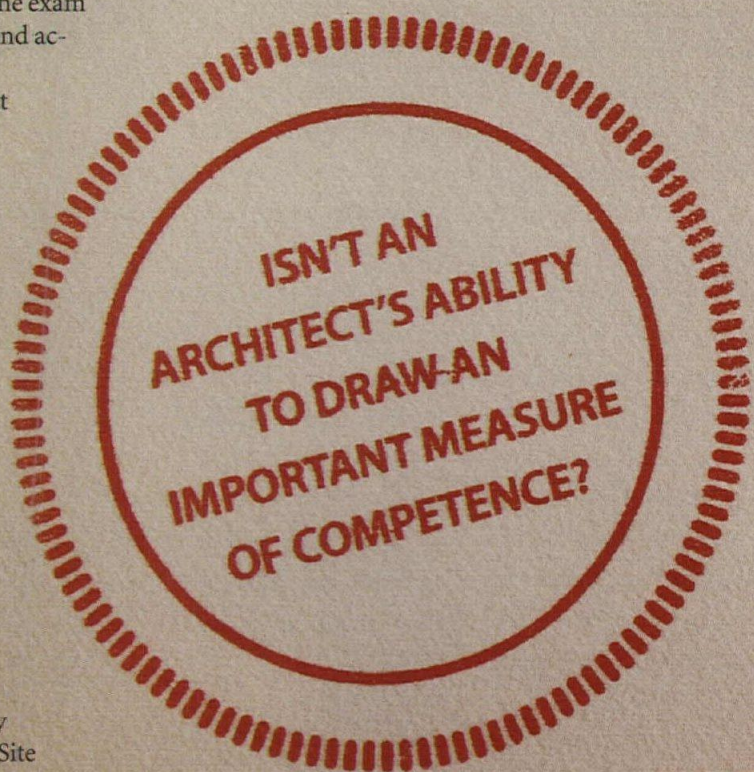
Until just recently, Division C was the stuff of legend. Within the space of 12 continuous hours, candidates were given an entire building to design and were required to show floor plans, building sections, structural plans, elevations, and a host of life-safety compliance factors. For most candidates (myself included) Division C was a nightmare. You had to juggle and satisfy dozens of program and code requirements, integrating them into a solution that was sensible and not a death trap.

On P/A's recent fax-back page, by which we encouraged comment on the ARE, Division C drew the most fire. "It rewards physical stamina, very quick thinking, and a certain amount of luck," one respondent wrote. Another confessed: "I passed on the fourth attempt, without knowing what made that effort better than the rest. That 12 hours is the most grueling and inhumane experience I have undergone."

Divide and Conquer

Last June, NCARB introduced a completely overhauled Division C, but humanitarianism had little to do with the change. NCARB determined that the old exam was not a fair appraisal of what the candidate knew and didn't know, because examinees essentially created their own test scenarios. "Some people were designing straightforward buildings," says Sam Balen, "while others were making the building design so complex that they couldn't resolve all of the issues they needed to."

Mistakes in one part of the exam also had reverberating effects throughout the building design. For example, a candidate who wasn't very good at laying out a rational plan diagram might later find that the



PASS RATES (PERCENT) FOR FIRST-TIME EXAM CANDIDATES WITH ACCREDITED DEGREES

SECTION	JUNE 1989	DEC. 1989	JUNE 1990	DEC. 1990	JUNE 1991	DEC. 1991	JUNE 1992	DEC. 1992	JUNE 1993	DEC. 1993	JUNE 1994
PRE-DESIGN (A)	82		80		80		83		81		81
SITE DESIGN (B)	88		95		94		82		80		85
SITE DESIGN GRAPHIC (B)	79	54	32	54	61	61	55	79	56	66	61
BUILDING DESIGN (C)	45	32	45	34	41	24	41	44	40	31	53
STRUCTURES (D/F)	64		65		60		80		85		82
LATERAL STRUCTURES (E)	79		81		79		73		74		71
MECH/ELEC/PLUMB (G)	86		85		86		72		73		74
MATERIALS/METHODS (H)	81		81		81		79		79		79
CONSTRUCTION DOCUMENTS (I)	78		84		82		80		80		79

mechanical system couldn't be resolved, or that the structure was impossible to figure out. The complexity of the problem also meant that many candidates couldn't finish the required drawings (even though NCARB maintained that the 12-hour exam could be completed in 10 hours), and so could fail this part. Effective time management was essential to pass.

The single-building problem, the format for which was virtually unchanged for more than 70 years, was also demanding on the graders. They were coached to ignore some aspects of the design, and to hunt through the drawings to verify that the candidate had solved all of the problems, particularly those regarding life safety.

The new Division C is modeled on the Site Design-Graphic division, where candidates are asked to solve a number of "vignette" problems in 12 continuous hours. There are now six in Division C: Block Diagram, Schematic Design (floor plans), Building Section, Structural Plan, Mechanical and Electrical Plan, and Accessibility. Candidates are asked to solve discrete problems in each vignette. For example, for the Structural Plan, they are given a building plan and section, a construction system, and are required to show footings, columns, beams, joists/trusses, headers/lintel, and bearing walls. The Section vignette provides two floors of a building wing, all the materials and their sizes, and requires a transverse section. For Accessibility, candidates must draw an exterior ramp and stair for the handicapped (see page 52). Schematic Design is the most demanding, requiring candidates to design and draw plans for two floors of a building. Each vignette has a suggested time allotment, which makes time management easier.

The results of the new exam have been profound. Candidates who have taken the new Division C exam report that it was much easier to understand what they were being tested on and how to respond appropriately. Candidates who commented on the new format on our fax-back page said that they had had more than enough time to complete all six vignettes, some with hours to spare. Graders I interviewed said that candidates seemed to have a firmer grasp of the test. "The candidates understood the exam better," says George Terrien, who graded the June test and sits on NCARB's ARE Research

and Development Subcommittee committee. He perceived that more candidates were completing the exam, and that there were fewer wild responses than to the single-building format. "It was clear whether they knew the material or they didn't, and from that perspective it was easier to grade."

The pass rates for the new format confirm these observations. The percentage of those candidates with an accredited degree taking the test for the first time and passing Division C has ranged, over the past five years, anywhere from 24 to 45 percent (see table). In June the rate shot up to 53 percent.

Is It Too Easy?

The question of whether the new format for Division C is too easy is a difficult one to answer, because several factors are involved. The most significant is grading. The old, single-building format was graded as a single entity. Candidates who completed the exam failed if their solutions had serious life-safety deficiencies or code infractions. Graders were trained to focus on those issues, and if they were in doubt, the candidate was given the benefit. Grades were "pass" or "fail."

The new grading system for Division C is the same as for the Site Design-Graphic exam and evaluates each vignette on a scale of one to four, according to NCARB's ARE Graphic Handbook. The highest score, four, is given for a solution that "shows an understanding of the concept ... and an acceptable solution"; three for "an understanding of the concept and a marginally acceptable solution"; two for concept understanding "but a poor solution"; one for a "lack of understanding of the concept and/or an extremely poor solution"; a blank sheet gets a zero. The graders are instructed by NCARB coordinators on what is acceptable, marginal, or poor, and are given specific criteria for grading. Each exam is scored by at least two graders (who spend from three to six minutes per exam). The grades for the six vignettes are then averaged together, according to their relative weight, and a final grade is assigned, either "pass" or "fail."

The grading system makes it possible to do well on the heavily weighted Schematic Design vignette, maybe not so well on one or two others, and still pass. Racking up points is important. According to one grader I interviewed, who also



payments can be spread out over months (candidates will also be able to charge exam fees to a credit card). Examinees won't have to take a block of time off from work; a division might be taken in an afternoon or on a weekend.

The computerized exam will also be easier on the registration boards. They won't have to gear up in June and December to administer the exam, find and rent a facility, hire proctoring staff, and mail out grades en masse. In an age of shrinking state budgets, this is welcome change. NCARB will be freed from coordinating the national grading sessions, rounding up a hundred or so graders twice a year, flying them to the grading site, and covering their accommodations.

NCARB worked with Educational Testing Services (the testing giant responsible for the SAT, GRE, and a host of professional exams) to develop the computerized exam. The multiple-choice (fill-in-the-grid) divisions were fairly easy to adapt to the computer. They will present the question on a screen in a form virtually the same as the one in the test booklets. Candidates will click on the right answer.

Daily testing brings up security concerns. Won't candidates be able to memorize questions and pass them on? Jeff Kenney, NCARB's director of exam development, says that every candidate will be given a multiple-choice exam composed of "pre-tested" questions. ETS and NCARB have studied how well these questions have performed in past exams and what their relative difficulty is. For a typical division, the computer will administer two 50-question "testlets" which will, says Kenney, be comparable in content and difficulty. The computer will simultaneously grade the answers and calculate whether the candidate has a "mastery" of the material or not. Borderline candidates will be given another 50 questions, until the computer determines their competency. Each

multiple-choice division has 20 testlets for the computer to draw from, and they can be given to candidates in different combinations. Thus the exams will be virtually impossible to memorize or duplicate. And candidates will have to wait six months to retake a division.

Will CAD Nerds Excel?

An obvious concern in computerizing the graphic portions of the exam is whether candidates with CAD experience will have an advantage over those who have never touched a computer. "We developed the software from scratch," says Peter Brittingham of Educational Testing Services, who has been working on the computerized exam. "We intentionally didn't make it like any another CAD package on the market."

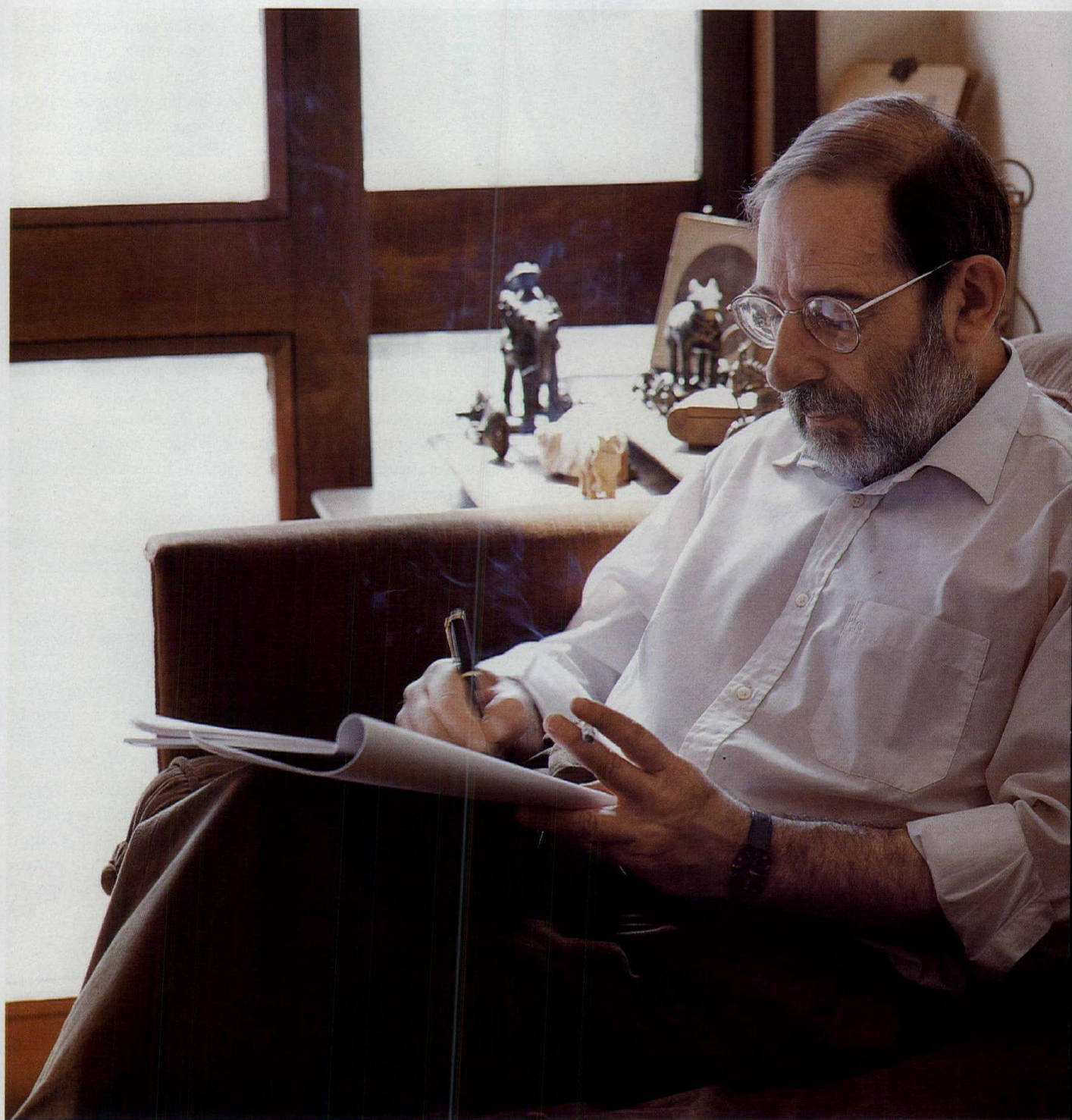
I visited ETS in Princeton, New Jersey, to see a demonstration of the computerized exam. I've never worked with CAD, but I found the computerized vignettes fairly easy to manipulate. The screen presents the vignette just as it now appears in the exam sketch pad. There are tool bars on the left side of the screen, one set for "sketching" and another set for "drawing" the solution. There are also measurement functions, which can tell you the length and angle of any line on the screen and the square footage of rooms. Lines are easy to erase and layers can be turned off to replicate the function of tracing paper.

What about candidates who have never worked on a computer? ETS has been doing extensive field testing, bringing in such people as young interns and middle-aged architects to work on the problems. Sometimes they're observed by cognitive psychologists to determine whether the computer is getting in the way of administering the test. ETS has also given vignettes to test volunteers to complete by computer and by paper and pencil to study the differences. According to the NCARB's Jeff Kenney, "interface" problems with the computerized exam have pretty much been worked out. In fact, the new computerized format will allow NCARB to include more vignettes: eight for Site Design and ten for Building Design. To meet the demand of variety in daily testing, there will be six versions of each vignette, and four "isomorphs" (computer lingo for appreciable variations) for each version. For those with computer anxiety, a tutorial disk containing sample vignettes will be available for candidates to practice with at their leisure before they sit for the exam.

Untouched By Human Hands

There are other advantages of computerizing the test, Kenney points out. "Candidates with physical disabilities who found the paper and pencil test too demanding will be able to take this one," he says, adding that paralyzed candidates can manipulate the "drawing tools" with special features. The exam will be far less physically demanding on able-bodied candidates as well. No *(continued on page 98)*

Searching for **Siza**



Little known in the United States, Portuguese architect Alvaro Siza is a star in Europe. What's all the fuss about? by Abby Bussetl

Portuguese architect Alvaro Siza is a paradoxical figure. You may not know his name, you may never have seen his architecture, but he is famous, his work covered almost obsessively in the European architectural press. Encouraged by a group of enthusiastic critics, the press celebrates the authenticity of his vision, but undermines its integrity in the process. For his part, Siza is a hesitant participant.

Glancing at photos of his architecture, you will see formalist assemblages echoing the work of the century's legendary Modernists, but this vocabulary is in his case a tool used to extract and transform the nuances of place rather than to advance a formalist doctrine. His buildings sometimes appear as objects in the landscape, but they emerge from the site, the context, the culture, and the climate. He rejects direct references to Wright, Loos, or Corb, but clearly admires and sometimes emulates their work. He is nearly impossible to reach by phone or fax, yet his work seeks to communicate through a universal language.

Skeptical of the paradoxical nature of his architecture, I visited his studio in Porto in 1992, just weeks after the Pritzker Prize jury's surprise announcement that Siza had been named that year's laureate (P/A, Jun. 1992, p. 25). I found a modest man unaffected by his own renown. Visits to several of his projects convinced me that the extensive publication of his work was more than hype. The urbanistic and spatial complexity he achieves, regardless of a project's scale, must be experienced to be appreciated.

At a time when the profession is searching for its own identity, when global connections and competition are blurring lines drawn long ago, it is worthwhile to look at the work of an architect who has devoted the past four decades to developing an architectural language that transcends but does not ignore regional traditions. As my colleague Thomas Fisher posits in his article "Escape from Style" (P/A, Sept. 1994, p. 59), we are entering a post-stylistic age, faced with the opportunity to re-

think the foundations of an architecture of place. Siza is among a handful of architects who are ahead of the game, although he too has succumbed to moments of stylistic bravado.

Smoking and Sketching

To understand the makings of Siza's architecture and to analyze his work, it is important to understand the man and his design method. He's a chain-smoker and a habitual sketcher. Drawn mostly in perspective, his sketches at their best tell a story of topographical conditions and relationships, materiality, movement, and natural light – issues essential to his architecture. He has filled 365 standard-size notebooks, according to the editor of *Alvaro Siza: City Sketches* (Birkhauser, 1994). He's prone, I've been told, to work on the least urgent project in the office, endlessly sketching, thinking and rethinking every aspect of a design problem. "Every commission needs ideas to bring it to life, and ideas take time to ripen," explained Siza in an interview published in *The Invisible in Architecture* (Academy Editions, 1994). He argues that, "A good architect works slowly." As for the cigarettes, they just seem to be part of the process.

Born in Matosinhos, a town outside of Porto, the city in Northern Portugal where he has lived and worked for many years, Siza is deeply loyal to the cultural traditions of his native country, where family and friends and the cultivation of the landscape are, according to a young American architect working in Porto, "the essence of life." He operates from a Portuguese perspective, passionately pursuing an architecture sensitive to the quirks of daily use.

The evolution of Siza's career can be viewed to a certain degree as parallel to changes in the political and the economic climate in Portugal. He studied at the School of Architecture in Porto from 1949 to 1955, and began building as early as 1954. At the time, Portugal was essentially an isolated society; it was nearly impossible to buy books or to



Luís Ferreira Alves

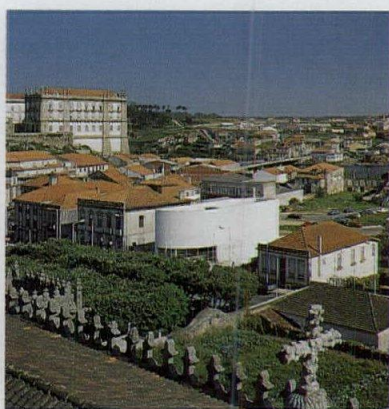
travel abroad. His early work included private residences, bank branches, and a now-famous swimming pool and restaurant, both in Leça da Palmeira.

After the revolution in 1974, the need and desire for public housing grew and Siza designed two-large projects, one in Porto and the other in Évora in the south. With these projects and the opening up of the country, Siza soon got work elsewhere in Europe. In the mid-1980s, commissions to design the school of architecture in Porto and an urban reconstruction project in Lisbon marked a major turning point in his career, both at home and abroad. Since then his commissions have included a steady stream of large-scale institutional and commercial work

Karmi, a practitioner whose ideas about place-making are not dissimilar to Siza's.

The origins of Siza's design philosophy are not easy to pin down. But in a recent issue of *El Croquis* he gives us a hint: "Universality is not equivalent to neutrality... It is the capacity to create from the roots." He goes on to say that his sense of universality is inspired by and analogous to the cross-fertilization of influences and ideas that affects the evolution of cities, but at the same time gives them "an unmistakable identity."

Inspired by the condition of the city, Siza's work, regardless of scale or location, is imbued with urbanistic qualities. His impulse is to capture "a fleeting moment." The vitality of the human experience, be it in Matosinhos or in New York City, is one of ever-changing views and perspectives. An example of Siza's desire to capture the fluid character of the city is the Banco Borges & Irmao, a curvilinear composition of geometric forms, completed in 1986. Located in Vila do Conde, Portugal, it is an expression of the importance of growth and variation in a traditional city, an expression not unlike Wright's Guggenheim spiral breaking the Manhattan grid.



Photos: Luís Ferreira Alves

Siza's Duarte House (1) of 1981-1985 is in a neighborhood of characterless residences in Ovar, Portugal. With no unique site conditions to work with, Siza created "an imaginary context." The result bears much resemblance to Loos's Steiner House of 1910. The Borges & Irmao Bank (2), completed in 1986, in Vila do Conde, Portugal, adheres to the scale of its historic city, but, in its materials and massing, announces itself as a 20th-Century insertion; Siza received the 1988 Mies van der Rohe Prize for European Architecture for the bank.

and urban design projects—an art museum in Spain and a university library in Portugal among them. Siza attributes his international success to a heightened interest in cultural exchange. He acknowledges that those seeking publicity and political gain by snagging signature buildings, particularly by architects from out-of-the-way places, have also upped the ante.

As for his relatively low profile, says Bill Lacy, secretary of the Pritzker jury, Siza is "out of the cloth of a Lou Kahn – more professional, in the old sense."

Regionalism or Universality

Over the years, as Portugal has become less isolated from its European cousins and as his commissions have come increasingly from an international clientele, Siza's architecture has evolved from a Modernist interpretation of the vernacular to more abstract geometric compositions. On the tectonics of his architecture, says Israeli architect Ada Karmi, "It's not so much the dynamism of form as much as form used to make place." His buildings "have a sense of gravity. He isn't afraid to resolve how they sit on the ground. They make a place for themselves," adds

Invention or Transformation

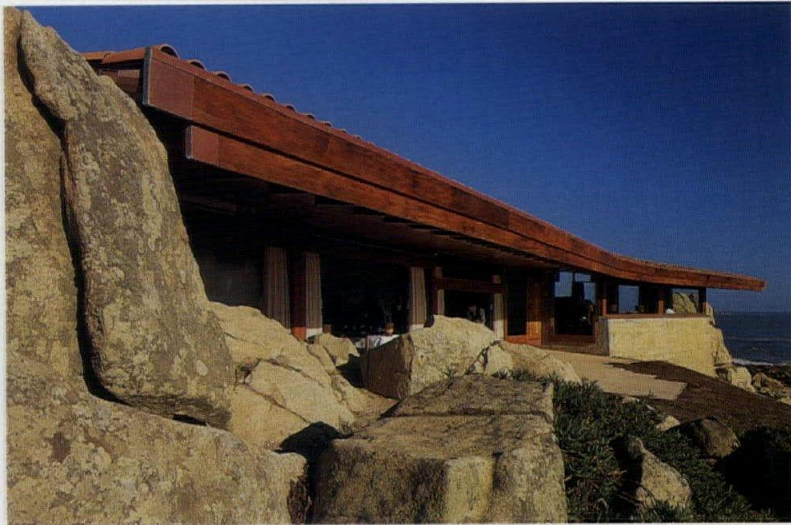
Siza is wary of the reliance on "preexisting languages," yet argues that architects "don't invent anything, they transform reality." It is a curious pronouncement from an architect who clearly digs deep into his own imagination to extract meaning from a given set of site conditions and, at the same time, uses the established vocabulary of the Modern Movement to communicate his ideas. "For the most part," argues William Curtis in *El Croquis* (IV, 1994), "the pre-existing is both admitted and denied."

But the denial doesn't always keep the acceptance in check. One of the more obvious examples is Siza's Duarte House of 1981-1985, which has a strong resemblance to Loos's Steiner House of 1910. When questioned about such references, Siza told me that the comparisons, "do not do justice to Loos."

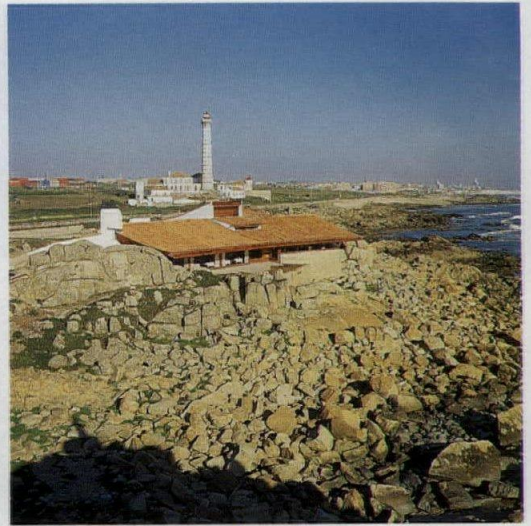
An Architect of Our Time

Siza has mined the complexities of the modern world, cultivating a language at once local and universal, while pursuing what Kenneth Frampton has called an "ethical imperative." "He is very much an architect of our time," believes Karmi. The irony is that the profession is only now beginning to catch up with him.

The real lesson to be learned from Alvaro Siza is that architecture, while stemming from a personal vision, should put people before both ego and fame. □



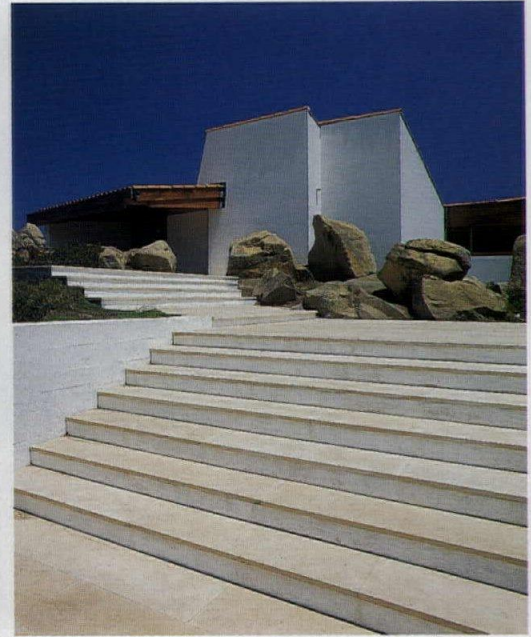
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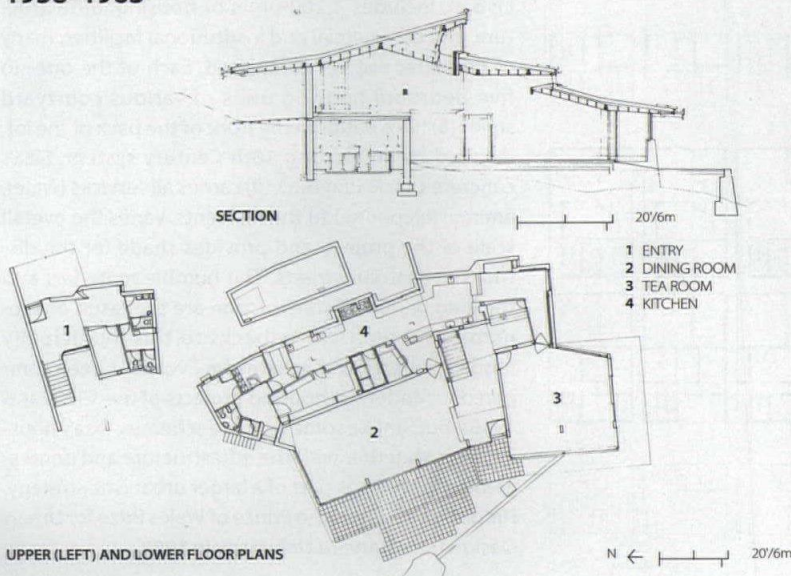
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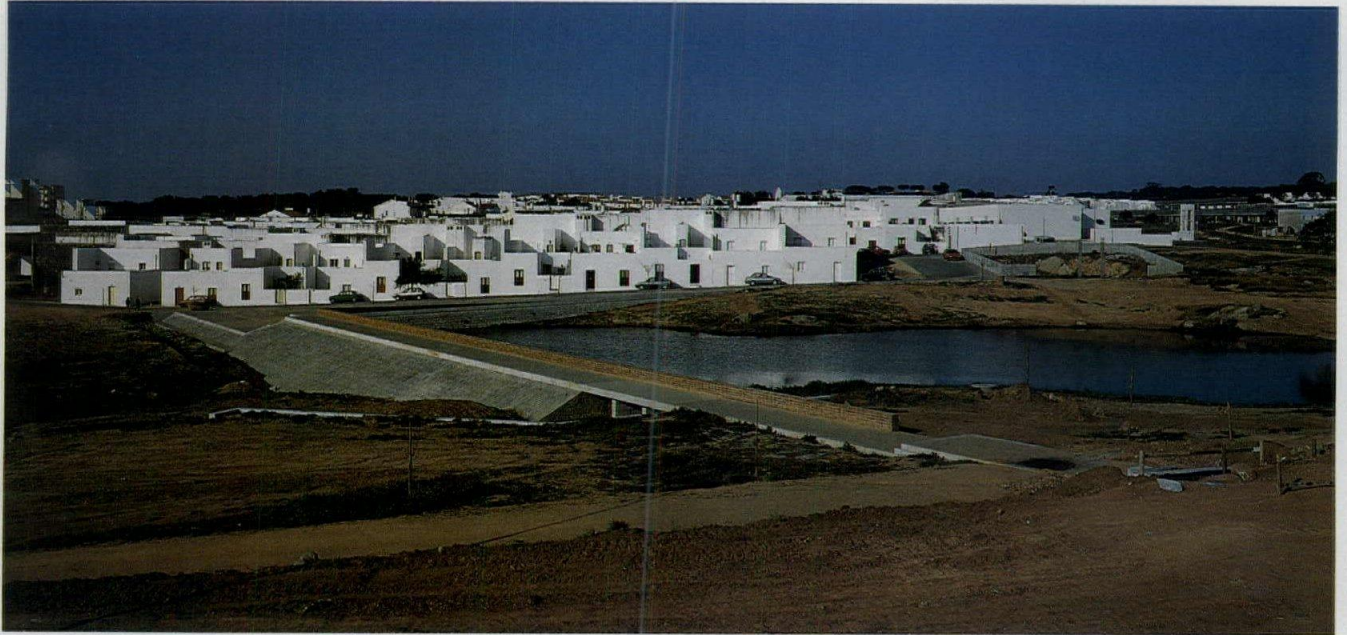
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Photos: Luís Ferreira Alves

Boa Nova Restaurant, Leça da Palmeira, Portugal, 1958–1963



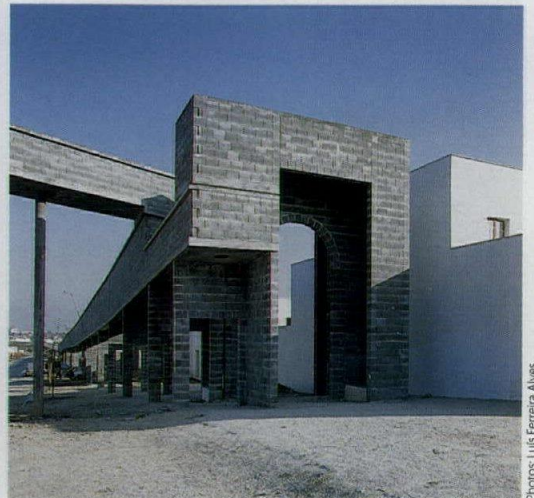
The stucco finish and the clay tile roof of the Boa Nova restaurant reflect a regional sensibility, while the irregular forms of the building can be viewed as prefiguring Siza's development of an abstracted architectural language. Organized on two levels, with the entry above and two dining halls below, the plan accentuates the structure's connection to its rocky site on the Atlantic coastline (4). The deep mahogany eaves (3) protect the west-facing dining rooms from the afternoon and evening sun. The low slope of the roof's overhang also gives the building a sense of gravity, pulling it down into the rocks. Inside, mahogany ceilings and floors and the wood and leather furnishings demonstrate Siza's craftsman-like attention to detail (5). The tea room windows slide down below the floor, opening the room to a stone terrace. The entrance sequence (6), completed during a later phase, includes a series of strongly geometric low walls and stairs that intensify views of the horizon line and the craggy character of the site.



7



8



Photos: Luis Ferreira Alves

9

Quinta da Malagueira Social Housing, Évora, Portugal, 1977-

Designed and built in phases since 1977, the new residential district of Évora (7), a small city southeast of Lisbon, includes 1,200-units of housing, infrastructure, and commercial and institutional facilities, many of the latter not yet completed. Each of the one- to five-bedroom housing units of various courtyard styles (8) have patios in the front or the back of the lot. Inspired by an existing 18th-Century system, Siza's concrete-block aqueduct (9) carries all services (water, energy, telephone) to the residents, varies the overall scale of the project, and provides shade for the district's pedestrian streets. The humble materials and the long period of construction are the result of economic and political setbacks to this municipally funded project. Siza's scheme for Évora has been compared to Modernist housing projects of the 1920s and 1930s. But, unlike some of those schemes, Siza's housing here, together with the infrastructure and nonresidential facilities, is part of a larger urbanistic strategy. His design received the Prince of Wales Prize for Urban Design from Harvard University in 1988.

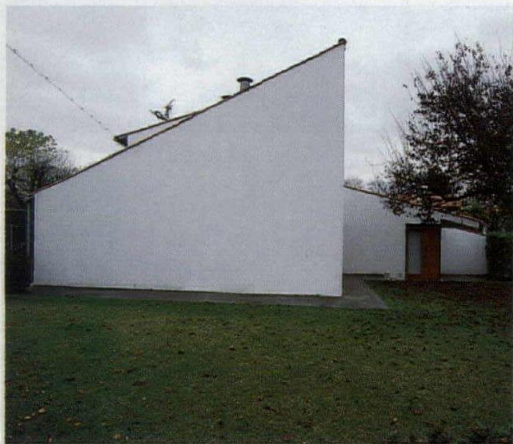


VARIOUS HOUSING UNITS, (FROM TOP TO BOTTOM) SECTIONS, FIRST FLOORS, SECOND FLOORS, AND ELEVATIONS

20/6m



10



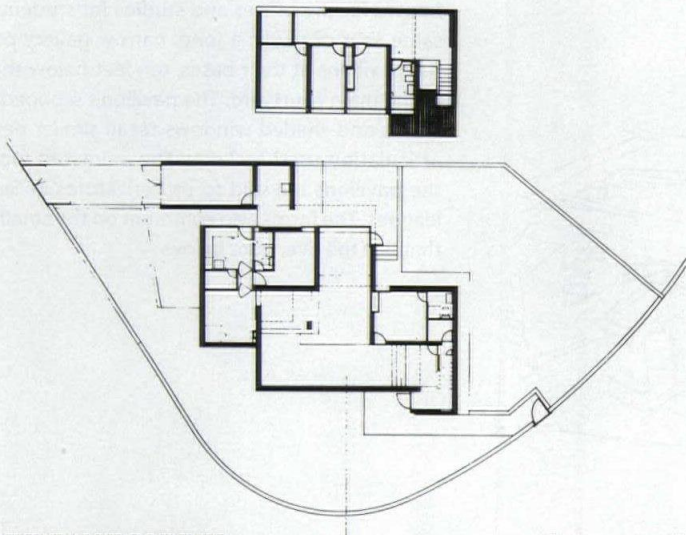
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12

Photos: Luís Ferreira Alves

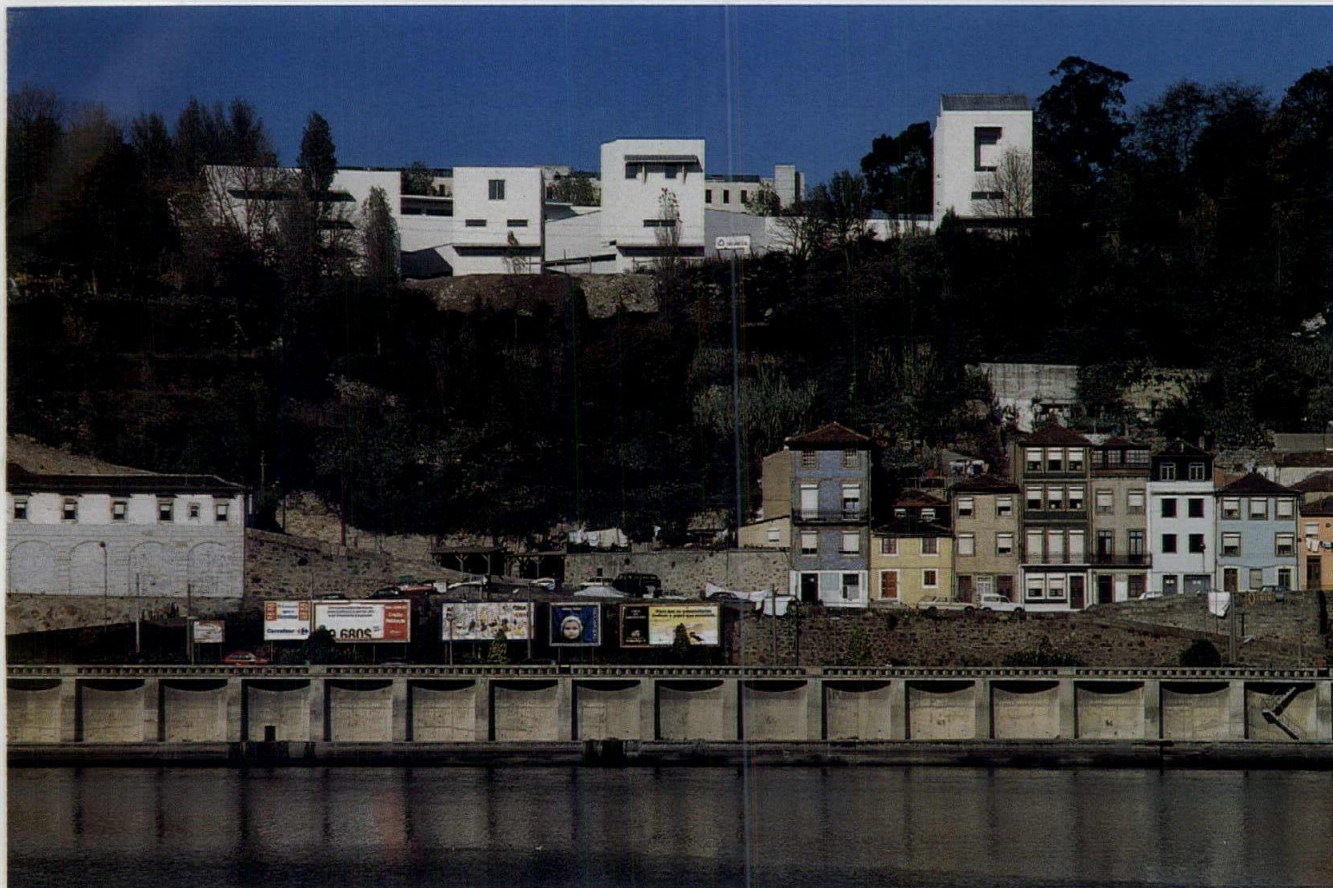
Miranda Santos House Refurbishment, Porto, Portugal, 1985–



FIRST AND SECOND (ABOVE) FLOOR PLANS

N → 10/3m

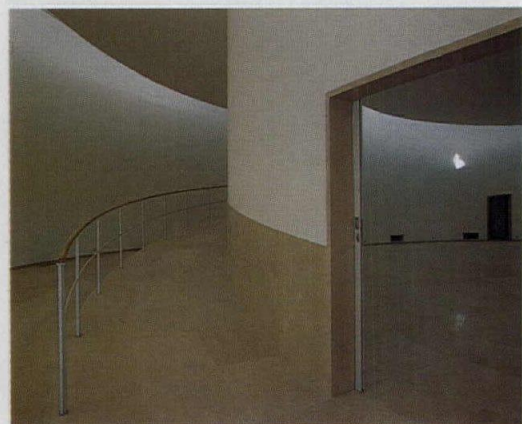
This house (11) was originally designed by Siza more than 30 years ago (1962–65), at a time when architects in Portugal were reacting against Modernism with a return to the vernacular. In contrast, Siza embraces Modern design with his refurbishment of the Santos house, an ongoing project since 1985. There is a clear connection to Loos inside this house: floor planes are raised or lowered to define specific areas such as the living/dining room (10), materials are spare but luxurious. His craftsmanship is Wrightian in its comprehensiveness. He has designed everything from the keys, doorknobs, doors, and entry mat (12) to the lighting, seating, tables, cabinetry, and bathroom accessories. Siza's ability to address very specific design problems with broadly applicable solutions is in evidence. These pieces were designed specifically for this house, but many have gone into production.



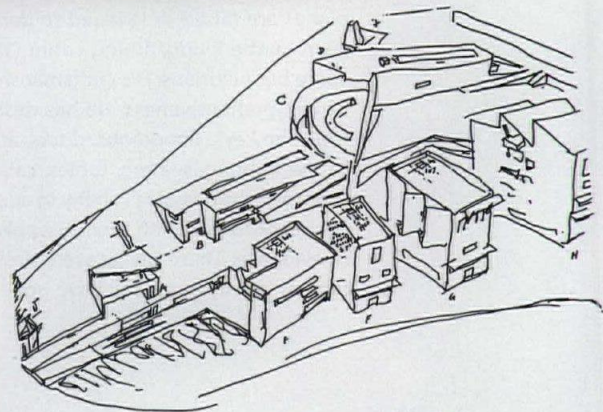
Photos: these two pages: Luís Ferreira Alves

13

School of Architecture, Porto, Portugal, 1987-1994



14

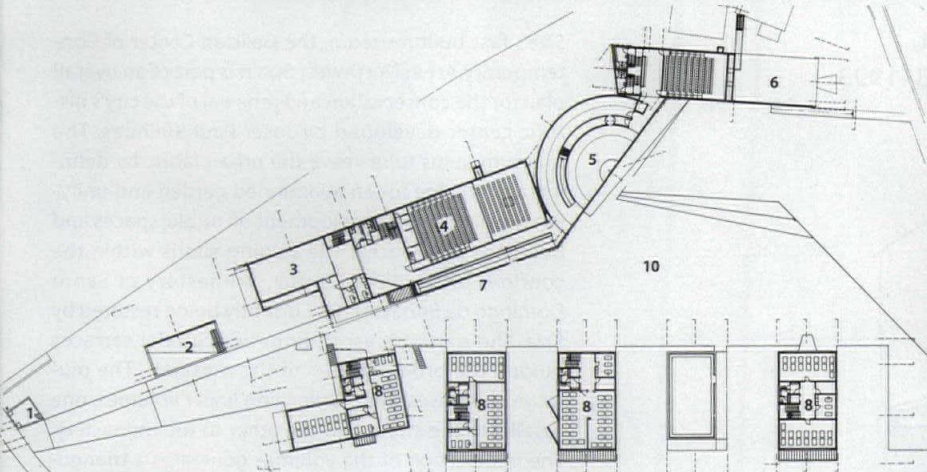


SKETCH

On a terraced site high above the Duoro River estuary in Porto is Siza's new School of Architecture (13), a courtyard-style complex (16) that extends the school's existing campus. The new buildings, only partially in use, are organized as autonomous but loosely connected north and south wings. The entry is defined by the convergence of the two wings at the west side of the site. The continuous, curvilinear form of the north wing (17) protects the school from the noise of an adjacent highway and includes administrative offices, auditoriums, a semicircular exhibition space (14), and a library. Across the triangular courtyard to the south, each of the four freestanding pavilions (15) houses faculty offices and studios for students in the same year of study; a long, narrow gallery connects the pavilions at their bases, ten feet below the grade of the main courtyard. The pavilion's scooped-out recesses and shaded windows recall similar devices of articulation used by Loos. The animated façades of the pavilions are said to be caricatures of Siza's colleagues. The forms also comment on the small houses that line the riverfront below.

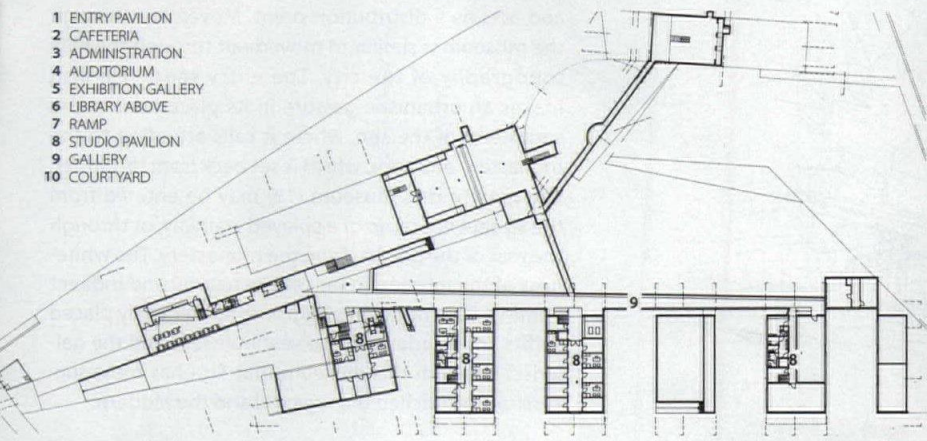


15



SECOND FLOOR PLAN

- 1 ENTRY PAVILION
- 2 CAFETERIA
- 3 ADMINISTRATION
- 4 AUDITORIUM
- 5 EXHIBITION GALLERY
- 6 LIBRARY ABOVE
- 7 RAMP
- 8 STUDIO PAVILION
- 9 GALLERY
- 10 COURTYARD

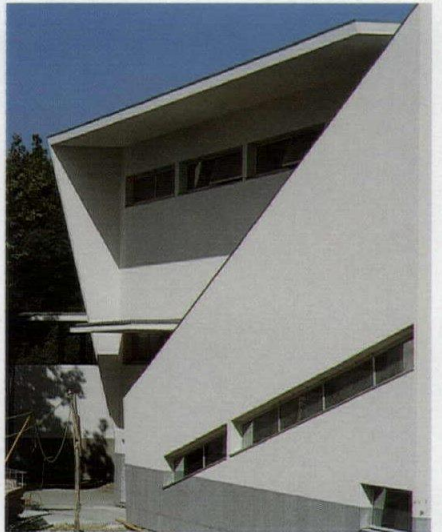


FIRST FLOOR PLAN

N ↑ 40'/12m



16



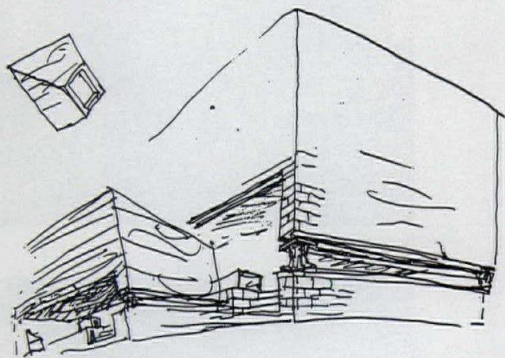
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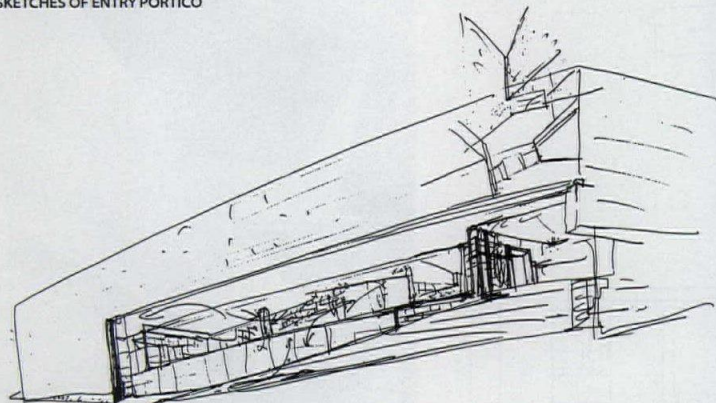
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Photos: these two pages, © Jeff Goldberg/Esto

Galician Center of Contemporary Art, Santiago de Compostela, Spain, 1988–1993



SKETCHES OF ENTRY PORTICO

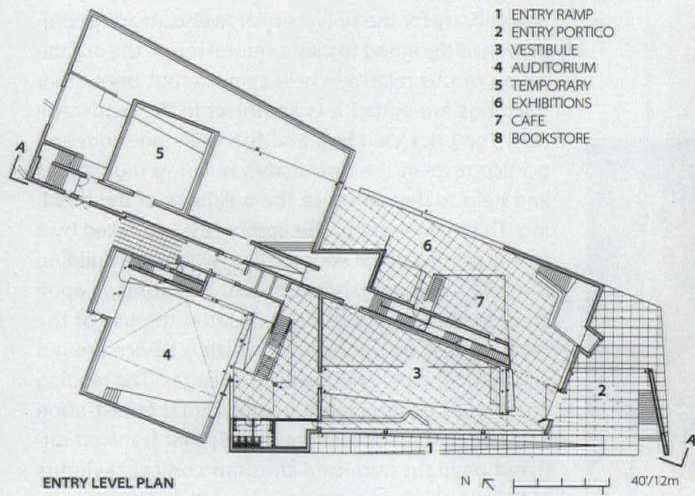


SKETCH OF ENTRY RAMP AND STAIR

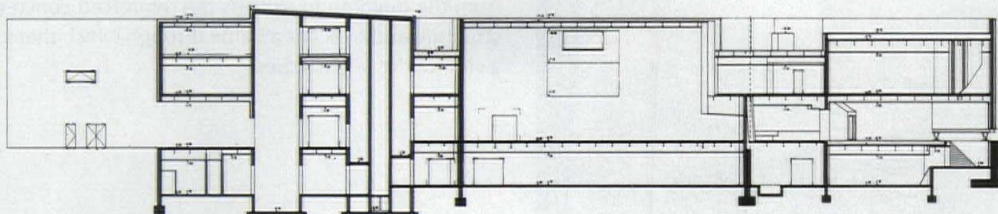
Siza's first built museum, the Galician Center of Contemporary Art in Northwest Spain is part of an overall plan for the conservation and renewal of the city's historic center developed by Josef Paul Kleihues. The museum helps to reweave the urban fabric by defining a new edge for an abandoned garden and unifying the haphazard development of public spaces and buildings in the area. The sloping site is within the confines of the 17th-Century monastery of Santo Domingo de Bonaval (18). Currently being restored by Siza, the garden's ascending, nonparallel terraces guided the ordering axes of the museum. The museum comprises two interlocking linear volumes, one parallel to the street and the other to the monastery. The intersection of the volumes generates a triangular void that extends to the full height of the building and acts as a distribution point. Movement through the museum is similar to movement through the hilly topography of the city. The entry sequence also makes an urbanistic gesture in its placement at the south end of the site, where it calls attention to the monastery entrance, which is set back from the street. The granite-clad museum (19) may be entered from the street via a ramp or a splayed stairway, or through the rear of the portico from the monastery. The whiteness of the interior enhances the natural and indirect lighting. Siza modulates light with strategically placed soffits and windows in the vestibule (20) and the galleries. It is with this museum that Siza has most successfully reconciled the regional and the Modern.



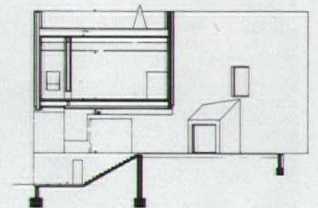
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20



SECTION AA THROUGH VESTIBULE



SECTION THROUGH ENTRY PORTICO



21

University Library, Aveiro, Portugal, 1988–

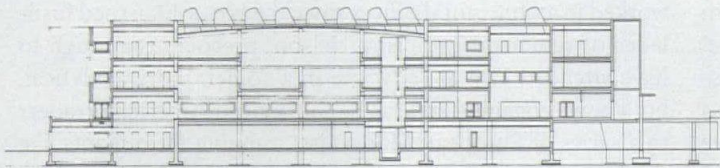


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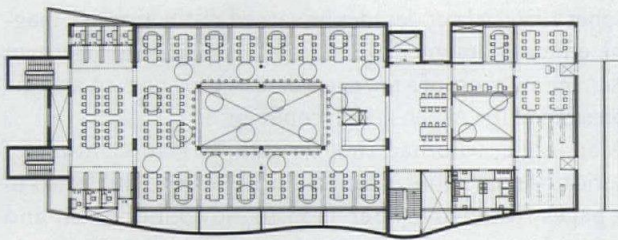
Siza's library for the University of Aveiro, nearing completion, is designed to play a central role in the organization of this relatively new campus. But until other buildings are added it is an object in the landscape (21). The brick cladding and the limestone trim and portico respect the university's building regulations and help to deemphasize the bulkiness of the building. The main entry to the library (23) is marked by a quirky portico at the second floor, where the building is attached to an existing plinth. The library's open stack system is said to have dictated the use of the reading desk as the main organizing device around which the shelving units will be arranged. The reading areas will be illuminated by horizontal fenestration and large offset circular voids (25) that transmit diffused daylight admitted through conical skylights (24). Individual rooms for conducting research are located in two towers at the north end of the building. The towers create an inset terrace – another Loosian gesture. Services and storage are located on the ground floor. A curving west wall (22) is pulled away from the building to express the reinforced concrete structure and to act as a baffle through which there is a view of the salt marshes.



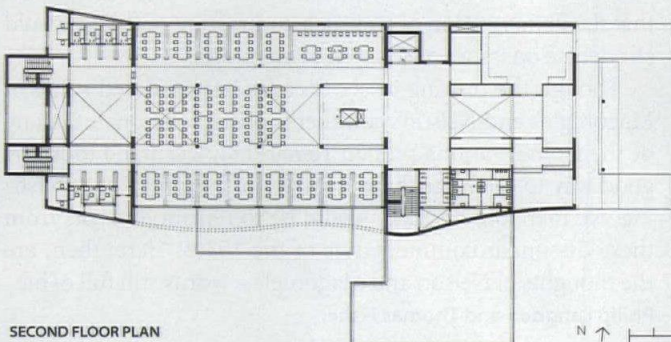
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SECTION THROUGH CENTRAL AXIS

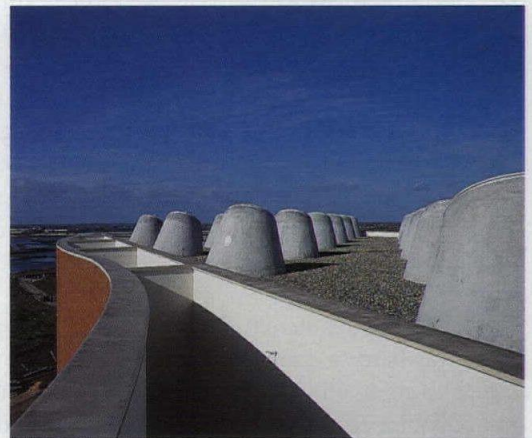


FOURTH FLOOR PLAN



SECOND FLOOR PLAN

N ↑ 40'/12m



24



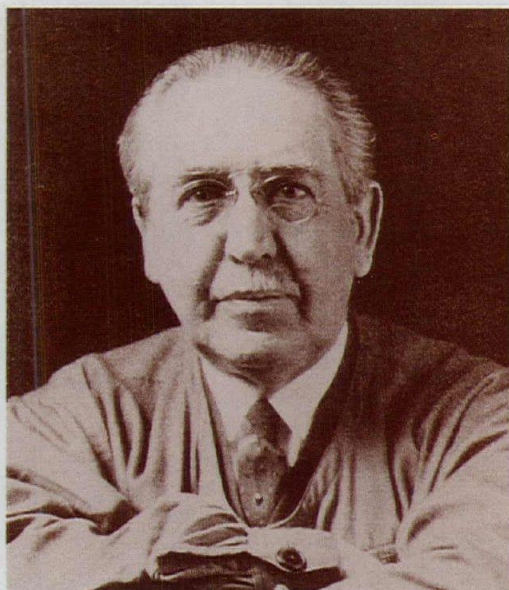
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The Debate Goes On

Many arguments and anxieties that aroused architects in the lean years of the 1930s have regained particular relevance today.



George Nelson, 1932



H. Van Buren Magonigle, 1934

Because P/A turns 75 this year, we've been thinking about how the profession and its concerns have changed – or in some cases remained constant – with the passage of time. Overproduction of graduates by architectural schools, questions about the leadership of the AIA, struggles between Modernists and their opponents – these and other issues have spawned recurrent debate within the profession. Nowhere is this made clearer than in the reporting and commentary that *Pencil Points*, as P/A was called until 1945, published from 1934 to 1936.

The mid-1930s were tumultuous years when architectural work was hard to come by. Perhaps partly as a result of the struggles going on in the profession – struggles that reflected not only dire economic circumstances but also disagreement on social and aesthetic questions – a publishing event of the first magnitude took place. Two writers of markedly different viewpoints fought to influence the thinking of American architects. One writer was H. Van Buren Magonigle, a New York designer then in his sixties, who had taught, presided over the local AIA chapter, and made a name for himself as an architect of memorials, institutions, and important residences. The other writer was George Nelson, a Hartford native in his twenties who was in Europe on a Rome Prize, an experience comparable to Magonigle's Rotch traveling fellowship 40 years earlier. The European sojourn gave Nelson his first opportunity to display the extraordinary talent as a reporter and commentator that would make him a youthful editor at *Architectural Forum* before he achieved international fame as an industrial and furniture designer.

Magonigle, who liked to remind readers that he had worked in architectural offices since the age of 13, issued fusillades of vehement criticism. Nelson, precocious enough to have attended Yale at 16, wrote in a cooler, more analytical, but always engaging style as he introduced American readers to a series of European Modernists, ranging from giants like Corbu and Mies to figures now relatively minor, such as Mussolini's state architect, Marcello Piacentini. The end of Magonigle's contributions came abruptly with his death from a stroke at age 67, in August 1935. Nelson's series concluded in October 1936; in later decades he earned distinction as a magazine editor, a designer of modern furnishings for Herman Miller, the architect of a few precedent-setting houses, and the impresario of the Aspen design conference.

Magonigle, who had first written "A Half Century of American Architecture, a Biographical Review," published in our pages from November 1933 to November 1934, and Nelson, who was a new voice in the magazine, did not directly address each other. But the editors of *Pencil Points* surely knew that the juxtaposition of two such contrasting outlooks would stir debate on issues of concern to architects.

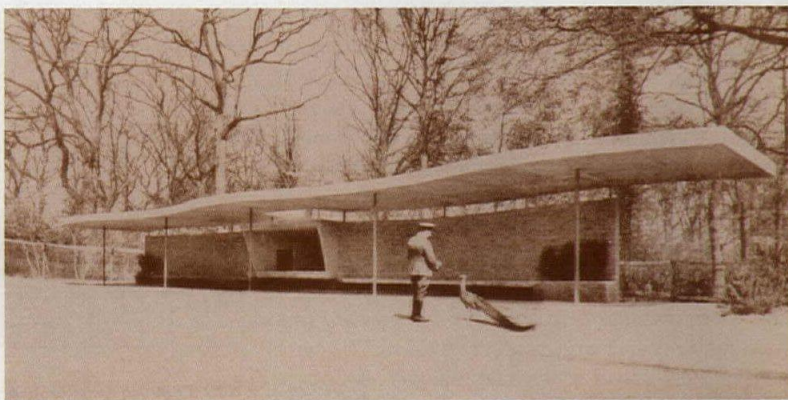
Though the passing of six decades has rendered some of Magonigle's and Nelson's comments obsolete or quaint, many of their observations remain remarkably germane today. A good way to celebrate three-quarters of a century of publishing, we therefore decided, would be to reprint excerpts from these dissimilar commentaries of the 1930s. Here, then, are the thoughts of Nelson and Magonigle – words still full of life.

Philip Langdon and Thomas Fisher

□

Architects and Power

In the 1930s, as in the 1990s, the profession was seen as declining in power. Magonigle argued that architects had let contractors have too much authority and, as today's conservatives assert, that the federal government had become too powerful. "The architect has no influence whatever in the country, not even in building matters. I prophesy that if the present trend continues **the architect will be extinct and become a kind of clerk to Government bureaus or building contractors.**" And yet, as Nelson reported, Modernists in Germany in the 1930s faced an even greater loss of authority with the rise of Nazism. The Modernists' "offense was to design buildings that took advantage of the great technical advances made since the beginning of the century, and reflected a new way of living. [Why this] was un-German would be interesting but unprofitable to inquire." Magonigle and Nelson also argued that architects must reassert our independence as design professionals and must deemphasize business.



Tecton's shelter at the Whipsnade Zoo, London. Tecton represented, for Nelson, "the ideal of the modern architect: the coordinator of what Gropius calls 'a modern architectonic art.'"

Architecture and Politics

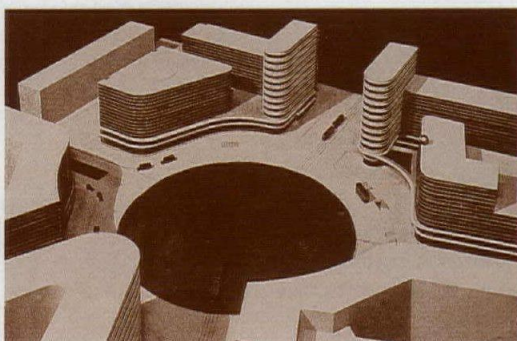
Both the traditional and the Modern architecture of the 1930s reacted to the growing nationalism sweeping Europe. The International Style clearly ran against nationalistic sentiments, even though the fascist Mussolini embraced the "new style." As George Nelson observed: "**Mussolini put his official stamp of approval on the so-called new style** ... [which] goes well with his highly advertised predilection for youth The dangerously intense spirit of nationalism which is sweeping Europe has nowhere reached a higher pitch than in Italy, and architecture has not been spared." Meanwhile traditionalists in the U.S., such as Magonigle, began to deemphasize the national "American" quality of their work and to embrace a regionalist perspective. "In America, there are too many widely divergent opinions, tastes, prejudices, and habits of thought to be regimented and marshaled under any one banner **I regard the architecture of the United States not as the product of a nation, but as a regional affair.**"



Naples Post Office, designed by Giuseppe Vaccaro. Mussolini reportedly liked the design; "the curious split entrance," wrote Nelson, "is a typical example of the persistent use of the fascist symbol." But "the Neapolitans saw nothing but indecent nudity" in the scheme.

Competitions, For and Against

Competitions were no less controversial in the 1930s than they are now, and the arguments for and against them seem to have changed hardly at all. For some, such as architect C. Godfrey Poggi, whose letter to Magonigle was published in the magazine, competitions were exploitative. "The architect who today enters competitions and does a lot of work for nothing is in public opinion just a poor fish **Is it any wonder that so many architects are now on the bread-line?**" Others saw just the opposite, as architect Louis Walsh stated in a published letter to Magonigle. "The best of architectural expression in this country today has in most instances been brought about through architectural competition."



Hans and Vassili Luckhardt's competition-winning design for the Alexanderplatz in Berlin. "The great daring of the scheme," wrote Nelson, "its simplicity, reasonableness, and lovely flow of line, captivated the jury ... but in the end ... [it] was never built."

The Educators' Responsibilities

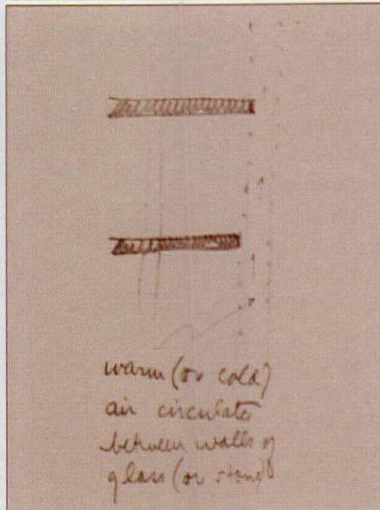
Questions about what the schools should be doing were as much an issue in the 1930s as they are today. "One of the most absurd spectacles of the past five years of Depression," wrote Magonigle, "has been the struggle of **the architectural schools to turn out as many students as possible into a profession that has no room for them and no work for them.**" Also at issue was what the schools should teach. "As long as the educators continue to mix up the study of architecture with 'democracy,' 'group thought,' and that sort of thing ... **the student will not be prepared for practice in a rational, or useful, or acceptable manner.**" Modernists were embroiled in the same debate, as George Nelson's description of the power struggles at the Bauhaus shows: "Hannes Meyer ... [was] more interested in communism than architecture ... [while] Mies was completely indifferent to communism or any political system, for that matter."



The Bauhaus, by Walter Gropius, whose mission, wrote George Nelson, was for students to learn "about architecture as the art of building instead of a collection of rules which involved the wholesale cribbing of façades out of whatever books happened to be popular at the time."

Drawing versus Model Making

The question of the medium's effect on design was an issue in the 1930s, as it is today, with the rise of the computer. Traditionalists argued that drawing was essential to the making of architecture. "An architect who can't draw is, in the high majority of cases, not a good designer," wrote Magonigle. "**There is only one way really to train the eye and that is by drawing and drawing and drawing.**" Modernists, however, saw the rise of model making as a natural result of a changing architecture. "The brilliant draftsmanship," wrote Nelson, "that appeared with the Beaux-Arts ... soon became an end in itself and it was forgotten that **architecture had nothing to do with lines on pieces of paper.**... [The Modernists] discovered, after throwing the styles overboard, that ... there was nothing left to indicate on paper, and they were forced into the study of volumes in three dimensions ... everything was shown in ... models."

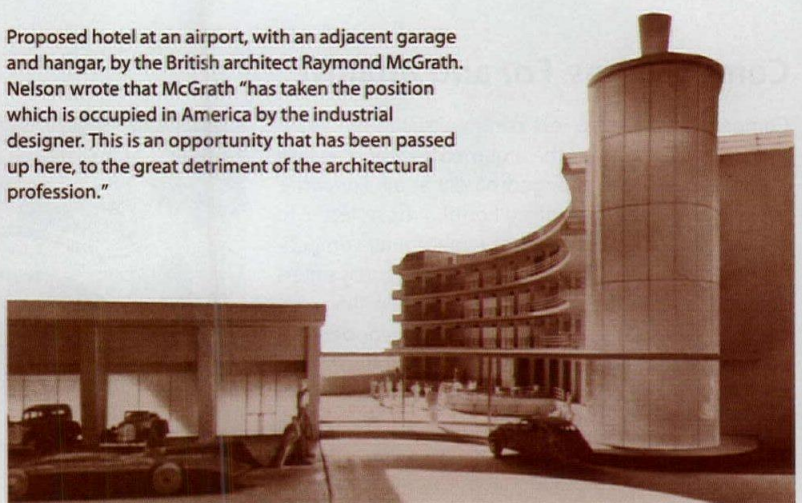


A drawing by George Nelson, based on one by Le Corbusier of a double glass wall through which warm air would pass. Corbu built a mock-up to prove that the concept worked. "One must not speak without thinking, without finding things out," he told Nelson.

The Role of Craft

The importance of craft in architecture was another area in which traditionalists and Modernists had similar concerns. Traditionalists such as Magonigle valued hand-crafts and measured the present by past standards: "It is one of my quarrels with the 'modern' stuff that it has none of the quality we associate with the best in craftsmanship ... among the craftsmen ... **the good ones hate the 'modern' stuff; they love quality and want a chance to produce it.**" For Modernists, what mattered was the integrity of the craft process in the new machine age. Wrote Nelson: "Implicit in **the idea of the Bauhaus was a revival of the old apprenticeship method** ... the old type craftsmen no longer existed; so each student was given two teachers, one a trained technician, the other an artist. In this way it was hoped to avoid the dangers of the narrow industrial outlook on the one hand and the 'art for art's sake' idea on the other."

Proposed hotel at an airport, with an adjacent garage and hangar, by the British architect Raymond McGrath. Nelson wrote that McGrath "has taken the position which is occupied in America by the industrial designer. This is an opportunity that has been passed up here, to the great detriment of the architectural profession."



Modernism, For and Against

The central architectural debate in the 1930s – a debate that continues today – was about Modernism: what is it and what value does it have? Traditionalists in the 1930s derided it for not living up to its promise, for not being as functional, logical, or convenient as its proponents claimed. Magonigle asserted **"I have yet to see one 'modern' house ... that is truly functional, really logical, structurally or aesthetically.** They do not seem to be built for real people living real lives neither climate, character of landscape or city, local materials, nor sound construction have anything to do with moulding the design."

Largely ignoring such criticism, Modernists presented their architecture as inevitable, driven by new technology and human needs. As George Nelson put it, "Undreamed-of technical developments had made available new tools, which demanded new means of expression, [and] an acute housing shortage had to be met – and at minimum cost. It was out of the work on these two problems that most of the elements of the International Style have come." Modernists also argued that this new work was, in fact, tied to tradition. "It is hard for the confirmed traditionalist to admit that **the men whose creations apparently violate every established idea of what constitutes beautiful building are continuing in the great tradition of architecture.**"

The Uses of History

Behind the debate over Modernism was the question of the role history should play in design. Traditionalists and Modernists alike in the 1930s were seeking ways to avoid mimicking the past, but they remained divided over how much of the past an architect needed to know. According to Magonigle, the architect needed to know a lot: "Brunelleschi and Bramante ... did either reproduce the architecture they excavated and measured and drew and studied? Not at all. Each in his own day and time brought an architecture into the world as new." Magonigle argued that history should be a source of ideas, not styles. "That word 'style' ... connotes just the slough of 'adaptation' in which architecture in this country has floundered for more than a generation. **Style happens It can't be taught, no matter what the 'style source,' no matter how new the idea about it.**"



Mies's Weissenhof housing in Stuttgart. George Nelson wrote in relation to such repetitive housing that a "series of standardized dwellings ... may be used only when the life is similarly standardized: barracks, convents, prisons, dormitories, but never for families."

Modernists, however, were more wary of history because of its previous abuse by those who lacked conviction or insight. Nelson asked, "How many of our architects ... would abandon their bastard Gothic, emasculated Colonial, or the other shaking props, which they substitute for lack of convictions?" And, when Nelson asked Mies about an engraving of an Ionic capital in his office, Mies said, **"The old architects copy this sort of thing. We appreciate it."**

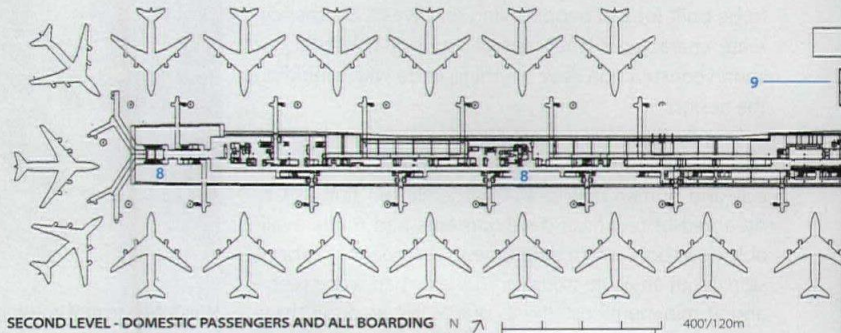
The Liberty Memorial in Kansas City, a competition-winning design by H. Van Buren Magonigle that reflected his efforts late in life to find a Modern traditionalism. "The architect," wrote Magonigle, must "free himself of stupid servitude to 'precedent' and really design, really compose."



Buy Now, Fly Later

The aerodynamic curves of the mile-long Kansai International Airport terminal in Osaka Bay enclose a shopping mall, along with the necessities of air travel.

by Richard D. Rush



SECOND LEVEL - DOMESTIC PASSENGERS AND ALL BOARDING N ↗ 400/120m



The Japanese archipelago has a new island, Kansai International Airport. At a cost of \$15 billion, a new aerial gateway has been opened to Osaka and the surrounding Kansai region. Somewhat over \$2 billion of this went into the one-mile-long passenger terminal, which opened last September to provide Japan's first 24-hour-a-day airline service.

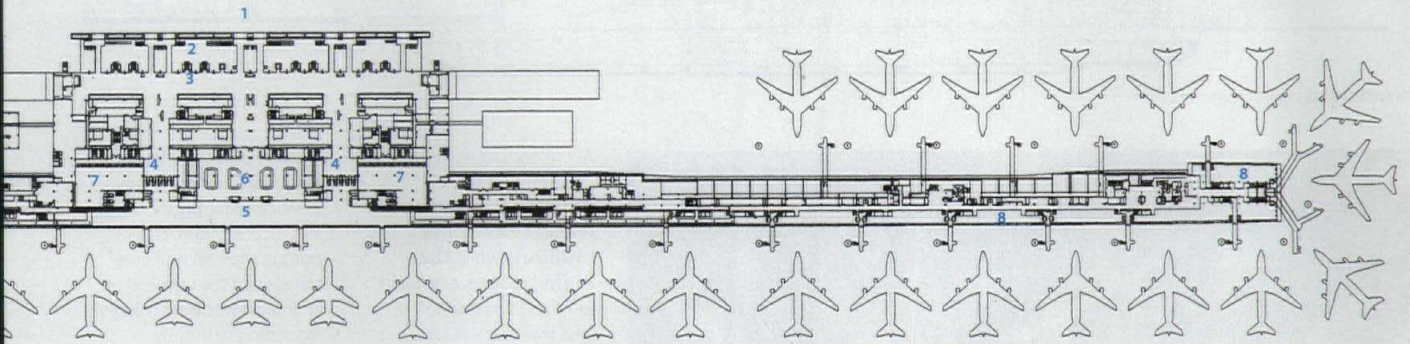
For this vast project, which represents the aspirations of this region, if not the entire country, the Japanese chose to demonstrate openness to foreign professionals by holding an international design competition (*P/A*, March 1989, p. 33). Although the vast majority of planes the terminal serves are American designed, some of our best architects were beaten in this competition by a

brilliant European team headed by Renzo Piano of Genoa and Paris, with Ove Arup of London. (Within a year, the international competition for the Tokyo Forum, with a projected cost of more than \$1 billion, was won by Rafael Viñoly of New York; see *P/A*, Jan. 1990, p. 27.)

Kansai International is the first international airport of such scale and significance since the Haj Terminal at Jeddah in Saudi Arabia, designed by Skidmore, Owings & Merrill (*P/A*, Feb. 1982). Both airports chose flamboyant computer-generated structures to express a bold formal identity. At Jeddah, S.O.M. engineer Fazlur Khan made visual reference to desert tents with a swooping translucent tensile structure. At Kansai, the upturned steel curves echo

To accommodate a new international airport, **an island was created** in Osaka Bay (above left). The mile-long metal-clad terminal was designed by a team including Renzo Piano, Peter Rice of Ove Arup, and the giant Japanese firm Nikken Sekkei, which alone was responsible for the control tower (above).

- | | |
|-------------------------|--------------------------------------|
| 1 GROUND TRANSPORTATION | 6 DOMESTIC ARRIVALS, BAGGAGE |
| 2 CANYON | 7 INTERNATIONAL ARRIVALS IMMIGRATION |
| 3 DOMESTIC CHECK-IN | 8 INTERNATIONAL BOARDING LOUNGES |
| 4 DOMESTIC DEPARTURES | 9 AIRLINE OFFICES |
| 5 BOARDING LOUNGE | |



Shinkenchiku-sha

the tiled roofs of Japanese shrines and temples, much as they were abstractly recalled in Kenzo Tange's Tokyo Olympic stadium of 1964 or Toyo Ito's recent museum at Lake Suwa (P/A, Oct. 1994, p. 29).

Under the Swooping Canopy

The symbolic uniqueness of Kansai lies in the roof of its main terminal, but from a distance this roof is practically invisible. There is no grand gesture to the arriving passenger like that of Saarinen's Dulles International. Kansai is just a silver sliver on the horizon as you approach it by bridge. The huge airliners on the runways are more visually pronounced than the building.

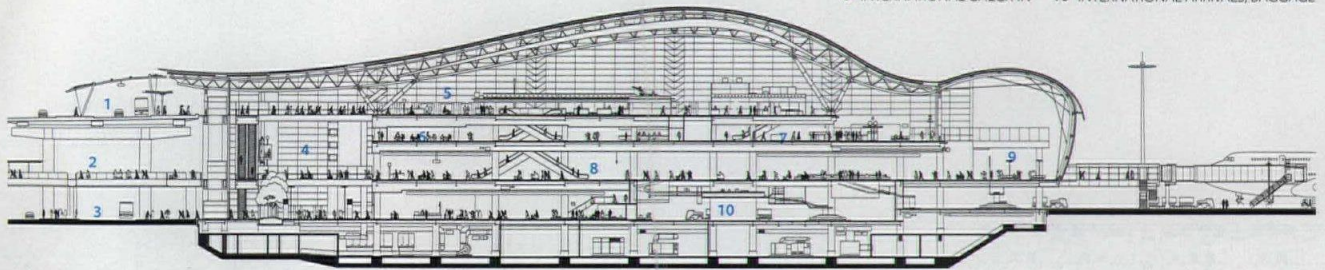
As one gets closer, the spectacular end eleva-

tion of the terminal's central blocks demands attention. The architects obviously are relying on the flowing roof shape to help direct passengers through the departure sequence, and they have specifically shaped each major departure-oriented space accordingly. The terminal roof sweeps up from a low point at the passenger entrance to a peak over international check-in hall, then terminates in a curl that wraps around the boarding areas.

Unfortunately, however, the entering passenger immediately encounters a contradiction of the roof form's logic. The "canyon" that penetrates the terminal's three lower levels opens up just inside the entry doors, violating the expectation of horizontality and layering that one gets

At the center of the terminal, **the sinuous metal canopy swoops up over the main check-in hall.** The photo above is from the field; on the land side vehicular ramps on two levels and pedestrian bridges to a garage and a transit station (section overleaf) dominate the view of the building. Within the terminal, automatic guided shuttle cars carry passengers to and from the international gates in the long wings.

- 1 DEPARTURE DROP-OFF
- 2 BRIDGES TO STATION
- 3 ARRIVAL PICK-UP
- 4 CANYON
- 5 INTERNATIONAL CHECK-IN
- 6 SHOPPING MALL
- 7 DUTY-FREE SHOPS
- 8 DOMESTIC PASSENGERS
- 9 DOMESTIC BOARDING LOUNGE
- 10 INTERNATIONAL ARRIVALS, BAGGAGE



TRANSVERSE SECTION, CENTRAL BLOCK

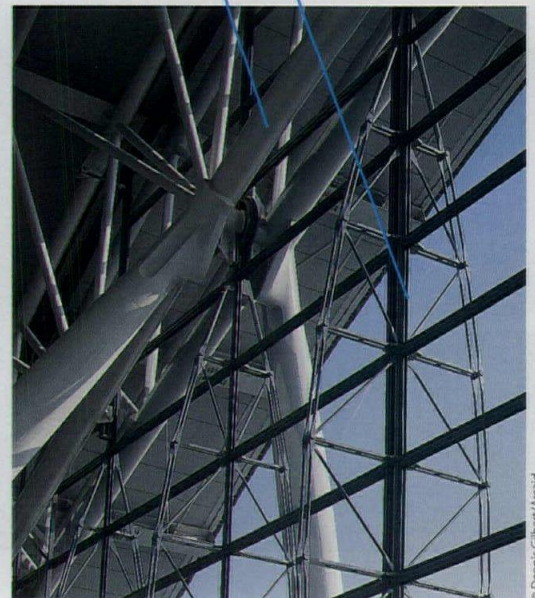
100/30m



Toshiharu Kitajima

At the ends of the international check-in hall, delicate bowstring trusses brace the mullions while the main trusses are split to allow the glass wall to pass through – illustrating

at two scales the virtuoso structural configurations developed jointly by Piano and Rice. At night, reflections in the end wall give travelers in the terminal an image of swooping trusses extending to infinity.



© Dennis Gilbert/Arcaid

The departing passenger approaching the terminal gets a revealing view of the **triangular trusses supporting the wave-like roof**, with the massive struts that carry them. The roof itself is a thoroughly repetitive system of steel purlins holding uniform metal panels.

on approaching the building. Inside, the roof continues to say “go straight ahead,” but the escalators and elevators visible in the canyon say, “go down.” This discrepancy suggests discord among the program components and among the members of the design team; they were clearly unable to resolve this conflict.

A Four-Layer Sandwich

The island site may have inspired the terminal’s unusual four-story internal arrangement. Passengers departing on international flights arrive at the top level, then descend after passing security to the third level, from which shuttles whisk them to departure gates. Arriving international passengers go down to the bottom floor

for baggage claim and ground transportation. The second level handles both departure and arrival of domestic passengers. Inserted at the third floor is the terminal’s most unusual programmatic feature, an extensive retail and restaurant area – essentially a shopping mall sandwiched into an airport.

The multifloor solution shortens horizontal distances in the terminal’s core (not in the wings, where the spacing of gates sets dimensions), but at the cost of additional level changes, which can be cumbersome. Escalators are adequate, but for those with wheelchairs or baby strollers elevators are few, slow, small, and oddly located. There are high-tech touch-screen orientation guides; though user-friendly, these are

Just inside the vehicular entrances, a **vast skylighted "canyon"** slashes through all of the terminal's public levels. On the third floor, the canyon is lined with the shops and restaurants of Kansai's unusual airport mall. The overall configuration of the space suggests that it is entirely a shopping mall, with the escalators and glass-enclosed elevators reinforcing that impression. The **sparse trees**, remnants of the competition scheme's proposed indoor-outdoor miniforest, only further this suggestion of a contemporary retail environment.



not placed at main entry points and are in themselves difficult to locate.

The High-Profile Low-Profile Roof

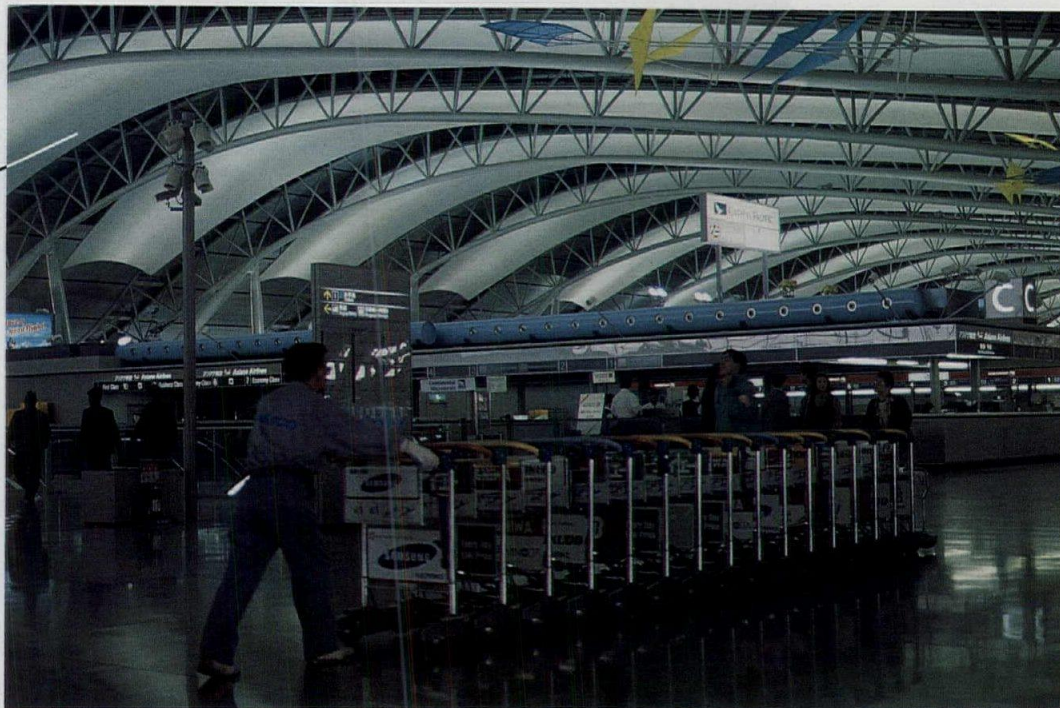
Is the terminal's sweeping metallic roof, its signature formal gesture, essentially structure pretending to be formal? Form pretending to be structure? More than anything, the roof is plain old styling, as in automobile styling, with the kind of aerodynamic organic flavor that cars often have. It is shaped first by intended space usage, then by structure, then by construction.

The bow-shaped structural members and pin joints allow transverse structural movement and flexibility. The beams must resist seismic movement, as well as spanning space. To that end,

trusslike beams in interior bays have a triangular cross section. In three dimensions, each one effectively contains a horizontal truss in the plane of the roof and two angled trusses. Despite the apparent complexity of the roof's curves, all parts are essential cylindrical or toroidal, allowing its entire surface to be clad with identical rectangular metal panels, for both economy and ease of construction.

The biggest visual flaw of the building, I believe, is the relationship of the reflectors in the international check-in hall to the arches of the triangulated roof structure. These reflectors are banana-shaped tensile fabric components that effectively remove both ambient lighting fixtures and ductwork from the space. Floating with no

In the international check-in hall, fabric reflectors suspended from the roof structure conceal lighting and direct air directed up onto them from huge duct nozzles. **Slight misalignments between reflectors and trusses**, however, undermine the impression of construction precision in the terminal's most monumental space.



Richard Rush

Crossing one of the canyon bridges toward the international check-in hall, the arriving passenger is thrust into intimate **contact with the terminal's muscular framing**, which is clad only with a fire-proofing coating. The three-fold increase in ceiling height and the 270-foot span of the trusses over the hall are dramatized. Compared to Centre Pompidou in Paris, on which both Piano and Rice worked, the structural elements here are more refined in contour and the exposed ductwork shaped and color-coded to subtler effect.



© Yutaka Kimumaki

discernible support, they reflect light and distribute air directed at them from the snouts of exposed vertical ducts. But the curves of these reflectors and the structural elements are just not mated accurately enough to dissolve into a single rhythmic pattern. Perhaps this discrepancy can be remedied in the course of future maintenance operations.

While departing international passengers experience in full the modulation of spaces under this roof canopy, domestic travelers are quickly shunted into more conventional spaces before emerging in the tubular, light-filled boarding lounge (facing page). Arriving passengers spend most of their time here in typical flat-ceilinged baggage claim and immigration halls.

A Mall of Its Own

The concept of fitting a shopping mall into a four-level stack of terminal functions is credited to Aéroports de Paris, which consulted on the airport's program before the architectural competition was held. Ove Arup contributed the crucial means of confining fire and smoke to the mall's level in case of emergency. Unfortunately, the "canyon" disperses the shopping mall image to all levels. This skylighted volume looks like a mall and feels like a mall, complete with the usual interior landscaping, glass-backed elevators, and escalators.

And why do we want a shopping mall here? If I am a departing passenger, my bags are packed. What else do I want to buy? The mall stores are



Along the field side of the terminal, the swooping roof wraps around to meet the floor at the second level, generating a tubular boarding lounge volume that extends, with diminishing height, to the extremities of the boarding wings. **An impressive display of crisscrossing steel members** is accentuated by daylight from the field.

Dennis Gilbert/Arcaid

much too crowded to be navigated with baggage in hand. And I have winnowed most of the yen from my wallet in anticipation of departure. For credit card purchases of last-minute gifts, there is always a duty-free shopping area beyond the security control point. Incoming passengers would rarely use the mall; maybe the people who await their arrival will. Business people may choose to fly in and meet at an airport restaurant. Perhaps this is why Kansai's mall, unlike normal commercial malls, emphasizes dining over retail.

At this point in its young life, the airport caters to a large population of nontraveling visitors, busloads of them. The added mall population does not contribute to airport efficiency or comfort for the passenger. It just reduces the

number of places to sit before check-in and security control.

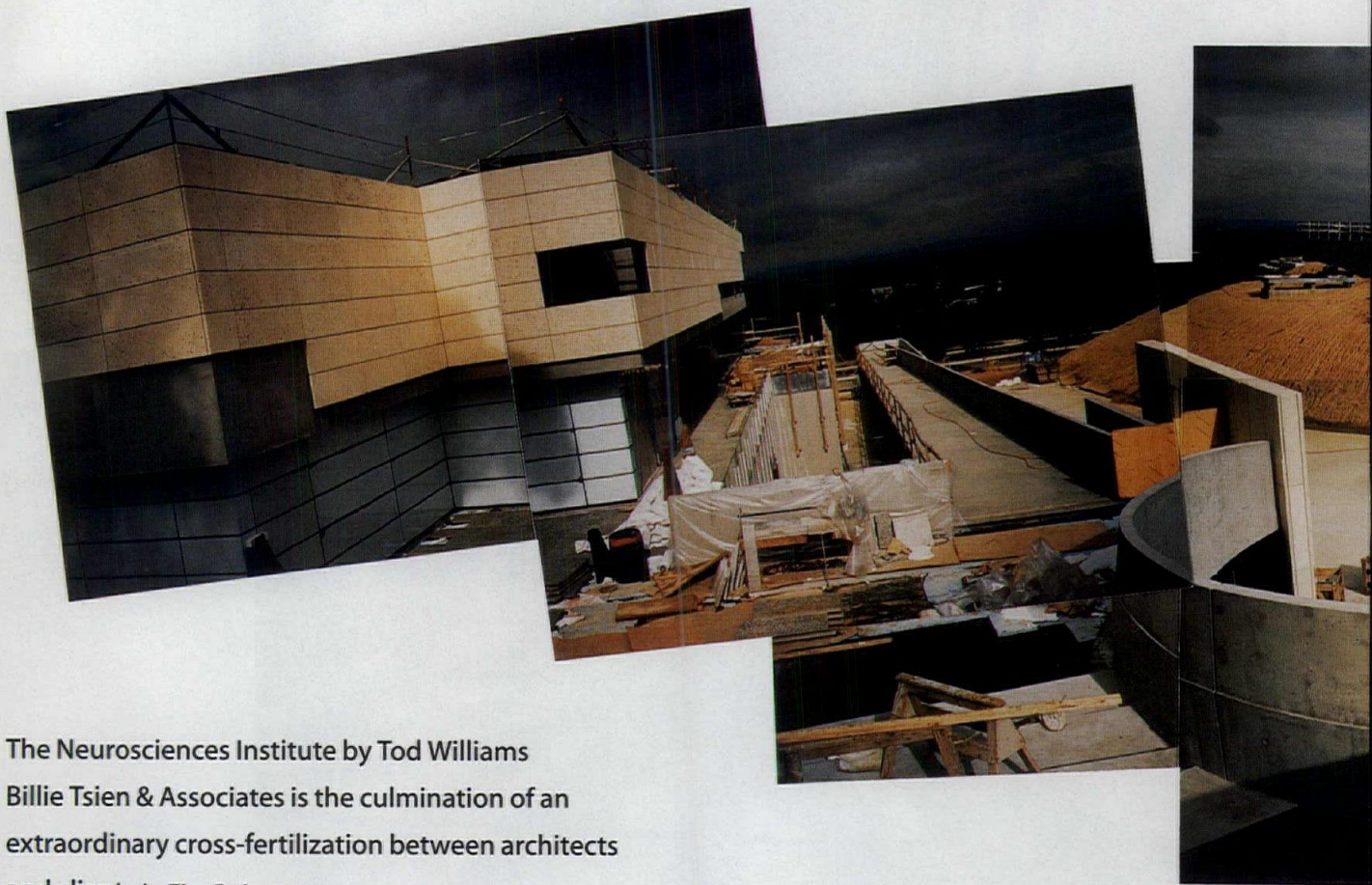
Form vs. Satisfaction

Virtuoso form-making as demonstrated in this Kansai terminal obviously gives a great boost to the image of its locale, but it's uncertain how much these moments of architectural inspiration do for the traveler trudging through airline rituals. Design can make the passage truly uplifting only if the terminal is functionally superior. For all the \$15-billion investment here, there are programmatic elements that do not make things easier for the passenger. When all is considered, this is functionally just an average airport – no better, no worse. □

Project: Passenger Terminal, Kansai International Airport, Osaka, Japan.

Architects: Renzo Piano Building Workshop Paris (competition phase), Renzo Piano Building Workshop Japan (design and construction phases), Renzo Piano and Noriaki Okabe, partners in charge; Nikken Sekkei (architecture, planning, and engineering teams, design and construction phases), Ove Arup & Partners International (structure and environmental teams, all phases). **Consultants:** Aéroports de Paris (concept, program, and shuttle design).

The Brain Exchange



The Neurosciences Institute by Tod Williams Billie Tsien & Associates is the culmination of an extraordinary cross-fertilization between architects and client. *by Ziva Freiman*

The Neurosciences Institute in La Jolla is the kind of commission most architects only dream about: an institutional project of complexity and prominence, husbanded by a client who needs no converting to the cause of good architecture. For Tod Williams Billie Tsien & Associates it materialized about three years ago, when the firm was poised to move on to bigger works, having a major addition to the Phoenix Museum of Art on the boards, and an artistic reputation built on small-scale projects and a promising new college at UVA.

The NSI was itself at a turning point: an esteemed independent organization funded by a not-for-profit foundation ready to build a home of its own after more than a decade of sheltering under the auspices of other institutions. In the interest of its own scientific community's enrichment, La Jolla's Scripps Research Institute invited the NSI to take up residence on leased land adjacent to the Scripps campus, while allowing it to retain its institutional independence. As added incentive, Scripps offered to underwrite the construction.

The program was big enough in size and vision to call forth architectural ideas with real fiber and soul, but not so ponderous as to smother the institute's own maverick spirit or overwhelm Williams & Tsien's penchant for understatement and spare, eccentric detail. Though the client was institutional, the

architects worked primarily with an uncommon individual: Dr. Gerald M. Edelman, founder and gray eminence of the NSI, whose revolutionary ideas about the human mind and the neurobiological sources of creativity greatly inspired the design – literally lending new meaning to the adage that good clients make good architecture (see sidebar, p. 78).

Located about half a mile away from the Salk Institute on the other side of North Torrey Pines Road, the site of the NSI hardly possessed the Salk's drama of "a pure view on the edge of a continent," as Williams puts it. At such proximity, however, the aura of the canonical building could not be escaped, driving the architects "to confront the Salk and not mimic it."

But even without the subliminal dialogue with Kahn's masterwork, the felicities of program and client would have been enough to fuel design of substantial interest.

The Spirit of the Place

The tenets guiding the formation of the Institute's physical home were in keeping with its spirit. "Because creativity necessarily begins with the self, we wanted to make a place for selfish individual creators, with no rules and no politics," Edelman explains. He envisioned a venue small enough (no more than 12 visiting fellows at one time) for unfettered ex-

A panorama of the Neurosciences Institute looking east: from left to right, an oblique view of the Theory Center, the entrance to the auditorium on the plaza level, and, extending to the south, the pedestrian walkway on the roof of the laboratory wing. The curved retaining wall in the foreground defines a courtyard at the junction of the Theory Center and the labs.



Peter Arnold

change among scientists old and young.

“Dr. Edelman wanted to make a ‘monastery for science,’” says Tsien. Since the NSI is surrounded by land designated for Scripps’s future expansion, it was clear that it would be necessary to protect the NSI’s monastic environment from the visual encroachments of the surrounding research park. “We wanted to create a compound that was separate,” says Tsien, “and to project the view outward.”

The hillside was scooped out to make a nonfigural “cloister” shaped by three structures: a raised Theory Center and a bermed laboratory wing form a U-shaped line of buildings oriented east; an auditorium with a bermed mechanical wing in the center of the void screen out the near view and humanize the scale of the winding plaza. “The true Neurosciences Institute is in the space between the buildings,” asserts Williams. “That is the principal intention of the design.”

The Nature of the Architecture

Edelman is much too polite to go on record criticizing the Salk. But between the lines of what he *will* say about his aspirations for the architecture of the NSI, one can discern a critique of his illustrious neighbor. “The Kahn building is a masterpiece of its kind,” he states. But Edelman wanted architecture

that was “not monumental,” and in which “every vista, every salient characteristic or place must be beautiful or interesting. I didn’t want people to be overwhelmed in one view and disappointed in another.”

Tsien is not nearly so cautious in describing the different qualities of the two institutes. “The purity of view and space is not something we’re looking for,” she says. “That’s my problem with the Salk – people seem like litter in it. Our whole thought about making places is that people can enter them without destroying the clarity of space.”

The architects’ approach meshed with Edelman’s vision of salience. As described by Williams, their work is about large-scale coherence *and* firsthand perceptions – an intimate enclosure, a glimpse – “tucked away” in unexpected places. “There is no singular view, no one experience we construct for you,” he explains, but rather diversions “into discovery” that render a wholly individual experience.

This phenomenological sensibility of simultaneity, un-replicability, and multiplicity of experience, and the way disparate parts of the NSI buildings inform each other on every scale, suggest an architectural analog for the way Edelman views the complex workings of the brain. He would insist that minds do not think alike, but perhaps this once they did. □

Meeting of the Minds: *The Client's Perspective on the Process*

The NSI project could have become the knotty "design by committee" scenario architects so often encounter with institutional clients. As it happened, although Williams & Tsien were officially employed by the Scripps Research Institute and answerable to members of both institutes' boards, they dealt primarily with a complementary duo: the "inspirational" director of the NSI, Dr. Gerald Edelman, and the "supportive" Dr. Einar Gall, the research director responsible for running the institute from day to day.

Williams & Tsien were selected for the job by a committee comprising local luminaries and representatives from both institutions. An iconoclast in his own field, Edelman wasn't one to be swayed by weighty reputations. While the net was cast wide among

prominent names in the profession, he was struck by Williams & Tsien for a number of reasons. "We knew they would take this project very seriously," he says, "something that was enormously persuasive for us." Furthermore, "with Williams & Tsien we knew there would be no thrust toward any kind of monumentality, and no stylistic dogma." The architects managed to "transcend the listmaking" Edelman associates with a good deal of architectural production. "They got the details in but never lost sight of the global."

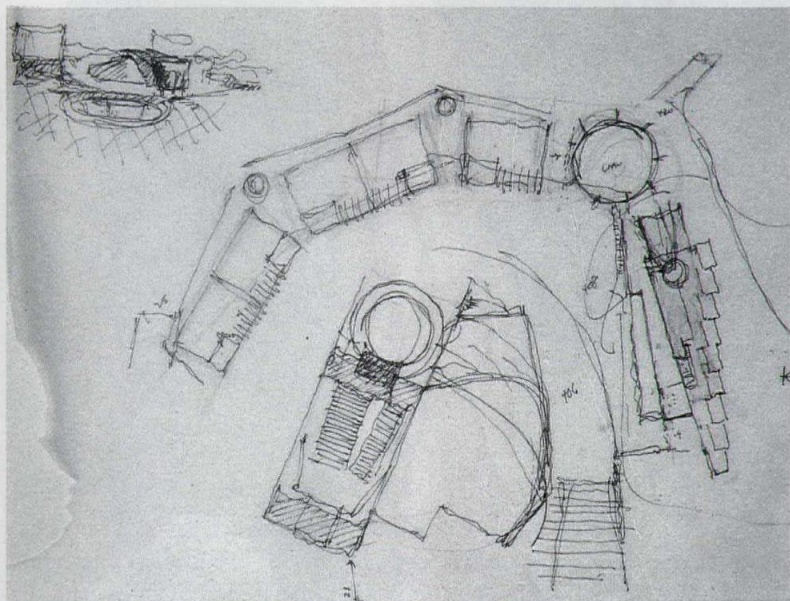
"With Tod and Billie one was putting together two extraordinary sensibilities," Edelman observes, describing the "artistic quasi-romanticism" of Williams and the "reductionism and taste" of Tsien. The design "captures the distance, the entity, between them."

In scientific circles Edelman is reputed to have a fearsome ego; perhaps that is why he found the absence of histrionics so appealing in the architects. They did not pretend to have all the answers and did not consider compromise a defeat, he relates, but always "aimed toward resolution." At the same time, Williams and Tsien picked their fights (as in going to bat for a \$30,000 projecting stone bench no one would ever use – a "grace note" in the Theory Center that Edelman now roundly appreciates).

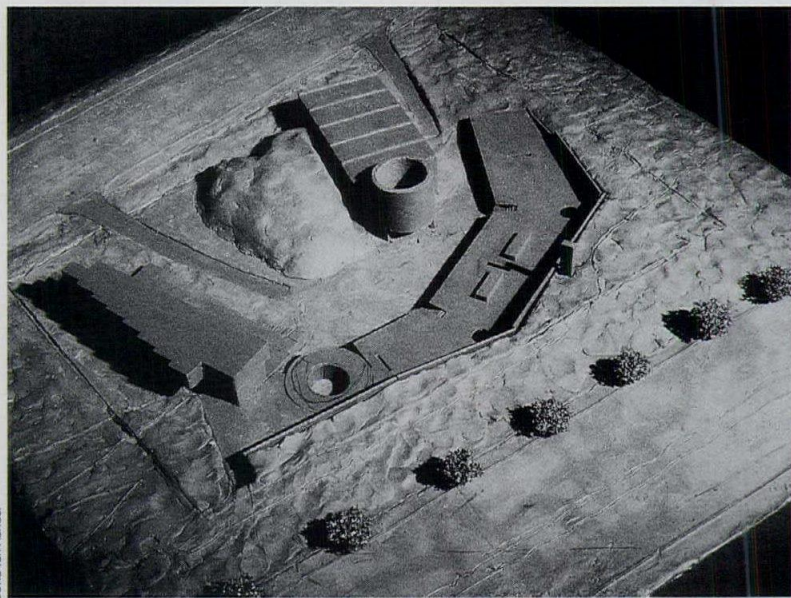
Curiously, in their dialogue with Edelman, the architects found themselves working with a client who, by virtue of his own life's work, was more deeply vested in the creative process itself than in any of its possible products. A biologist and 1972 Nobel laureate in immunology, Edelman defected to neurobiology in the early 1970s to confront one of the last great mysteries: how the brain gives rise to the higher functions of the mind. Central to the theory he has developed over the intervening decades is a vehement refutation of the computer model of the brain. Instead, Edelman posits an evolutionary model subject to Darwinian principles. (It is perhaps entirely coincidental that he ended up with architects who steadfastly ban computers from their studio.)

In an essay for the catalog of the upcoming Whitney Biennial, entitled "The Wordless Metaphor: Visual Art and the Brain," Edelman argues that "the brain does not work by instruction (as a computer does) but by selection" among myriad neural connections. By way of suggesting which neural networks will survive, Edelman emphasizes that "because it has no instructional program, but works by selection upon variation, the brain of a conscious animal must relate perception to feeling and value, whether inherited or acquired. These are the constraints – feeling and value – that give direction to selection within the body and brain."

As is amply evident in the design of the NSI, architects forever struggle with the balance between intuitive, emotive "art" and critical rigor. Now comes a theory that on the profound neurobiological level validates what we have empirically found to be true: the design process, too, is a Darwinian cycle of sorts – essentially diverse, evolutionary, critical, and reiterative.



PARTI SKETCH WITH PERSPECTIVE SKETCH IN TOP LEFT CORNER

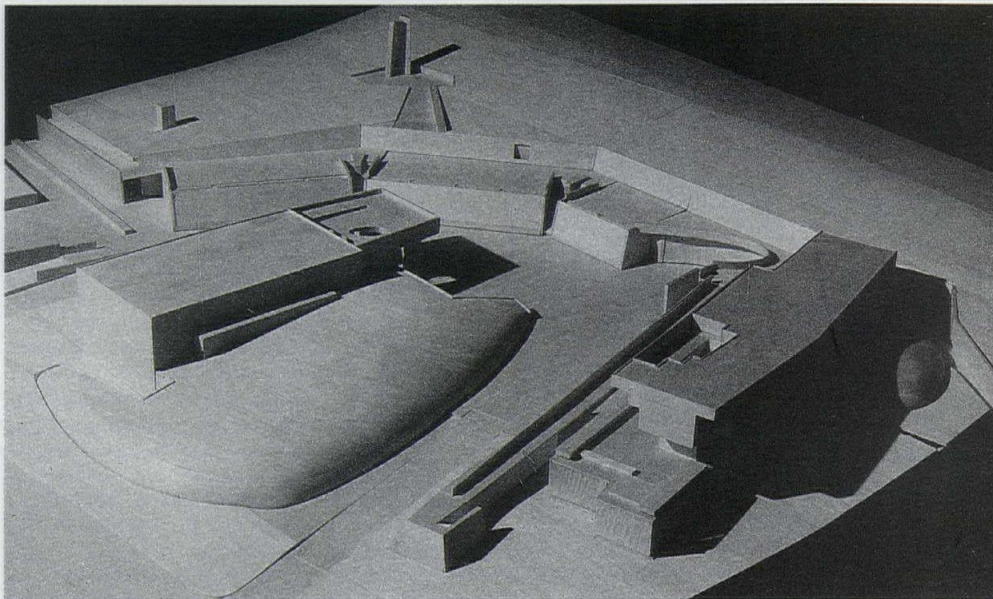


CONCEPTUAL CLAY MODEL

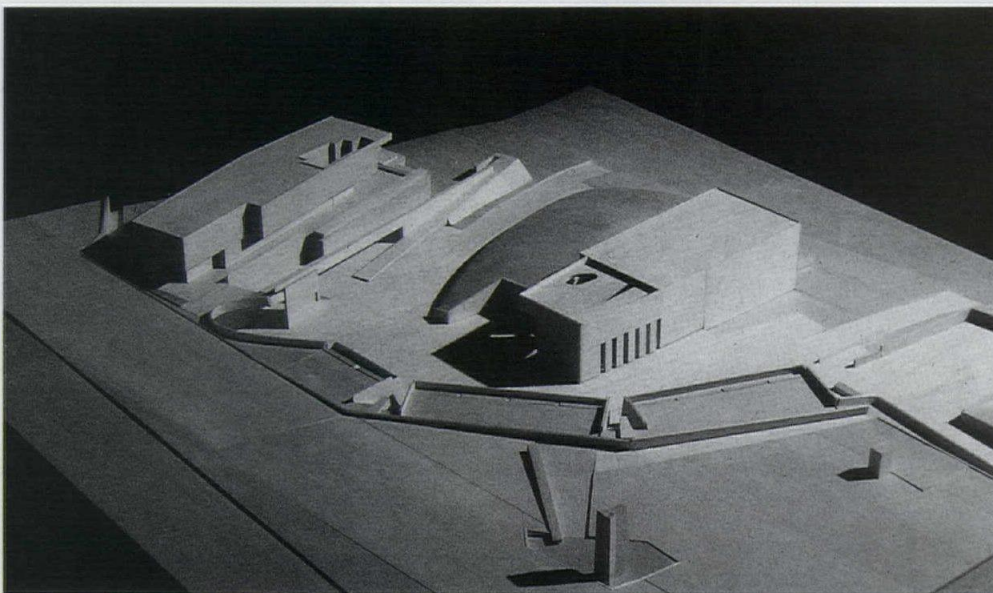


Peter Arnold

PANORAMA FROM SOUTHWEST



MODEL VIEWED FROM NORTHEAST



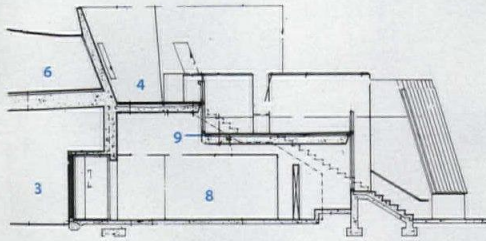
MODEL VIEWED FROM SOUTHWEST

The close-to-final models of the scheme (left) illustrate one of the substantive differences between Kahn's Beaux-Arts-informed Modernism at the Salk Institute, with its symmetry and hierarchy, and Williams & Tsien's organic, nonfigural sensibility brought to bear at the NSI. The conceptual clay model and parti sketch (facing page) clearly express the architectural strategies used to address the project's strongest programmatic requirement: the creation of public spaces conducive to chance encounters and cross-fertilization among scientists. The winding "plaza" and walkway on the roofs of the laboratory wing form a latterday "cloister" and gallery; the spaces defined as cones in the conceptual model represent the compound's focal gathering places. One is located at the juncture of the Theory Center and the labs; the other forms a forecourt to the auditorium. Counter to the seclusion implicit in the creation of a cloister, the walkway on the roof of the bermed labs (foreground in panorama above) connects to points beyond the NSI compound. To the north, a tunnel beneath North Torrey Pines Road leads to the Scripps Research Institute campus; to the south lies the site of future Scripps expansion.

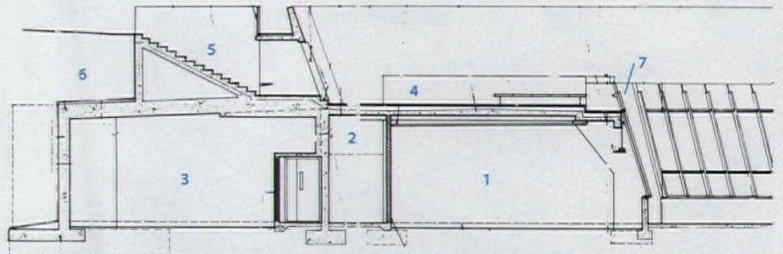
Model photos: Matthew Baird

LABORATORIES

- 1 LABORATORY FACING PLAZA
- 2 CORRIDOR
- 3 BERMED LABORATORY
- 4 WALKWAY
- 5 STAIR TO TOP OF BERM WITH SMALL SHELTER
- 6 BERM
- 7 GLAZED PARAPET
- 8 STEPPED CEILING CONFERENCE ROOM
- 9 CONFERENCE ROOM CLERESTORY



CROSS SECTION THROUGH LAB CONFERENCE ROOM AT NORTH STAIR

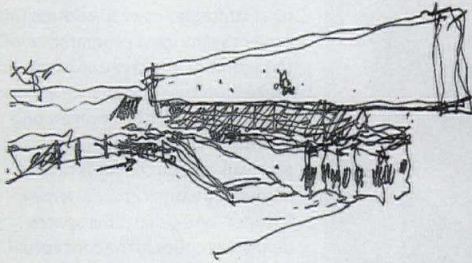


CROSS SECTION THROUGH LABORATORY (NOT OUTFITTED)

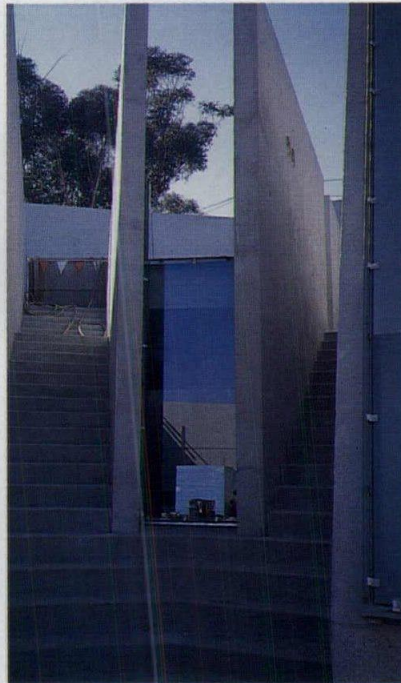
Photos: David van Handel



THEORY CENTER UNDER CONSTRUCTION VIEWED FROM NORTHEAST



THEORY CENTER CONCEPTUAL SKETCH



NORTH STAIR, CLERESTORY TO CONFERENCE ROOM

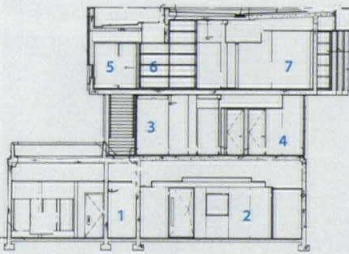
The scientific cloister will be occupied by two distinct emotional and intellectual types – theoreticians and empiricists. “Dr. Edelman always saw the theoreticians as almost floating, while the lab folks are more grounded,” explains Tsien. These oppositions led to architectural contrasts: the Theory Center was conceived as a raised, cantilevered structure looking to the far horizon (sketch, left), while the elongated wing of laboratories is embedded in the earth. The primary gathering space identified in the early phases of the design at the joint between the Theory Center and the labs was built as an intimately scaled circular courtyard at plaza level (bottom left), which is overlooked by the NSI dining room on the ground floor of the Theory Center. “Lunch should be a shared experience,” says Edelman, “when older and younger fellows come together over a scrambled egg to discuss the brain.” Fronting the plaza, the canted glass façade of the labs becomes the parapet/handrail for the rooftop walkway (detail, p. 85). The glass is a laminate sandwich that is sandblasted on its top two thirds and clear on the bottom third. The second of the two primary gathering spaces, located in front of the auditorium, is set off from the plaza’s concrete pavers by a serpentine stone surface that continues into the auditorium. From that point, the architects created a gradual transition into the hall proper: visitors traverse a porous, relatively lofty loggia to reach a narrow lobby enclosed by vast pivoting doors, which in turn lead into even more compressed vestibules that give onto the concert hall. Stairs between the plaza level and the rooftop walkway are tucked into “knuckles” connecting the increments of the labs. Two triangular voids were created between the flights: one is given over to a water court, and the other houses a small conference room lighted by clerestories (photo, near left, and section, top left).



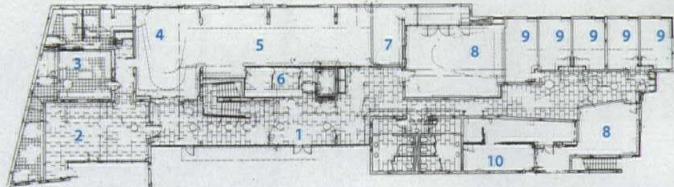
COURTYARD AT JUNCTURE OF LABS AND THEORY CENTER

THEORY CENTER

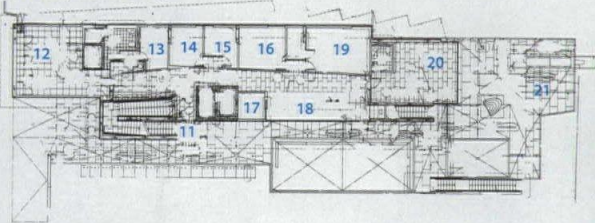
- 1 MAIN CORRIDOR
- 2 CONFERENCE ROOM
- 3 STAFF
- 4 RESEARCH DIRECTOR
- 5 FUTURE FELLOW'S OFFICE
- 6 PARTIALLY COVERED COURTYARD
- 7 FELLOW'S OFFICE



THEORY CENTER CROSS SECTION THROUGH THIRD FLOOR COURTYARD



GROUND FLOOR PLAN (PLAZA LEVEL)



SECOND FLOOR PLAN (TERRACE/WALKWAY)

THEORY CENTER

- 1 ENTRANCE
- 2 DINING
- 3 KITCHEN
- 4 READING ROOM
- 5 LIBRARY
- 6 LIBRARIAN/RECEPTION
- 7 PROJECTION ROOM
- 8 CONFERENCE ROOM
- 9 VISITING FELLOW'S OFFICE
- 10 MECHANICAL
- 11 ENTRANCE AT TERRACE LEVEL
- 12 COMPUTER ROOM
- 13 STORAGE
- 14 PUBLISHING
- 15 EDITOR
- 16 ADMINISTRATION DIRECTOR
- 17 COPY ROOM
- 18 STAFF
- 19 RESEARCH DIRECTOR
- 20 DIRECTOR
- 21 INACCESSIBLE ROOF TERRACE
- 22 MECHANICAL
- 23 EXPERIMENTAL
- 24 FELLOW'S OFFICE
- 25 COURTYARD
- 26 GRAPHICS
- 27 FUTURE FELLOWS' OFFICES

LABORATORIES

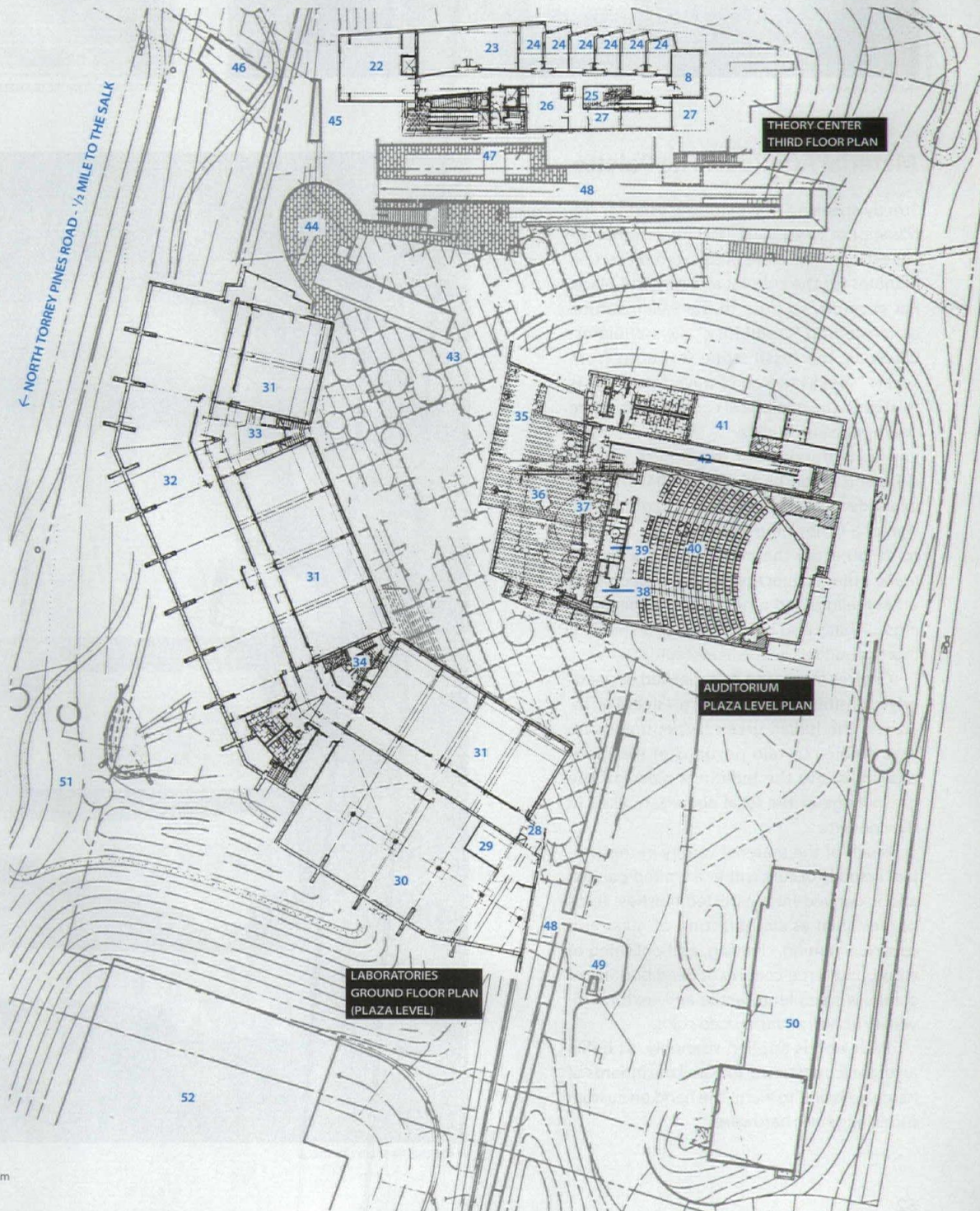
- 28 ENTRANCE
- 29 ELECTRICAL ROOM
- 30 MECHANICAL ROOM
- 31 LABORATORIES
- 32 LABORATORIES UNDER BERM
- 33 CONFERENCE ROOM (NOT DRAWN)
- 34 OPEN WATER COURT

AUDITORIUM

- 35 FORECOURT DEFINED BY STONE PAVING
- 36 LOGGIA
- 37 ENCLOSED LOBBY
- 38 VESTIBULES
- 39 PROJECTION ROOM
- 40 ACOUSTICALLY SEALED CONCERT HALL
- 41 SEPARATE MECHANICAL AND SERVICES WING
- 42 HANDICAPPED ACCESS RAMP

SITE

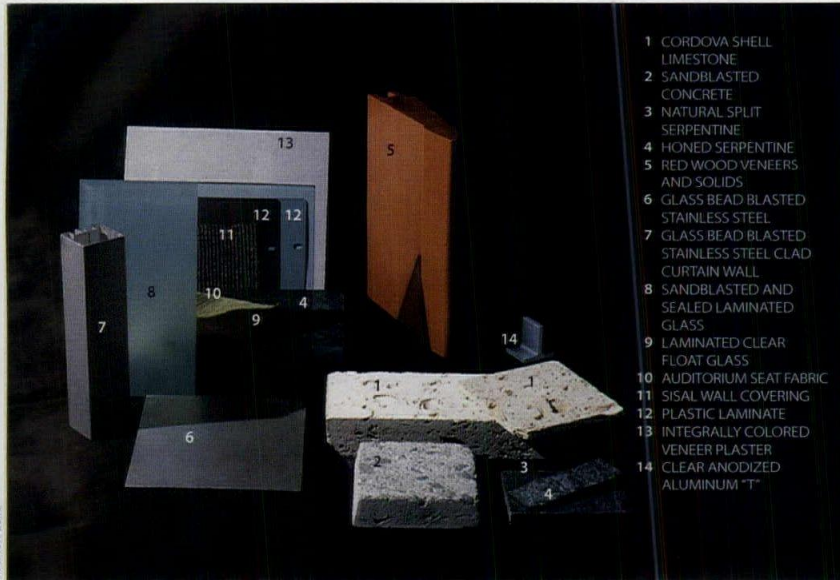
- 43 PLAZA
- 44 COURTYARD WITH WATER FEATURE
- 45 LAB ROOF-LEVEL WALKWAY AND COURT
- 46 TUNNEL TO SCRIPPS CAMPUS
- 47 PLANTED MOUND WITH STONE BRIDGE
- 48 RAMPS TO WALKWAY LEVEL
- 49 CAST-IN-PLACE LABORATORY FLUE
- 50 UTILITY BUILDING AND YARD
- 51 FELLOWS' GARDEN (NOT BUILT)
- 52 PARKING (SITE FOR FUTURE SCRIPPS EXPANSION)



THEORY CENTER THIRD FLOOR PLAN

AUDITORIUM PLAZA LEVEL PLAN

LABORATORIES GROUND FLOOR PLAN (PLAZA LEVEL)



- 1 CORDOVA SHELL LIMESTONE
- 2 SANDBLASTED CONCRETE
- 3 NATURAL SPLIT SERPENTINE
- 4 HONED SERPENTINE
- 5 RED WOOD VENEERS AND SOLIDS
- 6 GLASS BEAD BLASTED STAINLESS STEEL
- 7 GLASS BEAD BLASTED STAINLESS STEEL CLAD CURTAIN WALL
- 8 SANDBLASTED AND SEALED LAMINATED GLASS
- 9 LAMINATED CLEAR FLOAT GLASS
- 10 AUDITORIUM SEAT FABRIC
- 11 SISAL WALL COVERING
- 12 PLASTIC LAMINATE
- 13 INTEGRALLY COLORED VENEER PLASTER
- 14 CLEAR ANODIZED ALUMINUM "T"

Matthew Baird

PALETTE OF MATERIALS



David van Handel

AUDITORIUM CONCRETE SHELL

Material Affinities: The Palette

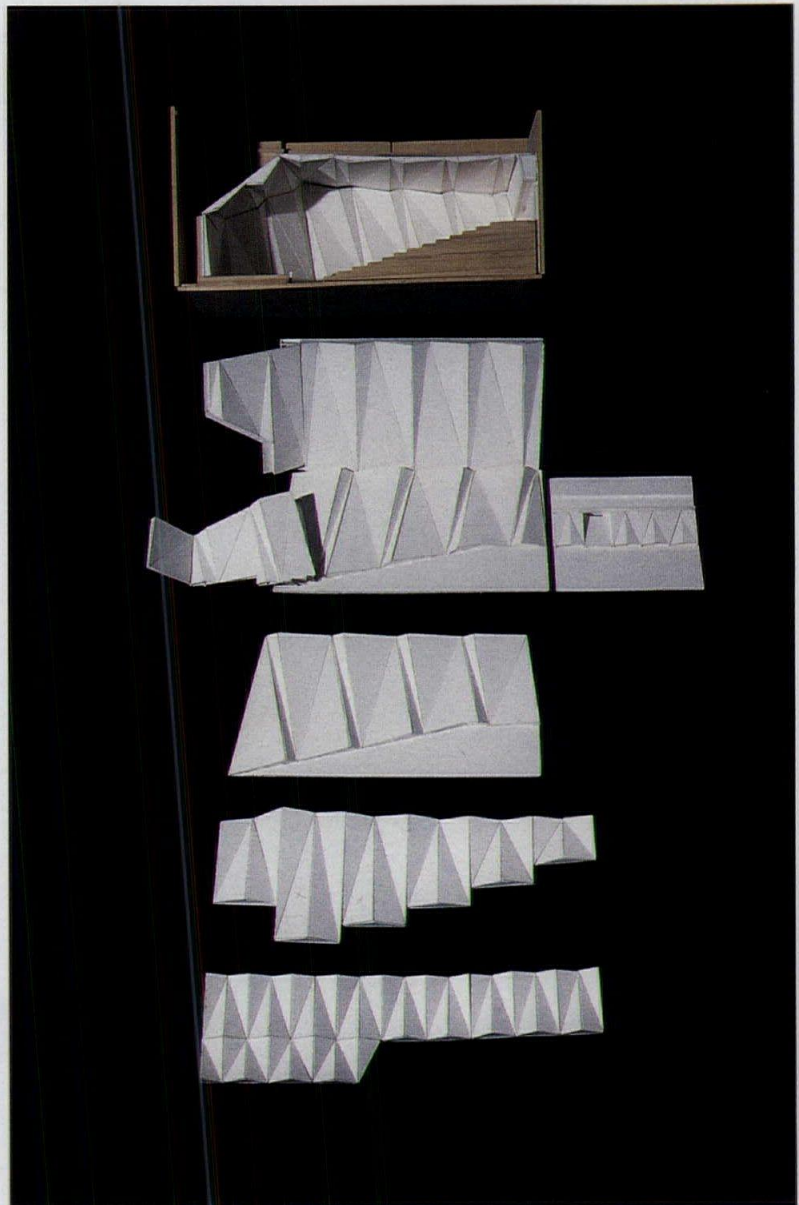
Strictly speaking, the materials used for the NSI are not contextual. Nonetheless, the architects' choices were predicated on certain affinities for the cultural and physical place. For example, so close to the Salk Institute, concrete had "credibility," says Williams. Likewise, the fossil stone (brought from Texas) "speaks to Kahn's travertine," and is related to the geological composition of the nearby oceanside cliffs.

In an interview for the Finnish journal *Arkkitehti*, published in May 1994, Williams expanded: "We actually encourage discussion of a richer variety of materials as a way to de-objectify the place, to find a way to make other connections to other people, to other feelings and other senses of the buildings.... That's also part of making a building more grounded [in the landscape]."

Choices for paving material had a "painterly" sensibility, according to Tsien. For instance, the Italian green serpentine stone that defines certain portions of the plaza and spills into the buildings plays off the green tinge of the local aggregate used in the concrete.

Much of the material variety in this project actually occurs within a limited palette, and is derived from assorted finishes. Techniques such as sandblasting of glass and concrete, honing, cleaving, and polishing of stone, and terne-coating or bead blasting of stainless steel, lend tactile and textural diversity as well as variegated color.

Redwood is applied sparingly, as befits an organic substance, to panel the innards of hard shells and to warm the hand on custom furnishings and hardware.



AUDITORIUM STUDY MODELS

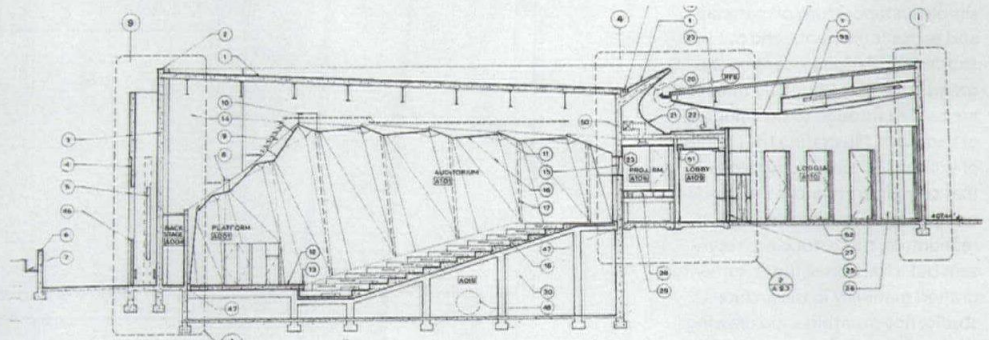
Matthew Baird

In the auditorium, Edelman, a violinist, was intent on having not only a place for scientific forums, but a "first-class" concert hall. Preeminent acoustician Cyril M. Harris ("some kind of genius," in Edelman's book) was inveigled to consult on the construction of an acoustically sealed chamber for unamplified music. A faceted "box" made of hard, reflective plaster was built within the auditorium's concrete shell. Designed like an instrument, as team member Erika Hinrichs puts it, the inner shell was devised to ensure the same sound in every seat: sound-swallowing right angles were avoided in favor of oblique, sound-dispersing triangular planes forming both sides of the hall, the wall behind the stage, and the ceiling. The rear wall is flat and absorptive. With Harris's input to a series of study models (facing page), the design evolved from the regular array in the lowest model to the asymmetrical rhythmic forms seen in the top model and in the construction panorama above. The panel structure is relatively simple: a web of steel C-channels with 1-inch plaster on a rib lath. The ceiling, however, having to accommodate electrical, mechanical, a/v systems, and cat-walks along the side walls, was "a real challenge to build," reports project architect David van Handel, who has spent the past 18 months on site. The challenge of lighting the auditorium gave rise to translucent "light pipes" tucked into the hall's panel joints (details, p. 84). A similarly creative solution was found in the loggia, where a massive "light scoop" (section and wall section detail, right) washes the bellied plaster ceiling with daylight.



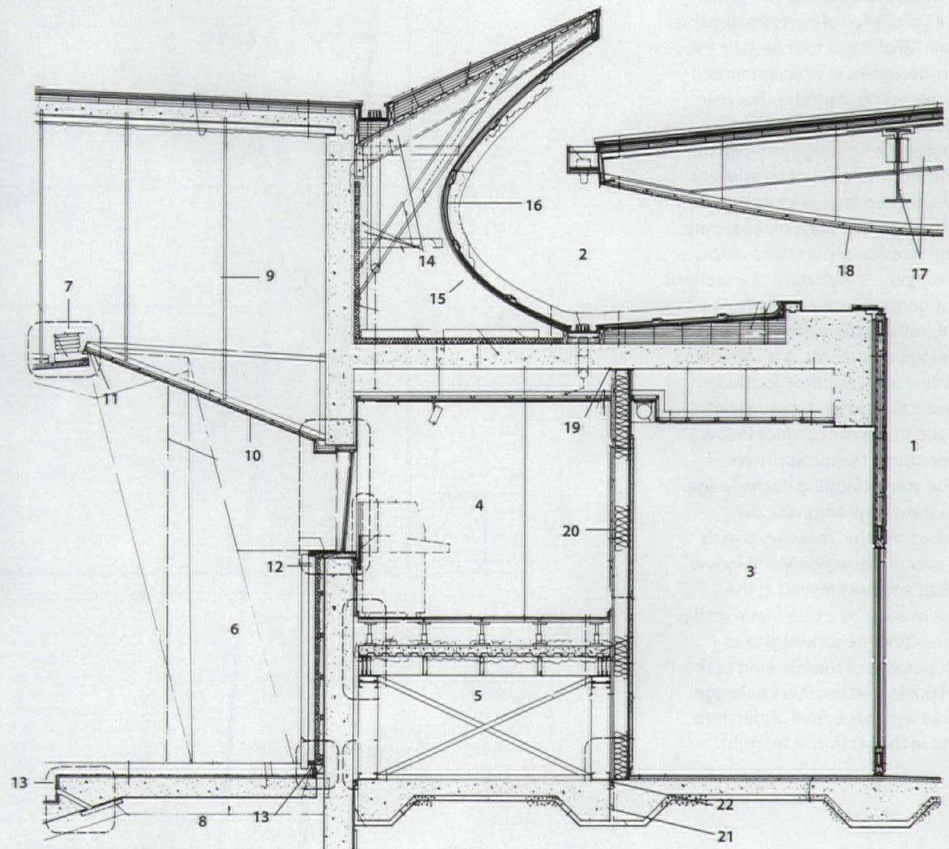
Peter Arnold

AUDITORIUM PLASTER FACET CONSTRUCTION



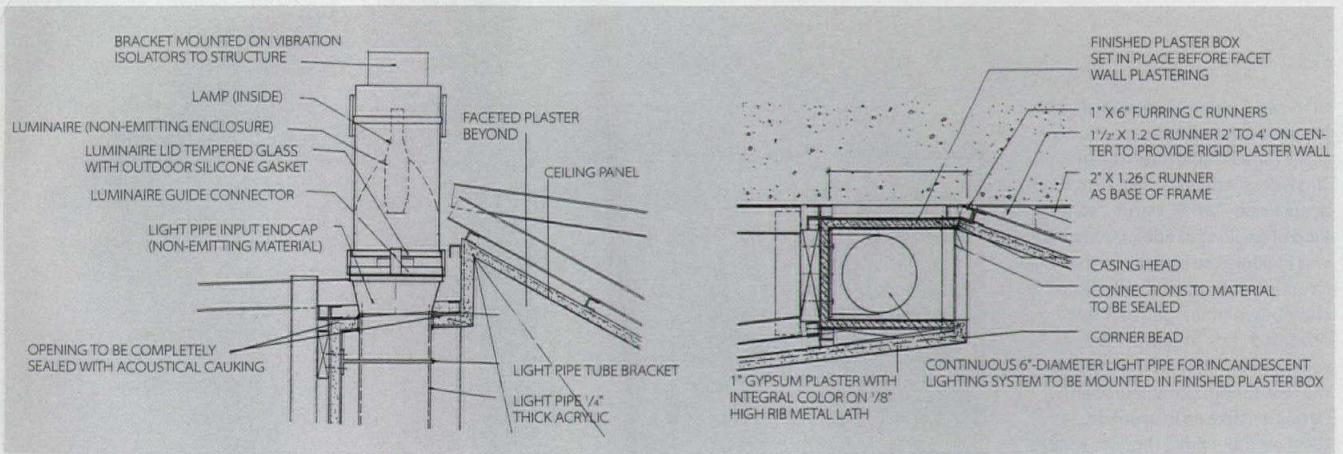
AUDITORIUM LONGITUDINAL SECTION

20'/6m



PORTION OF AUDITORIUM WALL SECTION

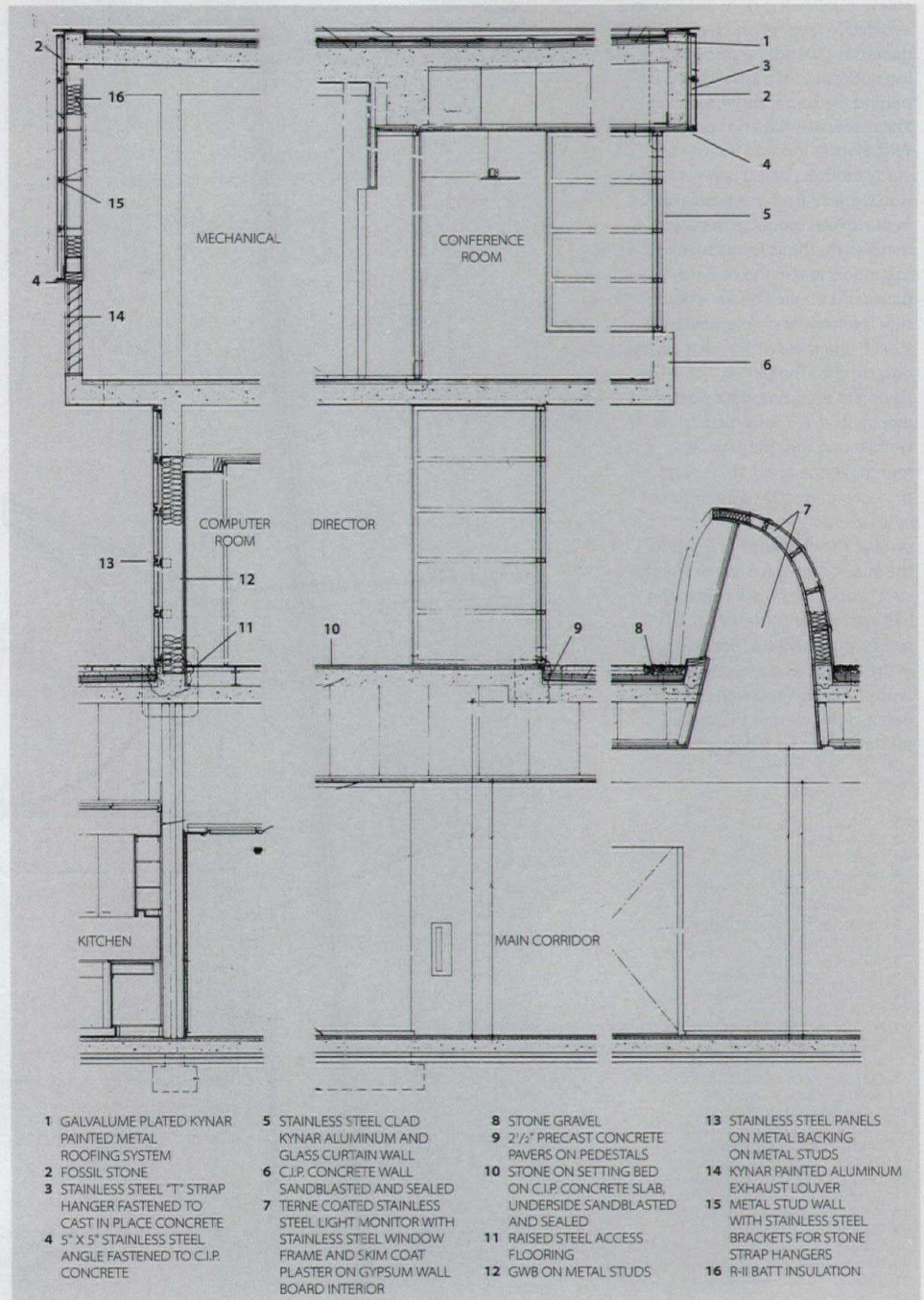
- 1 LOGGIA
- 2 LOGGIA LIGHT SCOOP
- 3 LOBBY
- 4 PROJECTION ROOM
- 5 OPEN UNDER BUILT UP-FLOOR
- 6 CHAMBER MUSIC HALL
- 7 SUPPLY AIR PLENUM WITH SOUND INSULATION
- 8 RETURN AIR PLENUM
- 9 1" X 1/16" STEEL BAR HANGERS
- 10 FACETED WALL AND CEILING ASSEMBLY
- 11 LINEAR DIFFUSER
- 12 REAR WALL ASSEMBLY: VERTICAL HARDWOOD BATTENS OVER FABRIC ON STEEL PLATES ON BLOCKING FURRED OUT FROM WALL AND FILLED WITH 2" FIBERGLASS INSULATION WITH ACRYLIC POLYMER COATING
- 13 2" RETURN AIR SLOT
- 14 STRUCTURAL STEEL FRAMING FOR CANTILEVERED ROOF SUPPORT
- 15 METAL STUD FRAMING FOR CURVE
- 16 1/2" 24-GAUGE GALVANIZED METAL B DECK
- 17 STEEL BEAMS
- 18 1" PLASTER CURVED HUNG CEILING
- 19 TOP OF WALL TO BE SOUND SEALED TO CONCRETE
- 20 FULL-DEPTH BATT INSULATION
- 21 STRUCTURAL SEPARATION
- 22 COMPRESSION SEAL



AUDITORIUM LIGHTPIPE SECTION DETAIL AT LUMINAIRE

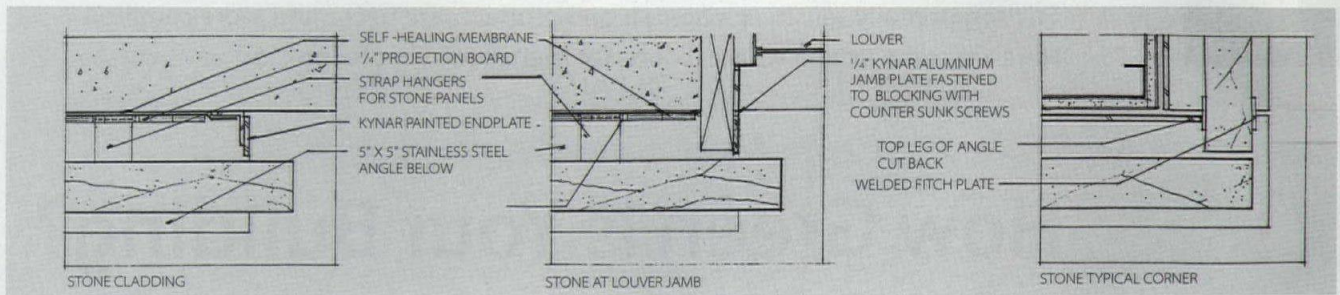
PLAN DETAIL AT VERTICAL LIGHT SLOT

The details on these pages epitomize the depth and consistency of Williams & Tsien's design process. The abstraction of form, deceptively simple juxtapositions of materials and tectonic elements, and the subtle articulation evident on the grand scale of the building masses are carried through to the minutiae of hardware. Illustrating the courage of Williams & Tsien's conviction that computers hamper the hands-on reiteration crucial to design refinement, these drawings represent but a fraction of the documents drafted manually in the architects' studio: not counting shop drawings, there are some 70 sheets in the construction set, and approximately 300 more in an exhaustive "sketchbook" chock full of every imaginable detail. All of it was executed by five to six designers in what amounted to a six-month charrette. The pair of details at top, left and right, describe the lighting system in the auditorium: a series of translucent pipes, tucked into crevices between the hall's angled plaster panels, are illuminated by fixtures above the ceiling panels. A portion of a section through the Theory Center, near right, reflects the variety of its envelope treatments. A terne-coated stainless steel monitor, located on an inaccessible landscaped roof terrace, lights the corridor below. Three characteristic approaches to the stone cladding (facing page, top) show how emphatically nonbearing thin masonry panels lap over metal window and louver frames and are finished at the bottom edge by a thin metal angle. Connecting the canted glazed wall/parapet of the lab wing to the roof presented another challenge, solved with deceptive understatement in the section at far right.



THEORY CENTER WALL SECTIONS

- 1 GALVALUME PLATED KYNAR PAINTED METAL ROOFING SYSTEM
- 2 FOSSIL STONE
- 3 STAINLESS STEEL "T" STRAP HANGER FASTENED TO CAST IN PLACE CONCRETE
- 4 5" X 5" STAINLESS STEEL ANGLE FASTENED TO C.I.P. CONCRETE
- 5 STAINLESS STEEL CLAD KYNAR ALUMINUM AND GLASS CURTAIN WALL
- 6 C.I.P. CONCRETE WALL SANDBLASTED AND SEALED
- 7 TERNE COATED STAINLESS STEEL LIGHT MONITOR WITH STAINLESS STEEL WINDOW FRAME AND SKIM COAT PLASTER ON GYPSUM WALL BOARD INTERIOR
- 8 STONE GRAVEL
- 9 2 1/2" PRECAST CONCRETE PAVERS ON PEDESTALS
- 10 STONE ON SETTING BED ON C.I.P. CONCRETE SLAB, UNDERSIDE SANDBLASTED AND SEALED
- 11 RAISED STEEL ACCESS FLOORING
- 12 GWB ON METAL STUDS
- 13 STAINLESS STEEL PANELS ON METAL BACKING ON METAL STUDS
- 14 KYNAR PAINTED ALUMINUM EXHAUST LOUVER
- 15 METAL STUD WALL WITH STAINLESS STEEL BRACKETS FOR STONE STRAP HANGERS
- 16 R-II BATT INSULATION



THEORY CENTER STONE CLADDING DETAILS

Project: The Neurosciences Institute, La Jolla.

Architects: Tod Williams Billie Tsien & Associates, Architects, New York (Tod Williams, Billie Tsien, *principals*; David van Handel, *project architect*; Erika Hinrichs, Matthew Baird, Betty Chen, Chris McVoy, Peter Burns, Brett Ettinger, Yoshiko Sato, *design team*; Peter Arnold, Martin Finio, Johannes Kaferstein, Matthew Pickner, Marwan Al-Sayed, Vivian Wang, *assistance*).

Associate Architect: Joseph Wong Design Associates, La Jolla.

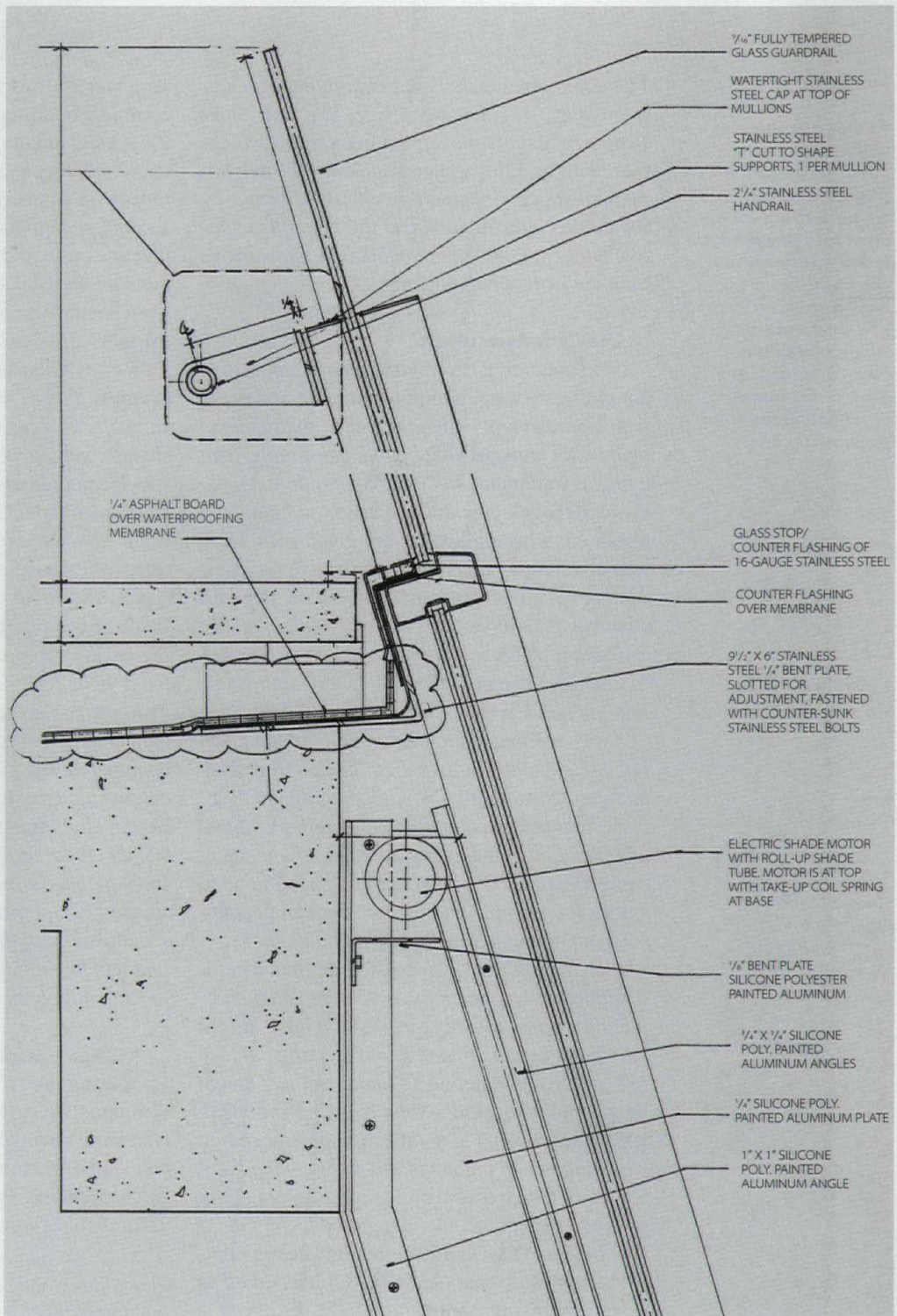
Client: The Scripps Research Institute, La Jolla; The Neurosciences Institute (Dr. Gerald M. Edelman, director).

Program: 56,000 gross sq ft including: Theory Center with 18,000 sq ft for reception, library, reading room, dining room, kitchen, offices, conference rooms, primary computer facilities, experimental areas, and mechanical; Laboratory Wing with 25,000 sq ft for reception, offices, research labs, conference room, mechanical and support spaces; Auditorium with 18,000 sq ft for 352-seat hall, green room, kitchen, mechanical and support spaces; Utility Building with 3,000 sq ft for central plant, delivery and storage areas.

Consultants: Burton Associates, landscape architect; Dr. Cyril M. Harris, acoustical; Severud Associates, structural; Tsuchiyama, Kaino & Gibson, mechanical; Randall Lamb Associates, electrical; Ambrosino, DePinto & Schmieler, consulting engineer; RBF/Sholders and Sanford, civil engineer; Klepper Marshall King, audio-visual; McKay Conant Brook, acoustical/AV; A.I. Associates, laboratories.

General contractor: Ninteman Construction Co.

Cost: \$16 million.



LAB GLASS PARAPET/WALL DETAIL

Environmentally sensitive materials and products are becoming more common. Here are some tips on where to look for them, and what to look for. *by Alex Wilson*

How Green is Your Building?

Abstract

A variety of environmentally sensitive or "green" building materials and products are coming to market. Architects, however, have little guidance in determining what is a green material and what isn't. This article examines how the environmental attributes of building materials are evaluated, and provides a sampling of some of the new green products.

The environmental building movement is steadily growing, as it has been since the late 1980s. Nowhere has this movement been more evident than with building materials. New low-environmental-impact or "green" materials are entering the market almost daily, and thousands of existing materials are being modified to improve their environmental performance.

Life-Cycle Assessment

Understanding the environmental impacts of a building material is a quite complex undertaking. For starters, impacts occur at different phases of a material's life cycle. For example, with gypsum wall board we need to consider how the raw materials – gypsum and cellulose fiber – are obtained; what pollutants are given off during manufacture; whether there are health concerns during manufacture, installation, or use; and what happens at the end of the material's useful life (can it be reused or recycled?). We also need to consider the energy used in extracting raw materials and in their manufacture.

Some refer to such life-cycle assessment (LCA) as "cradle-to-grave" or "cradle-to-cradle" analysis. Note that LCA is different from "life-cycle cost analysis," which considers purchase, operating, and maintenance costs of a piece of equipment over its expected life, enabling us to justify, for example, more expensive compact fluorescent lights over incandescent bulbs.

Comparing the LCAs of different materials is complicated by the fact that you are often comparing apples to oranges – Material A might result in contaminated water runoff from mining, while Material B's major impacts might be air pollution emissions from incineration when the material is worn out and disposed of. Deciding which impact is less severe – and thus, which is the greener building material – is a tricky judgment call.

The American Institute of Architects' Environmental Resource Guide (ERG), published in quarterly installments since 1992, has gone a

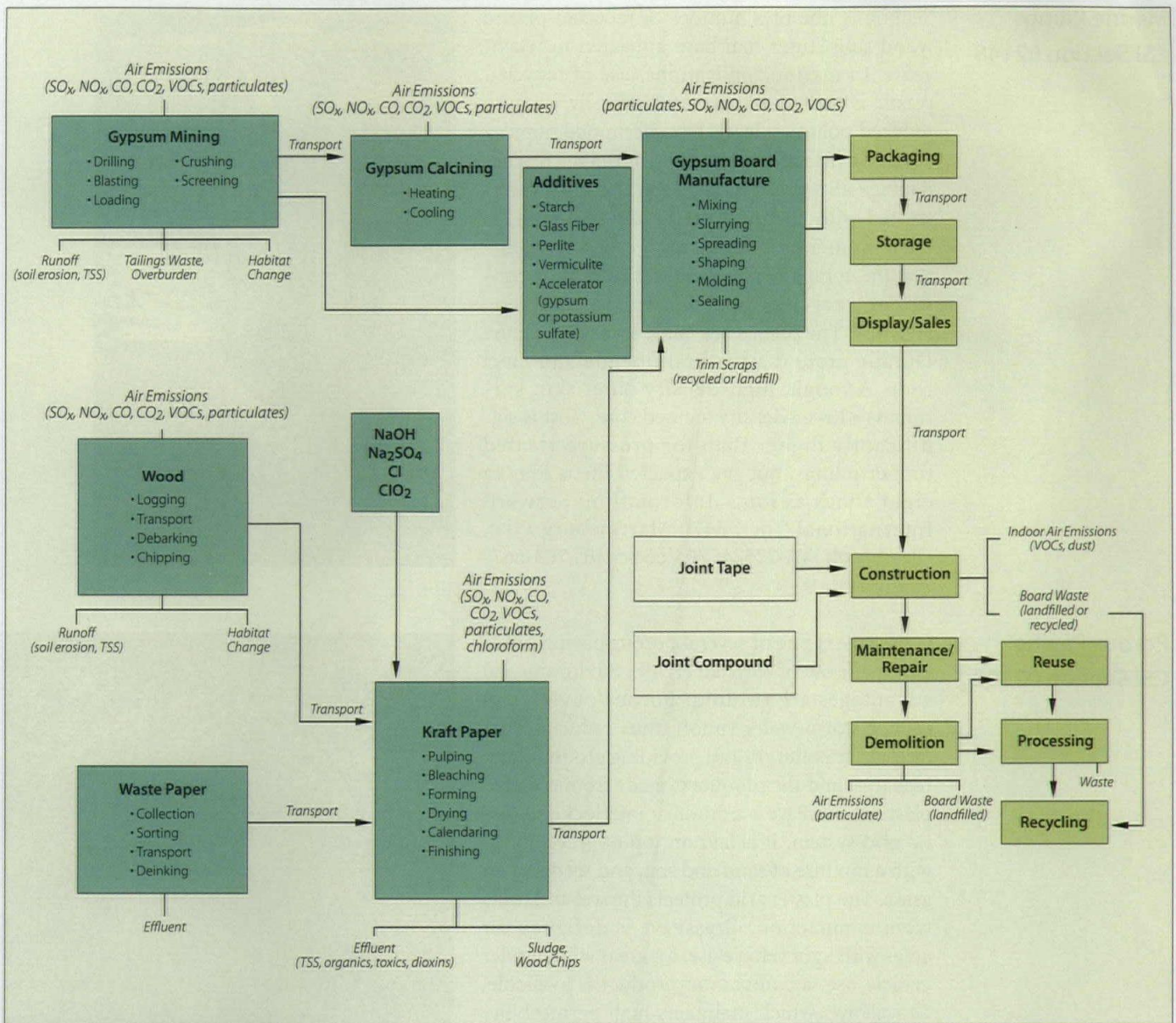
long way toward describing the LCAs of many common building materials. The complexity of these assessments is clear in the life-cycle "flow chart" (facing page) taken from a recent ERG report on gypsum wall board. The flow chart shows gypsum-board material extraction, manufacture, use, and disposal. The ERG also contains an analysis of the environmental impacts associated with each stage in the life cycle. These impacts are "cascading," meaning that one impact may cause others. Gypsum mining, for example, results in tailings waste, which leads to runoff, which can result in increased turbidity of surface waters, which causes oxygen depletion, which can ultimately kill fish.

This kind of LCA for building materials is still quite new. We are very fortunate that the AIA foresaw a need for this information a few years ago and solicited funding to conduct LCAs. The Institute has carried out about two dozen assessments over the past three years under a grant from the U.S. Environmental Protection Agency. Through the process, AIA's contractor, Scientific Consulting Group in Rockville, Maryland, has been perfecting a simplified methodology for assessments that is applicable to an architect's needs. Unfortunately, there are many materials left to study, and prospects of long-term EPA funding are, at best, uncertain. If government support disappears, manufacturers and trade associations may pick up the slack and fund independent LCAs, but having the industry involved in the funding raises concerns about objectivity.

A Green Materials Sampler

Making the call as to whether a product's environmental attributes are significant enough to warrant its being labeled as "green" can be difficult. Although some products are now "certified" by independent, third-party certification organizations that thoroughly investigate a product's

Alex Wilson is editor and publisher of Environmental Building News in Brattleboro, Vermont.



LIFE-CYCLE ASSESSMENT SUMMARY OF GYPSUM WALL BOARD

life-cycle environmental impacts, for most products and materials it is still a shoot-from-the-hip assessment.

The products listed on the following three pages, arranged according to CSI format, were chosen from among the hundreds that I'm aware of. They were selected not only because of their environmental attributes, but also to demonstrate the tremendous variety found among green materials and products today. Some are from mainstream companies that are modifying existing products to satisfy demand for low-impact materials. Others are from small, start-up companies that are bringing to market good ideas. While this is by no means a comprehensive listing, it should give architects a sense of what is available and where the building products industry is heading.

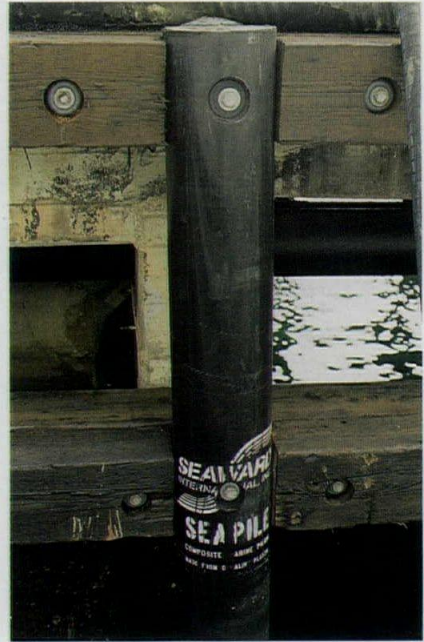
As the list demonstrates, materials can fall

into the green category for many different reasons. When shopping for green materials it is important to know what your priorities are – energy efficiency, low toxicity, and resource efficiency are all important goals, and products that excel in one area may be weak in another. Always seek independent verification of manufacturers' claims for environmental performance, and make sure the product doesn't fall short of conventional performance criteria.

This is a quickly evolving area of product specification. Keeping up to date on developments with green materials and products requires an investment in time and information. The resources listed at the end of this article provide a good starting point, but it is also useful to attend conferences where you can network with other architects and with builders who have had actual experience with these products.

Marine Pilings CSI Section 02148

Seapile is one of a number of recycled plastic wood substitutes that have appeared in recent years. In marine applications, use of recycled plastic is gaining popularity, ironically, because reduced pollution levels have permitted populations of marine borers to increase. Borers damage all wood pilings, even those pressure-treated with chemical preservatives. Seapile is made from a proprietary resin called Duralin™ that the company manufactures from post-consumer, recycled high-density polyethylene (HDPE). The pilings are made by extruding the Duralin around structural fiberglass or steel rods. A tough, high-density outer skin surrounds a lower-density foamed core. Cost is significantly higher than for pressure-treated timber pilings, but the expected life is four to eight times as long. Information: Seaward International, Inc., 3470 Martinsburg Pike, Clearbrook, VA 22624; 703-664-5191, 703-667-7987 (fax).



Porous Paving CSI Section 02500

GrassPave is one of several porous paving products made out of recycled HDPE. Environmental advantages are twofold: porous paving can reduce storm water runoff, thus reducing surface-water pollution and providing ground water recharge; and the product is made from recycled plastic. GrassPave is a modular interlocking plastic grid system. It is laid on top of gravel, filled with a mixture of sand and soil, and seeded with grass. The plastic grid protects the soil and roots from compaction. GrassPave is designed for areas with light vehicle use; for areas with heavier vehicle use, a companion product is available, GravelPave, which maintains high permeability by preventing compaction of the gravel. By eliminating the need for an expensive storm water management system, GrassPave, GravelPave, and other porous paving systems can reduce total project costs tremendously. Information: Invisible Structures, Inc., 1470-D East 33rd Place, Aurora, CO 80011; 303-344-2233, 303-344-2232.



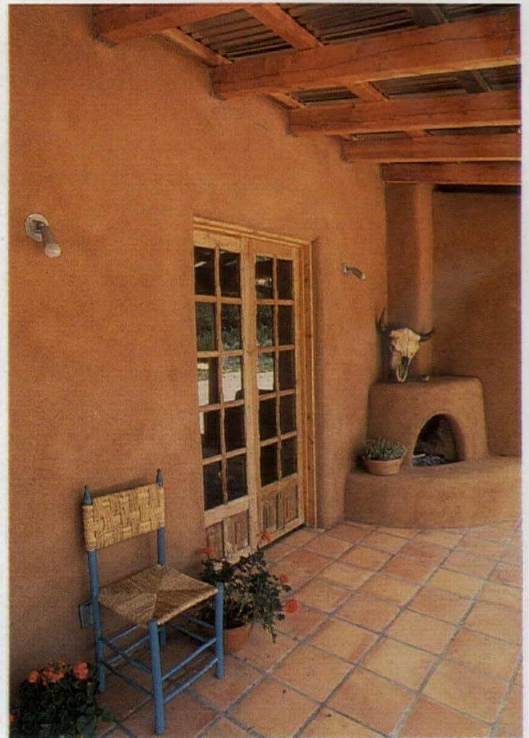
Precast Concrete CSI Section 03400

Aerated or cellular concrete has been used in Europe for decades. By this summer, Hebel Southeast will be producing aerated concrete in a new factory in Georgia. The lightweight, precast blocks can be cut and shaped with woodworking tools. They are stacked with a thin-set mortar between courses, then surface-bonded with a special stucco. Because of its resistance and its ability to store heat, an 8-inch wall of Hebel block thermally outperforms an R-30 wood-stud wall, according to the company. While Hebel will be using virgin materials in block production, an-

other company is developing a block made principally from fly ash (a waste product from coal-fired power plants). North American Cellular Concrete, with support from the electric utility industry, has been demonstrating the process with a mobile plant and hopes to gear up for full production in the future. Information: Hebel Southeast, 3800 Camp Creek Parkway, Building 2600, Suite 120, Atlanta, GA 30331; 404-344-2897. North American Cellular Concrete, 3 Regency Plaza, Suite 6, Providence, RI 02903; 401-621-8108, 401-861-9527 (fax).

Unit Masonry- CSI Section 04200

Plastered straw bales are in many ways the ideal environmental building material for one-story buildings. They are made from a waste material (stems of cereal grains), millions of tons of which are burned annually in fields, and they insulate extremely well (about R-50 for a three-wire bale). Once compacted into bales, straw is remarkably fire resistant. ASTM E-84 tests of straw-bale wall assemblies in New Mexico found that without plaster, a bale wall achieved a 34-minute fire rating; with plaster stucco on both sides (right), straw-bale walls exceeded a two-hour rating. Drawbacks include the very thick wall and the fact that straw-bale construction is so different from light-frame or masonry block construction that it is hard to imagine the mainstream building industry getting used to this system. Information: The best source of information on straw-bale construction is *The Straw Bale House*, a new book by Althena Steen, Bill Steen, and David Bainbridge, Chelsea Green Publishing, P.O. Box 428, White River Junction, VT 05001; 802-295-6300, 802-295-6444 (fax).



Lumber CSI Section 06100

Some architects have turned away from wood framing to using steel and other materials because of environmental concerns about forestry practices. Perhaps a better answer to these concerns is to specify wood from certified well-managed forests. There are now two forests certified by Scientific Certification Systems (SCS) that are producing dimension framing lumber for regional markets: Collins Pine in California and

Seven Islands in Maine. While certifiers shy away from the term "sustainable," both of these operations have been closely examined by forestry experts brought in by SCS and are rated by three different criteria as "well managed." Information: Collins Pine Co., P.O. Box 796, Chester, CA 96020; 916-258-2111; 916-258-4266 (fax). Seven Islands Land Co., P.O. Box 1168, Bangor, ME 04402; 207-947-0541, 207-945-5148 (fax).

Wood Preservative CSI Section 06310

CCA (chromated copper arsenate) has been the mainstay of the pressure-treated wood industry. Environmental concerns with CCA are greatest in the early and late stages of the life cycle – mining of raw materials, processing and shipping chemicals, and disposal of CCA-treated wood, particularly by incineration. There is also concern about leaching of CCA from treated wood in use. Now there is a new chemical with neither

chromium nor arsenic, ACQ (ammonium-copper-quaternary), which the manufacturer claims to be safer. Manufacturers of ACQ and CCA are funding a third-party study of the environmental characteristics of these two materials; results of that study should be available this year. Information: Chemical Specialties, Inc., One Woodlawn Green, Suite 250, Charlotte, NC 28217; 704-522-0825, 704-527-8232 (fax).

Insulation CSI Section 07200

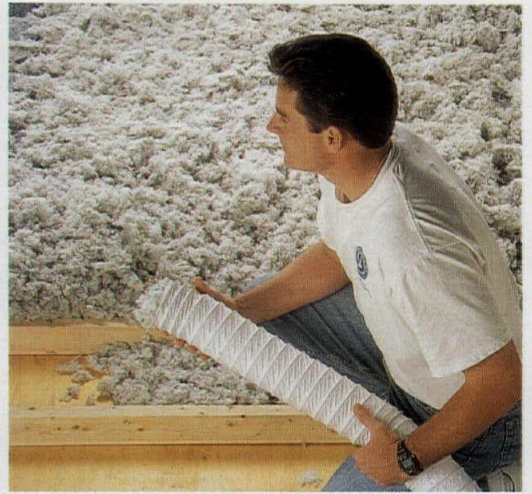
Owens Corning's new Miraflex fiber is called the most significant new development in fiberglass insulation in the past 60 years. A composite of two types of glass, the fibers are stronger, more resilient, and less likely to break than conventional glass fibers. In fact, because the insulation is less likely to introduce fibers into the air, Miraflex might not even have to carry the OSHA cancer warning label required on other fiberglass products (that determination had not yet been made). Because the fiber is twisted and springy, a



Insulation
(continued)
CSI Section 07200

phenol-formaldehyde binder is not required, so there is no risk that formaldehyde will offgas into the indoor environment, and less pollution is created during manufacturing. Another big environmental benefit from the springiness is that the rolls pack much more tightly, so four times as many can fit onto a truck, thus greatly reducing the energy required for shipping. Information: John Zaloudek, Owens Corning, One Fiberglas Tower, Toledo, OH 43659; 614-321-7731, 614-321-5606 (fax).

Another significant development in fiber insulation is a recycled cotton insulation just introduced in the Southeast. Greenwood Cotton (right) is made from 95-percent post-industrial recycled cotton and polyester fabric. It is treated with fire-retardant chemicals used in the textile industry and its energy performance is comparable to that of fiberglass. There are no irritating fibers; gloves and mask are not required for in-



stallation; and no binders are used in the manufacture. Information: Greenwood Cotton Insulation Products, Inc., P.O. Box 1017, Greenwood, SC 29648; 800-546-1332, 800-942-4814 (fax).

Carpet
CSI Section 09680

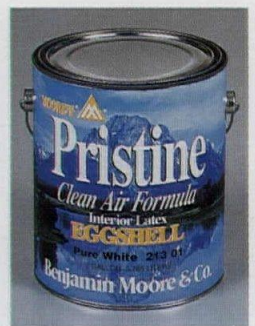
Carpeting has been implicated as one of the most significant indoor-air-quality problems in buildings. While the carpet itself may release dozens of chemicals, the adhesive used to secure most carpet can be as bad or worse. TacFast™ is a new Velcro® system for securing carpet that is licensed to carpet manufacturers. A "loop" fabric is attached to the carpet backing, and 4-inch-

wide "hook" tape is secured to the floor perimeter, at all carpet seams, and wherever else carpet bonding is needed. While TacFast holds the carpet firmly in place, it can easily be pulled up for removal or repositioning. Information: TacFast Systems Canada Ltd., 15 Wertheim Court, Suite 710, Richmond Hill, ON L4B 3H7; 905-886-0785, 905-886-5765 (fax).

Paint
CSI Section 09900

The past few years have seen efforts in the coatings industry to limit the amount of volatile organic compounds (VOC) released when paint is applied and dried. Two large paint manufacturers, Glidden and Benjamin Moore, now offer zero-VOC latex paints. Glidden's Spred 2000 and Lifemaster 2000 lines were introduced in 1993; Benjamin Moore's Pristine™ line is currently available in the New York/New Jersey area and will be introduced nationally this month. Zero-VOC paints are available in only limited premixed whites and off-whites because the tints used to achieve other colors contain VOCs. Cost is slightly above that of conventional latex paints, and performance is generally

comparable, although drying times differ, so painters have to adjust their techniques slightly. Glidden's residential product, Spred 2000 does not have as good wear characteristics as its commercial product, Lifemaster 2000.



Information: Benjamin Moore & Co., 51 Chestnut Hill Road, Montvale, NJ 07645; 201-573-6620, 201-573-9046 (fax). Glidden Company, 925 Euclid Ave., Cleveland, OH 44115; 216-344-8000.

Emergency Lighting
CSI Section 16535

Conventional exit signs use two 15- or 20-watt long-life incandescent bulbs that last about a year. Compact fluorescent exit signs consume less than half the electricity (about 12 watts), and the lamps last twice as long (roughly two years). New LED (light-emitting diode) exit signs from AstraLite and several other companies dramatically surpass both in energy performance and longevity, consuming just one-to-two watts and having an expected life of 80 to 100 years. Even

though the exit signs cost more than incandescent and fluorescent models, the energy and labor savings provide quick payback. Battery back-up, flashing, and other features are available. With more than 100 million exit signs in the U.S. that are on all the time, widespread conversion to LED units will offer tremendous energy and environmental benefits. Information: AstraLite, P.O. Box 476, Annandale, NJ 08801; 908-735-0232, 908-638-4463 (fax).

Green Building Information Sources

AIA Environmental Resource Guide, 1735 New York Ave., NW, Washington, DC 20006; 202-626-7300, 202-626-7508 (fax). Quarterly installments of detailed information on building material life cycle assessments, case studies, and other information on environmental design and material specifying. \$165/year.

Build Green Hotline, Greater Toronto Home Builder's Association; 416-822-4111, x 372. The GTHBA has undertaken a "Build Green Program" to develop public and industry awareness of building materials with recycled content. Their hotline will provide information on a wide variety of such materials available in Canada.

Building With Nature, P.O. Box 369, Gualala, CA 95445; 707-884-4513. Bimonthly professional networking newsletter on the creation of nontoxic environments.

Center for Maximum Potential Building Systems, Inc., 8604 FM 969, Austin, TX 78724; 512-928-4786, 512-926-4418 (fax). Nonprofit education, research, and demonstration organization focusing on the application of appropriate building and resource technology to a range of users, from individual homeowners to regional planning and natural resource agencies.

Environmental Building News, RR 1, Box 161, Brattleboro, VT 05301; 802-257-7300, 802-257-7304 (fax). Bimonthly, 20-page newsletter on all aspects of environmentally responsible design and construction, including in-depth feature articles, news, product reports, book reviews, and construction details. \$95/year (\$60 for individuals and companies with less than 25 employees).

Guide to Resource Efficient Building Elements, P.O. Box 3866, Missoula, MT 59806; 406-549-7678, 406-549-4100 (fax). In-depth and highly useful information on selected products; not a comprehensive directory. \$25.

The Harris Directory, Stafford-Harris, Inc., 1916 Pike Place, #705, Seattle, WA 98101; 206-682-4042, 206-447-1670 (fax). Updated semiannually, includes extensive listings of recycled content building materials and products in a computer database or spreadsheet format (Mac or PC), \$69.

REDI Guide, Iris Communications, Inc., 258 East 10th Ave., Suite E, Eugene, OR 97401; 503-484-8935, 503-484-1645 (fax). Computer database originally compiled by the American Institute of Architecture Students. Includes products with any of four environmental attributes: recycled content, low-toxic, sustainable forestry, and natural. Available in Mac or Windows format, \$49.

Resource Guide to Sustainable Landscapes, Environmental Resources, Inc., 2041 East Hollywood Ave., Salt Lake City, UT 84108; 801-485-0280, 801-485-0280 (fax). Directory of environmentally responsible landscape products, \$28.

Nontoxic Environments Inc., 6135 NW Mountain View Drive, Corvallis, OR 97330; 503-745-7838, 503-781-6892 (fax). Offers a catalog carrying a variety of nontoxic building materials, including finishes, insulation, joint compound, caulk, ceramic tile materials and adhesives, floor coverings, lighting, water treatment, insecticides, wood preservatives.

Shelter Supply Inc., 1325 East 79th Street, Minneapolis, MN 55425; 800-762-8399. Offers a catalog of resource-efficient building materials.

The Sourcebook for Sustainable Design, Boston Society of Architects, 52 Broad Street, Boston, MA 02109; 617-951-1433, 617-951-0845 (fax). Written in 1992, the Sourcebook is now somewhat dated, but still contains plenty of good information organized by CSI format, \$25.

U.S. Green Building Council, 1615 L Street, NW, Suite 1200, Washington, DC 20036; 202-778-0760, 202-463-0678 (fax). A nonprofit consensus coalition of building-product manufacturers, environmental groups, building owners and operators, architects, engineers, utilities, state and local governments, and universities. Its mission is to improve the energy and environmental efficiency of the whole building environment. □

Designing accessible seating in sports and concert facilities is a matter of making informed choices. Here are some guidelines. *by Kim A. Beasley and Thomas D. Davies, Jr.*

ADA Solutions

Seating for Assembly Spaces

The ADA Law- 4.33.3 Placement of Wheelchair Locations

Wheelchair areas shall be an integral part of any fixed seating plan and shall be provided so as to provide people with physical disabilities a choice of admission prices and lines of sight comparable to those for members of the general public. They shall adjoin an accessible route that also serves as a means of egress in case of emergency. At least one companion fixed seat shall be provided next to each wheelchair seating area. When the seating capacity exceeds 300, wheelchair spaces shall be provided in more than one location. Readily removable seats may be installed in wheelchair spaces when the spaces are not required for wheelchair users.

The Americans with Disabilities Act Accessibility Guidelines (ADAAG) contain specific requirements for building design. Because the law is relatively new, architects are still struggling with its interpretation. For example, the requirements for fixed seating in assembly areas can be met in a variety of ways, some better than others. Failure to understand the requirements fully may result in costly redesign or construction modifications. Several key requirements significantly affect seating design, not only for the disabled, but also for the able-bodied. Two specific requirements that significantly influence seating design are the requirements for wheelchair companion seats and for comparable lines of sight.

Companion Seats

Companion seating is important to wheelchair users' enjoyment of sports and entertainment facilities. The numerical ratio of companion seats to wheelchair spaces and their spatial relationship are also factors that influence the overall facility design. ADAAG specifies that "at least one companion fixed seat shall be provided next to each wheelchair seating area." The Department of Justice has indicated a companion seat is required directly adjacent to each wheelchair space, as in a two-two-two distribution (2).

While this arrangement satisfies the letter of the law, it is not ideal companion seating for wheelchair users. For example, the two-two-two distribution works adequately for one wheelchair user who is accompanied by one ambulatory companion. But it won't accommodate three or more wheelchair users who wish to sit together, or a paraplegic father who wishes to sit with two or more ambulatory family members.

Adaptable and Removable Seats

One alternative to provide flexibility in accommodating a range of seating needs is to use adaptable seating. Many companies now make conventional stadium seats that fold up to ac-

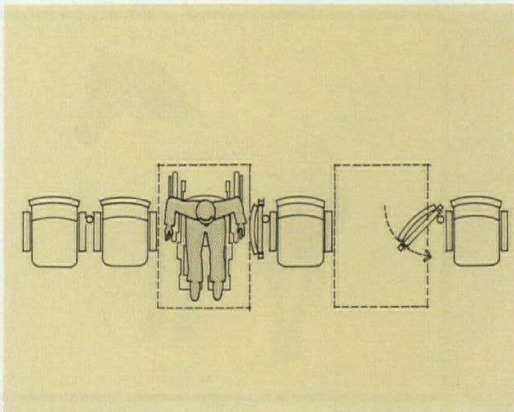
commodate wheelchair users (1). The flexibility of adaptable seating allows for any combination of seating arrangements. Two minor drawbacks to adaptable seats are initial cost and, more important, space limitations. Adaptable seats are wider than conventional ones, therefore requiring more row space. In some stadiums and arenas, adaptable seats (together with adjacent companion seats) take up too much space, and architects often elect not to install them.

Removable seat sections are a less expensive alternative for companion seats and do not increase seat width. Like adaptable seats, removable sections offer the facility owners increased ticket sales if wheelchair spaces do not sell out. For wheelchair users, sections installed in unused wheelchair locations result in a more cohesive row and therefore better "integration" into the overall seating plan. By removing three-seat or two-seat sections, different size groups of wheelchair users and companions can be accommodated (4). Although they are not as readily flexible as adaptable seats, removable seats have the advantage of providing long uninterrupted wheelchair seating locations to accommodate large groups of wheelchair users. The extra time required for installation and removal, and the space necessary for storage, are operational issues.

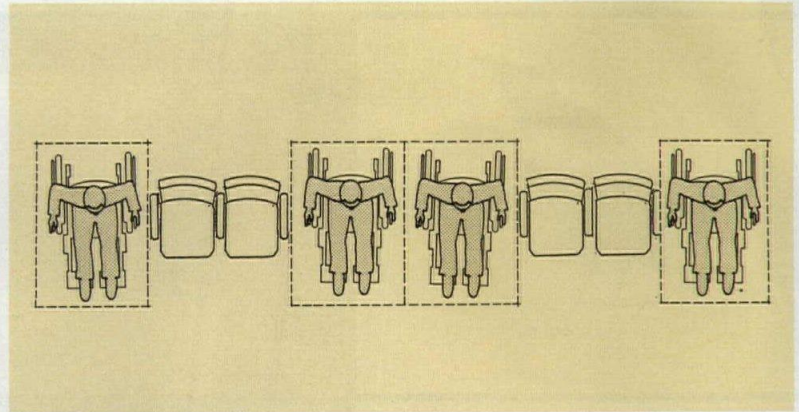
Comparable Lines of Sight

Another major design issue for accessible seating is the requirement to provide wheelchair seating locations with "comparable" lines of sight to the performance area. ADAAG does not specifically state that wheelchair users must be able to see over a spectator who stands up in the row in front. The Department of Justice has indicated, however, that they consider this to be an implicit requirement for facilities where it is

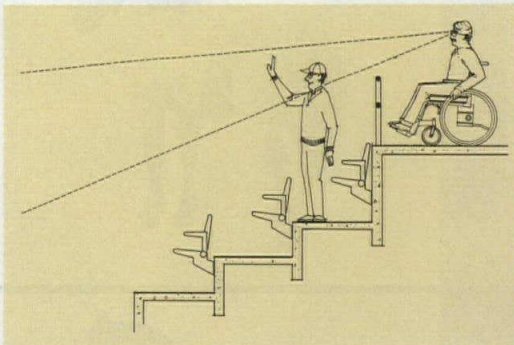
The authors are principals with Paradigm Design Group in Washington, D.C., which specializes in the design of accessible buildings.



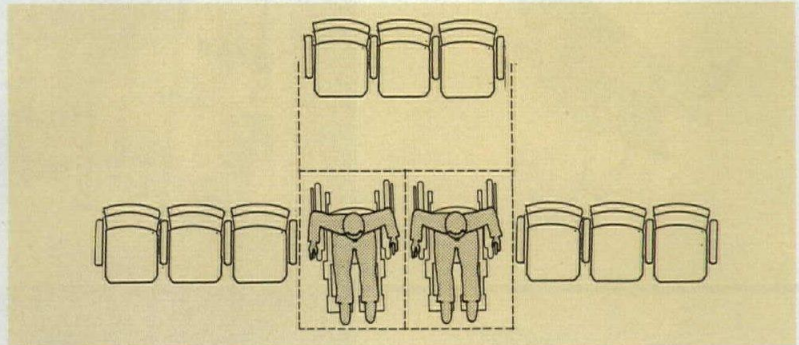
1 ADAPTABLE SEATING



2 TWO-TWO-TWO DISTRIBUTION



3 COMPARABLE AND ENHANCED LINE-OF-SIGHT



4 THREE-FOR-TWO REMOVABLE SEATS

common practice for spectators to stand, as at sports stadiums. For these facilities, Justice has suggested that a substantial percentage of the total accessible seating should be elevated (approximately 24 to 30 inches in low-sloped seating areas) to ensure that occupants have comparable lines of sight (3). This elevation may not be practical in steep seating areas, however, such as balconies or upper decks. In these locations, enhanced seating often needs to be elevated more than six feet above the row in front.

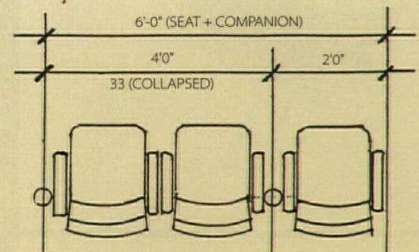
Unfortunately, elevated wheelchair areas also result in somewhat segregated seating platforms that are further isolated by protective railings or guard rails. The use of elevated platforms also makes it more difficult to disperse the wheelchair spaces to all parts of the seating bowl. The most practical solution is to provide a balance of options where both enhanced and more integrated seating are available.

Summary

Successful integration of wheelchair spaces into an assembly facility in a manner that fully complies with ADA requires careful planning and attention to details. Accessibility must be an important objective that is established early in the design programming stage and is carefully monitored through the design process until construction is complete.

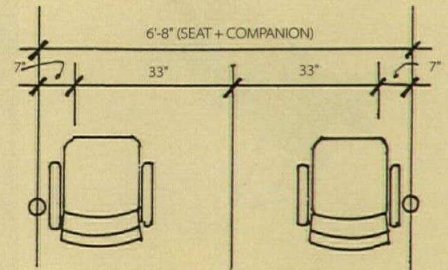
DOUBLE CONVERTIBLE SEAT

RATIO: 1 TO .75
 20 SPACE + 20 SEATS = 120' TOTAL
 COST - \$780/THREE SEATS = \$15,600



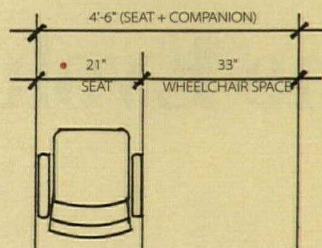
SINGLE CONVERTIBLE SEAT

RATIO: 1 TO .70
 20 SPACE + 20 SEATS = 133.3' TOTAL
 COST - \$520/PAIR = \$10,400

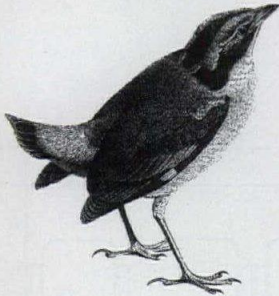
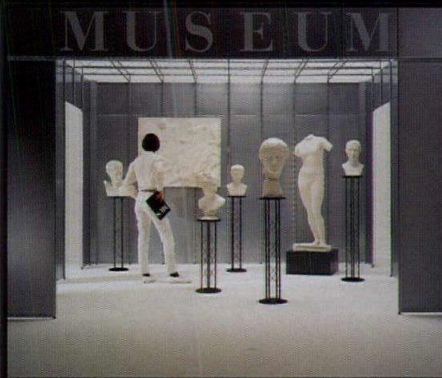
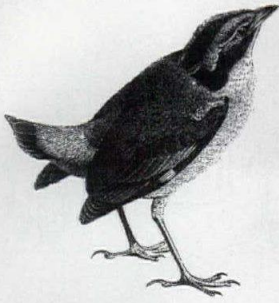


FIXED COMPANION SEAT

RATIO: 1 TO 1
 20 SPACE + 20 SEATS = 90' TOTAL
 COST - \$60/PAIR = \$1,200



5 COMPARABLE SPACING AND COSTS FOR WHEELCHAIR COMPANION SEATING



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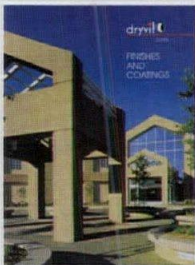
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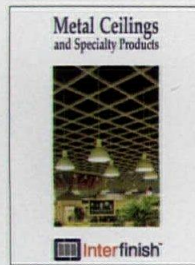
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AFM Corporation. Circle No. 360



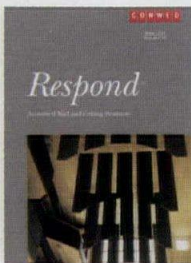
Dryvit Systems Inc., offers a new Finishes and Coatings brochure that provides product information and four-color representations detailing the company's standard, elastomeric, and specialty coatings for application over a range of substrates. Dryvit finishes and coatings deliver high-performance protection and lasting beauty. A wide range of custom colors and textures for new or retrofit projects is available.

Dryvit Systems Inc. Circle No. 363



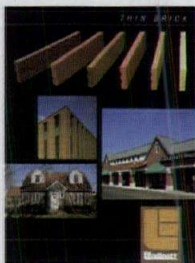
Open-cell, linear metal, luminous, baffle, and metal panel systems in a wide range of styles and options are but a few of the products covered in this comprehensive metal ceiling systems brochure. Tamper-resistant security ceiling systems are also detailed. The brochure includes vital information to keep on file.

Interfinish, Chicago Metallic Corp. Circle No. 366



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Conwed. Circle No. 361



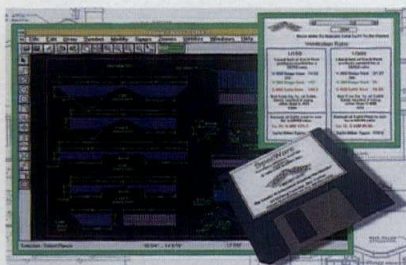
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Endicott Clay Products. Circle No. 364



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Kawneer Company, Inc. Circle No. 367



SpecWare™ from Cor-A-Vent, Inc., makes the detailing of ventilation easy to do. The detail drawings are in the DXF format, so they work with most CAD programs. Details for shingle, shake, and tile and metal roofing are included. Also included is VentCalc™, software that allows you to calculate ventilation requirements. Qualified architects and specifiers can receive the software free of charge.

Cor-A-Vent. Circle No. 362



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Homasote Company. Circle No. 365



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Kimball. Circle No. 368

University of Washington Health Sciences Complex
Seattle, Washington

Design:
TRA Architecture, Engineering, Planning, Interiors

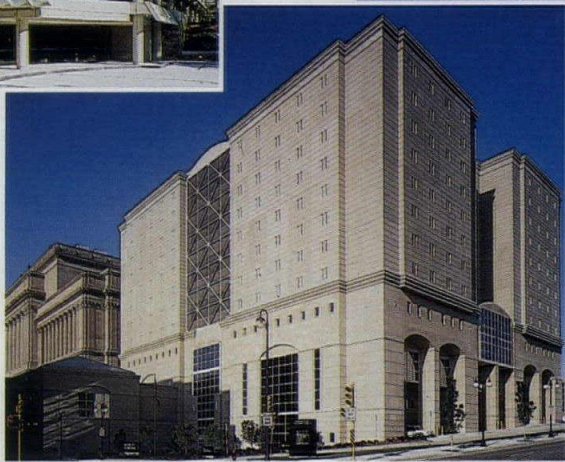
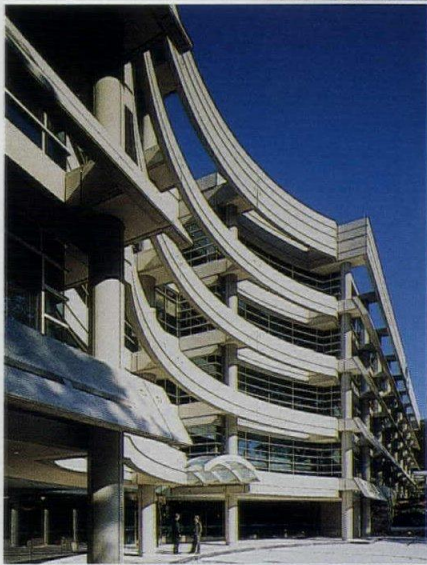
Manufacturing:
Olympian Precast, Inc.



United Parcel Service
Corporate Offices
Atlanta, Georgia

Design:
Thompson, Ventulett,
Stainback & Associates, Inc.

Manufacturing:
Cook & Ingle Company, Inc.

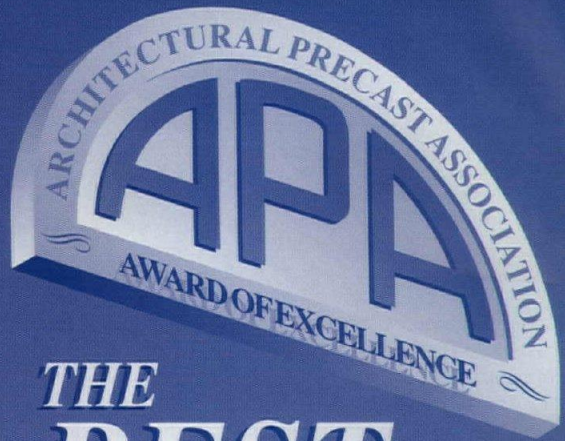
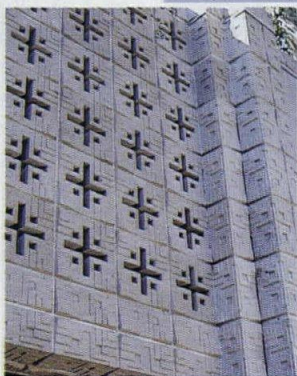


Milwaukee County Jail & Criminal Justice Facility
Milwaukee, Wisconsin

Design:
Venture Architects
Manufacturing:
J.W. Peters & Sons, Inc.

Special Commendation:
La Miniature
Pasadena, California

Design:
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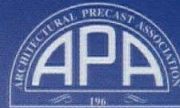
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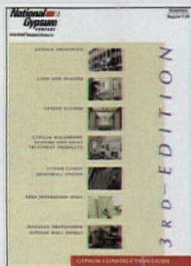
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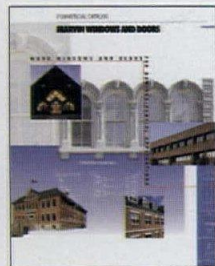
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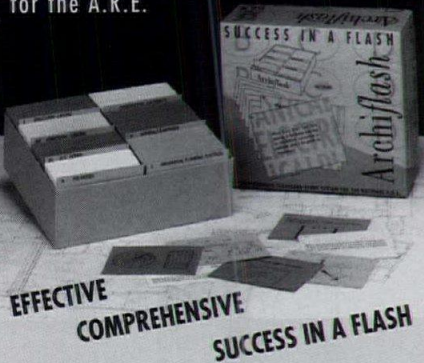


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The New Exam: Will it Change the Profession?

(continued from page 53)

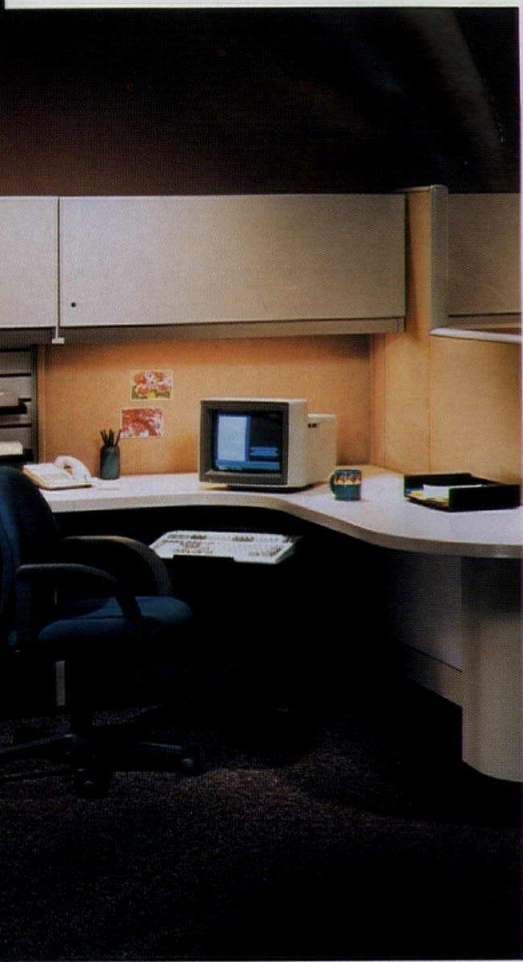
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But won't the profession lose something in the process? Maybe I'm hopelessly old-fashioned, but an architectural registration exam that doesn't test the candidate's graphic communication skills strikes me as odd. Isn't an architect's ability to draw, even at a minimal level, an important measure of professional competence? I applaud NCARB's efforts to make the exam as fair as possible, but is the profession – and is the public – ready to accept as competent an architect who doesn't need to demonstrate how to use a pencil?

A driving force behind the new vignette format for Division C was to make the test gradable by computer. Because the vignettes require the candidates to perform very specific, measurable tasks, programs can be devised to grade the graphic exams. Most candidates will champion this breakthrough, especially those who are convinced that they flunked the exam because they were graded by someone who got up on the wrong side of the bed. The computer will grade every candidate using exactly the same criteria.

But this raises the question: if a computer can grade the exam, why not just let computers design the solutions and remove architects from the process altogether? In fact there are CAD programs available right now to check drawings for code compliance and life-safety factors. Can computers that design, at least as the exam defines that term, be far behind? "Knowledge-based expert systems are continually getting more sophisticated," says Thomas Seebohm of the University of Waterloo School of Architecture, who directs Waterloo's program in architectural computing. "There isn't a program yet that will do the drawings, but we're just scratching the surface."

In a world where architects can use computers to check drawings for code compliance the way writers use them to check for spelling and grammatical errors, will this (continued on page 100)



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The New Exam: Will it Change the Pr

ability become just another "lower-order skill parlance, that doesn't need to be tested? How, exam test competence?

Back to the Future

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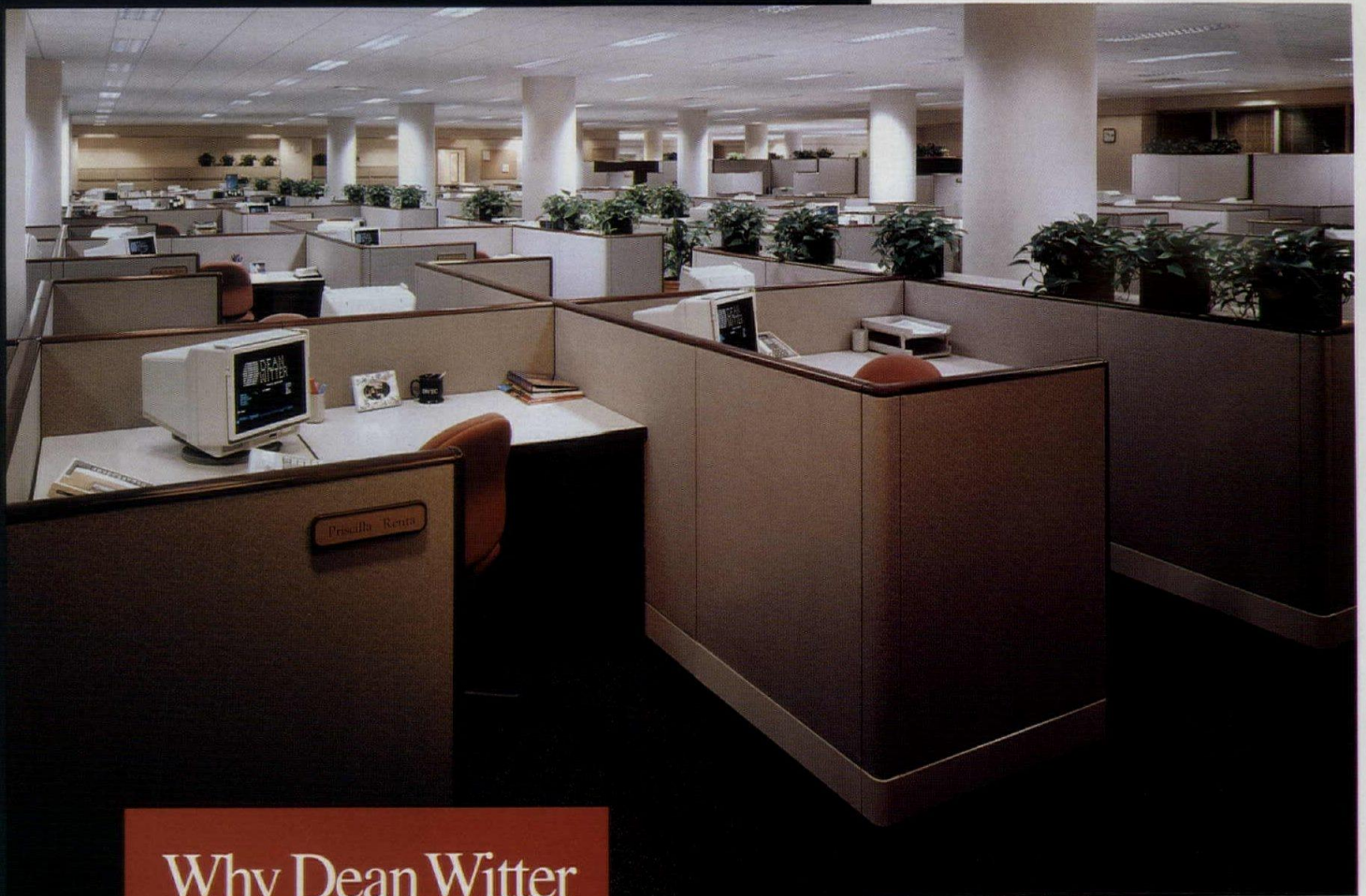


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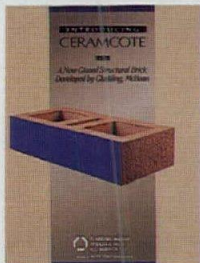


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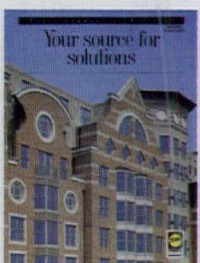
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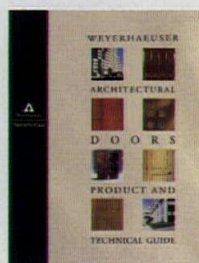
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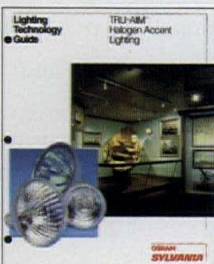
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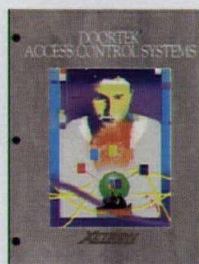
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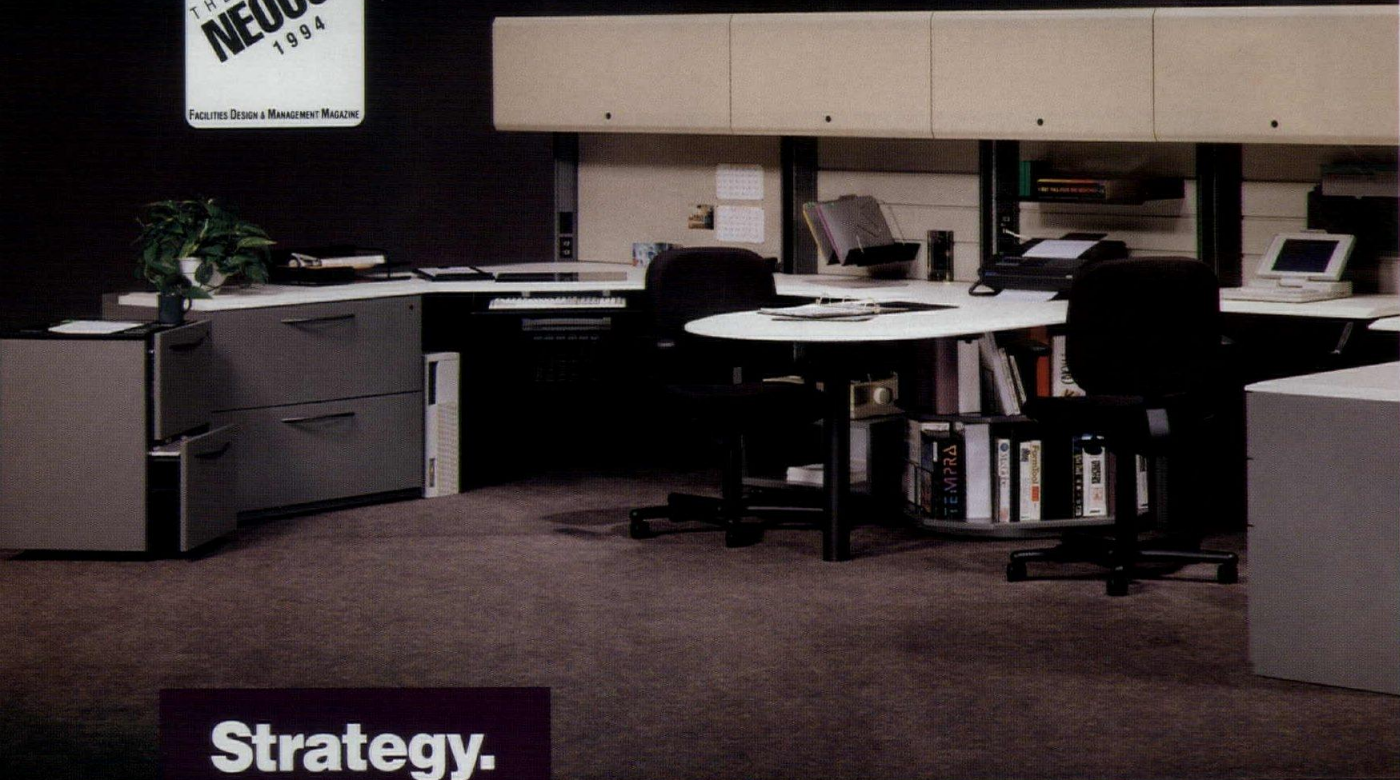
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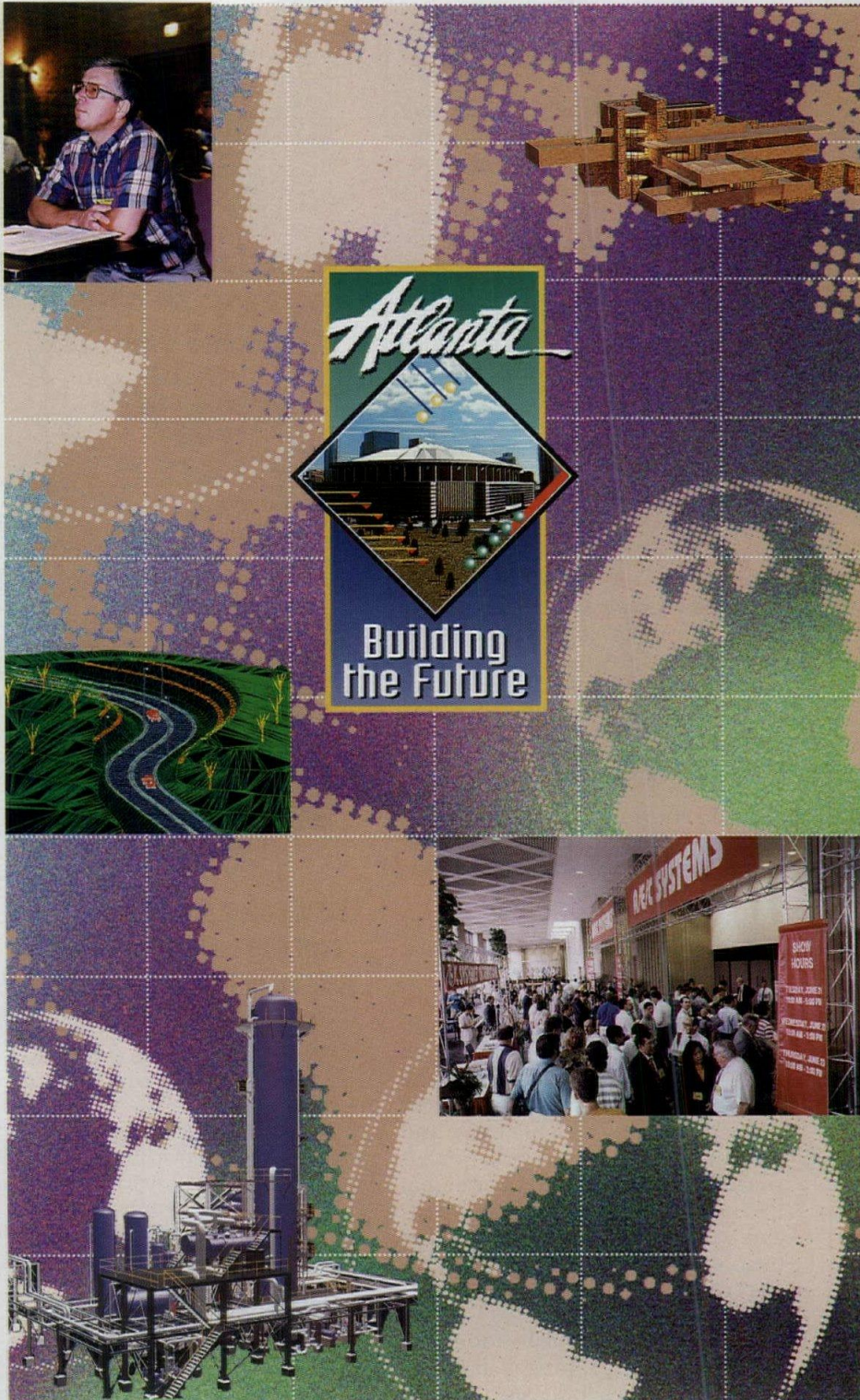
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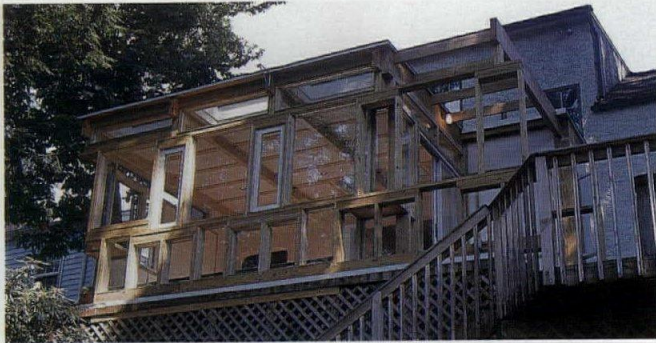
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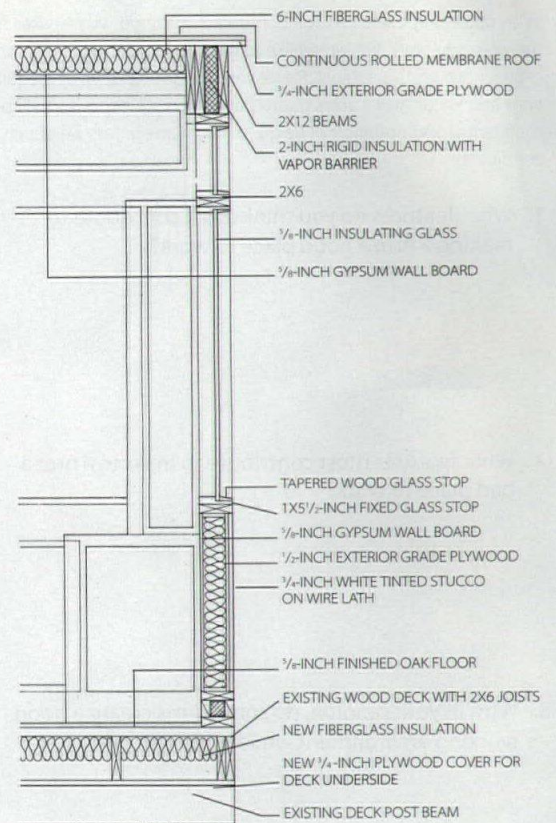
2 INTERIOR CORNER, SOUTH WALL AT LEFT, WEST WALL AT RIGHT

When New York architect Robert Marino was asked to design a sunroom addition to a mock-Tudor house in Larchmont, New York, he looked to authentic half-timbered construction for precedent. The room's trabeated structure developed from the client's wish for large skylights in the roof and a fully-glazed south wall. The 275-square-foot addition is built on an existing 2x6 wood deck. Marino had to transfer point loads from the roof beams between the skylight units to an existing floor beam that was suited for a distributed load (the project's tight budget wouldn't allow for new deck structure). Thus the transfer of point loads to the beam

became the diagram for the room's elevation (1).

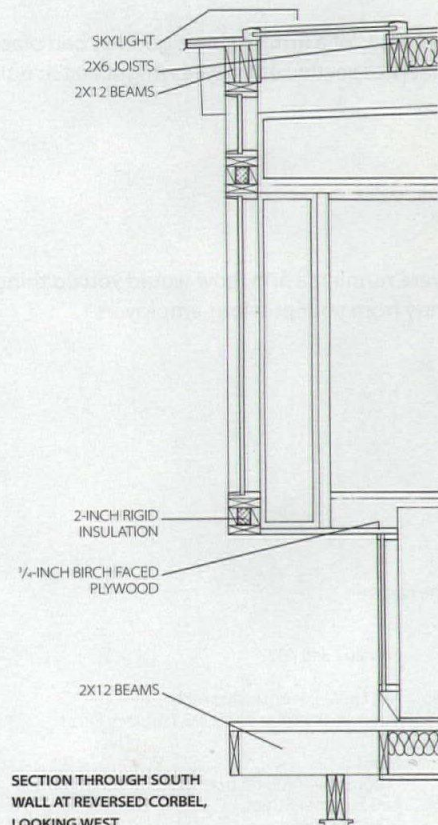
The walls are pressure-treated 2x6 framing infilled with insulating glass. Marino detailed the exposed framing to accept the glazing with tapered wood stops. Operable units were installed in the wall's mid-region for ventilation. To mitigate the sense of a boxlike container, Marino folded the corners of the room into the space (2). For Marino, this corner treatment reiterates the fact that the loads are transferred by the stepped structure, and no corner support is necessary. Marino refers to the addition's corners as "reversed corbels."

Michael J. Crosbie



SECTION THROUGH WEST WALL, LOOKING SOUTH

3/1m



SECTION THROUGH SOUTH WALL AT REVERSED CORBEL, LOOKING WEST

The New Exam: Will it Change the Profession? (continued from page 98)

ability become just another "lower-order skill," in NCARB's parlance, that doesn't need to be tested? How, then, does the exam test competence?

Back to the Future

An answer might be found in the history of the exam. Long before standardized tests, candidates for architectural registration in many states were tested not only with a written exam, but also orally. Even today, four state registration boards – California, Maine, Rhode Island, and Washington – require candidates to be interviewed before they're granted a license. The fact that California still requires an oral exam is significant because its board is responsible for registering between 20 and 25 percent of all the architects in the U.S.

What does an oral exam tell the registration board about a candidate that a written examination doesn't? "We've found that candidates may be able to pass the written exam," says Larry Paul, a California registration commissioner who has conducted candidate interviews, "but when they come before our board they're not able to sufficiently answer some fairly basic questions." Paul adds that California has kept the oral exam not only because of the state's stringent seismic codes, but also to screen more effectively the large number of candidates for registration. "It's added protection for the public."

Weeks before the interview, candidates are sent an outline of the test and a list of documents and laws they should be familiar with. The oral exam usually takes about an hour and contains about 35 questions. There is an explicitly stated exam methodology so all the examiners are testing candidates in the same way. Candidates who fail the interview are given feedback about areas where they need to improve. Paul says that the process seems to run smoothly and hasn't been a bureaucratic headache.

Paul believes the interview enhances the state board's appraisal of a candidate who has passed the NCARB's registration exam. "The written and graphic exams tend to focus on the knowledge of single-issue items. But architectural practice involves analyzing and integrating a larger amount of knowledge into a coherent design. The integration is what we try to accomplish with the oral exam. We set up practice scenarios, ask candidates to analyze the information, and tell us how they would respond. Architects are called upon to do that every day."

Conclusion

Will the new exam change the profession? With less emphasis on testing integrative skills, one could argue, the exam encourages a view of architectural specialization: a competent architect is one who can solve highly defined, abstract problems without a comprehensive understanding of the solution's ramifications. This runs counter to our notion of architects as generalists.

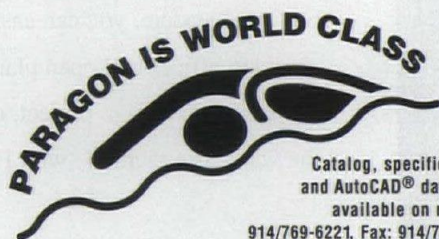
If the exam is viewed as a version of "natural selection," it's likely that such integrative skills will atrophy. It's also possible that the exam will hurry the profession along a path toward less and less responsibility for the building project in its totality. This trend is ironic given the computer's capacity to help us to think about and visualize architecture in multifaceted ways. With the high-tech of the computerized exam, it may become even more critical for examiners to further test for competency face-to-face, to judge the architect's skills of integrative thinking that no computer may ever duplicate.

We should also turn the question on its head: can the profession change the exam? In developing the exam, NCARB works with little or no overview by the profession. To calibrate the exam to practice, every five years NCARB surveys architects as to what tasks must be performed in an office. This "task analysis" is a narrow view of the profession and not a good barometer of how it is changing, as architects pursue avenues of nontraditional practice that also affect the public's health, safety, and welfare.

An exam written for the public's benefit should have formal mechanisms for comment by architects on its content. Even if NCARB chooses to ignore critiques of the exam by the profession and those engaged in new patterns of practice, the opportunity should exist. Without it, NCARB risks perpetuating an exam out of touch with architecture, and a profession ill-qualified for its future. □

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