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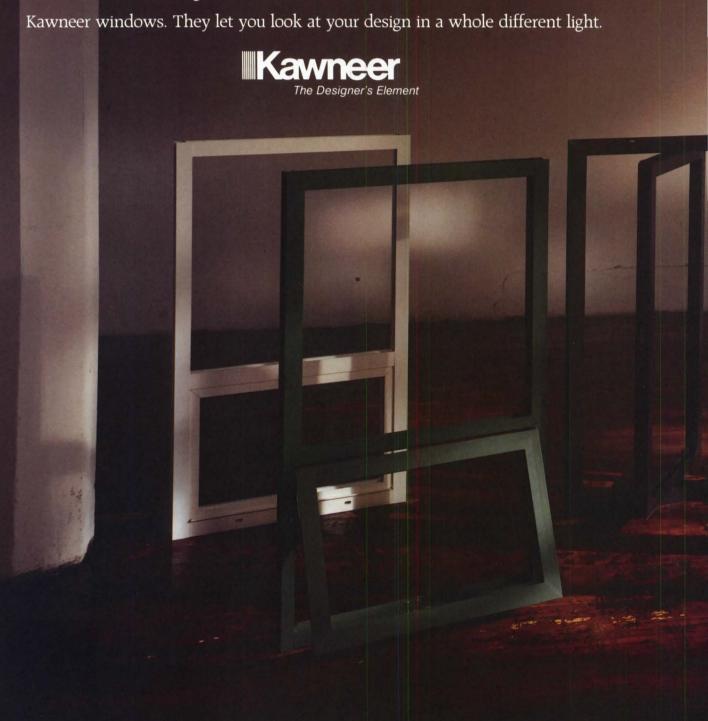
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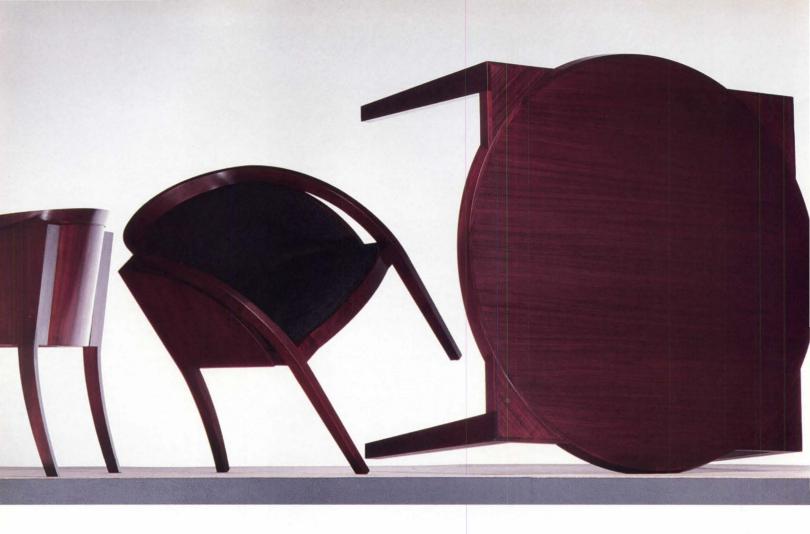
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Pacific Design Center, West Hollywood, Calif., by Cesar Pelli & Associates (p. 82). Photo: Aker Photography

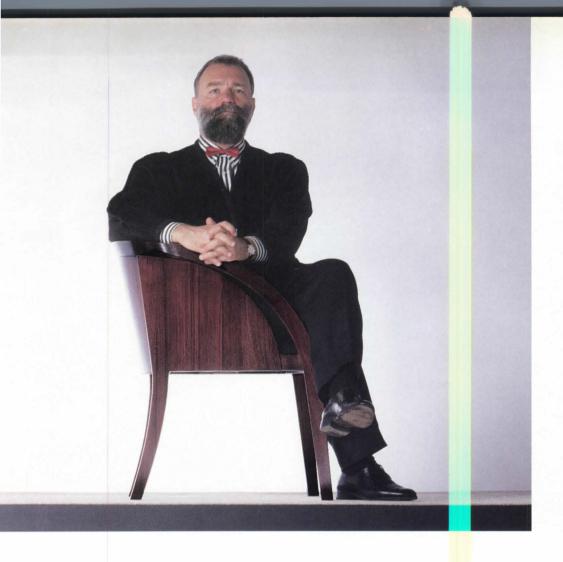


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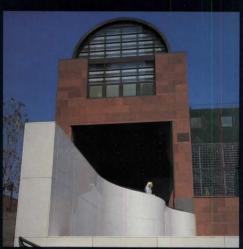
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## **Licensing Dilemmas**

The battle currently raging over the licensing of interior designers follows a pattern that other professions have already experienced.

THE AIA has been vigorously fighting the licensing of interior designers. But if the literature on the licensure of other professions is any guide, it is a battle whose resolution may be a foregone conclusion.

Most licensing battles seem to begin with what Wilbert Moore, in his book The Professions, Roles and Rules (Russell Sage Foundation, New York, 1970) has called "the end of universal competence," when an established profession's body of knowledge grows so large and complex that specialization becomes necessary. The medical and engineering professions, with their various specialties, are perhaps farthest along in this process. For the legal profession, as it is for a growing number within the architectural profession, specialization is more informal, often known by word of mouth.

The more specialized a profession becomes, the more it spins off certain tasks requiring less technical expertise or breadth of knowledge. Sociologists call this process "subprofessionalization" when these tasks are delegated to employees within an organization, and "centrifugal specialization" when the tasks are taken up by independent consulting groups. In medicine, examples of subprofessions include nursing and physical therapy, and centrifugal specialties include osteopathy and podiatry. Interior designers seem to have taken both courses. Some work as specialized employees within architectural firms while others have their own firms, operating beyond the control of the parent architectural profession.

Whichever way they arise, most new specialties eventually seek some form of self-definition and public recognition. Common steps toward that goal include creating university departments, forming associations, supporting magazines, and developing standards. In many cases, older established professions have supported and encouraged such efforts. But that encouragement often turns to confrontation when the new specialty takes the further step of seeking state regulation through licensing.

Some of these battles, such as the legendary dispute between the psychiatrists and psychologists, can take years of testifying and negotiating to settle. But settle they do, almost always in favor of the group seeking licensure. Various explanations for that have been offered, but the one that seems most convincing relates to why new specialties emerge in the first place: As professional knowledge becomes more complex, it becomes more difficult for the public to understand and more a target for state regulators acting in the name of consumer protection.

The activities of the group seeking licensure may have little effect on public safety or welfare, as architects have argued in their case against interior designers. But most legislators seem willing to give a new specialty the benefit of the doubt. Hairdressers, for example, gained licensure in many states by arguing, among other things, that they protected the public by spotting skin cancers.

If the long-term prognosis does not look good for those who oppose licensing interior designers, neither does it spell disaster. There is little evidence that the business of established professions suffers to any great extent from the licensure of a related specialty. Indeed, after resolving a licensing dispute, the former adversaries usually develop mutually beneficial working arrangements. Osteopaths, for example, have filled niches, such as family practice and emergency medicine, partly vacated by increasingly specialized physicians. And psychologists have taken on a larger share of therapy as psychiatrists have become more involved in psycho-pharmacology. If any group suffers, it is the newly licensed profession, which invariably loses a degree of its former freedom and fluidity.

What every licensing dispute seems to bring upon professions, both new and old, is the necessity of more clearly—and more narrowly—defining what it is they do. For architects, whose very education and problem-solving methods run counter to such definitional constraints, this may be the most difficult hurdle ahead. But it may be a hurdle impossible to avoid. Already various specialties—not only interior design, but such fields as programming, construction management, and graphic design—have emerged to take up responsibilities once largely carried by architects. The very fact that one of them is now seeking licensure suggests that the architectural profession is rather far along the narrowing track that other, more specialized professions have already taken. Thomas Fisher



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### Views

#### **Norberg-Schulz Defense**

Your recent review of "New World Architecture" by Christian Norberg-Schulz (Dec. 1988, p. 103) was distressing on two counts: your reviewer seems not to have read past Chapter One, and he seems to be obsessed with the tired and tiresome battle of the styles. Had he taken the time to read Chapter Two, he might have discovered a passage on the open city and the open street, a distinctly American form, not borrowed from European Classicists nor from European Modernists. Had he read Chapter Three he might have read of a new language of architecture based upon archetypes, as Lou Kahn described them, an understanding of form which goes beyond style to deeper roots.

It was the intention of the Architectural League in commissioning the lectures upon which the book is based to broaden the current dialogue on architectural theory by going beyond style, taking a new look at familiar objects, reinterpreting them to guide and inspire our continuing creative search. We think we have succeeded, and urge your reviewer to put away his "stylish" spectacles, and read the book. Frances Halsband, President The Architectural League of New York

[The reviewer, who did read the entire book, was trying to make a point not about style, but about turning history into a polemic. Norberg-Schulz polemicizes when he defines American architecture so narrowly that he can then dismiss entire phases of our past as "foreign." History attempts to understand and explain what, in fact, has occurred, even if the author doesn't like it.—Editors]

#### **Paying Consultants**

Mr. Coplan suggests that the proper wording in the Architect-Consultant Agreement regarding payments to the consultant be "... the architect will pay the consultants not only when but 'if and when' payment is received by the owner." (January 1989, pp. 53, 56). Only a fool of a con-

sultant would ever sign such an agreement. The wording in the present AIA standard form of agreement between architect and consultant stating "payments to the consultant will be made promptly after the architect is paid by the owner under the Prime Agreement" is not much better. Although it is an AIA standard, it is not necessarily accepted by consultants.

We provide structural engineering services to architects and have done so for the past ten vears. In that time we have signed only one contract having the standard AIA clause about being paid only after the architect is paid (out of about 1400 total contracts). In reality, we are probably paid after the architect is paid, and that is perfectly acceptable if those payments are made in a timely manner. When would an "if and when" payment clause be acceptable in an architect/consultant agreement? It would be acceptable when the consultant is included as an equal partner in contract negotiations with the owner, is privy to the financial history of the owner, and participates as an equal partner in all decisions that would affect the relationship with the owner. Few architects would include a consultant as an equal team member in a project. On the other hand, by asking a consultant to sign an "if and when" clause in an agreement, the architect is asking the consultant to assume financial risks as an equal team member, i.e., "if I don't get paid, we don't get paid.'

I really am appalled that an "if and when" payment clause is even proposed. It is a legal maneuver to permit an architect to renege on his/her obligation. If an architect does not want to assume the normal financial risks and obligations of hiring an outside consulting firm to provide needed services, then the architect should provide those services in-house. Architects and consultants all have revenues and expenses, and consultant fees are just another expense to an architect. If payment is delayed coming from an owner

(and only the architect can control the time of billing for the architect and all consultants), why should the consultant be expected to borrow to pay his/ her expenses, while the architect is not expected to borrow to pay his/her consultant fees?

The justification for this onesided "if and when" payment clause is that the architect is assuming liability for the work of all consultants when he/she signs a prime agreement with the owner to provide all design services. This is a rather thinly veiled justification. If a complaint is made against a design team, in practice, the architect and all consultants are named in the complaint. The burden is then shared by all parties equally to prove that the other party is the responsible party. The division of responsibility and liability is quite well defined. I do not think, in reality, the architect assumes any greater liability (or inconvenience) than consultants.

I would propose that acceptable and appropriate wording in the agreement between the architect and the consultant be "the consultant is paid by the architect in a timely manner, within 30 days," or within 30 days," or "within 60 days," or within some other specified time. Jon D. Raggett, PhD J.D. Raggett & Associates, Inc. Carmel, Calif.

#### Author's Response

Mr. Raggett has a "let them twist in the wind" philosophy. Although the consulting engineer receives a large proportion of the professional fee and although the architect, while relying upon the competence and skill of his consultant, is charged with responsibility if the engineer's performance is lacking, Mr. Raggett can find no justification for the architect and the engineer sharing the risk of a defaulting owner.

Normally, the prime professional contract is written solely with the architect because it is the owner's desire to centralize responsibility and to assure coordination of the engineer's work

with the architect's services. In all but a technically legal sense, the architect and his consulting engineers are joint venturers. The architect normally does not receive any additional fee (unless it is to cover administrative costs) for assuming the responsibility and potential liability for his consulting engineers, and it is not accurate to assert that the engineers will be named as parties by the owner in a lawsuit as there is no privity between such consultants and the owner. The architect must implead the consultant and incur the costs and risks of that procedure.

The American Institute of Architects has recognized that there is a relationship between payment of the architect by his owner, and payment of the consultant by the architect. Its form contract provides that the latter payment will be made "when the architect receives payment from the owner." Contrary to Mr. Raggett's letter, an engineer would not be a fool to sign such an agreement and most have no objection to it. The reason is that this approach carries with it the concept of fair play and a recognition of the real and pragmatic (not technical) relationships among the parties. Norman Coplan

Herman Miller Rendering

The colored renderings of the Herman Miller Design Yard (January 1989, p. 86) were inadvertently miscredited. Mr. James McBurney was the renderer. Jeffrey A. Scherer, AIA

#### **Goff Show Curator**

Your good notice of the Goff exhibition (January 1989, p. 24) is much appreciated. One minor correction. I was the curator, not Rob Singer. Mr. Singer is curator for Japanese art at the museum. David G. DeLong Professor of Architecture University of Pennsylvania

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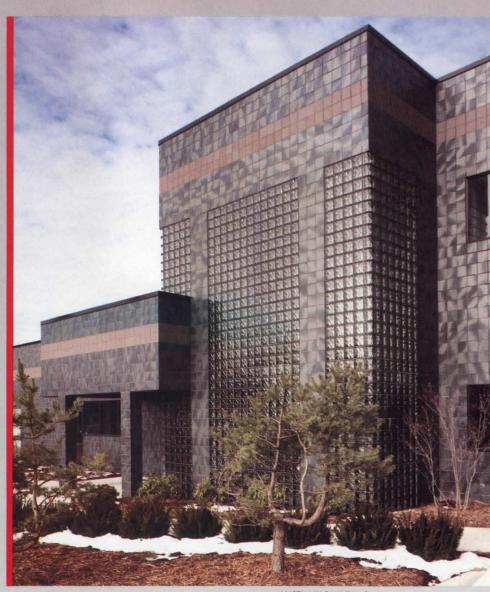
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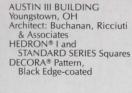
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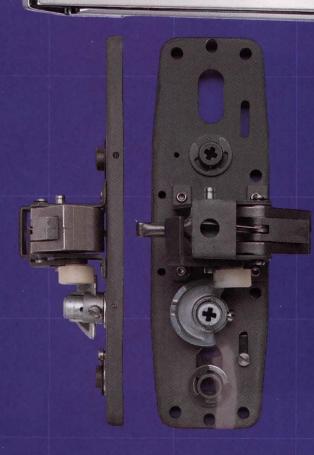
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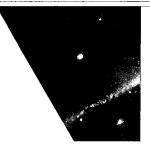
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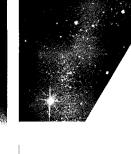


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Giuseppe Raimondi is an Italian architect and designer whose works can currently be seen at the Museum of Modern Art in N York and the Victoria and Albert Hall Museum in London. He has recently published a book on Italian Desian entitled Abitare Italia and, in the following article, gives an overview of Italian Design in the 1980s:

#### Italian Furniture Design in the 1980s

#### By Giuseppe Raimondi

In the 1980s the phenomenon of designer articles with the signature of the artist has expanded to include everyday things. It has been the decade of designers who design just about anything: Giugiaro designs both cars and a kind of pasta... Armani designs clothing but also a new model telephone...

Just like fashion, today, furniture can speak different "languages" which are independent of one another. Our choices of objects to beautify our homes and bodies are determined by an aesthetic logic that gives rise to major trends that are distinct in their development and character. This "aesthetic logic" has substituted religion, morality, politics and ideology as the principal determinant of today's major trends.

The pyramid concept with at its apex a rich and "cultured" elite whose lifestyle permeated to the large base made up of consumers is now disappearing. Today, substituting this pyramid, we have independent consumers who can no longer be described by a geometric concept, but who form a polycentric market similar to a leopard skin. This new phenomenon no longer corresponds to the old socio-economic stratifications, and has created instead a series of fluid trends which serve as inspiration to present day furniture designers. It has helped the creation of new products and firms that have been able to skillfully carve a place for themselves in markets that in the past many tradi-

tional-minded companies have ignored. The '80s lack those elements that characterized a whole historic period such as the '60s with the ingenious use of plastic materials and the strong link to Anglo-American youth and the Pop Generation, or the 70s when designers looked to natural materials like wood, marble and leather in order to createin the heart of the domestic environment—a sense of security which was denied by the external economic and

political tensions.

After the great controversies of the early eighties, when exponents of "good design" such as Magistretti, Bellini and Castiglioni fought it out with the postmodern school of Sottsass, Mendini and Branzi which had shaken the edifice of orthodoxy, today's panorama is marked by variety and permissiveness. There is the all black/all silver minimalism of Palucco and the super-decorativeness of Memphis with its rich chromatic assonance. As in fashion, today we have furniture firms who are more concerned with the product's image rather than the product itself: the accent is on "look" and is based on the awareness of the role of this syntony of communication in the commercial success of the product. At the opposite end of the spectrum, there are firms with long established traditions that in order to maintain a lead in the market, are almost obliged to invest in the product itself, utilizing expensive equipment to protect their furniture from easy imitation.

Compared to the seventies, today there is also a more ample and diverse use of materials. There has been transfer of technology to furniture manufacturing from more complex sectors such as the automobile industry; technologies like the application of composite plastic materials and a more extensive use of metals and the metal plate presses. On

the other hand, as if to balance this infusion of high technology into the furniture industry, new attention is being paid to artisian techniques in the finishing and application of lacquer—crafts that were gradually disappearing—and to new applications of old materials such as crystal and wicker.

Finally, the evolution of Italian furniture design in the '80s, by giving expression to different "languages" and expanding artistic freedom, has once again assured Italian preeminence in this field. In so far as polycentrism brings a new liberating outlook on furniture design, requiring new intellectual effort, it is to

be greeted as a positive development.

The Italian Furniture and Decorative Accessories Center, FORMA, has the pleasure of presenting in the following centerpiece a list of Italian furniture and lighting and accessories manufacturers whose products are currently available on the U.S. market. On the reon the U.S. marker. On the reverse side you will find the addresses and telephone numbers of the corresponding U.S. firms. We hope this attractive and easy reference directory will assist American designers and architecture.

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LIGHTING CENTER

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**MOSSA CENTER** 1214 Washington Ave St. Louis, MO 63013 Tel: 314/241-5199 Fax: 314/241-0711

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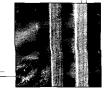
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DANDESIGN WEST, INC. 1 Henry Adams St. San Francisco, CA 94103 Tel: 415/626-8613 Fax: 415/826-7647

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ERIK K. HANSEN AGENCIES 185 Mark Trail Atlanta, GA 30328 Tel: 404/843-1992 Fax: 404/843-2568

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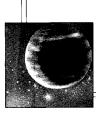
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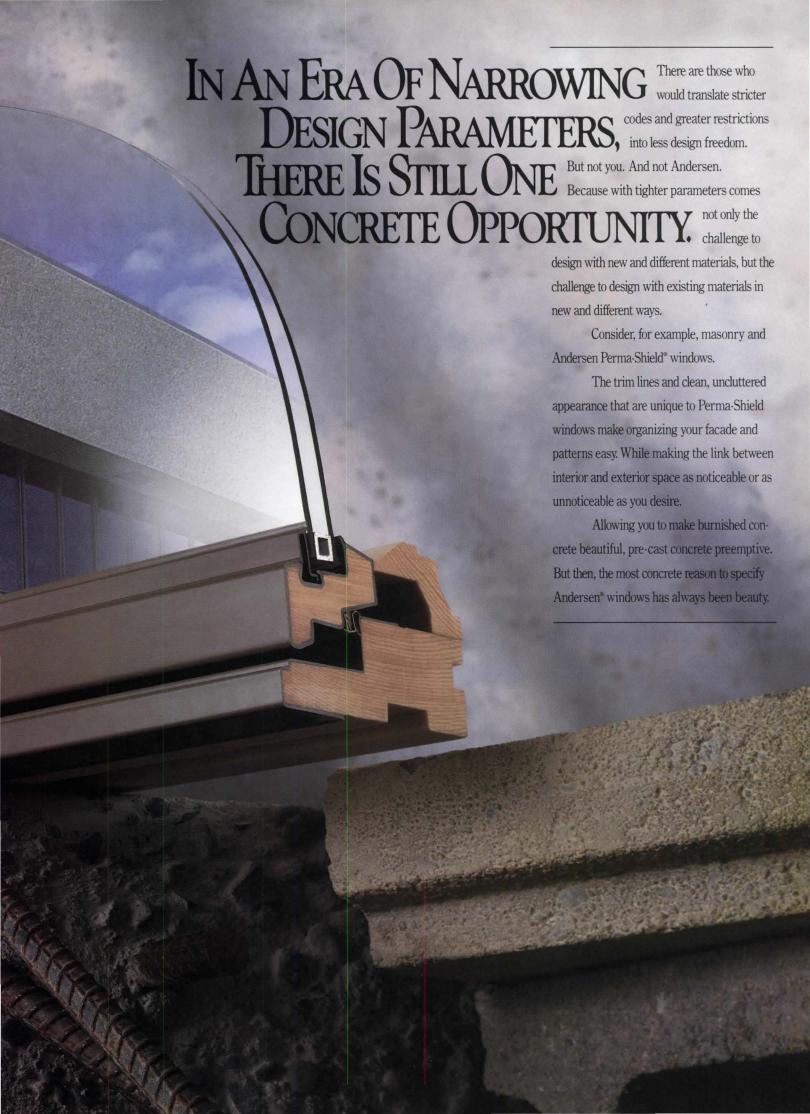
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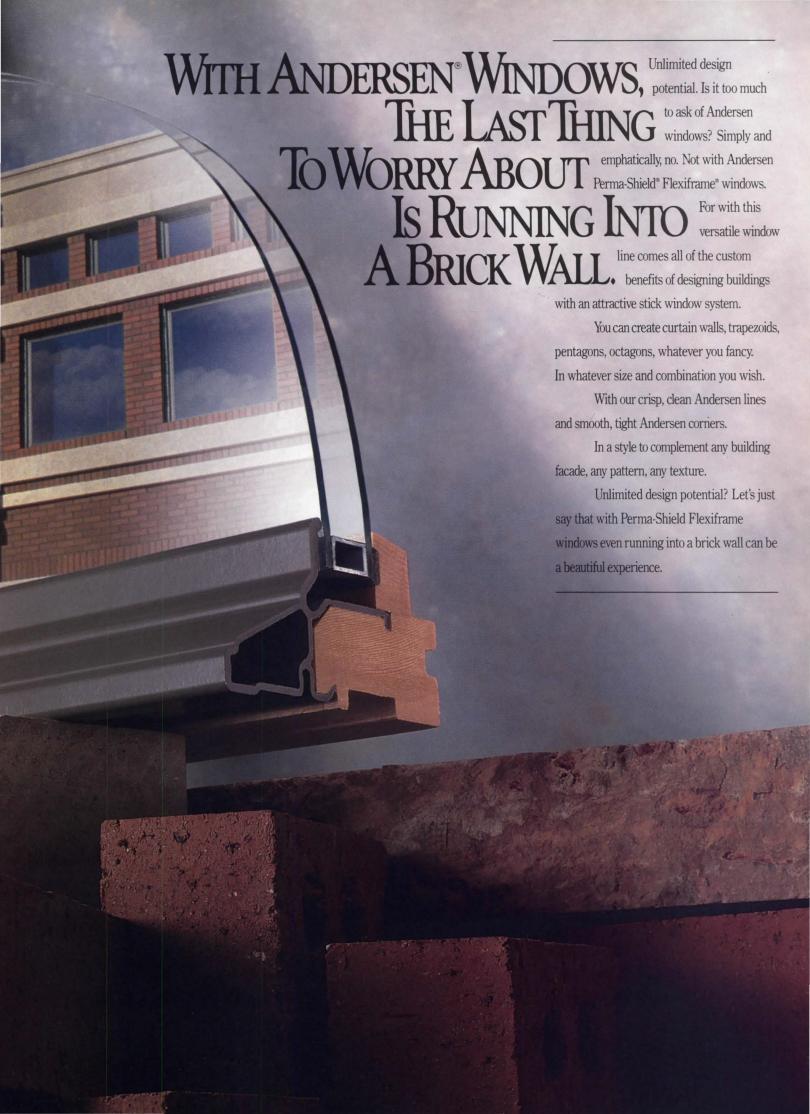














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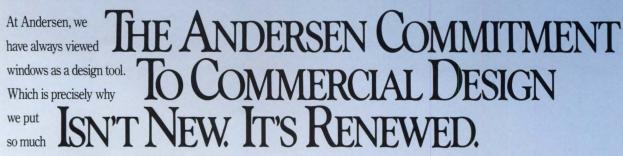
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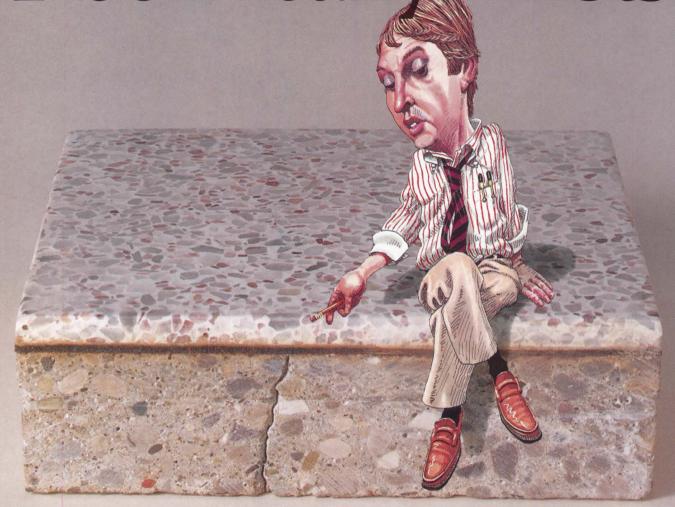
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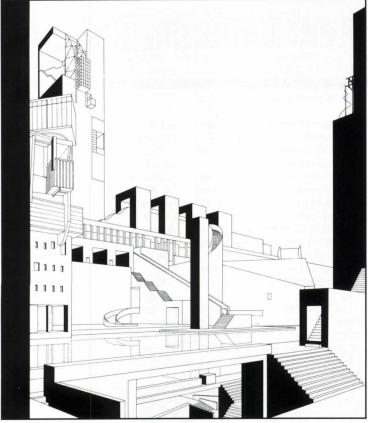
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#### P/A News Report

- 35 Robert Mills Exhibit P/A Awards Luncheon Wood Design Awards
- 47 In Progress: Cesar Pelli & Associates
- 55 Calendar



Detail from Steven Holl's plan for Porta Vittoria, Milan.

#### Ambasz and Holl at MOMA

The Pre-Socratic philosophers believed all sorts of wonderful things: the divinity of nature, the mystery of experience, the wholeness of man, the numerical unity of all things. Many thinkers in this century, attributing our alienating, inhuman world to the rule of reason that Socrates set in motion, have returned to a Pre-Socratic mode of thought. And both Emilio Ambasz and Steven Holl, whose work is on (continued on page 36)

#### P/A Editors Win Neal Awards

The editors of *Progressive Architecture* have won two awards—a double honor that is rarely bestowed—in the Association of Business Publishers' 1988 Jesse H. Neal Editorial Achievement Awards program.

At the ABP's awards luncheon, Executive Editor Thomas Fisher accepted an award for the P/A Technics section, which was named "best regularly featured department." The submitted articles were by Fisher and senior editor Vernon Mays, who took

on responsibility for the department in 1988.

Senior Editor Daralice D. Boles, editor in charge of articles on the housing crisis in the October 1988 issue, accepted the award for "best article or subject-related series of articles by a group of writers and/or editors," on behalf of several editors and contributors honored.

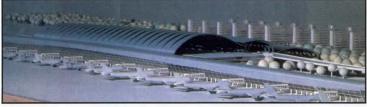
The Neal Awards program, which is open to business and professional magazines, attracted 774 entries this year, of which 15 received awards and 19 certificates of merit.



Tower, Hérouville Saint-Clair, France: pieces by four European architects.

#### An All-European Tower in France

In a France abuzz with "preparing for 1992" (the year of the unified European market), a burgeoning new town in Normandy has taken the dramatic first step towards inventing the architecture of free trade and cooperation. Hérouville Saint-Clair, a suburb of Caen, whose population has increased tenfold to 27,000 in its first 30 years, is planning a bold monument to European community: a mixeduse complex designed, in separate pieces, by four different architects, each representing a (continued on page 41)



Winning competition entry by Renzo Piano, Building Workshop.

#### Piano Wins Osaka Competition

Responding to a provocative site and program, Renzo Piano and Building Workshop have won a recent international design competition for the new Kansai International Airport in Osaka, Japan. Of 15 short-listed entries from the U.S., Europe, and Japan, an international jury led by Kisho Kurokawa chose Piano's entry, and cited designs as finalists by: Foster Associates and the Ohbayashi Corp.; Cesar Pelli & Associates and the

Takenaka Corp.; and Bernard Tschumi.

The airport is to be built on a reclaimed island site near Osaka. An earlier competition among airport design firms, won by Paul Andreu of Aeroports de Paris, established the airport's basic layout, which called for a 5600-foot-long concourse with a main passenger terminal building at its center.

Piano's design, which Kurokawa said was chosen mainly for aesthetic reasons, employs a roof of aerodynamic (continued on page 38)

#### New Buildings for Rice

Designs have been released for a pair of new buildings on the campus of Rice University in Houston, one to house a music school growing in size and national standing, another for a research laboratory.

Since the 1950s, when a stand of venerable oaks was cleared for construction of a 70,000-seat football stadium and oceans of asphalt-covered parking, the western end of the Rice grounds (continued on page 34)

P/A NEWS REPORT



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#### P/A NEWS REPORT

Wood (continued from page 35) Architects, New York; the Schulte Ranch, Round Top, Texas, by Cannady, Jackson & Ryan, Houston; Private residence, Chicago, Ill., by Stuart Cohen & Anders Nereim Architects, Chicago; 24 single-family homes at the Wild Dunes Beach and Racquet Club, Isle of Palms, S.C., by Chris Schmitt & Associates, Charleston, S.C.; the Davis Residence, Union Pier, Mich., a remodeling by Peter Landon Architect, Chicago; and a guest house in Seattle by James Cutler Architects of Winslow, Wash.

Jurors for this year's program were Kurt Anderson of *Time* magazine; Peter Q. Bohlin of Bohlin, Powell, Larkin, Cywinski, Wilkes Barre, Pa.; Laurence Booth of Booth Hansen & Associates, Chicago; Heidi Richardson of Richardson, Butler Associates, San Francisco, and Cynthia Weese of Weese Hickey Weese, Chicago.

MoMA (continued from page 33) view through April 4th in adjoining galleries at the Museum of Modern Art, must be counted among them.

Each in his own way seeks to reestablish man's connection with nature. Ambasz carves his buildings out of the earth or covers them with gardens or canopies of trees, while Holl recalls in many of his projects landscape elements—a canal, a walled enclosure, a bridge—that are characteristic of a place.

The importance of experience (not blinded by reason) also emerges in the work of both. Ambasz's evocative watercolor renderings of the Cooperative of Mexican-American Grapegrowers, for example, focus on what it would be like to stand under that project's continuous grape arbor. In Holl's Porta Vittoria in Milan, it is the experience of walking through the site that generates the district's plan.

Yet, neither Ambasz nor Holl is oblivious to function; what they reject is the social scientist's view of human activity as something that can be dissected, analyzed, and then generalized

about. Both architects create public space charged with poetic or mythical qualities, often leaving its specific functions undefined. And both emphasize the uniqueness and idiosyncrasies of individuals in the creation of private space. In his Schlumberger research facility, Ambasz designed mobile workstations to encourage freedom of association. Holl takes a different tack in projects such as his Autonomous Artisan's Houses, creating diverse building forms that reflect the character and activity of the people within.

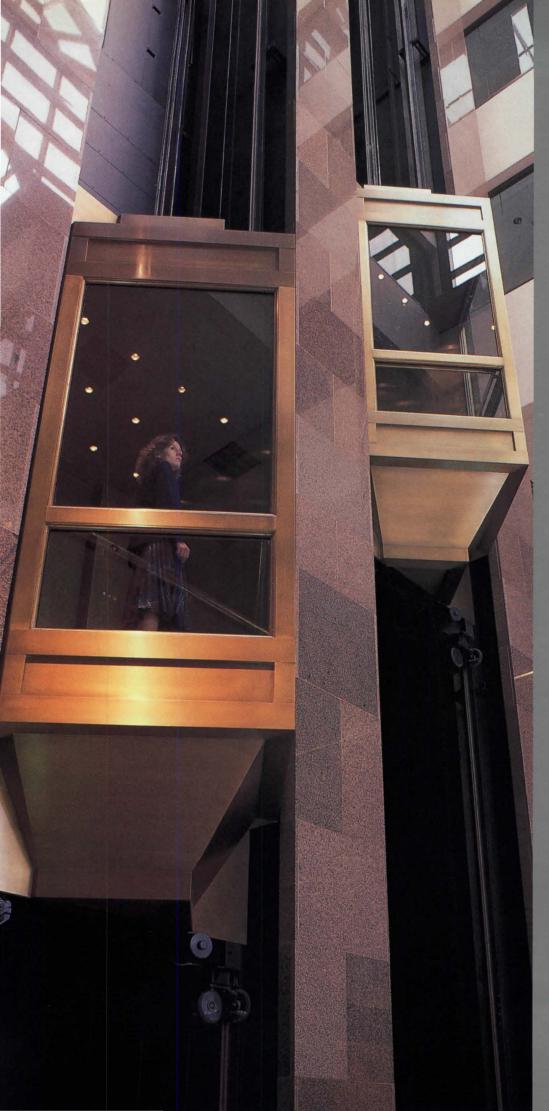
Number, proportion, and geometry, given almost mystical significance by the Pre-Socratics, play a major role in the work of Ambasz and Holl. There is a primal quality to Ambasz's house in Cordoba, Spain, whose L-shape wall defines a perfect cube in the landscape, or to Holl's scheme for the edge of Phoenix, where a series of hollow, cubic buildings define the outer limits of the city's sprawl and enframe views of the unspoiled desert.

Formal differences between the work of Emilio Ambasz and Steven Holl abound. One favors the meandering contour, the other Euclidean geometry; one physically embeds his buildings into the land, the other makes metaphorical connections to it. Differences also exist in the way each presents his work. In the exhibit, Ambasz uses almost no explanatory text, so that we focus on the consequences of what he has done, while Holl's extensive commentary forces us to consider his intentions.

Because of these obvious differences, many people at the exhibition were asking why the two were shown together. But Stuart Wrede, Director of the Department of Architecture and Design at MOMA, is to be commended for doing so. Just as Ambasz and Holl constantly stress the ideas underlying form, so does the juxtaposition of their work in this exhibit make us see their fundamental agreement and help us understand what we have lost in the embrace of Socratic reason. Thomas Fisher



Ambasz's Plaza Mayor in Salamanca, Spain, from MoMA show.



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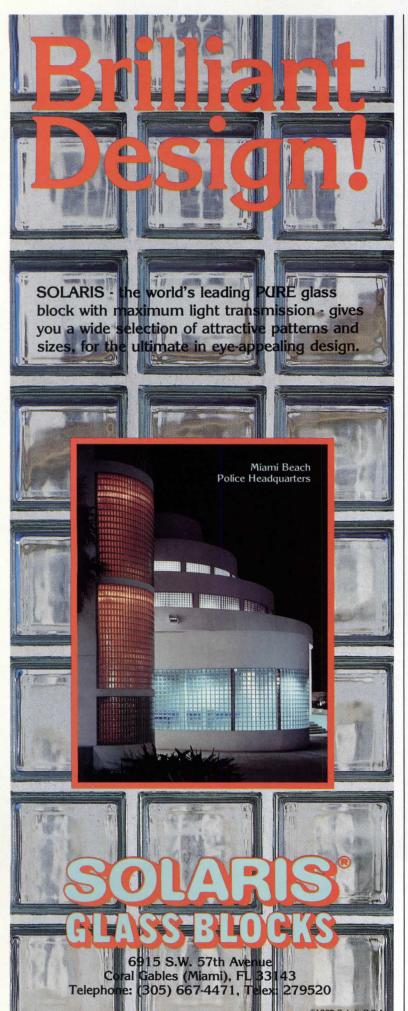
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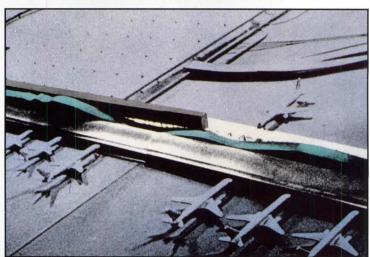
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Finalists in Osaka competition: top, Cesar Pelli & Associates; center, Bernard Tschumi; above, Foster Associates (detail).

Osaka (continued from page 33) curves reminiscent of an aircraft fuselage. The curves are meant to assist ventilation throughout the terminal. The other major features of the design are strips of plantings—Piano calls them "valleys"-running the length of the terminal. The theme of technology and nature coexisting is reinforced with an extensive planting scheme for the man-

made island. Of the other finalists, Cesar Pelli & Associates offered a main building with a series of stepped vaults and a concourse with a shallower vault across its length. While the jury called it the best of the four in terms of function, they objected to the use of intrusive columns in the main space, and felt that the space was "too simple and overwhelming to create a drama of diversified experience."

Foster's proposal divided the space into functional, expanda-

ble zones expressed as 54-meterwide parallel strips, and-breaking the rules-moved all the main terminal functions to one end of the great concourse, employing "people mover" cars on overhead tracks for circulation along the concourse. The jury rejected the Foster plan because they believed that the moving of the main terminal functions would not work.

Bernard Tschumi provided the most elaborate and conceptually exciting plan of the finalists, going beyond the competition program to propose a "21st-Century linear airport city" with hotels and entertainment, sports, and cultural facilities. The functions would be housed in a series of discrete parts: the airport concourse in a "double strip"; the hotels in an eightmeter-wide, stainless-steel-clad slab; and the cultural facilities in a 12-meter-wide "wave" undulat-(continued on page 41)



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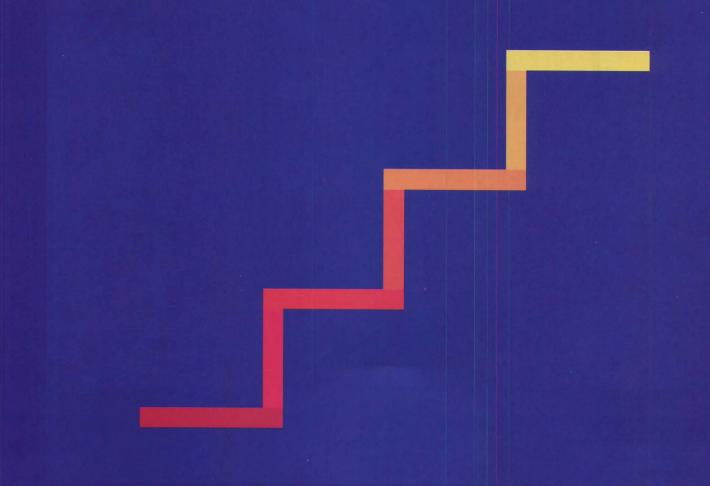
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Osaka (continued from page 38) ing up and down through the concourse on steel supports. Tschumi called the project "a 24-hour line that would conceptually extend around the globe; a 40,000-km city, with a relentless sequence of events." The jury rejected the scheme because of doubts as to whether the programmatic additions would be

approved. The 15 firms each received \$80,000 for their entries. The other 11 competitors were Ricardo Bofill and Taller de Arquitectura, Barcelona; I.M. Pei & Partners, New York, with Kumagai Gumi Co., Japan; Design System, Japan, with JD Architekten, West Germany; Planning Associates with Ungers Airconsult, West Germany; Ellerbe Becket, Santa Monica; Jean Nouvel & Associés, Paris; Hellmuth, Obata & Kassabaum, St. Louis, with the Kajima Corporation, Japan; Kazuhiro Ishii Architect & Associates; Kikutake Architect & Associates; Yasui Architects & Engineers; and AXS Satow, Inc.; all of Japan.

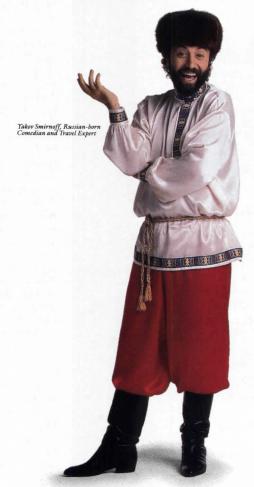
The jurors were Yoshio Takeuchi, the airport company's president; Toru Akiyama of Japan's Ministry of Transport; Kiyoshi Kawasaki of Kyoto University; Soichi Nishimura, vicegovernor of the Osaka Prefecture; and architects Kurokawa, Arata Isozaki, Helmut Jahn, and Richard Rogers.

Mark Alden Branch

Tower (continued from page 33)

different European country. The model for a 100-meterhigh "Euro-Tower" for the town center, unveiled at last summer's first Salon International de l'Architecture at La Villette, is the personal brainchild of Hérouville's dynamic Socialist mayor, François Geindre. One of a number of mayors in France who has seized upon the glittering prestige of the current architectural "stars" to promote a new identity and economic vitality for his town, Geindre invited the four architects, all of whom share his enthusiasm for hightech imagery, to contribute components to a vertical mixed-use complex combining shops, offices, apartments, restaurants, a convention center, and a luxury hotel. Each was assigned a specific piece of the 20,000-squaremeter (215,000-square-foot) complex. William Alsop of England designed a great "organic' vaulted commercial passage whose dramatic diagonal cut aims to anchor the tower to the fabric of the town. Massimiliano (continued on page 42)

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Tower (continued from page 41) Fuksas of Italy contributed the great double helix "spring" on which the tower seems to alight, plus five stories of offices clad in aluminum. Otto Steidle of Germany continued with five stories of duplex apartments arranged around a hollow central courtyard. The whole was topped off by two silolike hotel towers by the current superstar of French architecture, Jean Nouvel. Nouvel transformed the symmetrical "base" into a daring asymmetrically poised composition by the juxtaposition of two cylindrical towers: a 15-story tower with conventional hotel rooms, and a smaller cylinder with a single panoramic hotel room per floor and its own link to the ground by a spiral stair.

Nouvel compares this unusual design exercise to the party game where a sentence grows by the successive contributions of different players towards its own zany and unexpected form. Nouvel, who rounded off the "sentence," clearly reveled in the metaphor. Steidle, for one, however, admits that the transparency he sought in his elegantly detailed curtain wall, punctuated by the spiral stairs of the duplex apartments, is in part negated by the strong shadows of the great platform linking Nouvel's hotel towers. But the players have remained linguistically agile thanks to a late-20th-Century twist to this old game: With drawings and suggested refinements crisscrossing Europe by FAX, between sessions at Hérouville, each player has been able to adjust his utterance to the escalating audacity of the process. For the moment the next design round is on hold as the mayor launches the much more sophisticated and delicate game of finding the financing and technical means to realize such a

Project.

Hérouville Saint-Clair has spent its adolescence in the shadow of Caen, the regional Norman capital bristling with the spires and towers of a glorious medieval past. Its proposed tower at least represents a daring dialogue among four of Europe's leading practitioners of an architecture that revels in the materials and images of the moment; it remains to be seen whether the town will create the beacon of the European skyline for the late 20th Century. Barry Bergdoll

The author, who teaches architectural history at Columbia University, is in Paris for the semester.



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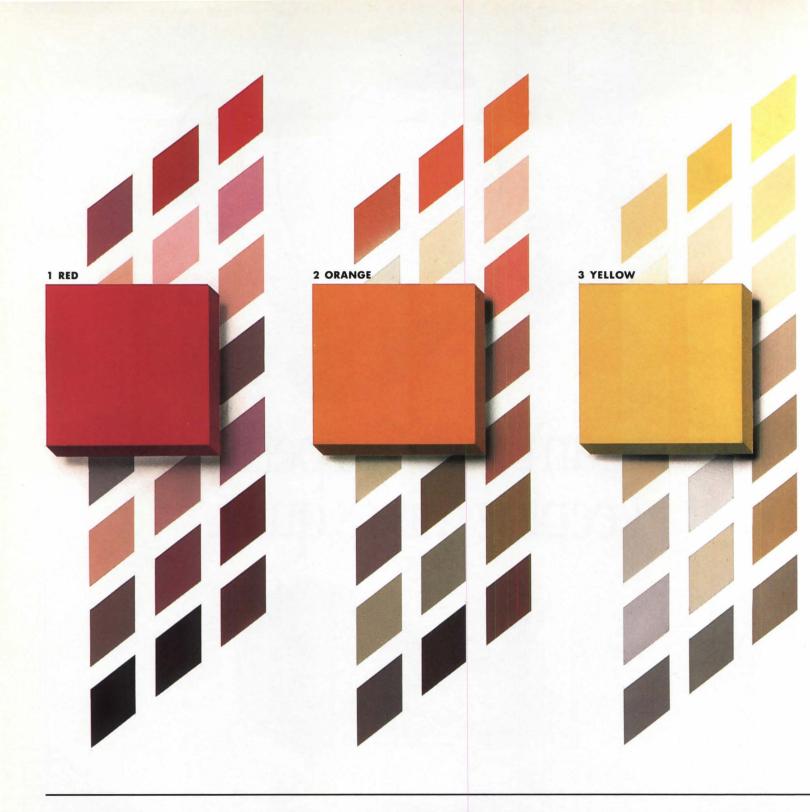
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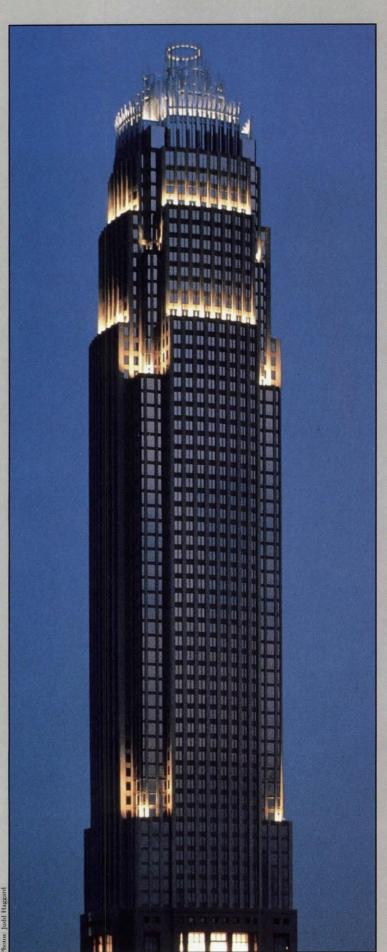
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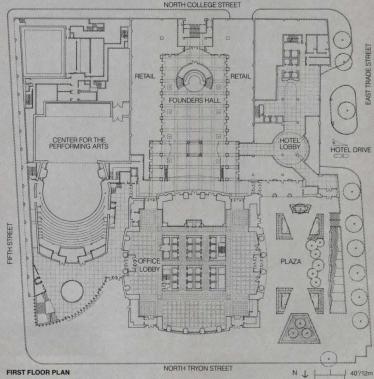
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#### In Progress

Four towers designed by Cesar Pelli & Associates explore a full range of aesthetic expression for skyscraper design, from the protomodern Carnegie Hall Tower to the idiosyncratic Yerba Buena.





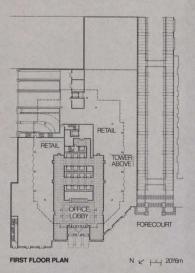


NCNB Corporate Center, Charlotte, N.C. Architects: Cesar Pelli & Associates, New Haven. Associate architects: HKS, Dallas. Sited at the center of Charlotte, this mixed-used development includes the 60-story headquarters for NCNB, a hotel, and retail mall that surrounds a skylighted, barrel-vaulted atrium. The tower will be the city's tallest building, a prominence accentuated by the vertical organiza-

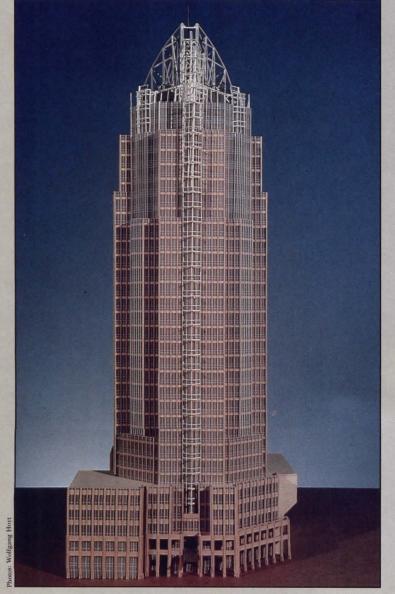
tion of windows and the gradual shift from a very solid, dark granite base through a lighter shaft clad in beige granite to a crown of silver rods. Scheduled for completion in 1992, the complex was designed for a joint venture of the NCNB Corporation, Charter Properties and Lincoln Property. Pelli has also been selected as architect for the adjacent Center for the Performing Arts, which fills out the block.

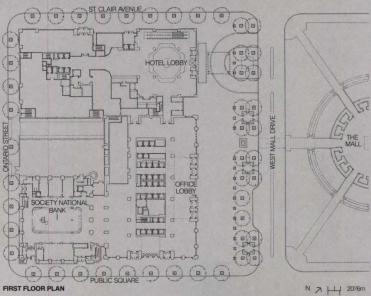
Yerba Buena Tower, San Francisco. Architects: Cesar Pelli & Associates, New Haven. Executed for developers Olympia & York, this 30-story office tower is distinguished by its dramatic cap, a collaborative work by Cesar Pelli and artist Siah Armajani. (For the pair's collaboration in Minneapolis-a skybridge-see page 80). The construction, built of white rolled steel, is a loose interpretation of traditional skyscraper crowns rising 127 feet above the building's top. The shaft's glass and stone façade, also highlighted by white steel, is articulated with the chamfered corners and bay windows that the architects consider to be typical of San Francisco architecture. The tower, which will mark the gateway to the Yerba Buena development from downtown, contains 750,000 square feet of rentable office space, with 36,000 square feet of retail, and a 160-car garage below grade.











Society Center, Cleveland,
Ohio. Architects: Cesar Pelli &
Associates, New Haven. Associate
architects: Van Dijk, Johnson &
Partners, Cleveland and Kendall/
Heaton Associates, Houston. Now
under construction, this 55-story
office tower designed for Jacobs,
Visconsi & Jacobs occupies an

important site facing both the Mall and the Public Square, and its position is likened by the architects to that of the Venice Campanile. Clad in light granite, aluminum, and glass with stainless steel trim and cap, the tower adjoins historic Society Bank. (continued on page 51)



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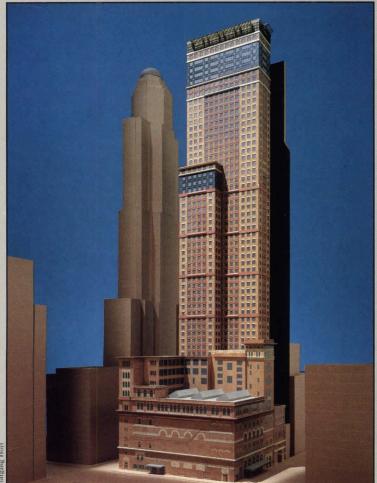


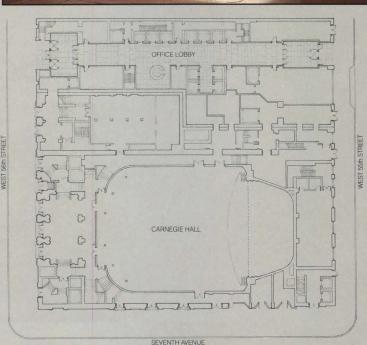
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Who says imagination doesn't grow on trees.







FIRST FLOOR PLAN
(continued from page 48)

Carnegie Hall Tower, New York. Architects: Cesar Pelli & Associates, New Haven. This 59-story, \$60 million tower, designed for Rockrose Development has 485,000 square feet of leasable office space and 25,000 square feet for use by Carnegie Hall. Unlike most of Pelli's recent skyscrapers in which verticality is emphasized, Carnegie takes its cues from the Hall itself

and emulates protomodern skyscrapers of its era. Thus the tower is capped not by a spire but by a strong cornice of open metalwork above a dark frieze. Its skin is stretched over a cast-in-place concrete structural tube with precast concrete lintels, sills, and accents. The tower is set back from the street to respect the Hall's campanile.

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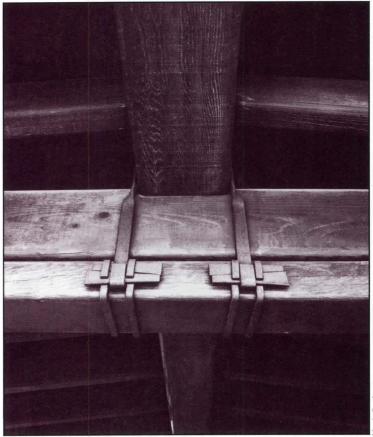
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#### P/A Calendar



Strapped Beam, Gamble House, from Greene & Greene: Photographs by Marvin Rand at Kirsten Kiser Gallery through April 29.

#### **Exhibitions**

Through March 17

Sir Edwin Lutyens: Furniture Designs. RIBA Gallery, London.

Through March 19

Saarinen in Finland. Gallery 2, University Art Museum, University of California, Berkeley.

**Through March 28** 

Through Amateur Eyes: The Architecture of European Modernism as Photographed by an American Abroad, 1931. Gallery 400, The University of Illinois, Chicago.

Through April 2

Robert Mills: Designs for Democracy. The Octagon, Washington, D.C. (see p. 35).

Through April 4

Best Addresses: A Century of Washington's Distinguished Apartment Houses. National Building Museum, Washington, D.C.

Through April 4

Emilio Ambasz and Steven Holl. Museum of Modern Art, New York (see p. 33).

Through April 5

The Experimental Tradition: Twenty-Five Years of American Architectural Competitions, 1960-1985. The High Museum, Atlanta. Also, April 15-July 8, The National Building Museum, Washington (see P/A, July 1988, p. 25).

Through April 16

Architecture Tomorrow: Frank Israel. San Francisco Museum of Modern Art, San Francisco (see P/A, Jan. 1989, p. 21).

Through April 16

Frederick Kiesler Retrospective. Whitney Museum of American Art, New York.

**Through April 17** 

Erik Gunnar Asplund. Georges Pompidou Center, Paris.

**Through June 26** 

Louis Kahn in the Midwest. The Art Institute of Chicago.

March 11-April 29

Greene & Greene: Photographs by Marvin Rand. Kirsten Kiser Gallery, Los Angeles.

March 16-May 13

New Projects by Architects in-

cluding works by Ricardo Bofill, Zaha Hadid, Arata Isozaki, Rem Koolhaas, Bernard Tschumi, and others. Max Protetch Gallery, New York.

March 30-May 28

Art Nouveau in Munich: Masters of the Jugendstil. St. Louis Museum of Art, St. Louis.

March 30-July 16

L'Art de Vivre: Decorative Arts and Design in France 1789-1989. Cooper-Hewitt Museum, New York.

April 4-June 25

Good Offices: The Seventh Arango International Design Exhibition. Ft. Lauderdale Museum of Art, Ft. Lauderdale, Fla.

April 5-May 10

Dwight Heald Perkins. Gallery 400, University of Illinois, Chicago.

April 8-July 22

Inigo Jones: The Complete Architectural Drawings: 1573-1652. The Drawing Center, New York.

#### Competitions

March 15

Entry deadline, Women in Military Service for America Memorial Design Competition. Contact Carla I. Corbin, Professional Advisor, % Women in Military Service Memorial Foundation, Inc., Dept. 560, Washington, D.C. 20042-0560 (703) 533-1155.

March 31

Entry deadline, Brick in Architecture Awards Program. Contact Brick Institute of America, 11490 Commerce Park Dr., Reston, Va. 22091 (703) 620-0010.

April 3

Submission deadline, Severn River Bridge Design Competition. Contact S. Donald Sherin, Chief, Bureau of Consultant Services, Room 414, Maryland State Highway Administration. 707 N. Calvert St., Baltimore, Md. 21203-0717.

May 26

Registration deadline, National Peace Garden Design Competition. Submissions due August 25. Contact Paul D. Spreiregen, Peace Garden Design Competition, P.O. Box 27558, Washington, D.C. 20038-7558.

#### Conferences

March 29-31

WESTWEEK®, Pacific Design Center, West Hollywood, Calif. Contact PDC, 8687 Melrose Ave., West Hollywood, Calif. 90069 (213) 657-0800.

March 29-April 2

Changing Paradigms: Environmental Design Research Association Annual Meeting, Black Mountain, N.C. Contact Willo Pequegnat, Executive Director, EDRA, 4977 Battery Lane, #413, Bethesda, Md. 20814.

April 7-8

American Architecture and the German Connection, Buell Center for the Study of American Architecture, Columbia University. Contact Buell Center, 400 Avery Hall, Columbia University, New York, N.Y. 10027.

April 8-9

Thinking the Present: The Last Twelve Years of American Architecture. Harvard Graduate School of Design. Contact Beth McKinney, GSD, 48 Quincy St., Cambridge, Mass. 02138.

April 16-18

Tile Expo '89, Dallas Convention Center, Dallas. Contact Marvin Park & Associates, 600 Talcott Rd., Park Ridge, Ill. 60068.

**April 20-22** 

Louis Sullivan and the Architecture of Democracy. Grinnell College, Grinnell, Iowa. Contact William Deminoff, Grinnell College, Grinnell, Iowa 50112.

May 10-12

Lighting World International, Jacob K. Javits Center, New York. Contact National Expositions, 15 W. 39th St., New York, N.Y. 10018 (212) 391-9111.



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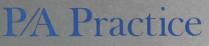




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Education: Gordon Brown and Mark Gelernter propose educational reforms.

Law: Norman Coplan discusses a case that jeopardizes licensing

#### **Education: Veering** from Practice

Architectural education is losing its direction. Traditionally, education in architecture prepared students for careers as practicing architects. From about the 1960s on, however, schools of architecture have been shifting inexorably away from this role (P/A, Feb. 1989, pp. 15-17). In its place they are attempting to establish architecture as an abstract discipline, which is studied for its own intrinsic interest, not necessarily as preparation for practice. Indeed, many schools of architecture exhibit ambivalence, even hostility, towards practice and the demands it makes on education.

However interesting the emerging conception of architecture in the schools might be, it is leaving the profession in a bad fix. Ironically, because of the lobbying efforts of the profession itself, the schools are now virtually the only entry into architectural practice, even though the gatekeepers hold views that are rarely sympathetic—and often antipathetic-to the interests and values of practicing professionals.

What do the schools offer as compensation? The last 30 years have seen a series of architectural "theories" dominating the schools-scientific method. geometric formalism, deconstructivism—each one more abstract and less connected with building. These do not appear to offer significantly better educational experiences, nor do they have a cumulative effect on each other. As each is abandoned, the schools go through a purifying ritual expelling what has become heresy from its curriculum.

Other fields and professions meanwhile are not hesitating to take over many of the architects' traditional roles and expertise in this area. While the schools fiddle, the social authority of the architecture profession is being undermined. Whatever else the schools choose to explore, they have a fundamental responsibil-(continued on page 62)

#### Law: A Threat to Licensing

It is a legal maxim that hard cases make bad law. This may explain a recent decision of New York's Court of Appeals that will negatively affect the architectural profession in New York and possibly in all states where the practice of architecture is restricted to those who are duly licensed.

The case (Charlebois v. J.M. Weller Associates, Inc.) arose out of a dispute in which an owner refused to pay a design-build firm for work claimed to have been done improperly. The design-build contract provided that the firm would be responsible for plans and specifications as well as construction for a particular project and would receive one fee for all of the services encompassed by that contract. However, the contract also stated that the professional services would be performed by a named licensed engineer who was the president of the contracting firm. The New York State Association of Architects, represented by the writer, entered into the case as a "friend of the Court," challenging the enforceability of the contract on the ground that the business corporation was practicing architecture in violation of the licensing laws of the State of New York. The State Education Department of New York and The New York State Society of Professional Engineers also entered the case as "friends of the Court" to support the premise that the contract violated public policy.

The Association of Architects, in challenging the contract, argued that:

- A nonlicensed corporation that undertook to provide or be responsible for professional services, even though performed by an employee who in fact was licensed, was practicing architecture illegally.
- An employee of a nonlicensed entity was subject to the direction and control of a board of directors, consisting of unlicensed (continued on page 67)

#### **Practice Points**

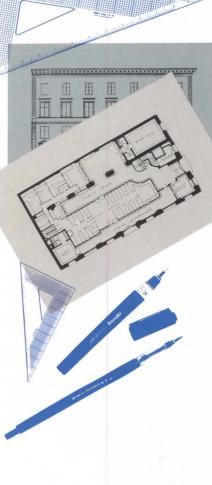
Those seeking architectural registration without a professional degree may still meet the educational requirements for licensing, states the National Council of Architectural Registration Boards. A group called Education Evaluation Services for Architects (EESA), which is administered by Education Credential Evaluators, has been established to review an applicant's education and experience. Contact ECE in Milwaukee, Wisc. (414) 964-0477 for information.

The dispute between the AIA and the ASID and IBD over the registration of interior designers has now moved into the negotiation stage. In a recently issued joint statement, the presidents of the three professional groups agreed upon an approach to the continuing discussions.

The risk/reward ratio for speculative building projects is most favorable in Boston. New Jersey, and Washington, **D.C. According to Peter Bren** of the Lincoln Development Company in an interview conducted by Integrated Resources' Real Estate Report. those U.S. markets may be the only three that merit the risk of speculative developments.

Washington, D.C., leads the way in office construction, reports the Land Use Digest, newsletter of the Urban Land Institute. Nearly 20 million square feet of construction is currently under way in the nation's capital.

Design firms continue to increase their billing rates and fee levels, according to PSMJ's 1989 Design Services Fee Structure survey. Principals' median hourly fees increased \$5 from last year's \$85 rate. Billing rates for other staff levels rose between 3 and 6 percent on average.



Education (continued from page 61) ity to prepare students for a changing profession.

The Changing Profession

Changes are occurring in the amount and type of demand for architectural services, the role of the architect in the building team, and the nature and size of organizations employing architects. As Robert Gutman shows in his recent book, Architectural Practice: A Critical View (Princeton Architectural Press, 1988), demand for architectural services has increased dramatically over the last decade and is continuing to do so. Architects are taking more responsibility for building types not traditionally their concern, and are consulted on a wider range of issues in the building industry, including financing and maintenance. Consequently, the architects' share of total construction dollars expanded by almost one third in the ten years from 1972 to 1982 and, as a result, receipts for architectural firms are up, showing a 25 percent increase when corrected for inflation in the same period. All of this has occurred because, according to Gutman, clients and contractors increasingly value architects' expertise, not only in space planning or building technology, but in visual design.

Although demand is increasing for architectural services, the nature of the demand is changing. As buildings become more

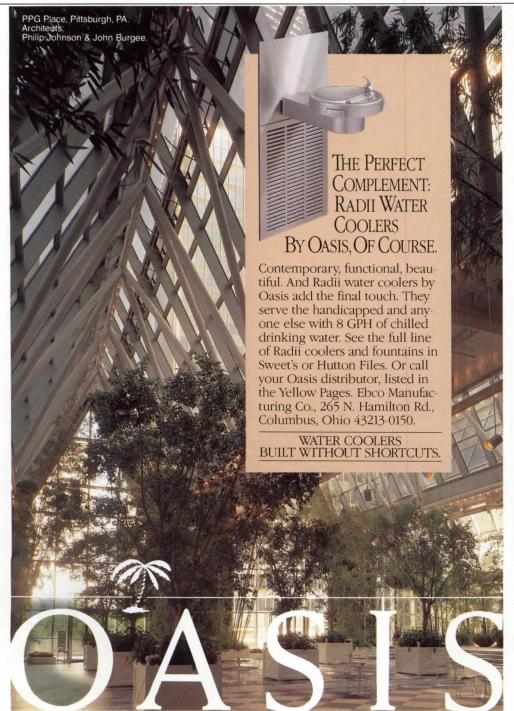
complex, and as their social and physical settings become more encumbered, many clients no longer believe architects have sufficient knowledge in all areas of the building activity to oversee the entire job satisfactorily. Instead, clients are turning to construction managers to supervise the construction process. Many architects are now taking up more limited roles as suppliers of specialist services, for some of which their education traditionally prepared them, such as interior architecture, and for some of which it did not, such as postoccupancy evaluation, cost estimates, and project viability. These nontraditional services are an important market for architects to develop, and Gutman notes that more architects than is usually assumed devote considerable time to these specialized tasks. Indeed, says Gutman, 34 percent of all architects now work for companies and agencies other than private architecture firms.

Another blow to the traditional image of the architect as a designer who mainly conjures up exciting new building forms comes from Success Strategies for Design Professionals: Superpositioning for Architecture and Engineering Firms (McGraw-Hill Book Company, New York, 1987), written by members of the Coxe Group and David Maister (P/A, May 1986, p. 61). They identify six types of architecture and engineering firms, ranging from those offering mainly new ideas and concepts to those that deliver specialized services or wellestablished building solutions. They estimate the market share available to the ideas firms is only about 10 to 15 percent, while the other types share the bulk of the market.

What are the implications of these changes for the architects' education? To start, several of the important markets currently opening up to architects demand skills and knowledge not usually found in the schools' curricula. Second, by far the greatest demand for architectural design services appears to be for the successful delivery of established building solution types, not for the innovative, tailormade creations that the schools usually stress. Third, a majority of architects will be working in teams in the future, even though many design studios still engender an image of the designer as a solitary creative genius. Fourth, while the architects' loss of control over the building process may be an irreversible social trend that neither the profession nor the schools can affect, it is a matter they both ought to ponder. What will happen to the long-term quality of the built environment, for example, when no one with an overall vision of a building in all its aspects controls its design and realization?

The Changing Schools

Why have many schools turned their backs on professional practice? One reason has to do with the split, inherited from the Renaissance, between the manual and the intellectual. From Alberti on, the "intellectual" aspect of architecture was accorded superior social status and the "manual" lost its legitimacy as an object of architectural con-(continued on page 64)





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Education (continued from page 62) cern. The French academic system exacerbated this split even further in the 19th Century by placing the fine arts in the Ecole des Beaux-Arts, and the practical arts in polytechniques.

Walter Gropius recognized the problems with this system when he founded the Bauhaus. But even he felt compelled (with regret, he said) to set up independent theory courses separate from "practical" workshops. This intellectual/manual split in both the Ecole and the Bauhaus was subsequently built into most schools of architecture around the world.

#### The Universities

To this was added another set of

problems. As the generation of knowledge through research has become a prime responsibility of American universities, the transmission of practical knowledge has acquired a second-class status. This places architecture schools in a bind, for their subject matter traditionally dealt with practical knowledge, not abstract principles or empirical research. That has had several effects. First, although many practicing architects still participate fully in schools of architecture and indeed provide leadership for some of them, an increasing number of full-time positions are given over to professional academics whose criteria of performance are determined mainly by the universities. Second, the full-time academics are often anxious to make the discipline more academically and theoretically credible and less like practical training. Architectural research, as a result, has modeled itself after the natural and social sciences and stressed the internal logic and elegance of the research more than its practical application.

The same pressures have also shaped the interests of the studio teachers. First, the university demands on teachers to create original work are passed on to the studio, where students are encouraged to create unprecedented ideas for every project.

Second, the demand for academically respectable work

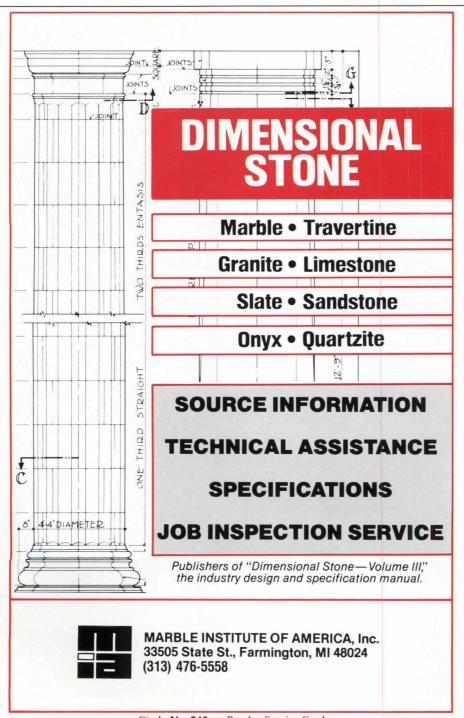
has driven many studio teachers even further away from physical buildings towards a more limited and abstract conception of design as a purely intellectual activity. This encourages a vicious cycle: The less students learn to integrate other aspects of the building activity in the design process, the more clients are later justified in viewing architects as specialists in visual design, and the more the schools and students feel justified in treating this area preferentially. The schools are actively contributing to the demise of the overseer role for architects.

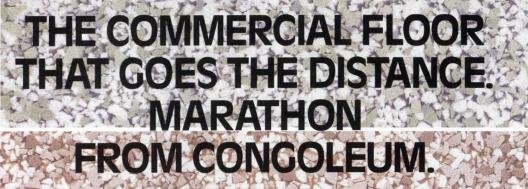
The current research and aesthetic preoccupations of the schools are not without merit. The work is interesting and it does contribute to our general knowledge, and partly on its image the schools of architecture are continuing to attract more students than ever before. Our point is that the schools are shifting away from practice at precisely the same time the schools are becoming the only legal gateways to the profession.

A Proposal

We think the educational concept that comes closest to balancing out the competing demands of education, practice, and the universities is the now pervasive 4 + 2 notion of a general liberal arts education at the undergraduate level and specialized training at the graduate level. But the nature of these two sides to the educational coin must be reconsidered, because the two have become confused.

A useful way out of the confusion can be found in a model of the designing activity proposed by Bill Hillier and his colleagues in London. They conceive of the designing activity as consisting of two interrelated parts: conjecture about a possible form that might satisfy the problems, and then testing this conjecture to see how well it satisfies the problem in all of its aspects. First the designer creates, using intuitive and often extra-rational processes, and then judges, using rational and intellectual powers of comparison and criticism. One of the university's great strengths is its stress on analytical and critical thinking. The studio system, in contrast, does rather poorly in developing an independent, critical sense; students mainly learn to judge according to the master's criteria, often without understanding the master's reasons. Yet the apprenticeship system is arguably better than the universities at teaching stu-(continued on page 66)





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Education (continued from page 64) dents how to generate forms, because the explicit guidance of a master helps overcome the sometimes bewildering complexity of real design problems. This idea, we propose, can help restructure the educational system.

Undergraduate programs in architecture would focus their attention mainly on developing the students' critical faculties.

The Undergraduate Schools

Here the students should learn about cultural, social, and behavioral factors as well as the intrinsic logic of architectural form, conducted, perhaps, as a series of case studies. Form generation would occupy less time than is currently the case.

Such an undergraduate program could attract numerous students interested in architecture, but who do not wish to pursue a professional career. It also would equalize the skill level of applicants to the professional programs discussed below, the body of which enter now with extremely uneven skills. Universities without architecture schools would award a Bachelor of Arts with a major in architecture: those with architecture schools would award a Bachelor of Arts in Architecture and Planning.

The Graduate Schools

In graduate school, students would focus more directly on form generation, with more traditional design exercises. Opportunities for specialization in areas demanded by the marketplace, such as computer aided design, management, history and theory, and visual design, would also be offered. Since those students who become interested in new specialisms are not necessarily interested in professional licensure and vice versa, we suggest these two areas be separated into distinct curricular routes, culminating in distinct degrees.

The preprofessional specialist route. Students who would follow this route would undertake two years of study in their specialty, culminating in a thesis that demonstrates their understanding of the current state of their chosen subject area. The degrees they offer should reflect the nature of the work in the program: Master of Fine Arts in Architecture, Master of Science in Architecture, or Master of Arts in Architecture. They would require performance standards quite different from those in force for graduate architecture degrees today, and could be as academic, artistic, research, business or theory oriented as they wish.

The market will decide which flourish

The professional licensure route. Those students wishing to pursue a professional degree would study a specialty for 12 months, taking as part of their studies a six-month core of technical courses in building systems, regulations, construction, and basic building design. They would then enroll in the professionally oriented and accredited Master of Architecture program, which we propose as a two-year curriculum combining a working paid internship, with evening design and practice courses meeting once or twice a week. Architectural education's tenuous relationship with practice cannot be resolved in the schools alone. The profession, through its national leadership organizations, should form a national professional education institute that oversees programs taught at the local level by both practicing professionals and educators.

The advanced professional curriculum would consist of a series of design studios interspersed with short courses addressing professional, financial, managerial, legal, and related issues. To participate in this program, a student would need to be accepted as an intern by a firm or agency and would

need to be reasonably certain of that position for two years. Since the program is actually an internship, the wage level would need to be no more than minimally fair. Students could move from one to another firm within the two years if circumstances required it (thus the need for a nationally agreed curriculum). Participation in this program would culminate in a comprehensive exam at the student's school which, if passed, would result in the granting of the professional M.Arch. degree.

This proposal would:

Expand architecture as an undergraduate discipline.

Develop a nonprofessional foundation curriculum.

 Develop alternative routes to the professional degree.

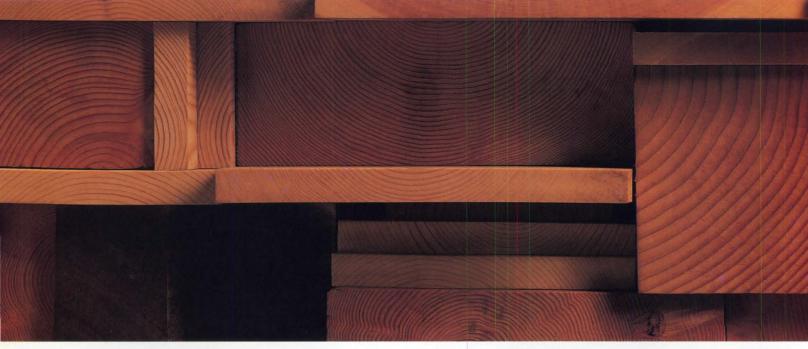
 More carefully define a professional education and remove it from an academic context.

 Link architecture to other related professional disciplines.

 Disperse professional architectural education more widely and build stronger links with local architectural firms.

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As Arthur C. Clarke once pointed out, failures in forecasting fall into two classes: failures of nerve and failures of imagination. Failures of imagination involve misunderstanding the potential or opportunity in new developments. Failures of nerve come from, given the facts and inescapable conclusions, refusing to believe anything fundamentally new can happen. Whether our particular proposal is taken up or not, we hope architectural education will face more squarely the challenges and opportunities currently before it and will not suffer a failure of nerve in pursuing a more appropriate vision of education in the last decade of the 20th Century. Gordon Brown and Mark Gelernter

Dr. Mark Gelernter is the Director of Undergraduate Studies and the Coordinator of the Architecture Option in the College of Environmental Design, University of Colorado at Boulder. Gordon Brown is an Associate Professor of Architecture at the School of Architecture and Planning, University of Colorado at Denver.

Law (continued from page 61)
parties, whose primary objective
was to maximize profits and not
to protect the public or the client.

The practice of a profession
in New York in corporate form
was only permissible through a

qualified professional service corporation, all of whose officers, directors, and stockholders had to be duly licensed in the profession practiced.

• The contract circumvented these requirements and sought to accomplish by indirection what could not be done directly.

• The unlicensed company, in receiving the fee for professional services, was violating the prohibition against fee-splitting.

The Court, in a four-to-three decision, upheld the contract. Because the contract had designated a licensed engineer to perform the professional services, the contract satisfied the licensing law of New York, said the Court, even though the engineer was an employee of a nonlicensed business corporation. The majority of the Court further concluded that the licensee, even though an employee of the corporation, would not be acting in that capacity, but in the capacity of an engineer obligated to exercise his professional judgment in the interest of the public health and welfare.

The three dissenting judges stated that the majority opinion "frustrated the long-standing policy of the State prohibiting the indirect rendering of professional services by unlicensed business corporations" and con-

cluded that the majority opinion did violence to the comprehensive professional licensing scheme that had been enacted by the legislature. The dissenting judges also argued that it was unrealistic to assume that the president of a construction company who was concerned with time, cost restrictions, allocations of resources, and profit margins would somehow remain unaffected by these concerns when assuming the role of a professional engineer. They concluded that it was virtually impossible for a licensee to maintain a professional relationship of trust and confidence where he had no direct contract or privity with the client.

The Court majority may have been influenced by the fact that if the contract was declared void, the contractor would have been unable to collect approximately \$600,000 in construction costs alleged to be due, and the client would have been unjustly enriched. The influence of the "equities" involved may explain the majority's seeming lack of concern as to the precedent-shattering impact of its decision and its possible negative effect on the architectural and engineering professions.

On the other hand, the dissenting judges were concerned

that the majority opinion also might subvert the precedents relating to the practice of other professions. It was a well-established principle, noted the dissent, that a corporation could not practice law by employing licensed attorneys to perform legal services. Has this principle been compromised by the decision in this case? It would appear that the majority opinion may well "open the door" for a significant invasion of the practice of architecture and engineering by "package dealers," jeopardizing the status and prerogatives of licensed professionals and, more significantly, jeopardizing the protection of the public's health and safety, which the licensing laws are designed to promote. Whether the New York State Legislature will recognize the dangers implicit in the majority opinion and take remedial action is a question of great importance and significance to the design professions. Norman Coplan

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





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## Solving the problem.

Street & Lundgren, an Aberdeen, Washington architectural firm, was hired to design a fire station for a nearby town. The project was completed, there was a grand opening celebration, and Street & Lundgren received the "keys to the city."

Almost six years later, the town filed a suit against Street & Lundgren. There was water leakage into the fire house and some hairline cracking of exterior masonry. The town was afraid the building might not be structurally sound.

Roy Lundgren called Dale Currie, DPIC's regional claims manager in San Francisco, and described the situation. The leakage appeared to be due to the town's failure to waterproof the structure on a regular basis. The cracking was almost certainly cosmetic, due to expansion during freezing.

Dale believed the problem was solvable.

He made two trips to Washington during the next few months; first, to meet with the town and hear its grievances and second, to conduct a roundtable discussion to mediate the dispute. It was a delicate situation. The town's building inspector was convinced the structure had serious problems. Street & Lundgren and the project's structural engineer were confident the building had been well-designed.

Dale managed to keep the dialogue open. Ultimately, the town hired a consulting structural engineer to assess the situation. This engineer's opinion fully supported Street & Lundgren, and convinced the town its fire station was structurally sound. Now, all that was left to be done was help the town resolve the

existing problems. In the conciliatory environment established by Dale, Street & Lundgren provided maintenance guidelines for the fire station as well as advice on how to repair the cracked masonry. Dale continued to work with the town's attor-

ney. A year and a half after the initial action, the town agreed to a dismissal with prejudice, meaning it was satisfied no further litigation was necessary.

Richard Dale Currie is an assistant vice president and manager of DPIC's regional claims office in San Francisco. He is a graduate of the University of California at Berkeley and the John F. Kennedy University School of Law and a member of the California bar. He has over a dozen years of experience in construction-related claims management.

Z. Wale lumi

Claims happen. It's what you do when they happen that shows the stuff you're made of.

66 T L liked Dale Currie immediately for his grasp of the situation, his concern about our welfare, his willingness to come up promptly and talk the situation over.

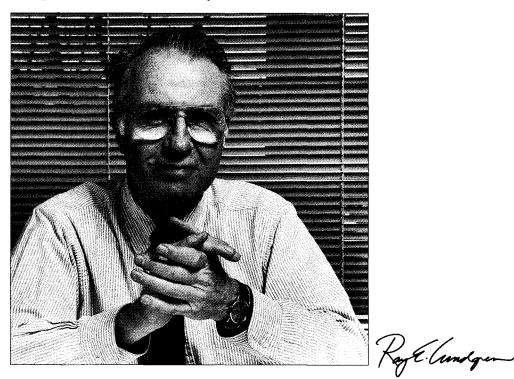
Dale was very skillful in seeking a solution to the city's

doubts about the building a difficult job based on the evidence that had been presented by their home-grown people, whom they know and trust. He showed a willingness to understand their problems, and to come to a resolution that satisfied them. He showed his concern for them in a way that made them very comfortable. And they responded very positively to him.

The idea of the roundtable was his. And he mediated and orchestrated it. He suggested what we should do to allay the fears of the city and we did it. And everything worked.

In essence, what Dale Currie and DPIC did was put out a fire before it really got started.

And you realize, from a business standpoint, all this cost us was our time."



Roy Lundgren is a principal in the firm of Street, Lundgren & Foster, a 39-yearold architectural firm based in Aberdeen, Washington. He is a past director of the Southwest Washington chapter of the AIA and former building code commissioner for the city of Aberdeen. We value our relationship with his firm and thank him for his generosity in talking about an important subject for design professionals.

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## Practicing What He Preaches

ALTHOUGH he has curtailed most of his academic responsibilities, Cesar Pelli still talks like a teacher. He speaks of a building's public role, arguing persuasively against both signature buildings and ideological architecture. "We tend to judge architecture as if it were painting, an isolated object that belongs to the set of the artist. But I believe the city is more important than the building, and the building more important than the architect," argues the former dean of Yale University's School of Architecture.

That Pelli—whose high-rise designs of the 1970s bore his distinct signature of intricately patterned curtain walls—should arrive at this self-effacing philosophy is proof, perhaps, of the effect of scholarship on practice. For the hero of Pelli's own article "Skyscrapers," published in *Perspecta* in 1982, is none other than New York architect Raymond Hood, whose stylistically diverse works were long misinterpreted or worse, ignored by Modernist historians and critics.

Pelli too, in changing his established signature, has opted for a more difficult but ultimately more satisfying course. Projects on the boards prove that his office has reached and passed a turning point. On one side of the divide stand such curtain wall classics as PDC II (page 82); on the other, the more overtly historicist Norwest Center (page 74).

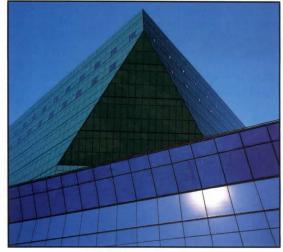
At PDC, the problem was one of Pelli's making: how to add to his own object building. The solution—a series of several new objects—is as classic as it is commonsensical. Norwest, however, marks the leading edge of a new wave of Pelli projects (see In Progress, p. 47). These new works are, in Pelli's own parlance, not high-rise office buildings but true skyscrapers that celebrate not just skin but silhouette. They are, moreover, contextual designs, more tied to place than to Pelli.

"We should not judge a building by how beautiful it is in isolation, but instead by how much better or worse that particular place has become by its addition," Pelli wrote recently. In other words, we must ask not only is a design good, but is it right? Such an attempt to divert the architectural debate from aesthetic to ethical questions is in today's climate a radical and a nostalgic move—one that, we suspect, many architects will welcome.

Daralice D. Boles



Norwest Center in Minneapolis.



PDC II in West Hollywood.

## Made in Minneapolis

Norwest Center marks a turning point for its design architects Cesar Pelli & Associates.



Norwest by day (facing page) or night, with lighting designed by Jules Fisher and Paul Marantz (above, with IDS at right) recalls New York skyscrapers of the 1930s.

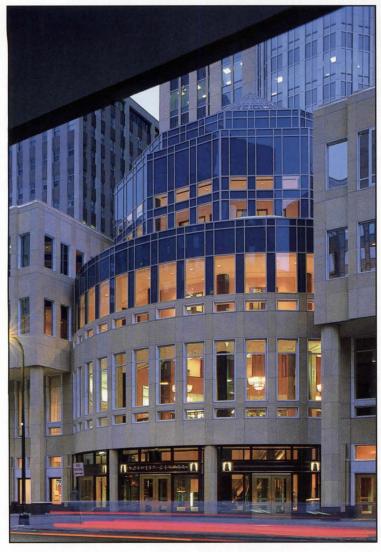
ALTHOUGH it must not have seemed so at the time, one of the luckiest opportunities to befall Cesar Pelli was the chance to start over on Norwest Center. "I doubt we could have designed a Minneapolis building under the first program," says Pelli now. But, with the dissolution of the client partnership and the breakup of the site into two adjacent parcels, Pelli landed a program more in scale with its city. (It is a measure of Pelli's skill with clients that he is the architect for both new sites, building not only Norwest Center, a project for developer Gerald D. Hines, but also a retail complex next door for Bell Canada Enterprises which opens this fall.) The bulky, square Scheme One that would have towered over the nearby IDS building gave way to a through-block slab that defers to that design by Johnson and Burgee and acknowledges its role as this city's de facto symbol.

The most profound change in design, however, was not one of scale but of aesthetic. Although Norwest One used Kasota stone, the local material

that gives many Minneapolis buildings their famous golden hue, little else in the design tied it to that city. Its curtain wall had more in common with Pelli's World Trade Center in New York than with such Minneapolis landmarks as the Foshay or Dain Towers, and its pointed cap quoted a common Post-Modern cliché.

Scheme Two, however, is very much of its place, conforming with considerable grace to the character of Minneapolis architecture. Pressed to define the city's style, Pelli cites a certain clarity and simplicity of form. "Minneapolis exudes a sense of quiet pride," he says. "Its architecture is beautiful but not extravagant." He speaks of the typically vertical organization of elevations, citing a 2'6" window module characteristic not only of older, pre-Modern buildings but of several Modern ones built by local architects. He draws further distinctions between more recent buildings, contrasting the very mediocre Marriott Hotel tower with the IDS building, which, although a curtain-wall building







The rotunda on South 6th Street is Norwest's grand public statement and the bank's principal entrance. (The office lobby is entered from South 7th St.) This skylighted Pantheon is organized around six chandeliers, 12 medallions, and railings (above right and facing page) salvaged from the 1930 Northwestern Bank Building, which stood on this site until a fire on Thanksgiving Day, 1982. Norwest's board room and the offices of its chairman Lloyd Johnson look down into the space from the third and fourth floors where executive offices are located. These are articulated on the street as projecting blocks to either side of the rotunda (above). Entering bank customers pass through the rotunda to elevators that serve only bank floors, or up the escalators to mezzanine offices (see page 79). The mezzanine also connects to the city's extensive skyway system. Teller stations (facing page, bottom) were designed by Studios Architecture of San Francisco.

like the Marriott, manages to achieve a vertical emphasis through its corner folds. Further study convinced Pelli and project architect Jon Pickard that Kasota stone alone was not the key to color in Minneapolis, but that it is the combination of that color with white that sparkles—a discovery that led directly to the use of white granite surrounds for windows in the base at Norwest and white granite accents where the tower meets the sky.

At the same time, Norwest bears an undeniable resemblance to architecture of other times and places—most specifically Raymond Hood's RCA building at Rockefeller Center in New York. The 1930s feel of the new Norwest has particular resonance, given the history of the site. Pelli's tower replaced the much-loved Northwestern National Bank Building, which had served as Norwest's headquarters from its completion in 1930 until a tragic fire in 1982. Medallions, chandeliers, and railings saved from the old 16-story building, which in its heyday was the largest in downtown Minneapolis, were incorporated into Pelli's grand rotunda and through-block lobby.

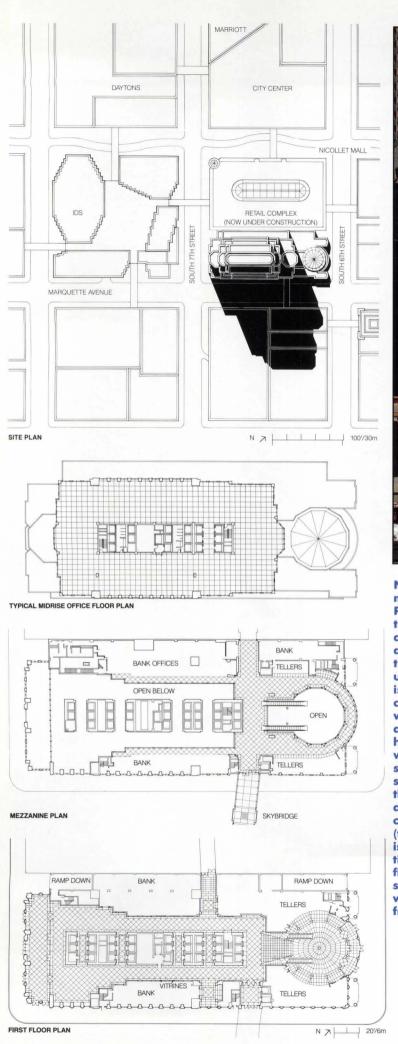
These objects also became the core of a new corporate art collection amassed for Norwest over the last two years by curator David Ryan, who has chosen to concentrate on Modern decorative arts. His selections, which rival many museum offerings, will be dispersed throughout the public and office floors. A changing exhibition in specially designed vitrines in the lobby makes this collection accessible to the public. Norwest trustees will dine on Hoffmann furniture, while their employees work in the company of *objets d'art* by Olbrich, Wright, Mallet Stevens, and others.

There are, of course, significant differences between Norwest and RCA, which Pelli is quick to point out. RCA, he says, is an eroded slab, while Norwest is more the product of accretion than erosion, with "bustles" at either end. Norwest is, moreover, bilaterally symmetrical in both directions at the top, unlike the unidirectional RCA. Hood's building is mainly stone, Pelli's mainly glass. Indeed, from some angles and at night, the body of his building appears to be all glass. Dramatic night lighting of the top of the building, however, recalls 1930s architecture, and the "RCA effect" remains the building's most lasting image.

While acknowledging a debt to Hood, Pelli is more interested in the ways in which his building expresses itself as a product of the 1980s. Here he is supported by Lloyd Johnson, who as chairman of Norwest Corporation represents the building's prime tenant. The tower, says Johnson, had to provide a new symbol for Norwest. "This building kind of lets you know how you should behave," he explains, ascribing more power to architecture than the architect himself might claim. "It reflects the past but doesn't lie about the fact that it's new," he continues.

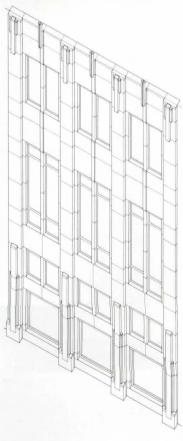
For Pelli, the latter description translates into a kind of architectural ethics, a moral edict reflected in his motto that a building must not be merely good, but right (page 73). To that end, he says, a design must be consistent with its technology. Thus Pelli criticizes contemporary architects who attempt to design towers in a Classical vein. (In this view, he echoes theorist Leon Krier who would limit Classical buildings to the five- or six-story (continued on page 80)







Norwest's façades adhere to many of the principles that Pelli considers to be keys to the character of Minneapolis architecture. Windows follow a 2'6" module, giving elevations a vertical emphasis. The use of Minnesota stone, which is equivalent to Kasota stone, captures the golden hue for which Minneapolis buildings are famous. This effect is heightened by the addition of white granite accents at the setbacks (above). Glazing is set back a full six inches from the face of the building within a white granite frame (axonometric, right). The site plan (top left) shows that the tower is symmetrical in two directions above the midrise, while floor plans (left) show the four supercolumns that handle wind load and permit columnfree office interiors.



AXONOMETRIC OF BASE ELEVATION, MARQUETTE AVENUE

The offices for Norwest Corporation, prime tenant in Norwest Center, occupy the first 19 floors of the 57-story tower. The problem for interior architects Studios Architecture of San Francisco was one of establishing a distinct identity for the bank within the dramatic envelope designed by Cesar Pelli. Rather than compete with Pelli's rich palette, Studios opted for simple, classically Modern materials and forms. The teller stations, for example, are black and white, with the black granite wall broken by glass prisms lighted from within (middle right). Railings from the original Northwestern **Bank Building provide the** principal decorative relief for bank offices on the mezzanine level (bottom). Norwest's main reception area is located on the third floor overlooking the rotunda (middle left). Here and throughout the executive offices on the third and fourth floors, the use of maple and anigre, a light mahogany, together with ivory-colored linen, provides a subtle background for Norwest's developing collection of Modern decorative arts. The staff cafeteria area, also located on the third floor, is distinguished by a curving water wall of red sandstone (top).

**Project:** Norwest Corporation & Norwest Bank Headquarters, Minneapolis.

Interior architects: Studios Architecture, San Francisco (Darryl T. Roberson, Martin Yardley, principals in charge; Thomas Yee, studio director; Kieran Boughan, Leif Glomset, JoAnne Powell, Mark Thompson, design team) in association with Shea Architects, Minneapolis (David Shea, principal; Steven Haasl, project manager; Sharon Gibbons, Russell Gilson, project team).

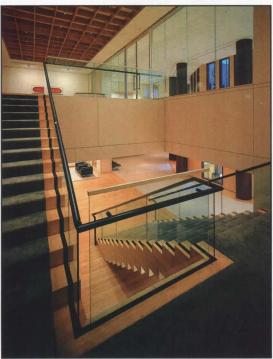
Client: Norwest Corporation, Norwest Properties, Inc. (Thomas J. Parish, president; Robert F. Seeger, vice president and corporate architect; Walfrid A. Johnson, construction manager; Marybeth Crandall, interior designer).

Consultants: Michaud, Cooley, Erickson, mechanical/electrical; CBM Engineers, structural; S. Leonard Auerbach, lighting; Charles Salter Associates, acoustical; Jameison Associates, audio/visual; Canteen Company, food service. General contractor: M.A.

Mortenson.

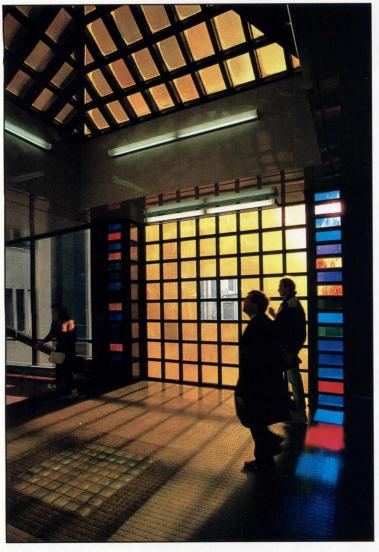
Photos: Christian Korab.













Viewed end on (facing page), the slab becomes a true skyscraper reaching for the clouds. At its base, the tower is tied into the city's network by a new skybridge (above right). (Other connections through a new retail center on the adjacent site will be completed this fall.) The bridge is the work of Cesar Pelli in collaboration with Minneapolis artist and sculptor Siah Armaiani. The two have collaborated before, and are continuing to do so, on projects ranging from the World Financial Center Plaza at Battery Park City in New York to the top of a skyscraper in San Francisco (page 48). Their design for Minneapolis departs from the vocabulary established in Norwest Center. At the same time, it goes beyond conventional skybridges of Minneapolis, which are treated more as building extrusions than bridges. The skylighted, stained-glass pavilion at its center (above) is a kind of walk-through art work that marks the center of the span with a burst of color.

(continued from page 76)

maximum of masonry construction.) "The carved stone tradition has disappeared, but many architects can't cope with that so they keep the keystone and the quoins," Pelli observes. Johnson/Burgee's AT&T building, for example, earns his criticism for columns that are designed to appear falsely structural.

What does it mean to make architectural expression consistent with technology in a building like Norwest, whose structure is based on a system of four supercolumns? Think of Mies, Pelli advises: "There is no need to express every beam." By the same token, the skin is not structural and should not be expressed as such. So Norwest is, in the end, a curtain-wall construction, and its architect has not moved as far from his forte as might at first appear. The façade is a veneer-not as thin, perhaps, as that of Herring Hall at Rice University (P/A, April 1985, pp. 86–97), nor as dedicated to pure pattern-making. But, as Pelli himself puts it, 'The architect's personality doesn't disappear. I have certain preferences for color and massing, but those concerns don't drive the project." This, then, is the essence of the shift in Pelli's direction: from an interest in skin for the sake of itself, to a composing of skin in the service of silhouette.

The attention paid to how the tower meets the sky also distinguishes Norwest from the prototypical high-rise office building—be it Mies' flattopped Seagram Building or Pelli's own Tower at the Museum of Modern Art. Norwest is a sky-scraper and as befits that tradition, it is at its most nostalgic at the top. (Gold finials at the setbacks and top, which were not in position when the build-

ing opened in January, are now going up.)

The base of the building, like its elevations, is equal parts Minneapolis and New York. The grand rotunda recalls Pelli's own World Financial Center towers, and the airy public lobby is a lighter, brighter version of RCA. The skybridge, the first of two designed by Pelli in collaboration with Minneapolis artist Siah Armajani, departs altogether from the 1930s feel of the building, anchoring Norwest in the modern skyway system for which Minneapolis is justly famous.

The shift in style from building to bridge—a move that will make it hard for anyone who doesn't know better to recognize both as the work of one architect—is itself indicative of Pelli's new contextualism. The building matches one Minneapolis—in keeping with the Dain Tower by Holabird & Root (left, page 81), a contemporary of the original Northwestern Bank building. The strippeddown skybridge, on the other hand, eschews all historical reference to either buildings or bridges, matching this city's skyways, most of which are frankly Modern structures.

So: by Pelli's own criteria, is Norwest right for Minneapolis? In the words of one local resident, "When I first saw what they were proposing, I was disappointed that there wasn't more flair to it. But then as it went up, it seemed to fit in, and I realized it didn't need any gimmicks." That sounds not only right, but good. *Daralice D. Boles* 



Project: Norwest Center, Minneapolis

Architects: Cesar Pelli & Associates, New Haven, Conn. (Cesar Pelli, principal for design; Fred Clarke, principal in charge; Jon Pickard, senior associate; Gregg Jones, Malcolm Roberts, associates; Michael Duddy, Roberto Espejo, Greg Jacobson, Anthony Markese, designers) with Kendall/Heaton Associates, Houston (William Kendall, principal in charge; Larry Burns, project architect; Wayne Shull, project manager).

Client: Gerald D. Hines Interests. Site: southeast half of city block bounded by 6th Street, Marquette Avenue, 7th Street, and Nicollet Mall.

**Program:** 1.192 million-sq-ft, 57-story office tower with four levels of parking and a truck dock below grade.

Structural system: steel frame with concrete-filled metal deck floors and curtain walls. Four "supercolumns" handle wind loading.

Major materials: Northern pink buff, Minnesota stone (equivalent to Kasota), white Carrara marble, New Imperial granite, reflective glass, aluminum for exterior wall; honed Crema Valencia marble, polished Rosa Verona marble, Stony Creek granite, bronze for lobby.

**Mechanical system:** central heating and cooling with fan-powered terminal boxes.

Consultants: CBM Engineers, structural; I.A. Naman & Associates, mechanical; Jules Fisher & Paul Marantz, architectural lighting design; Pentagram Design and Calori & Vanden-Eynden, graphics; Siah Armajani, sky bridge, designed in collaboration with Cesar Pelli; Schiff & Associates, security; Twin City Testing, geotechnical; BRW, civil engineering; Minnesota Valley Surveyors, land surveyors; Persohn/ Hahn Associates, elevators; Richard A. Peterson & Associates, code; Peter M. Muller, curtain wall; Cerami & Associates, acoustical; Techcord Consulting Group, building controls. General contractor: Mortenson/

Schal.
Costs: withheld.

**Photos:** Balthazar and Christian Korab, 1989, except as noted.

### Green Phase

For the expansion of their familiar Blue Whale, Cesar Pelli & Associates and **Gruen Associates** have created a green companion structure, deploying it to define a plaza.



Viewed from the north (below) the new green-glazed structure and the green-tinted garage join the original blue building on the skyline. Seen across the new plaza (facing page), the green volume rises from an extension of the original blue envelope, which frames the open space. The square windows have bronze-tinted glass. Plantings have the grayish foliage of species that thrive naturally in this semiarid region.

HOW do you add to a self-contained icon? Cesar Pelli inadvertently posed this challenge for himself when he designed the original Pacific Design Center as a partner of Gruen Associates (P/A, Oct. 1976, p. 78); a decade later, Cesar Pelli & Associates was asked to collaborate with the Gruen firm on a phased expansion scheme.

The expansion proposal succeeded formally by defying conventional expectations. The blue structure, so familiar as an isolated object in its low-rise area, has been integrated into a series of minimal forms—a red one, a green one, and a blue one. The admiring jury that chose the scheme for an award in the P/A Awards program (Jan. 1987, p. 92) observed that the expansion "strengthens the original proposition. The nonscale of the original is maintained." Now that the green structure in completed, along with the plaza and its gallery, the daring and appropriateness of the concept is even more apparent.

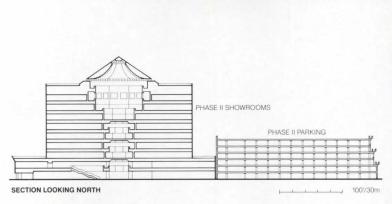
Originally, the aptly nicknamed Blue Whale had

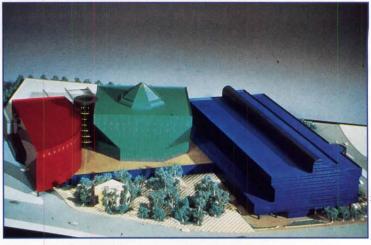
been an isolated event, not just in form and size, but as the only big investment in a relatively sleepy neighborhood. But by the early 1980s, the area was humming with design-related activities and PDC management began exploring how to capitalize on its acres of parking lot. After some studies of mixed-use development, it became apparent that demand would justify a phased doubling of the original 750,000 square feet of showroom (plus the garage this development would necessitate).

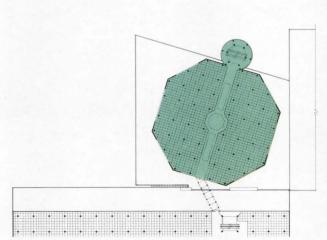
Meanwhile, the area around the PDC had been reorganized as the city of West Hollywood. The design center had taken on a symbolic role as the new city's economic anchor and was subject to the closer scrutiny of a new municipality. Among the amenities the developers agreed to provide was a large plaza, visibly available for public use.

Facing the challenge of adding to the Blue Whale, Pelli recalls realizing that his design team would have to "redesign it, conceptually, from the beginning," but arriving at the very same first-phase

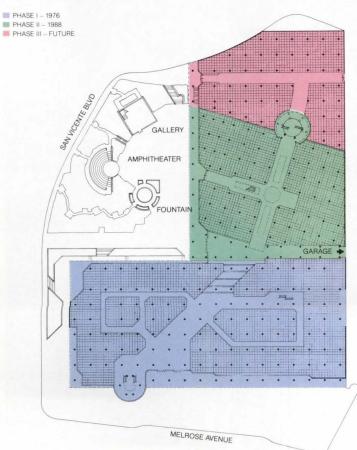












A model photo (top) shows conceal a central light

how the blue and green blocks fit into the final scheme. On the first floor plan (left), circulation from the garage and the plaza is seen converging at a main crossing, which has a reception booth and a broad plaza view. The Murray Feldman gallery (above) has been given greater presence by parapet walls that rise far above its clear-span second-

Project: Pacific Design Center, Phase II, West Hollywood, Calif. Design Architects: Cesar Pelli & Associates, New Haven, Conn. (Cesar Pelli, principal in charge; Diana Balmori, principal for landscape design; Lily del C. Berrios, project manager, design; Jeffrey L. Paine, project manager, construction; Mac Ball, Doug Denes, Philip Koether, Susan Papadakis, Roger Schickedantz, designers).

Executive Architect: Gruen Associates, Los Angeles (Allen Rubenstein, partner-in-charge; Robert S. Barnett, project architect; Karl Swope, job captain; Jon Courtney, contract administration).

Client: Pacific Design Center. Site: portions of 16-acre property. Program: 450,000 sq ft of show-

N 7 100'/30m

floor exhibition space and monitor. The first floor is occupied by a generous lobby, truck dock, and service facilities. The prominent door frame in its stone front contrasts with the storefront entrances to the showroom buildings. The gallery building will eventually be embedded in groves of eucalyptus and other planting.

room space, plus plaza, gallery, and parking for 1900 cars. Structural system: steel frame. Major materials: green spandrel glass, aluminum mullions system (see Building Materials, p. 143). Mechanical system: low-velocity, low-pressure cooling-heating system. Consultants: Cygna Consulting Engineers, structural; Flack & Kurtz, mechanical; P.O.D., Inc., landscape (production); Paller Roberts, civil engineering; Heitman & Associates, curtain walls; Sussman-Prezja & Co. graphics; Jules Fisher & Paul Marantz, lighting; Rolf Jensen & Associates, fire protection; Robert Engelkirk, Consulting Engineers, gallery structural. General contractor: HCB.

Photos: Aker, except as noted.

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conceived as three distinct forms, joined but still self-contained. Each one, however, is in a sense fragmentary—the red form apparently cut from a very large disk, the green form looking like some kind of axially-mounted machine part or knob, the blue form like a slice of extruded, linear component. In relation to the much larger original structure, the two new blocks had to hold their own visually—the green one with its taller, assertive silhouette, the future red one with its long, cantilevered sweep of wall.

Pelli felt that different materials for added blocks would be inappropriate, since the interiors are all the same programmatically. But color could easily be changed—and was. Technically, the curtain walls could not just be duplicated. In the intervening years, safety and energy concerns had led to tightened codes; it took ingenuity to maintain the same narrow, flat mullion profile under the revised standards. The colored glass itself is produced by the same technology as before—fusing a ceramic frit to the back of the lites-a method which is not very expensive and yields color that has shown no fading at all in twelve years of Los Angeles sunlight.

Internally, the showroom addition and the parking garage to the east had to form a coherent circulation system with the original building. The geometry of the Phase II addition and revised building codes both played a part in its internal layout. Since regulations now require a 20-foot clearance between mostly-glass showroom fronts, routes had to be short and direct, but this width allowed area for open wells two stories high—the maximum height permitted. The concept of a



lightwell under the central skylight could only be suggested in two-floor increments; the three-storyhigh space at the peak is made legal by glazing the

#### PDC Meets Public on Plaza

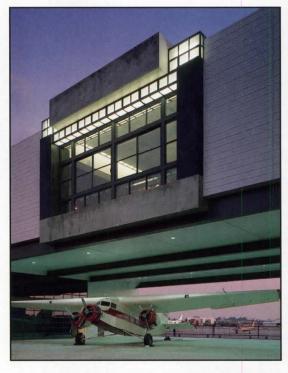
The new PDC plaza meets West Hollywood's requirements with greenery, fountains, and an amphitheater, which will complement the civic center to be developed across the street to the west (another P/A-award-winning scheme, January 1989, p. 107). Pelli made sure that the plaza is a "positive space," not a mere leftover, by giving it two strong right-angled walls—to be complemented later by the sweeping wall of the red block. The plaza, says Pelli, ties the PDC to the terrain, doing much to dispel the former alien-object image, at least at close range.

Located on the plaza is the 26,000-square-foot Murray Felderman Gallery, a block-like structure clad in stone to differentiate it from the commercial showroom structures. The gallery gives PDC a sample of the ornamental masonry treatment that has become prominent in Cesar Pelli's work only since the original PDC was completed (at the Rice University buildings, for instance, P/A, February, 1988, p. 72, and April 1985, p. 86) or the Norwest building (this issue, preceding pages). While Pelli's current work shows a continuing fascination with glass curtain walls (see In Progress, page 47), the Minimalist glass volumes seen here are unlikely to reappear in his firm's work, except in the thirdphase expansion of PDC. John Morris Dixon

The Phase II interiors repeat the red tile flooring and linear metal ceilings of the original PDC. Another success repeated is the external escalator well (above right), this one facing the Hollywood Hills. Broad new corridors (above left) have open wells between pairs of floors; the rotunda under the peak (top left) can be taller because topstory openings are glazed.

## Happy Landings

At an elegant new restaurant designed by artist Charles Arnoldi, with Solberg & Lowe Architects, diners can watch airplanes come and go.



DC3's south façade (above right), with its projecting concrete ceiling slab and 40-footlong windows, looks out over the runway of the Santa Monica Municipal Airport. A view from the kitchen (large photo) shows the bar and rusting steel wine cellar (right foreground), the black sphere of the host station, and, on the other side of the gridded maple screen wall, the dining room. The concrete slab ceiling covers the bar and dining areas; elsewhere, a fabricpanel acoustical ceiling is overlaid with Charles Arnoldi's free-form soffit of pale green-painted gypsum board.

DC3 is a restaurant at an airport, but an airport restaurant it is not. Its rather incongruous location, at Santa Monica Municipal Airport, hasn't deterred *le tout* Los Angeles from making DC3 the hottest reservation in town.

The restaurant's success is the third in a row for Bruce Marder, who already has two of L.A.'s best known dining spots, the West Beach Café and Rebecca's (P/A, Oct. 1986, p. 85). The former pioneered the idea of the restaurant as art gallery, and the latter caused a sensation with its idiosyncratic, highly decorative design by Frank Gehry. Given Marder's long relationship with the art world, it is no surprise that he invited an artist—Charles Arnoldi—to design his third restaurant.

The surprise is in Arnoldi's design. Working with the Santa Monica firm of Solberg & Lowe Architects, he confounds those who expect a walkin version of his artworks. What they find instead is an expansive, grand space that has been created by one who wears the hats of confident sculptor



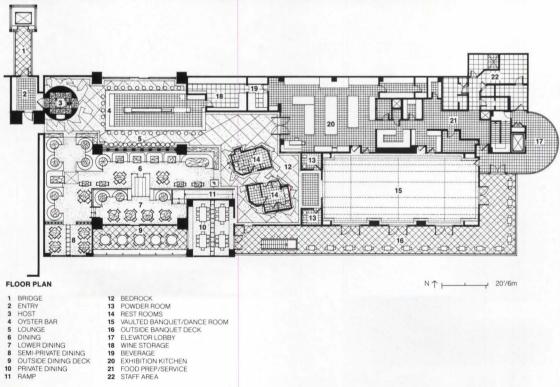




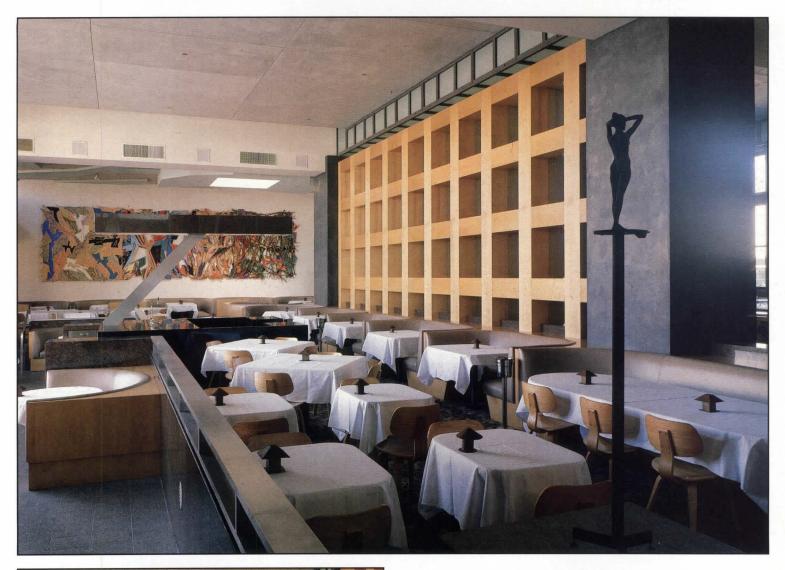
Visitors to the restaurant emerge from the black sphere of the host station (above) to turn right toward the dining room or walk straight into the bar (facing page, bottom). In the terrazzo-floored bar, tubular steel and leather chairs are paired around aluminum-topped tables. The bar front is covered in cowhide; the bar top is solid aluminum. The oyster bar is visible in the foreground.

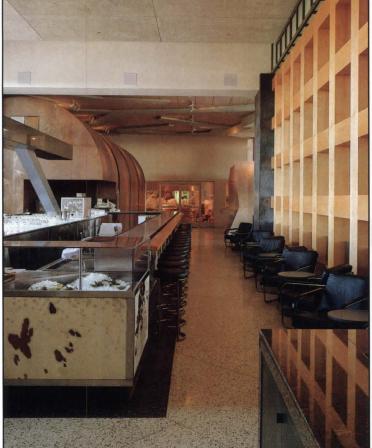
In the dining room (facing page, top), a two-level arrangement of booths and tables affords diners a view of the airport runway. The booths, which are covered in faux ostrich skin and encased in birch, are bordered by "retaining walls" of granite, with solid aluminum handrails. A cantilevered granite "light beam" illuminates the waiters' station. On the room's west wall hangs a painting by Charles Arnoldi; at the opposite end of the room stands a bronze sculpture by Robert Graham. Arnoldi also designed the acid-washed sheet-metal candle holders.

HOST
OYSTER BAR
LOUNGE
DINING
LOWER DINING
SEMI-PRIVATE DINING
OUTSIDE DINING DECK
PRIVATE DINING
RAMP



Progressive Architecture 3:89





and meticulous designer with equal aplomb.

The restaurant is located in a mixed-use aviation facility, designed by Solberg & Lowe, that was developed by David G. Price, chairman of the American Golf Corporation. When Price decided to add a restaurant to the complex, he turned to Marder, who brought Arnoldi in on the project.

By that time, the metal-paneled building that houses DC3 was under construction, and Arnoldi was looking at 15,000 square feet of empty space a lot for a restaurant, but for the artist "it was like

doing a loft or studio space."

Originally, Bruce Marder wanted a "bar and grill," with the simplicity of "a house in Monopoly." August Spier, DC3's general manager (and partner with Price, Marder, and chef William Hufferd), adds, "We didn't want a cavernous space; we wanted a personal feeling."

How to make 15,000 square feet personal? Arnoldi began by installing 40-foot-long operable windows on either side of the building to take advantage of views toward the airport runway to the south and the Santa Monica Mountains to the north. Six structural columns, clad in black plaster, define the bar and dining areas and support the concrete slab ceiling, which penetrates the building's exterior and "floats" in a lighting grid of aluminum and glass. A gridded screen wall of maple and glass separates the bar and dining room without blocking light or views. And, on the dining room's lower level, Arnoldi added a terrace.

"I approached the design the way I do sculpture," the artist explained. "I'd get an idea in my head and I'd just do it." Behind this intuitive approach, however, Arnoldi was constantly aware

In contrast to the more rigorous geometry of the rest of DC3's design, the little buildings that contain bathrooms and phones (right, view from the kitchen, and facing page, top, view from the dining room toward banquet room) are more expressionistic. Their plaster surfaces are crisscrossed with score lines, and their light wells are topped by skylights.

Outside, on the dining terrace (facing page, bottom), **Arnoldi-designed tables** (obscured by the tablecloth) offer an open-air view of the airport. The large window behind the table is on the west wall of the private dining

room.



that the space had to be "alive" at all times.

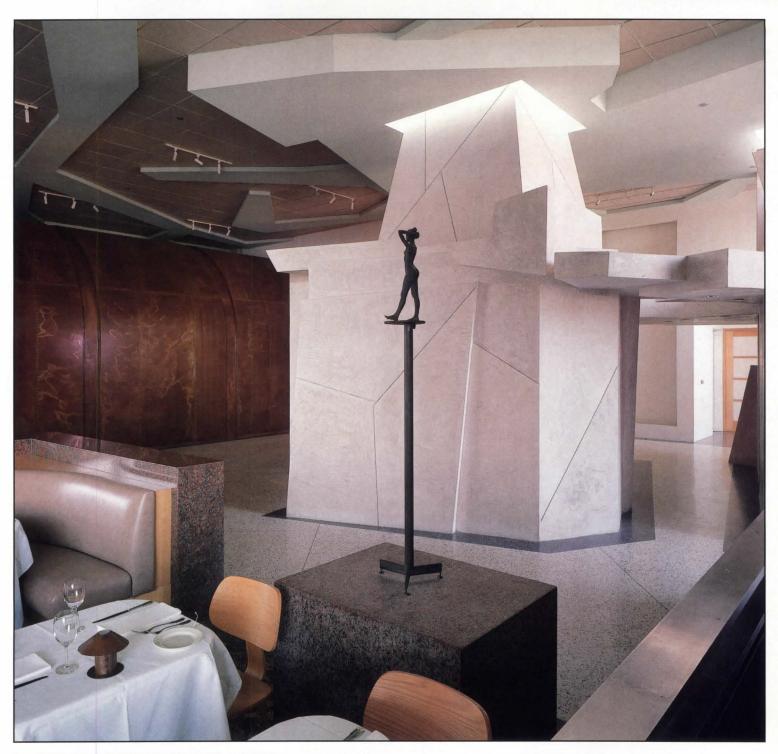
A series of "little buildings" transforms program into procession: the black sphere that contains the host station, a cube of black fossil marble, the Corten steel wine cellar, and the pinkish plaster-clad, expressionistic pavilions that house the bathrooms and phones. Frank Gehry often attributes his similar use of discrete elements to the art world; at DC3, Arnoldi returns the compliment.

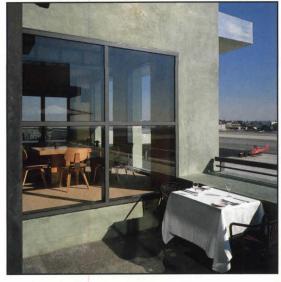
Arnoldi concentrated the design moves on the periphery, leaving the center calm. Given the luxury of so much space, he filled the dining room primarily with booths. "Everybody loves booths," he says, and here it is clear why. Encased in birch and upholstered in ostrich-patterned imitation leather, they look comfortably inviting in the spare, high-ceilinged space. Generous table spacing and a fabric acoustical ceiling ("customized" with Arnoldi's soffit pattern) keep noise levels low.

Arnoldi's sense of proportion never fails him at DC3; the grand gesture and the careful detail share equal billing. And his hand with materials is just as impressive: he treats "motel" carpeting (which he artfully recolored) with the same respect as the solid aluminum he uses for handrails.

If there is a weak spot in the design, it is the lighting grid; its aluminum sections look too heavy for the overall leanness of the other details. Arnoldi had wanted to "float" the ceiling slab in a glass skylight, an ambitious but too-costly proposal, and this was the compromise solution.

Still, DC3's triumph is in its balance between elegance and informality. Comparisons to The Four Seasons come to mind: that kind of understated glamour (and grandeur) is hard to find these days. But Arnoldi wisely tempered it with a softer and lighter palette of colors and materials that is appropriate to the restaurant's time and place. The thing that keeps people coming back to DC3 is that it not only looks like a million bucks, but it makes them feel that way, too. Pilar Viladas





Project: DC3 Restaurant, Santa Monica, California.

Designer: Charles Arnoldi, Venice, California.

Architect: Solberg & Lowe Architects, Santa Monica, California (Jack Highwart, designer; Michael McBurnette, project manager).

Client: 28th Street Restaurant Corporation.

Program: 15,550 sq ft of bar, dining, kitchen, and banquet areas. Major materials: steel, concrete, plaster, wood, granite, marble, glass, gypsum board, and terrazzo (see Building Materials, p. 143). Structural system: steel frame. Mechanical system: variable vol-

ume forced air from rooftop units. Consultants: Brian Cochran & Associates, structural; Interstate

Mechanical Systems, mechanical; G&W Electrical Engineers, electri-

General contractor: Cal-Pac Con-

struction.

Costs: \$2.5 million.

Photos: Grant Mudford, except as

noted.

## Garden in the Machine

A crisply Modern botanical garden by Conklin Rossant is bringing new life, horticultural and human, to downtown Oklahoma City.

OKLAHOMA CITY, not Chicago, is the windiest major city in the nation, according to the National Climatic Center. Situated on the eastern edge of the Great Plains, the city endures extremes of aridity, wind, heat, and cold over the course of a year. Like other cities that came of age in the era of the automobile (Oklahoma City turns 100 next month), it is essentially a center city of offices and institutions ringed by residential neighborhoods and suburban shopping. I.M. Pei & Partners' 1964 master plan for the center city remains tragically half-finished: a good number of old buildings were destroyed, but only office towers in a sea of parking lots have taken their place. Plans for shopping and other attractions to bring people downtown are largely unfulfilled.

But one important part of Pei's plan has finally come to fruition: a four-block urban park called the Myriad Gardens at the southern edge of downtown, designed by Conklin Rossant Architects of New York. The park has as its centerpiece the Crystal Bridge botanical garden, which has since its opening last March proven to be an effective dose of tropical splendor for an ailing center city.

Conklin Rossant's original scheme for the Myriad Gardens, which won a First Award in the 1973 P/A Awards Competition, was an ambitious collection of cultural and commercial facilities built around a T-shaped lake. The lake became the central element of the design after the architects discovered an aquifer 23 feet below ground level on the site. They decided that by "revealing the lake" and surrounding it with berms, they could create a sheltered oasis from the city and the elements.

The list of facilities to be included in the gardens was long and varied: a library, hotels, cinemas, museums, restaurants, retail shops, a planetarium, and the botanical garden, which in the early schemes was a pair of cylinders linked along their length by a pedestrian bridge. But by 1980, when construction began, the plan's first phase included only the construction of the lake and the botanical garden, scaled down to a single cylinder.

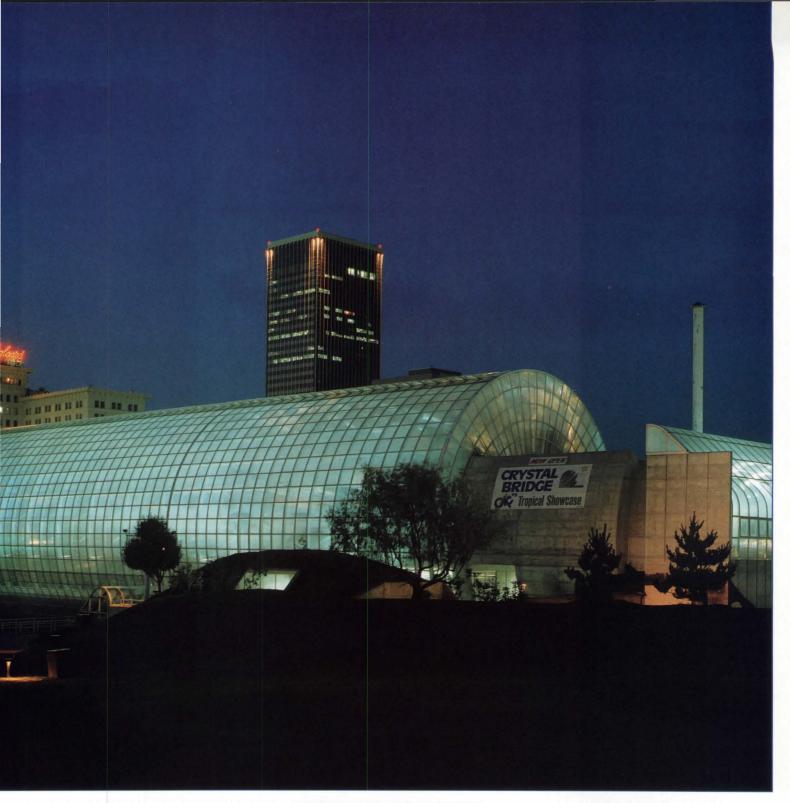
The form of the Crystal Bridge developed according to Modernist visions of "the machine in the garden," say the architects, who saw the building as "a machine-made object in the natural world to contrast with the softness of the surroundings." A linear plan was chosen to express movement



across the lake functionally and symbolically.

The structure is quite literally a bridge; a hollow concrete girder within the bottom of the cylinder spans 224 feet across the lake. Attached to the girder is a series of radial steel trusses, which were fabricated in thirds and assembled on site. Inspiration for the exposed structure, the architects say, came from the presence of oil derricks on the State Capitol grounds and throughout the city.

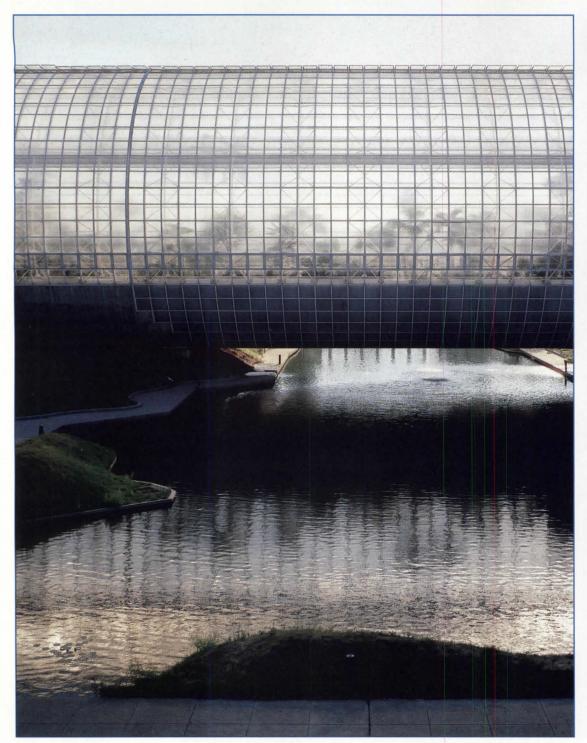
The idea of a "machine in the garden" is borne out literally in the extensive mechanical system that rests in the bottom of the cylinder: the building is a machine for keeping tropical plants alive, a machine in the garden with a garden inside. Although the two-layer transparent acrylic sheathing helps to insulate the space, the structure contains a combination forced-air/radiant heating system; evaporative coolers that draw wet, cool air from the top of the lake below; and a fog system that keeps up the humidity and contributes to the tropical flavor (continued on page 96)



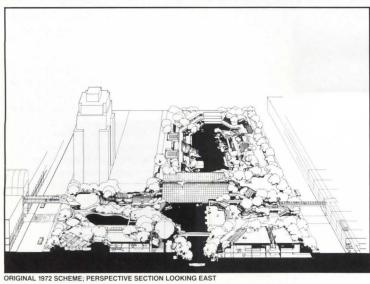


Metal halide lighting creates the glow of the building by night (above). The Myriad Gardens (left) cover a four-block area at the southern edge of downtown, bordered on the east (upper left in photo) by the Myriad Convention Center, on the west by John Johansen's Theater Center, and on the north by an underground parking garage and potential development site. The gardens, originally conceived as an elaborate array of cultural and commercial facilities, will probably be developed, for the most part, as green space.

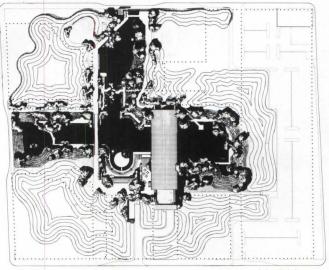
#### **Crystal Bridge**



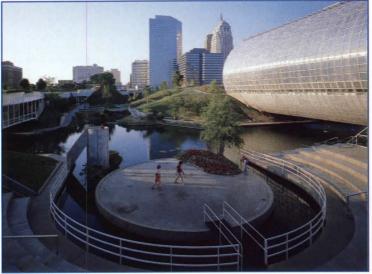












Inside the architects' Platonic structure, man-made hills at each end of the space simulate nature. At the north end (above), visitors walk among deciduous plants on a hill tiered with concrete stairs and landings while the south end, a rain-forest-like environment, is toured via a more naturalistic "adventure walk." Garden director Michael Bush, with the local firm of Loftis Downing & Partners, developed the specifics of the interior, including the painted concrete bluffs and waterfall that James Rossant calls "more theater than we would have done, but wonderful."

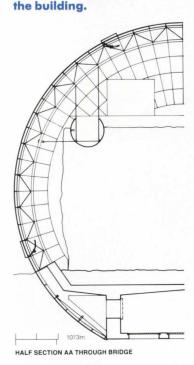
The bridge spans a natural lake (facing page, upper left) discovered on the site 23 feet below grade. Cool air from the top of the lake is used in the building's cooling system. Other features on the site (left) include an amphitheater and a two-level bridge that leads to the parking garage north of the site and to the downtown tunnel system. The 1972 scheme for the site (far left) featured a pair of cylinders with a skywalk between them.

#### **Crystal Bridge**

The building's skin (right) is of two-layer acrylic panels held together by perpendicular connectors. Although transparent, the connectors filter light so that from a distance the skin appears translucent. The panels are accessible from inside for repair. Plumbing for the sprinkler system runs inside the steel trusses.

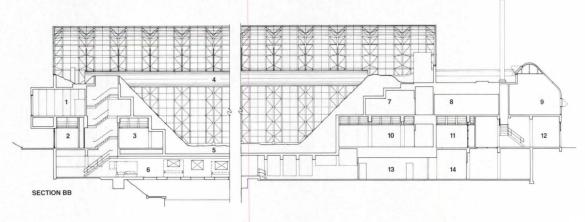
The low-ceilinged lobbies (top right) provide an effective contrast with the enormous main space. The suspended skywalk (facing page, top) affords a view of the plants from above and, through its shape, repeats the cylindrical imagery of the space. The arc of the railing also keeps the visitor away from the edge, lessening the likelihood of vertigo.

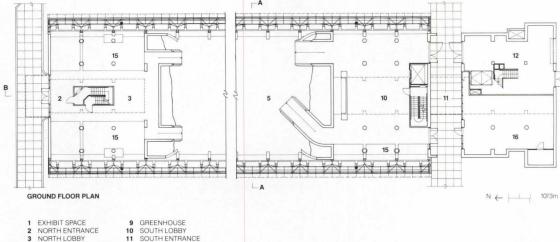
A temporary exhibit space at the building's north end features a large round bay window (facing page, bottom) overlooking downtown, one of the few viewing windows in











- NORTH ENTRANCE
- NORTH LOBBY

- SKYWALK MAIN PLANTING TRAY MECHANICAL ROOM OFFICE LEVEL LOBBY
- CLASSROOM
- WORKROOM LOWER LEVEL LOBBY UNDERGROUND PASSAGEWAY
- PLANTING TRAYS PLANT SHOP

(continued from page 92)

of the space. The garden is divided into four climate zones whose temperature and humidity can be adjusted separately.

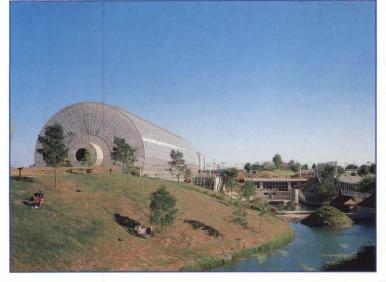
Conklin Rossant's plan for the interior called for steep slopes at the ends; a skywalk runs the length of the space, providing a bird's-eye view of the plantings. Outside the main space at each end are smaller exhibition areas; appended to the south end are support facilities and a greenhouse.

Designs for the interiors, including the plantings, the faux-stone bluffs (actually made of thinshell concrete), and waterfalls, were completed and carried out by the garden director, Michael Bush, with the local architecture firm Loftis Downing & Partners acting as consultants. Bush chose to treat the two ends of the space as separate environments. Using the versatile climate control system, he created a wet, rain-forest-like environment at the south end, and a more seasonal "rain-guided" set of deciduous plants at the north. The area between

the two bluffs includes a central space for temporary exhibitions.

Bush calls the garden "the most excellent space I've ever used," and cites the "potential for vertical exploitation" allowed by the skywalk and bluffs as a particular advantage of the design. The Crystal Bridge has also proven popular with the public: Over 225,000 people have been through the space since its opening. City leaders hope the Myriad Gardens' success will help in their effort to develop the adjacent site to the north as an arts center, a festival marketplace, or both. (Plans for such facilities on the Myriad Gardens site appear to have been scrapped; the site will most likely be developed further as gardens and green space.) Combined with the Myriad Convention Center to the east and John Johansen's Theater Center (now undergoing renovation) to the west, the Myriad Gardens may succeed in bringing more than just plant life back to the center city. Mark Alden Branch





**Project:** Myriad Gardens Crystal Bridge, Oklahoma City, Okla.

Architects: Conklin Rossant Architects, New York (William J. Conklin, partner in charge; James S. Rossant, Peter Mahony, Robert Craig McMillan, project team).

Client: Myriad Gardens Authority (Dean McGee, chairman; Michael Bush, director).

Site: a four-block, 11.3-acre tract at the edge of Oklahoma City's CBD, acquired by the city as part of an urban renewal program.

**Program:** botanical garden with a permanent display of tropical plants; an outdoor amphitheater; a passageway connecting the garden to a pedestrian tunnel system and underground parking.

Structural system: post-tensioned

concrete Vierendeel truss; threechord radial steel trusses.

Major materials: acrylic sheathing, steel, concrete, glass.

Mechanical system: evaporative cooling system, combination forced-air/radiant heating.

Consultants: Loftis Downing & Partners, Oklahoma City, interiors (Jim Loftis, project design consultant); Geiger-Berger Associates, New York, structural (Chris Anastos, structural designer); Dubin-Bloome Associates, New York, mechanical; RGDC, Inc., Oklahoma City, civil engineers.

General contractor: Lippert Brothers, Inc., Oklahoma City. Costs: \$12 million (including site work, landscaping, and interiors). Photos: Peter Aaron/ESTO.

## A Monument for Media

In his House of
Books, Images, and
Sounds, architect
Mario Botta creates
a new symbol for
the city of
Villeurbanne and
taps the power
of light.

Traveling toward Lyons along the Cours Emile-Zola, one encounters the striking profile of the House of Books, Images, and Sounds (above) in Villeurbanne. Architect Mario Botta envisioned the building as a signal for the city, resolute in both material and form. The stepped form of the cutout in the building's façade (facing page) suggests the staggered profile of the atrium within.

FOREVER cast in the shadow of neighboring Lyons, the satellite town of Villeurbanne, France, has long suffered an uneasy self-identity. Its reputation as one of 15 secondary cities that comprise the *communauté urbain* revolving around Lyons has occasionally left it wanting a prominence of its own. Little wonder, then, that the 1983 campaign to erect a new city library took the form of an international competition, with the winning result by Swiss architect Mario Botta certain to enhance the city's renown.

Even the early competition schemes revealed the purity of Botta's architectural language and his clarity of vision, manifested at Villeurbanne by a boldly striped façade cleaved at its center by a symmetrical slot. The power of the image was all-important to Botta, who sought to create for Villeurbanne a symbol, a kind of flag unfurled along the main highway to and from Lyons. (In the end, the building's profile was so strong that it became its own logo, imprinted on small square badges worn by library staff for identification.)

Botta's charge was to create a library for the 1990s, a multimedia institution to be known as the House of Books, Images, and Sounds. But in addition to providing an adequate container for the library's collection of books, magazines, videotapes, videodisks, CDs, and lithographs, Botta faced awkward site constraints. The given site was a gap between two existing buildings, one starkly Modern and the other flamboyantly eclectic. Their clashing styles were one problem; more troubling still were their severely nonaligned façades. "My goal was to reconstruct the continuity of the urban plan," Botta says, a notion that began to suggest an organization for the overall project. First he introduced the main body of the building, an infill element that, in plan, takes the form of a narrow parallelogram. From the front of that volume Botta extended what he calls the "visual façade," a wedgelike form rendered in stripes of limestone in the final construction. The alignment of those two forms created an axis along which a series of elements-lobby, reception area, staircase, atrium, and semicircular volume—are placed.

It is the circular atrium, rising like a stepped cone to a narrow lantern on the roof, that casts a spell over visitors to the House of Books. And it is the same space that makes this building a



watershed project for Botta. In his words: "There is a strength of light here that I never experienced before in my buildings. For the first time, I succeeded in playing with and controlling the light. For me, that was a departure point."

The opportunity to discuss the atrium is, for Botta, the opportunity to invoke the themes of his architectural forebears—Le Corbusier and Louis Kahn. "In the darkness, there is no architecture. Without light, there is no space," Botta says. His tendency to wax poetic is understandable after one has experienced the circular lightwell, a soaring space that derives rhythm and scale from the segmented drums that compose it and the openings cut into them. Other elements within the building are designed in deference to the lightwell, so that at every point in the library the curved atrium wall (enclosed, for safety reasons, with a glazed partition) functions as a common orientation point.

The governing idea was that visitors entering from the urban space would, with one glimpse of the lightwell, comprehend the whole building. On one level, it's a conscious effort to avoid the trap of Modern architecture, whose interior spaces, in Botta's words, too often become a labyrinth of corridors requiring signs to direct building users. His goal here was to be self-evident.

Likewise, it was Botta's intention that the façade reveal something about the building's interior space. "The hole on the inside is actually an answer to what is on the façade," he says. "It's exactly the opposite of the Post-Modernists, the people who make façades and have nothing in the back. Here you not only have a façade, but you have a series of events one after the other."

Botta explains the semicircular form in the rear as a response to the open and somewhat unsightly asphalt courtyard behind the library. Placed along the library's axis, the curved form begins to uplift the leftover urban space that functions primarily as a parking lot today. Interestingly, it wasn't until the external form of the building was largely decided upon that Botta began to consider in detail the placement of functions within it. "I didn't want the function to determine the image," he says. "So I preferred to answer to the city with shapes and forms, and then put the required functions into the given floors."

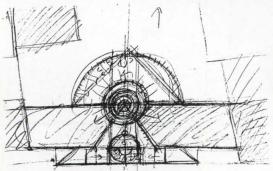
(continued on page 104)



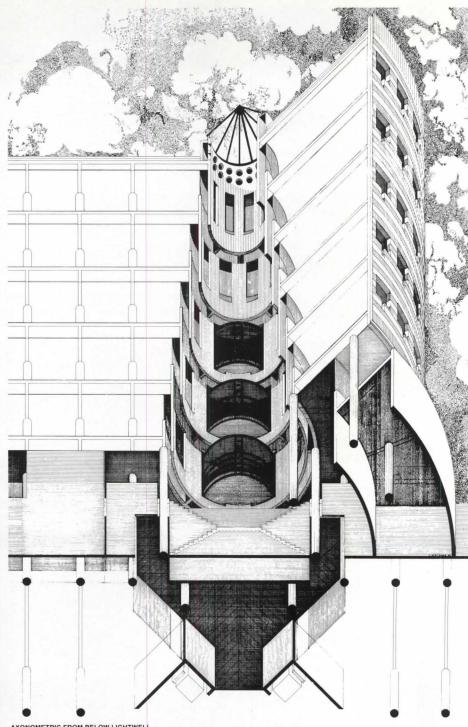
#### **House of Books**

The parallel planes of the library's façade—one of opaque stone, the other glass block—resolve an unusual nonalignment of the adjoining building fronts (bottom right). An early design sketch (bottom left) shows not only Botta's concept for reestablishing a continuity along the street wall, but also his placement of the circular lightwell that organizes the building elements. Rising five floors above the reception area, the lightwell narrows in steps from 29 feet wide at the base to 11 feet at the top. Curved glass cages protruding into the space at the second, third, and fourth floors signal the location of information desks. Structurally, each segment is a prefabricated element in reinforced concrete (below). The bottom segment rests on pilasters (drawing, right) in the lobby reception area and art gallery.









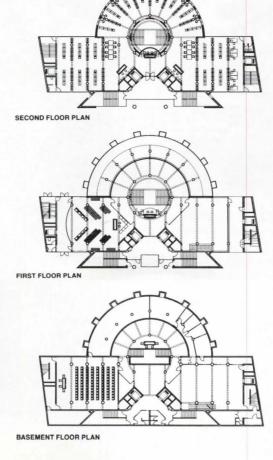
AXONOMETRIC FROM BELOW LIGHTWELL

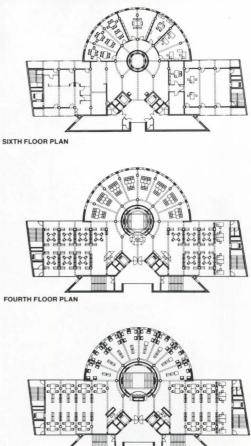






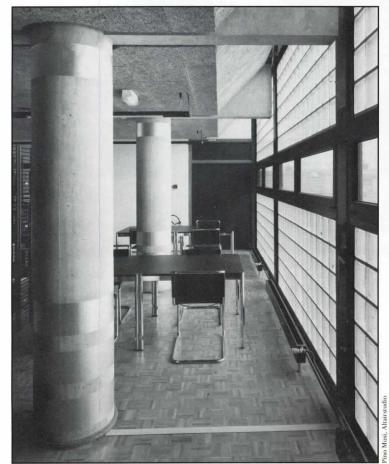
Information desks on the public floors (above) are stationed opposite the elevator/ stair lobbies. Functions are distributed neatly among the floors (plans, right). A 100seat auditorium, semicircular gallery, and exhibition hall occupy the basement. The first-floor reception area leads to audio collections and exhibit space in the wings. The second and third floors house adult collections; children's materials are on the fourth floor. Staff only is allowed in the fifth floor archives (plans not shown). The sixth floor houses administration, a bookbinding workshop, and a caretaker's apartment. Despite the similar construction of the upper floors, each has its own character. The common element to all is the glassed-in lightwell, as shown in the children's area (facing page, top) and one of the adult floors (facing page, bottom right). Reading areas receive diffuse light through glass block walls (facing page, bottom left).





THIRD FLOOR PLAN









(continued from page 98)

As one of the grands projets designed and built under partial sponsorship of the French government, the House of Books received national attention in October when President François Mitterrand delivered its formal dedication. Yet even before the much-promoted public inauguration, membership at the library had, in six months, exceeded the goal for the first year of operation, an accomplishment that delights the library's administration. Lectures, films, and small-scale performances now presented at the library are the foundation of a wide-ranging cultural program that has sprung up in Villeurbanne. Which seems to suggest that, within the context of the city's efforts to enrich its cultural life and extend its accessibility to all residents, the completion of the House of Books, Images, and Sounds has been of vital importance. Vernon Mays

The library's rear façade (above) is dominated by the semicircular drum projecting into an asphalt courtyard. "It is the calm, quiet side of the building," says a library staffer, pointing out the location of reading areas beside the glass block walls. Sixthfloor interiors are stepped back from the street façade, creating partially enclosed terraces (facing page) with views of the town and the projecting wedge of the building's striped front.

Project: House of Books, Images and Sounds, Villeurbanne, France. Architect: Mario Botta, Lugano, Switzerland (with Urs Külling). Consulting architect: Marc Givry, Grenoble, France.

Client: City of Villeurbanne.

Site: 14,500-sq-ft urban site between two existing buildings.

**Program:** 58,000 sq ft for a collection of books, videos, art, and audio recordings.

Structural system: reinforced concrete.

Major materials: limestone cladding, stone and parquet flooring, structural shape iron fixtures, and glass block.

Costs: \$7.3 million.

Photos: S. Couturier/Archipress, except as noted.



## P/A Technics The Uses of Glass

While manufacturers keep finding new methods to improve architectural glass and glass block, architects keep inventing new ways to use it.

PITY the poor "glass box." Once the reigning aesthetic for mid- and high-rise office buildings, the spartan glass curtain wall of rigid geometry and minimalist detail has lost the affection of critics, clients, and architects. Yet the shifting tide of aesthetic opinion has done little to erode the popularity of glass (see Cesar Pelli's Pacific Design Center, p. 82, and Selected Details, p. 151) or slow the industry's efforts to improve this fundamental building material.

Quite the contrary, in fact. "Glass has become much more complex," says Rick Cunningham, executive vice-president of AFG Industries. And, since 1972, the use of glass in the construction industry has risen from 2.2 billion square feet per year to more than 3.5 billion square feet, Cunningham adds. The fact that the glass industry is growing at a rate faster than the nation's GNP is largely attributable to two factors: the heightened concern about energy consumption in buildings and the boom in the repair and renovation of existing building stock (which often includes replacement

The success story on the energy front has been low-emissivity (low-e) glass, which made its first appearance in 1983 and has undergone continued refinement since then. "Probably the best thing to happen recently in glass technology is the improvement in performance of low-e glass and improved transparency of the films," says Jim Gildea, architectural and new products manager at Libby-Owens-Ford Company. The best performers are sputtered, soft-coat low-e glasses, now available with emittance values of .10 to .20 (meaning 10 to 20 percent of radiant heat passes through the glass). Yet the delicate nature of soft-coat films drives up the labor costs associated with handling and fabricating the glass. More recently introduced hard-coat low-e glass, which has baked-on (pyrolitic) film with emittance ratings from .30 to .35, has gained popularity because it can be handled without kid gloves and, more important, can be tempered and bent after it has been coated.

Low-e glass is effective in reducing the passage of radiant heat through windows, and is limited mostly to residential applications in which one wants to keep warm air inside during cool weather and outside during hot weather. In commercial buildings, where the combined radiant heat of people, machines, and lighting often contributes significantly to the cooling load year round, reflective and tinted glass has been favored in order to reduce solar heat gain while allowing radiant heat to escape. Although for years designers have had a wide choice of glass transmittance values, many of the available glazings blocked desirable daylight along with solar heat. New coated glazings, which are spinoffs of low-e technology, now admit ample daylight while reducing solar heat gain by about half, says Steve Selkowitz, team leader of the Windows and Daylighting Group at Lawrence Berkeley Laboratory. Advanced coatings also provide a wider range of colors than was previously available.

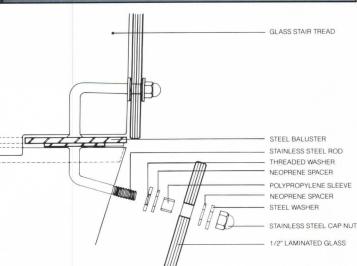
In the context of all this activity, glass block manufacturers are not sitting still either. After suffering a dearth of demand for glass block during the 1970s, Pittsburgh Corning Corporation increased its production capacity on two occasions during the 1980s, says systems engineer Nick Loomis. Improvements of late in glass block include better clarity in the glass (achieved by using raw materials low in iron, which causes coloration), solar reflective coatings, and internal fibrous glass filters that reduce glare.

Another related area of technology under increased scrutiny is structural silicone glazing systems. This method of installing glass relies on the adhesion of a silicone sealant placed between the glass and window frame. No mechanical attachment is used in so-called four-sided structural glazing, but many specifiers are still cautious in their use of this technology and often call for metal retainers at the top and bottom edges of the glass. Some liability concerns in this area have been addressed by a new structural spacer glazing system for insulating units, in which the interior light is held mechanically in place while allowing the same flush appearance on the exterior.

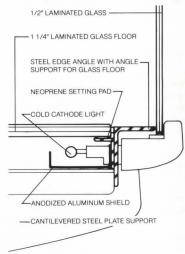
Meanwhile, architects are doing their part to find new uses for glass or encourage producers to come up with products that fit designers' needs. The push to innovate is further spurred by a new breed of glass consultants who advise architects or execute glass works that are integral to larger architectural projects. Taken together, their efforts-a range of which is shown on the following pagescontinue to redefine the role of glass in architecture. Vernon Mays











**Project: Apartment (Untitled** #1), Chicago. **Architects: Krueck & Olsen** Architects, Chicago.

"In all of our work, we think glass has some of the most interesting potentials for manipulating space," says architect Keith Olsen. And in this 6400-square-foot penthouse apartment, Krueck & Olsen exploited those potentials to their fullest. The firm's decided interest in the abstract layering of space is clearly evident here in the intersecting and superimposed planes of water, stone, and glass. Considering the many intersections of materials, Olsen says, "if we had used conventional details in that apartment, we would have ended up with tons of off-the-shelf aluminum items."

**But standard details they** are not. Take, for example, the sculptural stair that thrusts into the two-story atrium. Its treelike structure begins with a central column from which extend slender steel brackets that support the treads before turning upward and bending again to form minimalist handrails. Reflective glass enclosing the stair is hung on custom-fabricated stainless steel pins (drawing, bottom left). To minimize the risk of chipping the glass on the threaded pins, a polypropylene sleeve is slipped over them. Special care is taken to keep the drilled glass from bearing directly at the holes. Rather, friction from neoprene washers against the glass surface holds each sheet in

Glass ceiling panels, sealed at the joints with silicone to separate the plenum space from the finished space below, rest on steel knuckles designed especially for this job. The knuckles, and the painted-steel clips used to support balcony walls, are "fairly simple ways to construct those elements and have them work structurally, while minimizing the expectation of what a tradesman must accomplish," Olsen says. **Heat-strengthened safety** glass on the stair treads (middle left) and balcony floors (middle right, and drawing, bottom right) is a Mylar laminated sandwich consisting of two layers of clear glass and a textured wearing surface.

**Projects: United Airlines Ter**minal, O'Hare International Airport, Chicago, and Oakbrook Terrace Tower, Oakbrook, Illinois. Architects: Murphy/Jahn, Chicago.

In selecting glass for the concourse areas at O'Hare (near right), lighting concerns were paramount, says project architect Martin Wolf. The goal was to maximize daylighting, yet the designers knew that large areas of glass would cause excessive glare and heat gain. When they learned of a process by which a ceramic frit is directly applied to the glass surface, the solution presented itself: a skin that reduces glare and heat gain while admitting ample daylight. Better yet, the frit pattern's reflectivity contributes to indirect night lighting of the concourse. A 50-footlong, full-scale mockup of the vault was built to test different combinations of glass (say, the ratio of clear to patterned panels) and the effectiveness of various substrates for the fritted glass. Says Wolf: "We made the final decision with the client standing inside the mockup."

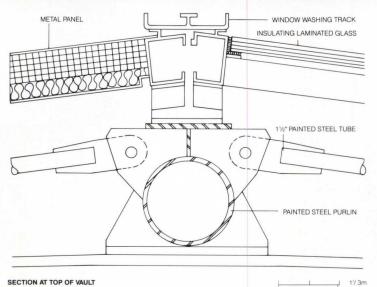
The positive experience at O'Hare prompted discussion about other applications of fritted glass. At Oakbrook Terrace Tower, a 29-story suburban office building, the choice was a spandrel glass with a fine dot pattern (bottom, far right). "From a distance, this material has a mystery to it," says project architect Philip Castillo. "You don't know if it is metal, you don't know if it's stone. As you begin to approach the building, you perceive there is more there than a different color glass."

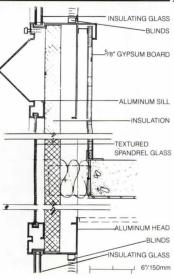
At Oakbrook, the fritted glass is used as a scale-giving device, expressed as quoins at the seams of the building's two wall systems (one with triangular mullions and silver reflective glass, the other with a structural silicone-glazed system using green reflective glass). Triangular sills emphasize the building's horizontal layers. Castillo cautions architects using this glass to be watchful of pattern alignment, particularly in light of the differential movement of the skin. His solution: specify a common reference point governing the installation of each piece.

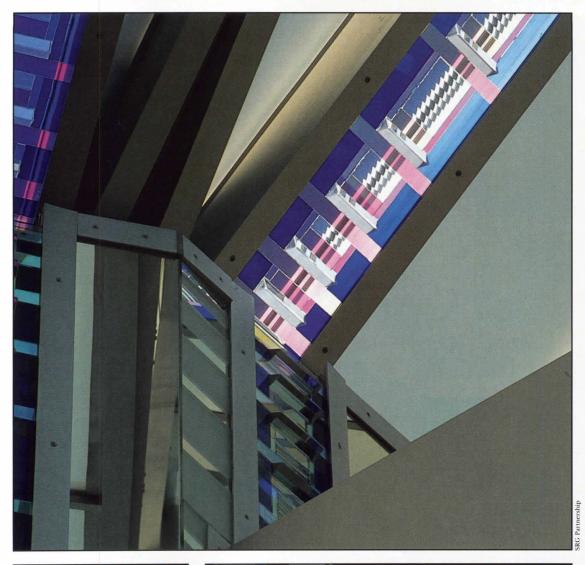










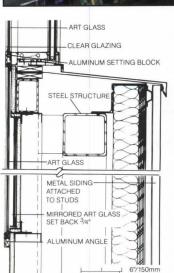




**Project: Oregon Institute of** Technology, Klamath Falls, Oregon. Glass artist: Ed Carpenter, Portland, Oregon. Architects: SRG Partnership, Portland.

What might easily have been just another skylight is transformed here into a dynamic display of colored (and often mysterious) light, thanks to the addition of art glass panels. The skylight is designed to do more than transmit light; it projects and reflects light in ever-changing patterns and hues that shift with the seasons. "I wanted it to perform in a variety of ways in a variety of conditions," says artist Ed Carpenter. To accomplish that, combinations of four specialty glasses, each with unique qualities, were laminated onto panels of plate glass. Key among the four types is dichroic glass, a metal-coated material that reflects and transmits a variety of colors of light. Here's how it works: light passing through blue dichroic glass appears blue only to someone whose sightline is perpendicular to the glass surface. Light passing obliquely through the glass appears magenta. And light bouncing perpendicularly off blue dichroic glass appears gold. A changed angle of reflection yields another color. In this case, more variables figure into the equation, for each panel also includes flat strips of handblown glass, sections of clear fluted glass, and 4-inch prisms ("the standard schoolhouse equipment"). Sections of art glass that extend below the roofline are mounted with mirrors behind them (drawing, bottom left) to bounce light yet again. The skylight enclosure is primarily frosted glass, so that at night it appears as a glowing lantern, says architect Mike McCulloch, who collaborated closely with Carpenter on the skylight design. Often, Carpenter notes, people ask if he calculated how every sun angle would manifest itself in colors on the skylight walls. The answer, simply, is no. "It's intended to be filled with surprises."





SKYLIGHT WALL SECTION

**Project: Corporate Headquar**ters, Cambridge, Mass. Glass artist: Dan Dailey, Amesbury, Mass. Interior architects: ADD Inc., Cambridge, Mass.

The client was first seeking art for nine locations in its new headquarters, but discussions led to a new strategy: instead of placing art within each space, why not create walls of art glass that define the space? Working from fullscale sketches, Dailey carved a clay negative relief, divided it into foot-square sections with aluminum "cookie cutters," and poured plaster positives. Each positive was refined before transferral to a sand mold and final pouring. The structural load of the walls is borne by vertical stainless steel members between the columns of blocks.

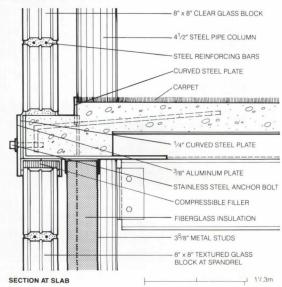
**Project: Liberty Center, Troy,** Michigan. **Architects: Rosetti Associates,** Detroit.

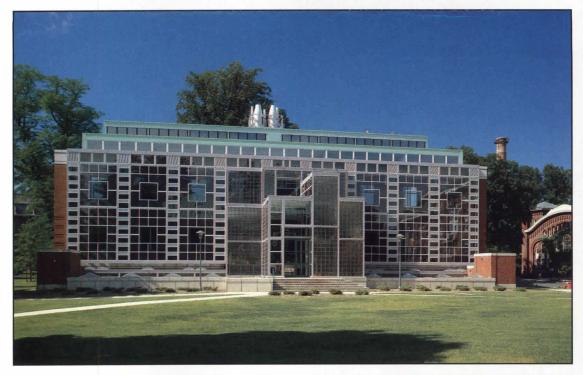
The selection of two types of glass cladding for this project had its roots in the original program, which called for twin speculative office buildings. Although from the beginning the possibility of phased construction was likely, "we considered the project as one building with a segment taken out," says project designer Algis Bublys. The result, in plan, was a slender rectangle cut away in the middle to form a courtyard (middle right). Design studies of the "eroded" wall explored a variety of configurations, with a sinuous wave getting the final okay. A clear glass block was chosen for floor-to-ceiling locations, and a translucent block for the spandrel areas, which are blacked out with foil-backed rigid insulation that is painted black. The joint between them is a blue aluminum band that subdivides the block wall. Previous experience with leaks has made the gutter detail at each slab (drawing, bottom right) an office standard to prevent carpet damage. Each building features a three-story atrium lobby (bottom left) and a twostory atrium at the top. The three rectilinear façades of each building are blue reflective glass butted at the vertical ioints.

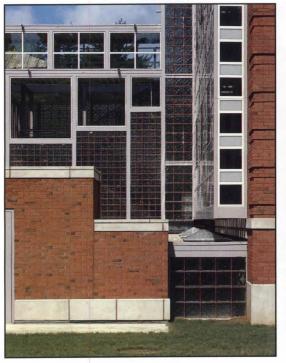




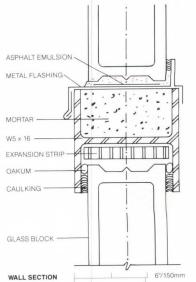


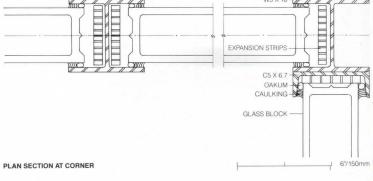












Project: Seeley G. Mudd Chemistry Building, Vassar College, Poughkeepsie, New York.

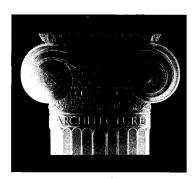
Architects: Perry, Dean, Rogers & Partners, Boston.

This building, the first-prize winner in a 1988 design awards competition sponsored by Pittsburgh Corning Corporation, uses combinations of plate glass and glass block in a design that deftly integrates energy technology. While a host of energy features from heat-recovery components in the mechanical system to task-ambient lighting with supplemental daylighting emphasize the internal workings of the building, externally its most prominent feature is the richly patterned solar wall on the south façade (top). Framed in steel and suspended two feet in front of a second façade of concrete masonry, the glass skin acts with the backup surface as a modified trombe wall (middle left), producing warm air that can be distributed throughout the building via direct connections to the mechanical system. All of which was part of a comprehensive strategy to create ways to recapture energy, says Peter Ringenbach, a partner at the firm.

Yet there was room for whimsy. A stair lobby (middle right) clad in combinations of tempered glass and glass block was introduced as a decorative feature, Ringenbach says. This volume provides a luminous source of light, glimpses of which are available through much of the building—and welcomed, too, since the north, east, and west façades are primarily solid masonry.

Ringenbach says glass block can be handled successfully "as long as you're careful with the detailing of the steelwork. You can't leave a lot to the contractors." The tricky part is the frame, he says, which must allow adequate room for expansion while maintaining the watertight integrity of the wall. And great care has to be taken in the selection of sealants, because glass block is so much denser than standard glass. "It's glass, but it isn't glass," he adds.

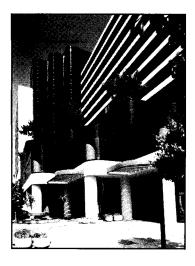
## Technics-Related Products



Carved glass signage is custommade using deep "V" or smooth, rounded cuts in a thick plate of glass. The glass can be tinted or clear and the option of edgelighting with neon is available. Bronze, chrome, wood, gold leaf, and other material can also be used as inlays.

Wallach Glass Studio.

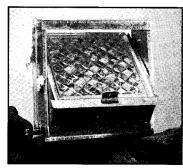
Circle 200 on reader service card



A silicone-based pigment adds color and opaqueness to spandrel glass and glass wall claddings. Opaci-Coat 300 can be used on annealed, tempered, high performance, and reflective glass and comes in a broad spectrum of colors. Glass coated with this pigment will accept both insulation and glazing materials with compatible silicones. Industrial Control Development. Circle 106 on reader service card

Glass blocks are available from this Italian company in a wide variety of patterns, colors, and shapes. A seven-page color brochure includes technical data and installation instructions. Iperfan.

Circle 201 on reader service card



A glass-block vent, consisting of a standard glass block hinged into an enamel-covered metal frame, is available for use in conventional or glass block walls. The vent comes in two sizes, 8x8x4 and 12x12x4, opens to a 45-degree angle, and has a snap closure. Glass Block Company. Circle 101 on reader service card



Glass Solariums and eve-level skylights are made to order with a variety of options that include color, size, pitch, lighting, decorative borders, and monograms. Classy Glass.

Circle 202 on reader service card

Architectural bent glass is handmade to a variety of specifications by this company. Their bending process is suitable for laminated safety glass, float glass, thermal insulated glass, spandrel glass in all colors, heat-resistant glasses, wire glass, and all types of patterned and colored glasses. A free, full-color brochure is available.

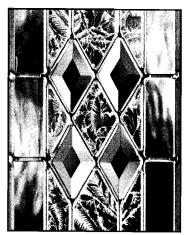
California Glass Bending Corp. Circle 203 on reader service card



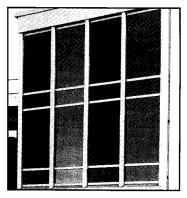
A glass finishing block called EndBlock, for use with PC GlassBlock® and HEDRON® I corner block products, has a finished surface on one side that can end a wall or partition without the use of wood, masonry, or metallic framework. EndBlock can be used horizontally or vertically and is available in the Decora® or Vue® patterns in 8-inch squares. Pittsburgh Corning. Circle 102 on reader service card

A fire-resistant, clear glazing material called FireLite has been introduced as an alternative to wire-glass for fire-rated locations. FireLite has a current maximum fire rating of 90 minutes in sizes up to 100 square inches. It can be cut to size and its thickness fits standard fire-rated frames.

Technical Glass Products. Circle 103 on reader service card



Brass replaces lead as the metal strip between clear or stained glass windows in this new line of doors, sidelights, and transoms. Decorative glass with brass came, the industry term for this metal strip, is sealed between two pieces of clear, smooth glass for longevity and ease of maintenance. Simpson Door Company. Circle 104 on reader service card



High performance coated glass called Solarban 470 comes in a choice of blue hues ranging from deep sapphire to a blue bronze. Solarban is available in spandrel or double-glazed insulated glass and comes with a 10-year warranty against peeling. PPG Industries.

Circle 105 on reader service card

(See Technics, The Uses of Glass, p. 106)



# Don't worry about staying inside the lines.

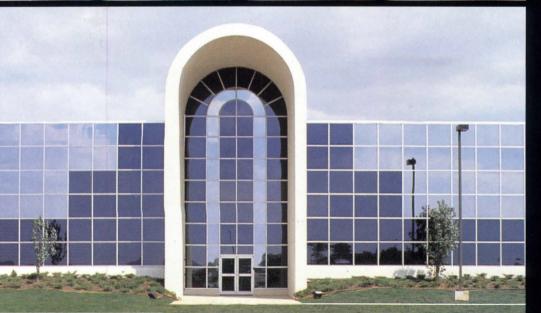
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## The Image of Stone in Glass.



The photo features Black Granite

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## **Technics Topics**

117 A return visit to the Enerplex project yields mixed reviews for the energy technologies and methods that were integral to the buildings' development.

123 A vine-clad topiary fills out its shape in a fraction of the time required by traditional trimming methods.

#### **Enerplex Revisited** and Reevaluated

The energy question was on everyone's mind when the board of directors of Prudential Life Insurance Company met in the fall of 1979 to launch the Enerplex project. At that time we were experiencing the second oil crisis of the late 1970s, when shortages at the gas pump, together with the then-recent nuclear accident at Three Mile Island, were raising urgent questions about the future of longterm energy supplies. As a major real estate developer and owner, Prudential wanted to pioneer new energy technologies for commercial buildings. To achieve this end, the board decided to build the Enerplex buildings (P/A, Aug. 1984, pp. 82-89) in Princeton, New Jersey. They selected a team of architects that included Alan Chimacoff and Skidmore, Owings & Merrill, engineers from Flack + Kurtz, and energy researchers from the Center for **Energy and Environmental** Studies at Princeton University, and charged them with researching and designing a low-energy

Prudential's commitment to the project went beyond the design and construction phase; they wanted to find out how the buildings performed and which of the many energy features could be incorporated into future projects. Researchers from Princeton were chosen to track the buildings' energy consumption during the first years of occupancy. To complement this effort, the research team also conducted a post-occupancy evaluation four years after the buildings were first occupied to reconstruct the activities of the principal players in the design, construction, and occupancy of the Enerplex project and assessing their satisfaction with the final result.

office building.

Before reporting the research findings, let's look at the buildings and the energy-efficient features that distinguished this experiment in commercial build-



The two buildings at Enerplex. The South Building is at left, the North Building at right.

ing design. The two Enerplex buildings, referred to as the "North Building" and the "South Building," are similar in size, shape, and function. Both are 130,000 square feet, three stories high, organized around an atrium entrance, and designed with open-plan office space. A cross-section through both buildings reveals a skylighted, threestory central circulation space. But there also are striking contrasts between the two. The North Building is sheathed in glass, and the South Building is clad predominantly in stone. And the South Building uses passive strategies, controlling heat loss through the shading and sizing of windows on the different elevations of the building, while the North Building uses active strategies, collecting warm air in the south-facing atrium and blanketing the building with a layer of air inside a double-glass exterior wall

Heating and cooling schemes also differ in each building. The South Building is heated and cooled by a ground-water source heat pump, which uses the natural aquifer under the building as a heat source and heat sink. The North Building uses its atrium for heat collection and distributes the air to the north side of the building through an 18-inch space between the exterior glass walls; a conventional electric-resistance heating system serves as a back-up to the solar system. Cooling for the North Building was initially provided by an ice pond, which made and stored thousands of tons of ice in winter for use in summer. After two years of operation, the ice pond proved too costly to operate, and the system, regarded as an experiment from the outset, was replaced by a chiller.

Several other energy technologies aimed at minimizing the need for lighting, cooling, and heating were incorporated in the two buildings. For example, recognizing that electric lighting represents a large contribution to total energy use in office buildings, the designers used the atriums and skylighting to maximize natural daylighting. They also used efficient lighting equipment and controls, not only to minimize electricity use but to reduce the heat generated by conventional lighting. Venetian blinds were installed to enable

occupants to control the light from the windows, and reflective blinds were installed on transoms to bounce the light to the ceiling.

What do the key players think about the completed buildings? Says Rebholz: "We've satisfied ourselves. We're not satisfied that the buildings are not fully occupied, but we are satisfied with what we have done." (A tenant took over the entire North Building shortly after its completion, but the South Building is only partially occupied.)

Others at Prudential don't entirely agree. Not only did Prudential try to accomplish too much on one project, says Bruce Long, vice president of engineering for the Prudential Realty Group, but they learned that it is possible to be "overinnovative," to go beyond what the market will bear. Long's hopes that there would be spinoff projects from Enerplex have not been realized. And, given the present lack of emphasis on energy conservation, Prudential Realty has not pursued such ventures. Nonetheless, Long claims that the buildings subsequently developed by Prudential have used half the energy of



The South Building designed by Alan Chimacoff

the pre-Enerplex buildings.

From the point of view of the marketing and leasing staff, a commercial building is successful when it is leased, the tenants are happy, and the project is generating income. Members of the marketing team were all aware of the difficulty in leasing a speculative office building, particularly one tagged as "experimental." They report that some prospective tenants have expressed concerns about the differences between the two buildings: "If the buildings had been further apart," says a staff member, "it would have been easier to lease them, or if they had both been glass, or both looked the same.

According to the realtors, prospective tenants are "curious about the energy features, but curiosity can work in a negative or a positive way." Some of the marketing staff feel that prospective tenants have appreciated the daylighting, finding that the light slot and atrium provide a pleasant environment, especially for people having to work at computer terminals. But the leasing staff is not unanimous about the positive value of the light slots. "I think people want to have conventional office space," says one staff member. "They want to walk down corridors that have drywall. It is not that they don't like daylight; I think it is just familiarity.

The leasing and operating staff are critical of other features as well. The buildings, they say, are more oriented to the sun than to the needs of the occupants; the parking lot is not adjacent to the entrances to the building; there is no sense of arrival at the curb; and the relationship of the two buildings to each other is disturbing-interested tenants

will love the appearance of one building but dislike the other (with both buildings falling into either category equally). The South Building, still not fully leased, confirms the marketing staff's view that energy is at the bottom of the list of tenant requirements. The realtors applaud Prudential for having brought them into the project early. However, one staff person, who noted that leasing and managing personnel are usually the last ones to be invited, comments that their input could have been solicited even earlier.

The architects, who are generally satisfied with the completed buildings, want to know how the buildings are perceived by the tenants, which parts are performing well, what the tenants feel about the buildings' use of glass and light, whether the glass-walled corridors interfere with privacy, how the atriums

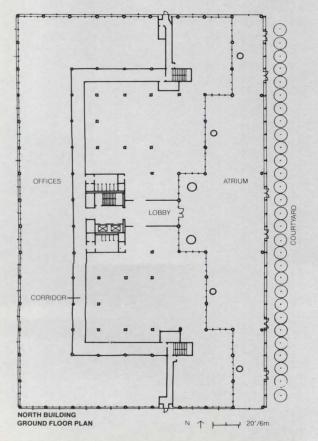
are used or should be used, and, generally, whether the buildings provide a good environment regardless of their energy features. Princeton architect Alan Chimacoff adds that "Every architect should stand in front of his building once a year and tell people he is the architect, and let them tell him what they think."

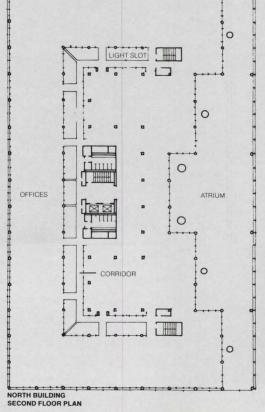
The mechanical and electrical engineer for the project, David Stillman (Flack + Kurtz), also is satisfied with the project overall, but acknowledges some disappointment in equipment performance. "In terms of theoretical performance," he says, "the heat pumps don't make the predicted COP [coefficient of performance], but compared to the practical alternative, they are a whole lot better." Several of the features of the building (groundwater heat pumps, lighting fixtures) were successful enough to be incorporated into later projects. Besides speaking highly of the buildings' use of the latest technologies, the engineers applaud the design process in which they had been team players.

What do the tenants have to say? Tenants in both buildings filled out written questionnaires that asked how the buildings compared to other places they had worked, what they regarded as a good working environment, how well their particular office provided those characteristics, and how their building could be improved.

The responses of the tenants contained the expected variability, but also highlighted real differences in satisfaction according to sex, job category, and age of respondents, and the particular building. Regardless of which building was involved, the chief tenant complaint has to do with heating and cooling systems. Many find their building too hot some of the time and too cold the rest of the time; tenants in both buildings agree that there are not enough periods of comfortable temperatures.

Satisfaction with both the natural and electric lighting, however, is generally high among all







The North Building designed by Skidmore, Owings & Merrill, New York.

tenants, although there are complaints about the lack of privacy along the glass-walled corridors and in the first-floor offices facing the atrium. In fact, workers close window blinds to prevent people from looking in, negating the intended effects of the daylighting. Some tenants also objected to what they saw as the "prison-like" atmosphere of the three-story light slots (in both buildings) and the wire glass (in the South Building).

When asked to remark on what constitutes a "good working environment," tenants cite adequate space; private or semiprivate work area; easy access to work-related equipment, other departments, elevators, and restrooms; a pleasant view to the outside; an attractive overall appearance; comfortable temperatures; and good lighting. The majority of respondents in the North Building do not feel their building fulfills these requirements, but the majority in the South Building do, a surprising disparity, in light of the South Building's amount of unleased space. One explanation may be that company representatives looking at real estate are fixed on the "sexy lobby, sexy elevator cab, and curb appeal" criteria and are less interested in the features that ultimately make it desirable to the tenants.

One other question to explore is why the buildings used so much more energy than originally predicted. The 30,000 Btu per sq ft target was exceeded by a factor of three in the North Building, and by a factor of two in the partially occupied South Building. The reasons for this gross difference are many. First, the buildings were not built as originally designed. Changes in equipment and controls meant that the final construction was substantially different from what was originally modeled. (For example, the photocell sensors that were to control the lighting were never installed.) Second, the tenants brought in more equipment than originally envisioned by those performing the energy simulations—an allelectric cafeteria, a main computer room, and individual computers at most work stations. (Remember that the buildings were planned in 1979 before computerized offices were commonplace.) And third, building operators did not always operate the buildings on the same schedules as predicted; that is, they would override setback schedules for the heating system, change morning start-up sequences, and maintain longer lighting schedules.

What emerges from this evaluation is that, despite the technological achievement of having incorporated state-of-the-art energy-efficient design features into a major commercial building complex, despite the benefits of having taken a team approach to its design and construction, and despite the unusual support provided by a forward-looking and risk-taking

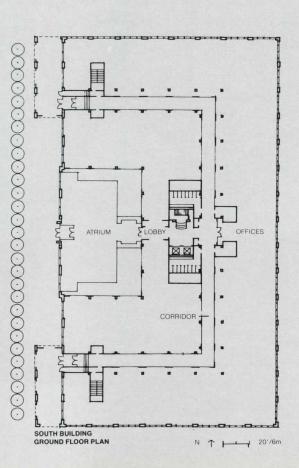
client, the project is disappointing in terms of its marketability and its actual energy use. On the other hand, the Enerplex project has taught some important lessons. An effective team must include, from the earliest stages. the client, the architects, the engineers, the marketing and leasing staff, and the building operators, with follow-through from one stage to the next, from design through occupancy. The best energy-saving features in the world mean nothing if both the occupants of the building and those who operate it on a daily basis are unaware of how they are designed to function or resist their intended use.

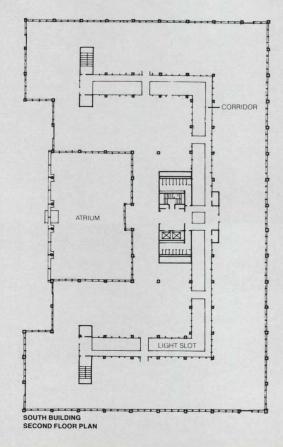
Perhaps the greatest lesson from Enerplex is that providing people with a comfortable work environment—where "comfort" involves more than temperature control—must take precedence over creating a low-energy workplace. And even here it has been made clear that energy efficiency is not achieved simply through a particular design feature or judicious selection of equipment: Human behavior can mean the difference between success and failure of the best architecture and engineering.

\*\*Richard Diamond\*\*

The author is a staff scientist with the Energy Performance of Buildings Group at Lawrence Berkeley Laboratory.

This work was supported by funding from the Prudential Insurance Company, the New Jersey gas and electric utilities, and the U.S. Department of Energy. For copies of the report from which this article was based, write for CEES Report #222, "Enerplex Revisited: A Post-Occupancy Evaluation," Center for Energy and Environmental Studies, Engineering Quadrangle, Princeton University, Princeton, N.J. 08544, or contact the author directly, % Lawrence Berkeley Laboratory, 90-3074, Berkeley, Calif. 94720.







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Going strictly by the book—in this case, a 1983 dictionary—the topiary arches in Minneapolis at the Walker Art Center's new conservatory (P/A, Nov. 1988, pp. 102-107) aren't topiaries at all. The vine-clad structures are neither "clipped" nor "trimmed," per Random House. They grew in full form in a matter of weeks, not decades, and they require only nominal maintenance in contrast to the labor-intensive clipped plants of traditional gardens.

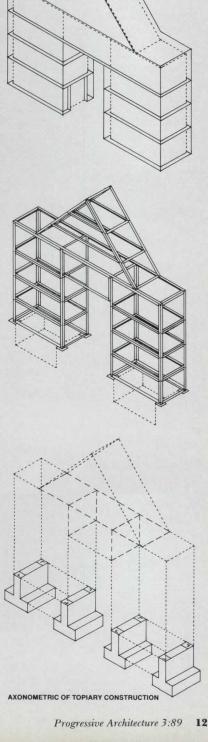
Yet, as designers Barbara Stauffacher Solomon and Michael Van Valkenburgh of San Francisco and Cambridge, Mass., respectively (Michael Van Valkenburgh Associates handled contract documents and construction observation) found out in their research on the topic, these vine-topiaries harken back to a landscape tradition that predates the English bushes upon which the dictionary definition is based and extends back to early Roman times.

Thus the Walker's arches are something of a retrograde revolution, one with potentially widespread applicability. A stainless steel structure, pre fabricated in sections and clad in a punctured plastic mesh (hardware cloth) supports soil-growing medium. Vines-in this case 4300 creeping figs per arch—are planted on staggered four-inch centers over the entire surface and fed by an internal drip irrigation system that also supplies liquid fertilization. According to Jim Kelly, the horticultural consultant with contractor Bachmans Inc., experimentation produced a soil mix that retains nutrients but does not rot. The frames themselves were etched and painted to camouflage any metal that might show among the plants.

The hollow arches, engineered by Bakke, Kopp, Ballou & McFarlin, are serviced through an access panel at the base. The irrigation system, which has 400 drip points, is calibrated to provide variable flow rates for different elevations within each arch. Maintenance, the responsibility of the Minneapolis Landscape Arboretum, is limited to trimming every four to six weeks and occasional spot-

watering at the tops, which tend to dry out.

That problem, the result of gravity, could be solved in future designs by extra irrigation. Given half a chance, these high-tech, low-touch topiaries could inject a new notion of fantasy or formal design into ficus-ridden interiors, from corporate office buildings to shopping malls. Daralice D. Boles





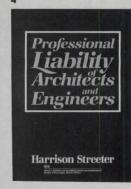


















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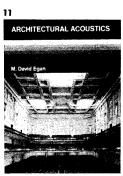
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#### BEGINNINGS



**ALEXANDRA TYNG** 





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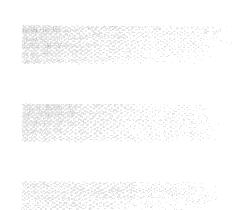
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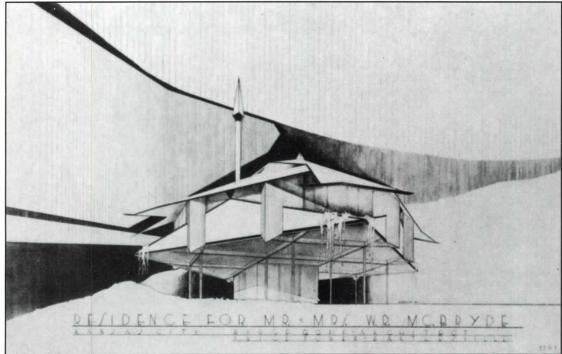
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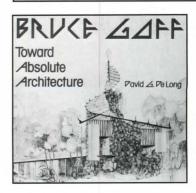
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## Books

Bruce Goff Towards Absolute Architecture by David DeLong. The Architectural Foundation, N.Y.; the MIT Press, Cambridge, Mass. 1988. 388 pp. illus \$50.







Above: little-known unbuilt house designed in 1959 for W.R. McBryde, Kansas City, Minn. Top: hypothetical study for studio (date uncertain) shows early influence of Erich Mendelsohn.

## Goff: Pure, not Absolute

For many, Bruce Goff (1904-1982) was the impossible architect of the century, its bête noire. Just as impossible seems the task of condensing the career of one of the richest architectural minds of all time into a monograph of 388 pages, with 321 illustrations. Scholar David G. DeLong succeeds in opening the archive of this epic life, but somehow fails to make it come alive. For if Goff had something to share, it was his vital yet gentle enjoyment of life, especially through aesthetic experience. Architecture was the wholeness and happiness of

his being, and he celebrated it with a creative, professional polyphony that is impossible to catalogue. Few architects have been so serious about joy.

"I never related to feathers as a wall treatment, or to glass clinkers, or a B-17 nose cone as architectural detail," writes Frank Gehry of Goff's architecture in a sensitive and sincere but unnecessary foreword. "An architecture of Coke bottles and old locomotive parts" was the inaccurate description by Louis Kahn in 1963 that provoked author DeLong as a student to find out more. Others have been less kind and more ignorant.

The early potential of Goff's (continued on page 131)

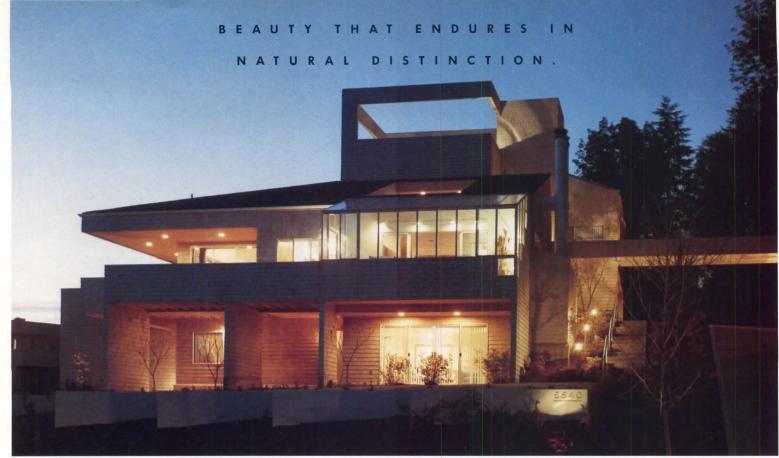
The City that Never Was by Rebecca Read Shanor, Viking, New York, 1988. 254 pp., illus., \$35. Subtitled "Two hundred years of fantastic and fascinating plans that might have changed the face of New York City," this book presents buildings, bridges, parks, monuments, and other plans from New York's unbuilt past. The lively text is replete with anecdotes, and photos or drawings illustrate almost every page.

Deco Delights: Preserving the Beauty and Joy of Miami Beach Architecture by Barbara Baer Capitman. E.P. Dutton, New York, 1988. 116 pp., illus., \$29.95 cloth, \$17.95 paper.

The exuberant narrator of this history of Miami's Art Deco District was herself a leader in the fight to preserve it. Of note are the lavish photographs by Steven Brooke, some of buildings that have since been destroyed.

Ramsey/Sleeper Architectural Graphic Standards, Student Edition, edited by Robert T. Packard, and Stephen A. Kliment. Wiley, New York, 1989. 499 pp., illus., \$49.95. This edition reflects the consensus of a board of students and instructors who edited Graphic Standards down to what students need at a price they can afford.

**Education of an Architect,** edited by John Hejduk, Elizabeth Diller, Diane Lewis, and Kim Shkapich. Rizzoli, New York, 1988. 351 pp., illus., \$60 cloth, \$40 paper. This luxuriously produced monograph of student work from The Cooper Union between 1972-1985 goes far beyond the norm for student catalogs. Some work is a little too trendy with its "Decon" bent, however, and the influence of mythmaker Heiduk is abundantly apparent.



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(continued from page 129) architectural alchemy was evident at the age of 12 when his parents apprenticed him to a firm in Tulsa, Oklahoma. By the age of 24, Goff had completed the Boston Avenue Methodist Episcopal Church in Tulsa. Widely published in the United States and abroad, it was hailed in the local press as "a complete departure from all past styles

and revolutionary." Sheldon Cheney in the 1930 publication New World Architecture called it, "the most provocative American example of different church building."

"There should be as many kinds (styles) of houses as there are kinds (styles) of people and as many differentiations as there are different individuals," Frank Lloyd Wright wrote in 1908. But Goff, although influenced by Wright, was probably more persuaded about the necessity for each building being in its own style by the writings and illustrations of Erte, the Parisian fashion designer. Indeed, he moved quickly beyond the imitation of Wright with whom he is too often paired, and while still in his 30's, had clearly left behind assimilation and derivation from others to become a generator of architectural originals.

During the Second World

War as a member of the U.S. Navy Seebees, Goff introduced imaginative interiors using found materials into the standardized military structures of the Aleutians. By his 41st year, Goff had designed houses that could be compared with the best work of surrealist Salvador Dali, which Allen Tate and C.Ray Smith have characterized as "a kind of discontinuous dissociated, manic humor . . . baroquely bizarre and perverse," a description quoted by DeLong that suits Goff as well. By midcentury Goff had built a number of now classic houses: Lebetter, 1947; Ruth Ford, 1947; Eugene Bavinger, 1950; and James Wilson, 1950. Located in Norman, Oklahoma; Aurora, Ill., and Pensacola, Fla., respectively, these houses, which span the modular, spiral, solar, free-form, and found materials categories of Modern architecture, are also richly decorative.

Until his death in 1982, Goff continued a stream of projects, almost all in the private realm. His modest houses for middle class clients in small towns and cities scattered throughout the Great Plains and beyond, were largely unavoidable to the public. By their non-conformity, they were also alien to prevalent taste. Goff's Pavilion of Japanese

Art at the Los Angeles County Museum (P/A, Nov. 1988, p. 33), which opened last September six years after his death, is the largest and most accessible of Goff's works since the church in Tulsa was completed 60 years earlier. Because it is a public building, the Pavilion may finally establish Goff's historic presence in the architectural world.

David DeLong's book will surely do that for the academic world. He has had the advantage of 16 years of research, including 10 years with Goff's assistance. DeLong, whose Ph.D. thesis on Goff was completed in 1977, was appointed as archivist to Goff's estate in 1982 and had virtually exclusive use of Goff's extensive effects and records. As a scholarly work on a productive and complex modern architect, his book is impressive and has few equals. It will stand as the definitive first reference.

Yet, tragically, the imperfections of the book are not slight. This is not a lively integration of life and work. As a biography, it is incomplete and unclear, especially in recording important people and events in Goff's life. As a documentation of only building designs, it omits all of Goff's paintings and graphic designs. As a monograph on architectural practice, it is simi-

larly inadequate. Most architects at the time and ever since have wondered how Goff managed to get "that stuff" built—especially since most of his clients were of modest means. And as a critical appraisal or evaluation it is very uneven. Also missing is any discussion of Goff as an "organic" architect, or of the impact of 19th-Century American transcendentalists or mid-20th Century existentialists on his work.

Yet the book makes enormous new contributions, both factual and interpretive, to an understanding of Goff. Perhaps the most interesting aspect of the book is DeLong's flattering evaluation in the concluding chapter, "The Continuous Present," in which he proposes a centrality and an acceptability for this maverick of the Midwest that is contrary to the continuous challenges addressed to Goff by almost all other scholars, architects, and critics.

Unfortunately, the current conventions for publishing architecture are particularly destructive to those qualities that distinguish Goff's work. The objective description of buildings as abstract compositions of discrete elements does not address the experiential, which was so central to Goff's work—be it the steadily revealed procession of



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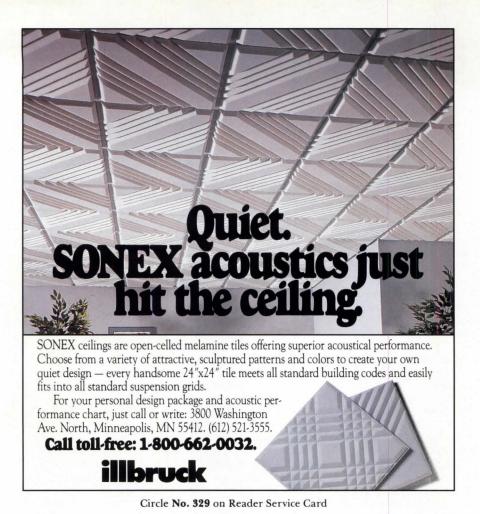
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spatial sequences, the dramatization of sun, clouds, and seasons by the architectural container. or the sparkle of surface effects.

Moreover, the art-historical tendency to trace each work to earlier models is equally inappropriate to Goff. Such a routine of aesthetic family-tree derivation is applicable to the early works and learning years of Goff. However, only once, in the case of the 1947 Ford house, does DeLong admit the intuitive method of Goff's mature creative process, which he calls "idiosyncratic creativity." Ironically, the critical influence of Goff's paintings on his architecture might have been one precedent worth exploring.

The author did not talk with many members of the supporting cast in Goff's life. In particular, the assistants who participated in many of the key buildings of the 1950s and 1960s were not interviewed. There are also minor flaws of incomplete indexing, and photographs are not dated.

Finally, this reviewer takes issue with the title Towards Absolute Architecture. Although Goff did occasionally use the term "absolute" to express his ultimate architectural goal, he himself more often called his work "pure" architecture. Analogous to music, "pure" architecture might go beyond function, materials, or structure to become an unattached perceptual experience. Similarly, the term Kebyar, "a Balinese word meaning literally 'the sudden bursting open of a flower' " (p. 69), might have made a better book title as an expression of Goff's philosophic commitment to creative architectural joy. (The phrase Friends of Kebyar identifies a network of associates and former students who publish a newsletter that was established shortly after Goff's death.)

But the most memorable term that Goff used to describe the unfolding perceptions of space in architecture was the "continuous present," a phrase that he first used in 1933. It was this belief in constant renewal, in eternal reawakening that also allowed his youthful mind to thrive regardless of the age of his body. As Goff himself said, paraphrasing Gertrude Stein, "The past is gone, the future is not here, but the present is continuous." Jeffrey Cook

The author is Regents' Professor of Architecture at Arizona State University.

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# HOW ANDERSEN DID JUSTICE TO AN OLD TENNESSEE COURTHOUSE.

Renovating the courthouse in the oldest town in Tennessee turned out to be quite a challenge.

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To preserve its historic nature."

To do this, Lusk first looked at specifying custom windows.

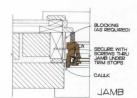
The cost was prohibitive.

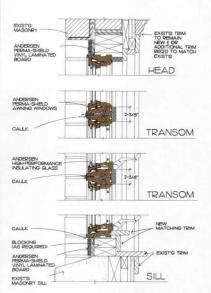
Fortunately, an Andersen sales representative had another idea: By stacking standard Andersen windows and adding a custom designed vertical muntin,

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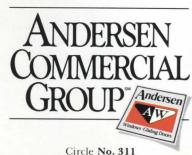




Washington County Courthouse Jonesborough, Tennessee

Architect: Joe Lusk Beeson Lusk and Street Johnson City, Tennessee

89111 © 1989 Andersen Corp., Bayport, MN



Tele 110. 311



## **New Products** and Literature

138 Products and Literature continued

112 Technics-Related Products



Floor lamps designed by Ulrich Hoebreth are made of stainless steel, glass, and metal. Part of the Art Collection, Schwenk, Chinahut, Laser, and Schilf are complemented by acrylic floor and table lamps, all of which are manufactured in Vienna. Woka Lamps.

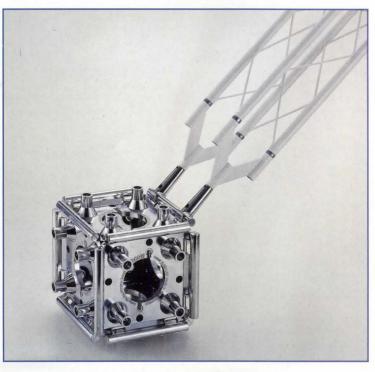
Circle 107 on reader service card



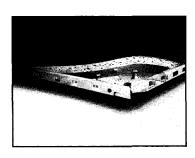
Anodized aluminum sheets are now available with processed color. Six patterns in various colors may be specified for the 4' x 10' Sublichromic sheets, which can be stamped, formed, punched, routed, bent, or sawn. Advanced Technology. Circle 108 on reader service card



Single-ply roofing membrane called Hi-Tuff may now be specified in gray, blue, and tan. The mechanically attached roofing systems are scrim-reinforced and complement a complete line of roofing products. Stevens Roofing Systems. Circle 110 on reader service card



A new junction called Zerone and designed for use with the Zero display system consists of six dye-cast aluminum plates that are bolted together. Six beams and 12 half beams can be linked diagonally to the universal junction at different heights. A color catalog shows many design options. Zero U.S. Circle 109 on reader service card



Flooring systems can now be compared with a computer program that provides cost-analysis information for access flooring, cellular floors, floor trench systems, and flat wire cable management systems. Access® itemizes materials, installation labor, and actual costs of wiring and cabling. C-Tech.

Circle 111 on reader service card

Wall protection products called Decrovin® are an economical line of rub rails, corner guards, crash rails, handrails, and wall and door coverings. The rub rails can incorporate brass, chrome, high gloss vinyl, carpet, or 30 colorful vinyl-acrylic inserts. The C/S Group.

Circle 112 on reader service card



Clerestory windows can be secured to the top of 42-inch or 54-inch panels and may be stacked two high. The 12-inchhigh windows are offered in clear or tinted plexiglass with mahogany or oak frames. Gunlocke.

Circle 113 on reader service card

Roll-up mats, ideal for commercial entryways or service areas, are constructed from carpet or vinyl tread inserts that are locked into replaceable aluminum retainer walls. A vinyl hinge facilitates easy roll-up. Musson Rubber.

Circle 114 on reader service card



A technical workstation called InterPro 3070 incorporates a central processing unit and new 27-inch display that doubles the area with the same resolution as a 19-inch screen. Intergraph. Circle 115 on reader service card

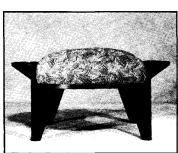
Custom metal railings and ornamental components for a variety of architectural applications are featured in a new four-page, full-color brochure. Stainless steel, brass, bronze, and aluminum installations are illustrated. Rippel Architectural Metals. Circle 204 on reader service card

**Extended coverage sprinklers** have been qualified under UL99 for use in light-hazard occupancies such as hotels, dormitories, nursing homes, and museums. The horizontal sidewall models are explained in a technical bulletin. Grinnell.

Circle 205 on reader service card

Ornamental outdoor lighting for parks, streets, plazas, malls, and other public places is featured in a new color catalog, which introduces a neo-Art Deco luminaire. Sentry.

Circle 206 on reader service card



A club sofa designed by Kevin Walz is called Circle Club. The four-cushion, two-seater sofa may be specified with an ebonized ash ply, mahogany, or coppered mahogany frame. Arc International.

Circle 116 on reader service card

Fire protection boards called Promat<sup>®</sup>-H are asbestos-free medium-density calcium silicate boards designed for interior and exterior surfaces. The product accepts any surface treatment. Isolatek International.

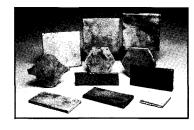
Circle 117 on reader service card

Interlocking pavers for singleply roofing systems are discussed in a new four-page, full-color brochure, which also includes a selection chart and specifications. Roofblok, Ltd.

Circle 207 on reader service card

**Industrial impact doors** and the Powr-Fold® bi-parting doors are presented in a 12-page, color brochure. Information about sound and temperature control doors, in addition to custommade strip doors, is reviewed. Frommelt.

Circle 208 on reader service card



Handmade tiles from the Gallery Collection include 12 colors that are coordinated to blend with the A La Carte collection of hand-painted tiles. Fifteen different sizes may be specified. Epro.

Circle 118 on reader service card

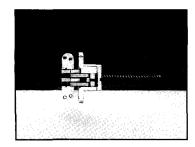
Fire-rated exit devices from the Series 3000 line feature fullwidth push bars. Mounting options accommodate wood, metal, and glass doors. Finish options include brass, bronze, and stainless steel.

Adams Rite Manufacturing. Circle 119 on reader service card

Exterior insulation and finish systems are detailed in a new brochure, which discusses Surewall® and Bonsal® weatherproofing systems and waterproofing products for a range of commercial, industrial, and residential applications. Bonsal. Circle 209 on reader service card

Visual communications prod**ucts** are the subject of a 16-page illustrated brochure. They include front and rear projection screens for meeting rooms, the Electramount ceiling-recessed video projector lift, support cabinets, and accessories. Dimensional information is provided. Draper.

Circle 210 on reader service card



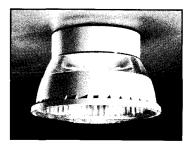
**A door closer** that also functions as a hinge is available in three sizes. The Soss Invisible Closer® can be retrofited to existing same-size applications in brass or chrome finishes.

Universal Industrial Products. Circle 120 on reader service card

Insulating concrete for roofdeck applications is the subject of a new four-page illustrated brochure, which reviews testing procedures, materials information, and applications examples. Fire rating and other technical factors are included. Perlite Institute.

Circle 211 on reader service card

Laboratory furniture systems called Versalab consist of wood and metal modular workstations that combine ergonomic planning with flexibility. A self-contained handicap design is part of the line. Kewaunee Scientific. Circle 121 on reader service card



Parking garage lighting provided by the PGL luminaire is low brightness with uniform illumination. The vertical lamp also offers ceiling illumination for additional security. Kim Lighting.

Circle 122 on reader service card

Stained glass is discussed and illustrated in a new color brochure. It details various techniques and styles for working with stained glass, carved etched glass, and painted stained glass. Osler Studio.

Circle 212 on reader service card

A transparent blind called Optix protects interiors from 100 percent of the sun's ultraviolet rays. Mocha, navy blue, brown, and rose may now be specified. Nanik.

Circle 123 on reader service card (continued on page 140)

## Small Company's New Golf Ball Flies Too Far; Could Obsolete Many Golf Courses

Pro Hits 400-Yard Tee Shots During Test Round

Want To Shoot An Eagle or Two?

By Mike Henson

MERIDEN, CT - A small golf company in Connecticut has created a new, super ball that flies like a U-2, putts with the steady roll of a cue ball and bites the green on approach shots like a dropped cat. But don't look for it on weekend TV. Long-hitting pros could make a joke out of some of golf's finest courses with it. One pro who tested the ball drove it 400 yards, reaching the green on all but the longest par-fours. Scientific tests by an independent lab using a hitting machine prove the ball out-distances all major brands

The ball's extraordinary distance comes partly from a revolutionary new dimple design that keeps the ball aloft longer. But there's also a secret change in the core that makes it rise faster off the clubhead. Another change reduces air drag. The result is a ball that gains altitude quickly, then sails like a glider. None of the

changes is noticeable in the ball itself.

Despite this extraordinary performance the company has a problem. A spokesman put it this way: "In golf you need endorsements and TV publicity. This is what gets you in the pro shops and stores where 95% of all golf products are sold. Unless the pros use your ball on TV, you're virtually locked out of these outlets.

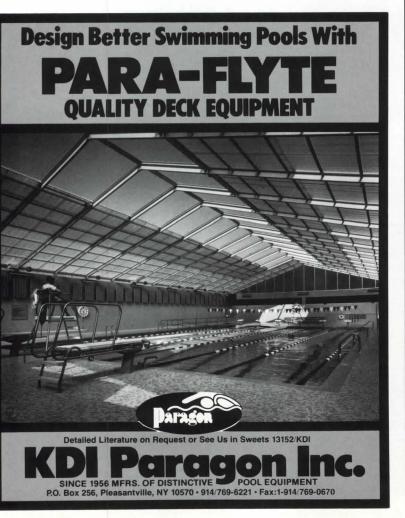
TV advertising is too expensive to buy on your own, at least for us.

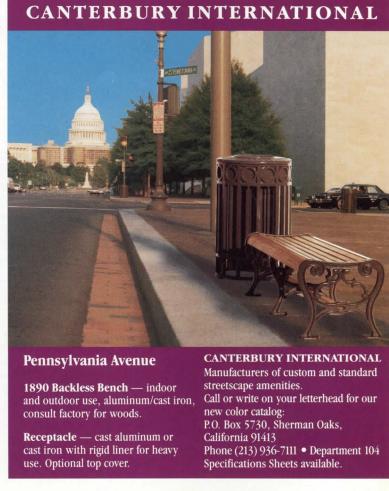
"Now, you've seen how far this ball can fly. Can you imagine a pro using it on TV and eagle-ing par-fours? It would turn the course into a par-three, and real men don't play par-three's. This new fly-power forces us to sell it without relying on pros or pro-shops. One way is to sell it direct from our plant. That way we can keep the name printed on the ball a secret that only a buyer would know. There's more to golf than tournaments, you know.'

The company guarantees a golfer a prompt refund if the new ball doesn't cut five to ten strokes off his or her average score. Simply return the balls — new or used — to the address below. "No one else would dare do that," boasted the company's director.

If you would like an eagle or two, here's your best chance yet. Write your name and address and "Code Name S" (the ball's R&D name) on a piece of paper and send it along with a check (or your credit card number and expiration date) to National Golf Center (Dept. H-1019), 500 S. Broad St., Meriden, CT 06450. Or phone 203-238-2712, 8-8 Eastern time. No P.O. boxes, all shipments are UPS. One dozen "S" balls cost \$21.95 (plus \$2.50 shipping & handling), two to five dozen are only \$19.50 each, six dozen are only \$99.00. You save \$47.70 ordering six. Shipping is free on two or more dozen. Specify white or Hi-Vision yellow.

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(continued from page 138)



**Bumpers** designed to provide damage protection in retail, hospitality, health-care, and contract applications offer an abrasion-resistant surface and shock-absorbing vinyl end and corner caps. Boston Metal Products.

Circle 124 on reader service card

Aluminum window and door selection is discussed in this updated, accredited publication, Voluntary Specifications for Aluminum Prime Windows and Sliding Glass Doors.

American Architectural Manufacturers.

Circle 213 on reader service card

Retaining wall systems for landscaping, residential, commercial, and civil engineering applications can be engineered to exceed 20 feet in height. Eightinch and four-inch-thick standard units and mini units are offered along with color and face

Circle 125 on reader service card

options. Keystone.

A computer program that verifies outdoor lighting designs is called EMCOlite. It allows users to arrange lighting standards, mask unwanted areas, and tilt fixtures above or below the horizontal. Poles, luminaires, and lamp sizes can be altered, analyzed, and re-evaluated immediately.

Emco Environmental Lighting. Circle 126 on reader service card

Cement floor and wall tiles are profiled in an illustrated, 12-page product catalog. Design guidelines for the full line of Ro-Tile, Ro-Stone, and Ro-Brick tiles are included. Ro-Tile, Inc. Circle 214 on reader service card



Spiral stairs that utilize dual stringers and handrails, rather than a centerpost, feature stair treads that are supported at both the inner and outer edges for added strength. Supplementary level rails, nosing, and balusters are offered. York Spiral Stair. Circle 127 on reader service card

A window overglazing system for commercial or industrial applications utilizing Lexan Thermoclear sheets can improve window energy efficiency up to 68 percent. In this system, clear ribbed Lexan sheets are installed over existing windows, creating a dead air space. These sheets have greater light transmission than fiberglass panels but afford visual privacy and security because of their ribbed design. Exterior Technologies.

Circle 128 on reader service card

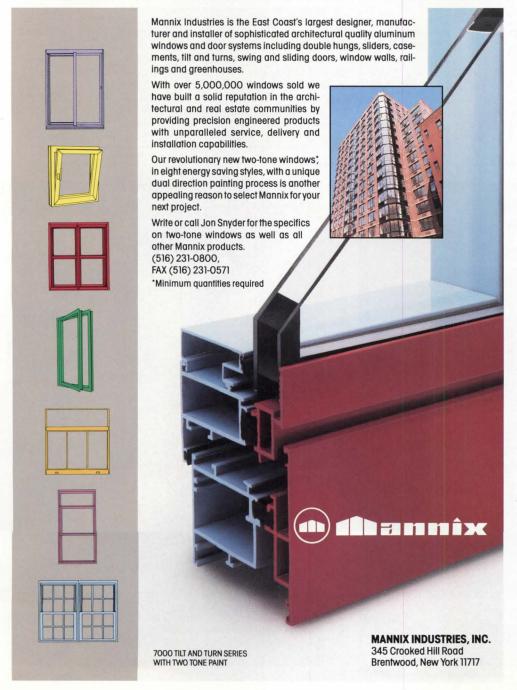


A fire-rated door called Masonite<sup>®</sup> FC- 20<sup>®</sup> provides a minimum 20-minute flame barrier for interior applications. It may be specified in six- or four-panel versions. Masonite.

Circle 129 on reader service card

Custom printed appliques that feature over 100 of the most commonly used drafting symbols, diagrams, and notes, are offered in matte or clear finishes. The removable appliques do not damage paper or film. Stanpat. Circle 130 on reader service card

### MANNIX WINDOWS DELIVERS AGAIN



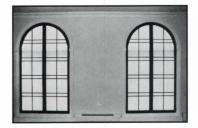
Adjustable HVAC drives are detailed in this new brochure. Energy savings of over 60 percent have been realized using this series 1573 Series AC drive as opposed to constant speed drives. In the catalog, advanced features of the series, which achieves 94 percent efficiency, are discussed.

Graham Company.

Circle 215 on reader service card

Wood window replacement system, an energy-efficient line called CustomShield, is designed to fit the exact measurement of each existing window opening without disturbing interior or exterior walls. Each unit is installed from the inside, and only the inside moldings are removed and replaced. Available in 5/8inch or 1-inch insulated or an optional 1-inch triple low-E glazing. Weather Shield Mfg.

Circle 131 on reader service card



Custom fit shoji panels with angled tops to fit rake, round, octagonal, and arched-topped windows can be semistationary, sliding, bifolding, or mounted shutter-style. The panels are offered in five standard inserts and 12 wood colors. Design Shoji.

Circle 132 on reader service card

Motorized Skylight Window Shades are activated by solar sensors to close automatically during the hours of most intense sunlight and open again during cooler hours. They also come with a hand-held remote control unit, which can control up to 16 shades at once, separately or together. Each model installs without cords or cables and comes in a variety of colors. Solar Drape.

Circle 133 on reader service card

Halogen floodlights and spotlights use 90 watts of power to produce the same amount of light as a standard 150-watt lamp. A 45-watt version is also available. Halogen lamps produce a light appropriate for outdoor applications and for large interiors. Halogen light output remains virtually the same over the life of the lamp. General Electric.

Circle 134 on reader service card



A new 300-watt dimmer called Touch, designed by Achille Castiglioni for Relco, provides continuous control of incandescent and halogen floor lamps. The rubber and plastic dimmer has a positive on-off switch and a memory feature.

Lazin Lighting.

Circle 135 on reader service card

The exterior insulation system Senerthik is a rigid, mechanically attached system featuring a high-R value insulation board and a synthetic plaster finish coat. The system can be applied over concrete, masonry, wood, or metal and comes ready-mixed or in prefabricated panels. Senergy.

Circle 136 on reader service card

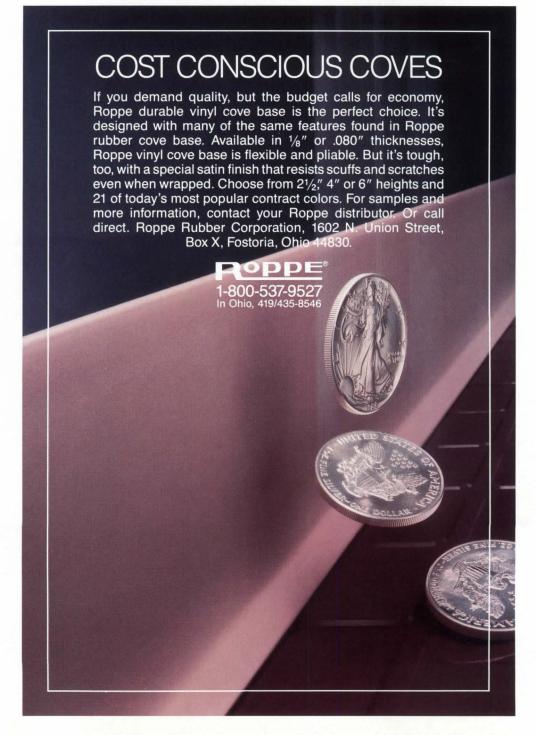
Polished porcelain tiles are described in a new color brochure. Other porcelain stoneware created for interior and exterior floors and walls in residential, commercial, and industrial markets is also discussed. Offered in various trim shapes, the tiles

measure 8" x 8" and 12" x 12". Georgian Porcelain Tiles. Circle 216 on reader service card



Solid oak litter receptacles, planters, urns, and benches are coated with a protective varnish. Each planter comes with a rigid plastic liner and overflow tray to catch excess water. Upbeat.

Circle 137 on reader service card (continued on page 142)



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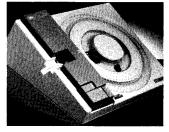
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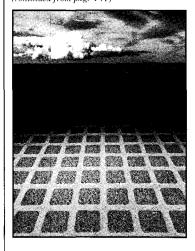
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Circle No. 317 on Reader Service Card

(continued from page 141)



Rubber flooring called Norament 985 B Stone is a square pastille flooring with color granules blended in a coordinating color base. Four standard mineral colors are offered. Freudenberg Building Systems. Circle 138 on reader service card

Door closers from the TS 77 Series are explained in a twopage bulletin, which provides sizing and comparison charts in addition to manufacturing data about the surface-applied, economy-grade closers. Dorma. Circle 217 on reader service card



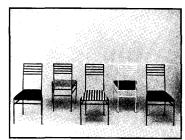
Stainless steel hardware for residential and commercial windows and doors can now be specified for projecting and casement windows. A patented end cap provides a more secure closing action. Bronze Craft. Circle 139 on reader service card

A new roofing material called Dura Ridge has a saw-tooth profile and can be applied to ridges, hips, and rakes on all types of asphalt shingle roofs. It can also be used to customize standard shingle roofs. Ridge Manufacturing. Circle 140 on reader service card

A media air cleaner that mounts flush in standard 2' x 4' ceiling openings helps remove smoke,

paper dust, bacteria, and other indoor pollutants from the air. The MAR-1200 Micro Air cleaner has three-way adjustable supply grilles that provide 360degree coverage. Metal-Fab. Circle 141 on reader service card

Sheet vinyl flooring for residential applications is now available in eight new patterns and 28 colorations. Pennwyck, part of the Lifetime Brite® Inlaid Flooring collection, features a softedged geometric pattern on a white background. Tarkett. Circle 142 on reader service card



The Gail chair is available in five textured metal finishes. A matching counter and bar stool complement the chair, which stands 371/2 inches tall and is constructed of 18-gauge tubular steel. Tri-Mark Tulip.

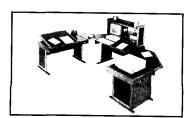
Circle 143 on reader service card

Architectural hardware is the subject of a new 12-page catalog. Product applications for three new exit devices, alarms, and door closers are presented together with information on the standard duty cylindrical locksets. Arrow®.

Circle 218 on reader service card

Circle 144 on reader service card

A mini drafting machine consists of two metal rollers that ensure parallel movement of the drawing edge. Usable on any flat surface, the PL491 portable instrument performs the functions of protractor, ruler, T-square, or drawing board. Gaebel Enterprises.



Modular wood furniture designed to accommodate desktop publishing tasks consists of a computer desk with hutch, two corner connectors, a layout table, and a duo printer stand. A catalog describes the complete line. Foster Manufacturing. Circle 145 on reader service card



A floormat featuring interlocking polypropylene and rubber is called Flexmat. Offered in black or safety yellow, the mat is mildew- and fungus-resistant, noncorrosive, and applicable for indoor and outdoor use. McNichol.

Circle 146 on reader service card



A new office furniture system called Parameters® Plus offers four wood edge designs: square, radius, transitional bevel, and traditional designs. New surface materials may be specified to customize the system. PCI Tandem.

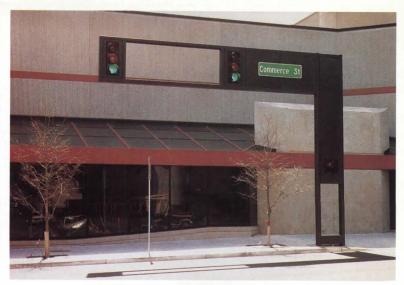
Circle 148 on reader service card

#### **Building Materials**

Pacific Design Center, Phase II (p. 82). Architects: Cesar Pelli & Associates, New Haven, Conn., and Gruen Associates, Los Angeles. Driven reinforced concrete piles: Macco. Steel framing: Samsung Ind. Composite slabs: American Bridge. Neoprene zipper gaskets, curtain wall: Stanlock. Aluminum mullions: Atlas Architectural Metals. Glass: Viracon. Storefront: Model Glass Co. Hollow metal doors: J. Door, Inc. Linear metal ceiling: Donn Corp. Built-up roofing: Koppers. Sealants: Dow Corning. Ceramic tile flooring: Duraceramic "Terra Grande." Movable partitions: Modernfold. Interior paint: Sinclair Paint Co. Steel butt hinges: H. Soss & Co. Locksets: Corbin. Door closers: Rixson-Firemark. Panic exit hardware: Sargent. Security equipment:

Mirtone Industries. Elevators: Westinghouse. Lighting: CSL Lighting, Lightolier, I.C.E., Crescent, Neoray. Electrical distribution: General Electric. Plumbing fixtures: Kohler, American Standard. Flush valves: Sloan. Toilet stalls, ceiling hung: Global Corp. Washroom accessories: Bobrick. Sprinklers: Grinnel. Electric duct heaters: Brasch. Pumps: Paco. Cooling tower: Evapco. Chillers: Trane. Fans: Greenheck, Toroaire. Environmental controls: Honeywell.

Norwest Center, Minneapolis, Minn. (p. 74). Architects: Ĉesar Pelli & Associates, New Haven, Conn. Reinforced concrete: M.A. Mortenson. Steel frame, metal deck, floors, and roof: L.L. LeJeune. Electrical metal deck: INRYCO Construction. Aluminum curtain wall assembly and fiberglass batts: Greer Architectural Products. Reflective coated glass: PPG. Clear vision glass: Viracon. Northern pink buff and Minnesota stone: Vetterstone. New Imperial, Royal Red, and Stoney Creek granite; White Carrara, Creme Vallencia and Rossa Verona marble: TGM Assoc. Sheetrock and fiberglass reinforced gypsum: Olympic Wall Systems. Aluminum windows, floors 1-4 and bronze entrances and storefront: Baker Metal Products. Rotunda skylight: Supersky Products. Revolving doors: Crane Fullview Door. Hollow metal doors and frames and toilet partitions: Jim Michael Building Specialties. Interior wood doors: Otto Nachlas & Assoc. Waterproofing: C.V. Nielson. Exterior wall sealant: Dow Corning. Window washing equipment: Powered Platforms. Paint: Devoe Raynolds. Hardware: Straughan Hardware. Security equipment: Videotronics. Custom millwork: Pauls Woodcraft. Elevators and moving stairways: Otis Elevator. Steel stairs: A. Trejo & Sons Welding. Ornamental handrails: Star Ironworks. High pressure sodium exterior flood lamps: Sterner Lighting Systems. Interior incandescent lighting: Lightolier. Typical tenant lighting: Lithonia Lighting. Electrical distribution: Hunt Electric. Toilet fixtures: American Standard. Washroom accessories: Bobrick Washroom Equipment. Sprinklers, plumbing, heating system, and air conditioning: Metropolitan Mechanical Contractors. Environmental control system: Trane.



# CityScape.

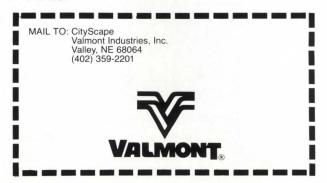


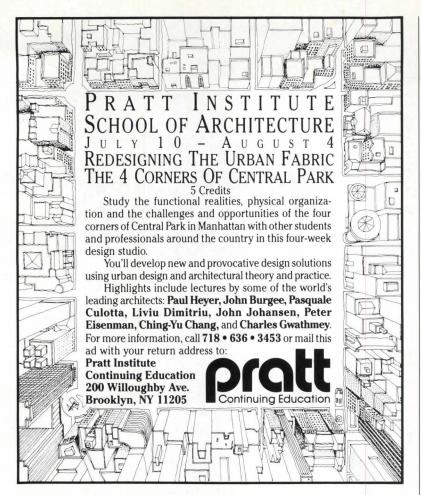
## Street furniture worth a second look.

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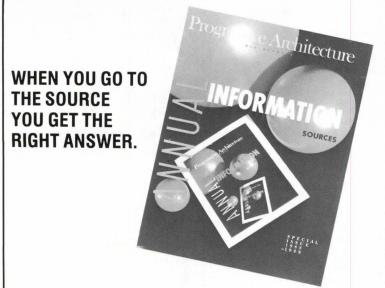
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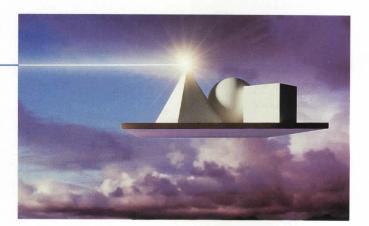
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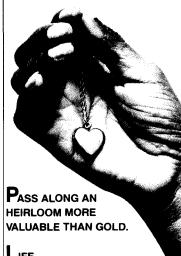
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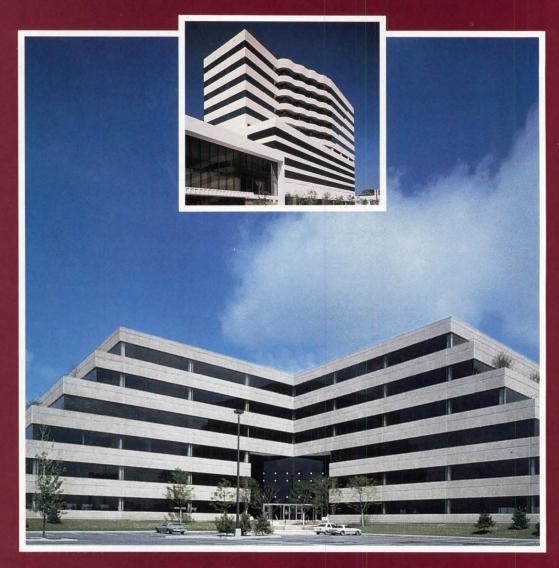
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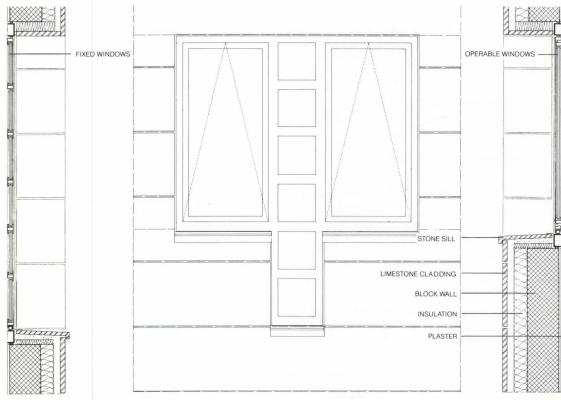
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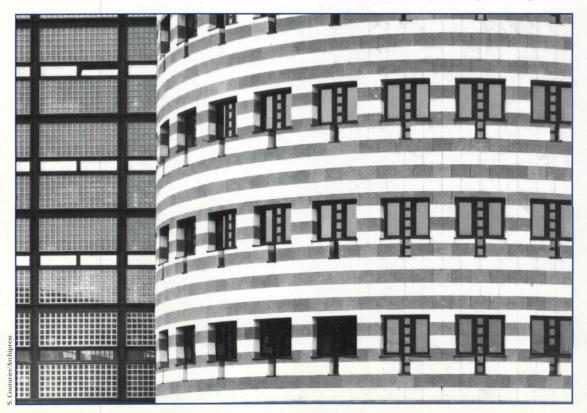
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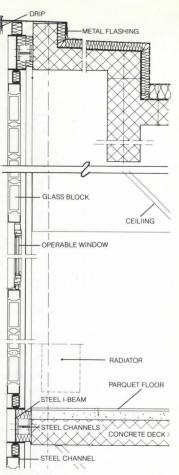
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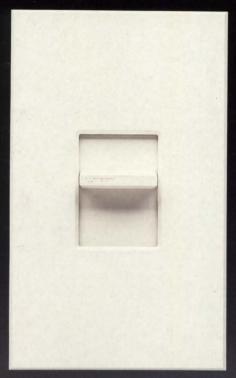
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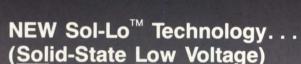
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\*Typical fixture is inaudible in a quiet room of 27dBA at a distance of 3 feet.

This product is covered by one or more of the following U.S. patents:3,735,020; 3,746,923; and corresponding foreign patents. Foreign and U.S. patents pending. Lutron, Nova  $T^{\star}_{X}$ , Nova, and Skylark are registered trademarks. Sol-Lo is a trademark of Lutron Electronics Co., Inc. @1988 by Lutron Electronics Co., Inc.

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