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<thead>
<tr>
<th>Term</th>
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Our Perfect Competition

Architecture has been moving inexorably toward what economists call perfect competition - a condition that has been perfect hell for most architects. Perfect competition is a hypothetical state in which the goods or services in a market are abundant in quantity, identical in quality, and attainable at absolutely the lowest possible price. In a perfectly competitive market, wages and profits are low, competitors are numerous and fierce, and firms are mostly small in size. Economists will tell you that no industry ever fully achieves perfect competition, but the market for architectural services seems to have come pretty close to it these last several years.

Certainly when you look at what goes into making such a market, we couldn't have done a better job. A perfectly competitive market typically has a large number of new entrants (lots of recent graduates or newly formed firms), buyers with a lot of bargaining power (able to get fee bids or use competition-like selection methods), the constant threat of substitute services (with many clients thinking that one firm is much like another), and intense rivalry among existing competitors (as firms undercut each other just to get work).

The opposite of perfect competition is a monopoly, which in some respects is what licensing laws provide - if a profession takes advantage of them. Physicians have effectively controlled the number of entrants into their field and insulated consumers from the real price of their services. Lawyers, too, have avoided perfect competition by expanding their market with the help of their fellows who are lawmakers and reducing the number of direct competitors through the specialization of services. In architecture, professional status has had a very different effect. By helping ensure a uniform quality of services, that has certainly been the case, as more and more firms give away the most valuable portion of their work - the schematic design effort - just to get commissions. Ironically, while some clients are questioning the value of architects, architects, through uncompensated work, are giving clients incredible value for their money.

Over the long run, perfectly competitive markets tend to be unstable. Enough contributing factors change - fewer people enter the field or competition declines as firms merge or go out of business - that buyers in the market no longer have the leverage they once had. That, however, doesn't address the problem - or the pain - in the short term. The question is: How can this profession get itself out of its highly competitive situation?

Apart from drastic measures such as closing half the architecture schools, the one area over which we have the most control and through which action on our part would benefit clients as well as ourselves is the perceived interchangeability of firms. Every firm should be able to articulate and prove to clients what sets it apart from its competitors. Vague statements such as "provide cutting-edge design" or "high-quality service," which I hear firms say all the time, are not enough. The difference has to be so clear and demonstrable that clients with almost no knowledge of architecture or experience with architects can understand it. The goal of every firm should be to have no substitute.

One way to achieve this is to take our art form more seriously. By art, I mean not only formal manipulation, but the application of knowledge-based skills to substantive problems. The art of architecture, at its best, involves making distinctions, recognizing differences, questioning norms, challenging assumptions, pushing constraints, undermining clichés - ideally in ways that are clear to ordinary people. The more firms take that sense of the art seriously, avoiding the trap of the latest fashion or the rut of a comfortable style, the more differentiated firms will become in terms of their work as well as their structure and services, and the less they will be perceived as interchangeable commodities. Clients have had so much leverage in our field because too many firms are too much alike.

The final irony is that most clients seem not to want commodity architecture. Most want solutions tailored to their needs, and so they are holding the door open for us, showing us a way out of our perfect competition.

Thomas Fisher
When specifying materials for the Portland Museum of Art for I. M. Pei & Partners, project manager Preston Moore researched many types of flooring.

"I selected antique longleaf heart pine because of its unique hardness, its quality of grain, and its unusual character. I've used Mountain Lumber often and plan to specify their products again. The company was helpful in every respect."

Escage from Style

I can't fully express the agreement and appreciation produced by Mr. Fisher's article, "Escape From Style" (P/A Sept. 1994). I've had innumerable discussions with teachers and colleagues on the subject.

The position I've evolved can perhaps best be expressed with the analogy of language or music. German and Spanish are not different "styles" of speaking. They are different systems formed from and expressing different cultures. This is entirely distinct from a royal court, which has affected imitation of the King's speech impediment. Such a court "style" of speech mysteriously disappears when the King becomes unpopular or is replaced by another. The language remains.

Similarly, jazz and European classical music are not different "styles." They are different languages from different periods of history. As such, comparison isn't relevant. Igor Stravinsky reportedly remarked to Benny Goodman, "There are only two kinds of music, good and bad." Stylized music is that found in elevators. Unfortunately, our cities are full of elevator music.

The difficulty, on the other side, is a conservative, parochial regionalism. Brown shingles in Berkeley, red brick in Boston, and concrete block and stucco with red tile roofs in Miami are not the final solutions to Architecture! Traditional ways of building, in the face of the modern world, are themselves stylized and folkloric (as Mr. Fisher suggested). "We only listen to banjo music around here, partner!"

Sadly, I'm less optimistic than his article. The opinions of real estate brokers carry greater weight than those of architects. People care more about the resale value of their property than about what they're building because they're leaving in five years. Unlike the residents of Dubrovnik in the past, people today have choice but no education to go with it and comparatively little commitment to place. An acquaintance has said, "The problem with this country is that it doesn't have any owners." Added to that, too many architects practice like bands who play at bar mitzvahs and weddings. "You want that? Sure, I can do that!"

I suspect many physical aspects of American culture will not advance until well into the next century. The United States will then be challenged economically and industrially as it hasn't been since the 19th Century. Twenty years ago, when I was in architecture school, Honda made one car. It was an imitation of the Austin Mini Minor. We all know what's happened since! I am optimistic that we can respond to the creativity and progress of a united Europe and industrialized Asia. I'm just concerned whether we can move without the stimulus. I hope that's what will take place when Mitsubishi or whoever starts unloading contemporary, industrialized housing here. Can't happen? Just wait!

Richard Arango, AIA
Arango Architects
Coconut Grove, Florida

The Virtual Office

"The Virtual Practice" (Sept. 1994, p. 86) illustrates yet another stunning and timely example of the quality, importance, and innovation of the new P/A. This article (continued on page 12)
EDITORS’ CHOICE

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PC Magazine, September 1994

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(continued from page 10) clearly articulates the future of the profession, and for some of us, the present.

The days of the big, cumbersome, and bureaucratic office where dozens of people are warehoused in office buildings, plodding along in masse as part of enormous "teams," are numbered. In a previous issue of P/A ("Can This Profession Be Saved?" Feb. 1994) it was alluded to that two architects, outfitted with the proper computer hardware and software, could produce more work at lower fees than much larger firms and do so anywhere in the world. This represents the advent of the "virtual office."

Already, the "virtual office" affords the quick-minded, professionally competent, and entrepreneurial architect superior opportunities. In my own work, I am able to do all the schematic design, design development, and construction documents on the computer. With respect to the construction documents, CAD enables one to generate the drawings as quickly as five draftspeople using the old manual method. An obvious benefit to this is the economic one: the savings in time yield a higher rate per hour.

The use of CAD and the "virtual office" pose one of the greatest opportunities for the profession since the advent of paper, as means to communicate our ideas and ultimately get buildings built. Clients and entire communities can now see what they (we) are getting and how the new building(s) will positively or negatively affect our neighborhoods, cities, and environment.

As more and more architects gravitate toward the "virtual office," we will increasingly dialogue with one another concerning the opportunities associated with it. However, it appears that our numbers are few and far between. I personally would like to meet and get to know other professionals who work the way I do, people like Curtis Wayne, in my area (Los Angeles). Therefore, I would like to suggest that P/A initiate a forum (perhaps via a bulletin board service) so that we may communicate and possibly collaborate on certain projects.

Carter C. Bravmann
Interform
Los Angeles

AIA Chapters
Gloria Wise, Executive Director of the Dallas AIA Chapter, in her letter printed in the September issue (Views, p. 98), seems to have entirely missed the point of the disaffection in the ranks of the AIA.

It is not dissatisfaction with the local chapters. AIA Middle Tennessee (the Nashville Chapter) is one of the largest in the nation. It is well run, growing, vigorous, and boasts an excellent executive. Carol Pedigo, I am sure most other chapters are equally blessed.

The problem, as many of us see it, is with the national organization. Your article and the subsequent letters bear this out with arresting clarity.

Perhaps if Ms. Wise were not so defensive, she could see that the rebellion has substance, and she might begin to address the reasons, along with continuing the good local work she has led her chapter to do.

Frank Orr
Orr-Houk & Associates
Nashville, Tennessee

The Intern Trap
Congratulations on your continuing criticism of the architectural profession.

"The Intern Trap" (July 1994) identifies a significant problem but stops somewhat short of addressing the full range of issues and solutions necessary to solve it.

Many of the abuses referred to in your article are symptoms of inadequate compensation, a disease which impacts the entire profession. Interns are only the last in the architectural chain who suffer from it. Enforcing the tax and labor laws is like treating the symptoms rather than the disease. Architects have many beliefs which contribute and even are responsible for this disease. Foremost is the attitude about architecture as art. Until we change our belief system to one less skewed toward art and more skewed toward craft, we will continue to be financially abused and will in turn transfer that abuse to our own.

The lack of an organized intern/residency program coordinated with architectural education is another area where improvement is necessary. The philosophy of architectural education which maintains that the architectural schools' responsibility is to teach theory and the profession's responsibility is to teach practice prevents the student from coming to the architect's office with productive skills. The architect has little incentive to pay much to an unskilled employee who will require time and money to be trained. The intern, possessing few skills but having to meet the school's internship requirement for summer work, is forced to work for very little or nothing at all. Forcing architects to pay decent wages with benefits and overtime to unskilled interns will only discourage (continued on page 14)
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Views

(continued from page 12) age the acceptance of interns.

Rather than accepting the present schism between town and gown, architects should view preparation of students as a partnership between the schools and the practicing profession. Schools should provide more skills to their students so that interns can receive higher pay and be in a position to accept more responsibility. In return, practicing architects would participate in a structured internship/residency program which would insure the intern access to a full range of architectural responsibilities—a general upgrading of students’ skills which would result in a major benefit to the profession in the long run. The medical profession’s intern/residency program comes to mind as a possible model.

Architecture schools need to look at other areas of improvement. The cult of the “star-architect” and the “suffering artist” syndrome, often encouraged in the schools, become the psychological rationalization for students to accept abuse and financial hardship for the sake of art. Both contribute to low self-esteem which is a source of many problems to the profession.

Other exploitation such as gender discrimination and not giving credit for work are inexcusable and should be punished by professional sanctions.

Students can do a great deal to precipitate change by taking the following actions:
1. Demand more practice-oriented courses.
2. Demand structured internship programs that trade low pay for intense hands-on learning.
3. Refuse to work unless paid.
4. Address values of low self-esteem encouraged in school.

“I do not think the solution to the ‘intern trap’ is turning in architects who break the law.”
Bruce Sternberg

Book Review Correction

The correct title of the new book on the U.N. Headquarters (August 1994, p. 16) is A Workshop for Peace: Designing the United Nations Headquarters. The illustration shown was a model photo, not a sketch.

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Views

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**A new Fire-Halt Sealant Technical Bulletin is now available from the Gyproc Group. It contains many newly tested architectural details for firestopping 1-, 2-, and 3-hour fire walls and floors for pipes, conduits, cables, and, for the first time, fire-stopping steel deck flutes. Fire-Halt is the most dependable firestopping material available and the simplest to use.**

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Putting Rochester on Track

The Rochester (Minnesota) Architectural Society, hoping to inspire interest in bringing a magnetic levitation rail line through the city that's home to the Mayo Clinic, held a competition for ideas for an “intermodal port” that would serve 300-mph trains and connect with other forms of transportation. David R. Lyon of TSP3 Architects in Rapid City, South Dakota, received a first-place award for a scheme based on glass structures that rise from a grove of trees, becoming “a glowing beacon by night or a feathery landmark by day.” The structure (lower left) includes a bermmed hill, held back by concrete retaining walls, to make parking areas less conspicuous. The first prize was shared with Robert Piotrowski and Mark Bowers of Holabird & Root, Chicago, who placed a glass canopy over tracks that would be adjacent to the Rochester airport (upper left). Rochester State Senator Sheila Kiscaden, a juror, praised its linking of rail and air transportation. Honorable mentions were awarded to Thomas Melville of Minneapolis and a six-architect team from OW&P in Deerfield, Illinois. The route of the proposed high-speed rail line from Chicago to other cities of the upper Midwest has not been decided. The society intends to display the designs in locations from Chicago to Duluth to generate interest in running the line through Rochester, which currently has no passenger trains. Also on the jury were Susan A. Maxman, Harrison S. Fraker, Jr., Michael S. Chinn, and Kathryn DeSpiegelaere.

Is That a Richard Meier?

We all need an outlet, something to release stress or to use energy that goes untapped in our daily lives. Richard Meier, a master of cool Modern architecture, has found his outlet – you might say alter ego – in sculpture. The 40 pieces of his work on display earlier this fall at the Leo Castelli Gallery in New York came as something of a shock to those familiar with Meier's formal fetishes – powerful geometries, grids galore, and a palette of white. To sculpt, Meier collects scraps from his architectural model shop in Los Angeles, uses string to bind them together, and dips the bundles in wax; a ceramic mold is made and used as a shell for casting the pieces in stainless steel. To enhance this scrappy aesthetic, the casting's scars and remnants – cylinders and tubes through which the liquid metal is flowed into the mold – are left in the finished works. Sales of the works make this sideline of Meier potentially lucrative: the “assemblages” are priced from $12,000 to $100,000.

Johnson's Newest Partners

Philip Johnson at 88 has merged his approximately 10-person firm with that of Alan Ritchie and David F. Fiore, both of whom worked until 1987 in Johnson's since-disbanded partnership with John Burgee. The new firm, Philip Johnson, Ritchie & Fiore has about 18 architects and is working on a number of projects, including two for Donald Trump in New York – the conversion of the Gulf & Western Building on Columbus Circle into a hotel and residential building and the first of four apartment towers in the Riverside South project on the Upper West Side. Ritchie, who first went to work for Johnson in 1969, was the principal-in-charge of the AT&T Building in New York. Johnson received the Medal of Honor of the New York Landmarks Preservation Foundation in October for his work, including his efforts to save such buildings as Grand Central Terminal, the subject of a Supreme Court ruling on government right to protect landmarks.
Books


This densely argued book addresses important problems, such as how cities can respond to the diversity of their people without losing a sense of community and how the public realm can be revived without its being co-opted by commercial interests. The author discusses these in terms of three shifts in our perception of cities—as works of art in the 17th Century, as panoramas through the early 20th Century, and as sites for spectacle and "scenographic allusions" today. And she offers much insightful analysis of everything from Washington, D.C., to Battery Park City. However, her distrust of "totalities" inhibits her from making many concrete recommendations, leaving the reader to wonder whether the city of collective memory will ever be anything other than a theoretical proposition.


Interviews with more than 60 Modern architects and engineers, conducted and recorded by author and journalist John Peter from the early 1950s to 1989, make an extraordinary archive that comes to life most poignantly on the book's compact disk. In the book itself, he has organized the content of his interviews into three categories: technology, society, and art. There are also in-depth excerpts from interviews with Frank Lloyd Wright, Le Corbusier, Mies van der Rohe, Walter Gropius, Eero Saarinen, Louis Kahn, Philip Johnson, Oscar Niemeyer, Josep Luis Sert, and I. M. Pei. Although the book includes a chapter called "Assessments," where the people being interviewed look back at the early years of the Modern Movement, there is little else in the way of critical commentary.


This building monograph is a thorough and caring documentation of Loos's last urban house, Villa Müller in Prague, considered to be his most accomplished and complete investigation of the Raumplan. Completed in 1930, the villa was taken over by the Marxist-Leninist Institute of Czechoslovakia in the early 1970s, and was, not surprisingly, off limits to both public and scholarly visits until the Velvet Revolution in that country a few years ago. The authors, who began their research in 1991, position the villa in its historical and political context and provide a critical analysis of its architecture. Architecture drawings, photos, and letters are complemented by new plans and contemporary photos by Pavel Stecha (shown below left: stair to dining room.)


The design ideas and issues of most concern to Austrian-born architect Mark Mack, who has lived and practiced in California since 1975, are here explored in an extended text by Diane Ghirardo, in a shorter piece by Kurt Forster, and in brief project descriptions of Mack's mostly residential commissions (some designed in collaboration with his former partner Andrew Batey). The illustrated descriptions begin with renderings of ten Californian Houses of 1977-1978, in which the architect made a theoretical exploration of different ways of living in harmony with the natural environment, and end with models of the Stremlmil House of 1993-1994, designed for a site in Reno. There is a clear evolution in Mack's body of work to date, where color, material, site, and form are the driving forces. (Shown above: Summers House in Santa Monica of 1989-1991, the deck off the family room.)

Briefly Noted

Fallingwater in 3D Studio® by Laura Sanchez and Alex Sanchez, OnWord Press, Santa Fe, 1994, $39.95.

Case study and tutorial for beginners and intermediate users to apply modeling, rendering, and animation techniques.


Documentation of a 200-acre garden in New York State designed on Asian principles by painter Walter Beck and landscape architect Lester Collins.

Whodunit? The Deconstructivist?

If you've ever wondered how a murder mystery written by an architect would read, The Seventh Sacrament (St. Martin's Press) by James Bradberry may slake your curiosity. The plot revolves around the ultimate charrette competition, a struggle among six titans of a fictional architectural world. The would-be client, an unspeakably wealthy Italian furniture magnate, has assembled this Olympian group at his villa far above Lake Garda. The air positively crackles with personal animosity and professional jargon. The narrator is the competition's adviser, a Princeton faculty member who turns out to have untapped (and improbable) skills as a sleuth. While wading through carnage that could give "cut-throat competition" a new meaning, our hero manages to savor the subtlest nuances of moldings, mountain air, facial expressions, sunsets, vintage wines, and contour models. Neither the trota con salsapecied nor the Valpolicella Clasico are allowed to escape his attention—or the reader's. Some of the sentences almost collapse under the weight of such insuperable connoisseurship. The dust jacket says the architect-author practices in Villanova, Pennsylvania, has taught at several important schools (not including Princeton), and is at work on a second novel about the same detail-obsessed architect-gumshoe. At this point, Bradberry shouldn't let his license lapse.

Corbett Ready for More

Michael Corbett, who gained a measure of worldwide publicity in the 1970s with an environmental subdivision called Village Homes in Davis, California, would now like to work his magic on a larger scale—creating a community for 8,000 residents on 1,000 acres at Davis's edge. Over the years, legions of designers have trekked to the university town west of Sacramento to see Corbett's 70-acre collection of solar-oriented and in some instances earth-sheltered houses set amid an "edible landscape" of community gardens and orchards. Corbett has said the new development would contain elements of the "New Urbanism," such as narrow streets, a town center, and mixing of jobs and housing. Corbett believes neotraditionalists err in combining pedestrians, bikes, and cars, so his project would have two separate road networks, a kind of modern Radburn. Approval promises to be difficult, since the land is to be transferred from one county to another and then annexed to Davis, which is now debating a new general plan.
Ron Herron Dies

Ronald James Herron, better known simply as Ron Herron, died in England October 1 at the age of 64. He and his associates in the Archigram group permanently altered designers' views of architecture and high technology through the visionary projects they proposed in the 1960s and early 1970s, notably "Walking City" and "Instant City." Archigram, which also included Warren Chalk, Peter Cook, Dennis Crompton, David Green, and Mike Webb, took the machine aesthetic of Modernism literally, applying space-age materials and techniques to architecture and expressing the placelessness and mobility of modern culture. In later years Herron worked in various firms and taught, most recently as head of architecture at East London University.

Wide-ranging Show of Japanese Design

The world's first comprehensive exhibition of modern Japanese design is on view through Nov. 20 at the Philadelphia Museum of Art. "Japanese Design: A Survey Since 1950," as crisply and cleanly conceived as the objects it celebrates, brings together more than 250 items ranging from furniture, housewares and consumer electronics to posters, packaging, and clothing. Japanese architect Kisho Kurokawa designed the exhibition with a palette that may seem surprisingly restrained to Americans who recall his exuberant Metabolist experiments in the 1960s and 1970s. Most of the objects are displayed at the periphery of a single large gallery space, on continuous low platforms (above) whose random profiles suggest Japan's rugged coastline but are in fact computer-generated fractal patterns. The central axis of the exhibition space is defined by a series of five transparent panels that use Zen proverbs to announce the show's five principles: craftsmanship, simplicity, compactness, humor, and asymmetry—though paradoxically, the exhibition itself is essentially symmetrical. Included are two small period rooms: a traditional tatami room and a mock-up of a small apartment from Kurokawa's well-documented Nakagin Capsule Tower, built in Tokyo in 1972. In each room, a number of characteristic consumer goods are displayed in context. The show is a convincing argument that Japanese designers are at their best when using the most ephemeral materials. The works in and on paper and linen are exquisite for their sensitivity and delicacy. Organized under the direction of Kathryn B. Hiesinger and Felice Fischer, the exhibition will go on to Milan, Dusseldorf, and Paris before concluding in Osaka in 1996.

Graves Defeats Miami Preservationists

The Miami Design Preservation League lost its battle in late September to prevent architect Michael Graves from demolishing part of the derelict Bancroft Hotel in the Art Deco district of Miami Beach. Graves was hired by the developer Constructa for a project involving conversion of the 1939 hotel into retail and office space, erection of a 16-story apartment tower, and creation of a public plaza at the north end of Ocean Drive. The Princeton architect's design, influenced by preservationists, calls for saving two of the Bancroft's façades. The league nonetheless remained dissatisfied, saying a "trend toward fagadism," which leaves the street appearance of the historic building, much like a movie set, while destroying the interior along with the historic integrity, is the latest threat to the Historic District. John Diebboll, who manages Graves's New York office, disputed the opponents' assessment, saying many features of the building's interior, including the lobby, the main staircase, a bas-relief mural, and a terrazzo terrace, will be restored.

A Beachhead of the New Urbanism

To promote his 106-acre second-home project, Beachwalk, in Michigan City, Indiana, developer Tom Moss sponsored a "great debate" September 18, pitting advocates of the "New Urbanism" against their critics. Moss is a believer in the New Urbanism and adopted some of its principles in the 250-unit undertaking, an hour east of Chicago. New Haven architect Robert Orr, designer of several Beachwalk houses, extolled the humanistic virtues of Seaside, Florida. Jeffrey Speck, an architect with Miami's Andres Duany and Elizabeth Plater-Zyberk, knocked reliance on the machine aesthetic of Modernism lit-tled by preservationists, calls for Americans who recall his exuberant Metabolist experiments in the 1960s and 1970s. Most of the objects are displayed at the periphery of a single large gallery space, on continuous low platforms (above) whose random profiles suggest Japan's rugged coastline but are in fact computer-generated fractal patterns. The central axis of the exhibition space is defined by a series of five transparent panels that use Zen proverbs to announce the show's five principles: craftsmanship, simplicity, compactness, humor, and asymmetry—though paradoxically, the exhibition itself is essentially symmetrical. Included are two small period rooms: a traditional tatami room and a mock-up of a small apartment from Kurokawa's well-documented Nakagin Capsule Tower, built in Tokyo in 1972. In each room, a number of characteristic consumer goods are displayed in context. The show is a convincing argument that Japanese designers are at their best when using the most ephemeral materials. The works in and on paper and linen are exquisite for their sensitivity and delicacy. Organized under the direction of Kathryn B. Hiesinger and Felice Fischer, the exhibition will go on to Milan, Dusseldorf, and Paris before concluding in Osaka in 1996.

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### Competitions

**AIA Awards**
Upcoming AIA awards deadlines include: ACSA/AIA Topaz Medallion for Excellence in Architectural Education and Young Architects Citation (nomination: Dec. 9); AIA/BJA Brick in Architecture Awards (registration: Jan. 16, 1995, submission: Feb. 20, 1995). Contact Frimmel Smith, AIA, 1733 New York Ave., NW, Washington, DC 20006-5292 (202) 626-7300.

**Korean-American Center**
Deadline, registration: December 1; submission: January 22, 1995
This is an international design competition for the Korean-American Museum of Art and Cultural Center. Contact KAMACC, 4401 Wilshire Blvd., Ste. 325, Dept. B, Los Angeles, CA 90010 (213) 933-4766.

**Home Design Contest**
Deadline, registration: December 1; Trus Joist MacMillan's FrameWorks® Home Design Contest is being held to encourage the exploration of the "structural and environmental efficiencies of an engineered lumber building system." Sixty teams selected from the pool of registrants will compete for a $50,000 prize. Contact Trus Joist MacMillan (800) 338-0515.

**Urban Excellence**
Deadline, entry: December 2
The 1995 Rudy Bruner Award for Excellence in the Urban Environment "recognizes urban places that successfully reconcile social, economic, and aesthetic values throughout the development process." The $50,000 award is given every two years. Contact Bruner Foundation, 560 Broadway, Ste. 507, New York, NY 10012 (212) 334-9844, FAX (212) 334-9842.

**Asia Pacific Architecture**
Deadlines, registration: December 15; entry: February 15, 1995
Any project in Asia or in any country bordering the Pacific Ocean, completed between Jan. 1, 1970, and Jan. 1, 1994, may be entered in the 1995 Award competition. Contact Kenneth F. Brown Asia Pacific Culture and Architecture Design Awards. Contact Leighton Liu, 37833-6070.

**Pacific Architecture**
Deadlines, registration: December 15; entry: February 15, 1995
The 1995 Rudy Bruner Award for Excellence in the Urban Environment "recognizes urban places that successfully reconcile social, economic, and aesthetic values throughout the development process." The $50,000 award is given every two years. Contact Bruner Foundation, 560 Broadway, Ste. 507, New York, NY 10012 (212) 334-9844, FAX (212) 334-9842.

**Student Competition for New Cities**
Deadline: December 15
Students are invited to explore new city structures and developments based on telecommunications technologies. Contact Bruce MacAulay, 390 Wurster Hall, Berkeley, CA 94720 (510) 642-2896, FAX (510) 643-5571.

**City Civic Center in Taiwan**
Deadlines, registration: December 31; entry: May 10, 1995
The City of Taichung, Taiwan, has announced an international competition for a new civic center. Contact Barry Cheng, Taiwan Architects Association, PO Box 467, Taichung, Taiwan, R.O.C. tel. 886-4-2971655, FAX 886-4-2972346.

### Exhibitions

**Karl Friedrich Schinkel**
Through January 2, 1995
Art Institute, Chicago. "Karl Friedrich Schinkel, 1781-1841: The Drama of Architecture" will feature 100 drawings and prints by the German architect and designer. (Shown above: "Perspective View of the Entrance to the Cathedral of Reims, a Set Design for The Maid of Orleans.")

**Lord Burlington and Thomas Jefferson**
Through January 8, 1995

**Rem Koolhaas and Public Architecture**
November 3–January 15, 1995
Museum of Modern Art, New York. Work by Rem Koolhaas and the Iio Office of Metropolitan Architecture (see p. 00) is on view.

**Wartime Building**
November 11–December 31, 1995
National Building Museum, Washington, D.C. This show explores the relationship between war and building. The exhibition is designed by Michael Sokin and J. Abbott Miller.

**Thomas Hanrahan & Victoria Meyers**
November 18–December 17
I-Space, Chicago. "ACTIONS + CONTINUITIES: Architecture, Incidents, and Extended Fields" includes buildings and projects by the New York-based partners.

### Conferences

**Thermal Performance of Building Envelopes**
December 4–8
Clearwater Beach, Florida. This international conference will cover research, advanced technologies, practical applications, and case studies. Contact Oak Ridge National Laboratory, Thermal Envelopes Conference, PO Box 2008, Bldg. 3147, Oak Ridge, TN 37831-6070.

**Traditional Environments**
December 17–20

### Practice Notes

**What Defense Cutbacks?**
A Department of Defense report (PO-7) shows that the department's construction spending increased dramatically from 1992 to 1993. Spending on buildings went from $133.4 million to $200 million, while the total for all architectural and engineering services rose from $2.13 billion to $2.24 billion.

**And What About Marketing?**
Birnberg & Associates' 1994 Financial Performance Survey for Design Firms shows that the average collection period for fees has improved (56 days versus 68 in 1993) and pretax profits on gross revenues are up (7 percent versus 6.7 percent in 1993). However, spending on marketing as a percent of total revenues is down (3.9 percent versus 4.1 in 1993). Contact Birnberg & Associates, 1227 West Wrightwood Avenue, Chicago, IL 60614, (312) 664-2300, FAX (312) 525-0444.

**Technics Notes**

**PV Technology in Hot Water**
Researchers at the U.S. Commerce Department's National Institute of Standards and Technology have invented a solar hot-water heating system powered by photovoltaic cells. The cells convert sunlight into electrical energy, which activates heating elements in a water tank. This is an attractive alternative to systems that circulate water through a solar collector and that have been plagued by leaks and failed pumps. Inventor Hunter Fanney says PV cells offer "a low-cost means of supplying a significant portion of the energy consumed for domestic hot-water heating."

**Clean Air Information**

**Fire Standards Symposium**
A symposium, "Fire Standards in the International Marketplace: Past, Present, and Future," is scheduled for December 5, 1994, in Phoenix. Sponsored by the American Society for Testing and Materials, it is free to ASTM members and open to others for $50 (prepaid). Contact: Peggy Loughran, ASTM, 215-299-5560; e-mail: ploughra@local.astm.org.
Steeling Home

The number of houses built with steel framing increased from 500 in 1992 to 12,000 in 1993 and this year is expected to rise to 75,000, according to the American Iron and Steel Institute. Although only 3 percent of residential builders currently use steel, 45 percent are considering it—a huge increase in interest in just the past year. This is partly a question of cost. The price of wood framing has jumped about 25 percent in the past year. In addition, The New York Times has found that mills have become stricter at sorting—making sure that customers are not provided higher-quality lumber than they are paying for. The result is that builders often do not get as much of the higher-grade production as they used to. Steel is becoming an attractive substitute, closely matched to wood’s dimensions and structural performance. However, steel is also more than 400 times as conductive of heat than wood, possibly leading to thermal bridging (see P/A, Dec. 1992, p. 27). Over the life of a building, this may produce higher heating and cooling costs and do more harm to the environment than that caused by harvesting forests.

Diner-To-Go

Ben & Jerry’s Ice Cream reached back to the diner imagery of the 1920s and 1930s for the design of its new indoor kiosk to be built on college campuses. The 13’x9’ structure, topped by an imitation of an early diner’s monitor roof, was designed by architect John Connell and his Yestermorrow Building Group, Warren, Vermont, with the idea that the structure could easily be taken apart for transport, and all the pieces would fit through a three-foot-wide door. It comes complete with refrigerators, sink, water supply holding tanks, and counters, not to mention such “green” features as pao lope wood from sustainably managed rain forests and tiles made of recycled automobile windshield glass. An Ohio factory is mass-producing the kiosks, and Connell is now working on a weatherized version that can be set up outdoors, powered by photovoltaic cells.

An Even Grander Terminal

After years of gradual restoration, New York’s Grand Central Terminal will undergo a new phase of improvements focusing on public circulation and services if a plan unveiled by the Metropolitan Transportation Authority goes forward. The $100-million project designed by Beyer Blinder Belle calls for addition of a monumental staircase at the east end of the main concourse, mirroring the existing stair at the west end. The staircase was part of Warren and Wetmore’s original design but was never built. The tunnel-like Oyster Bar ramps (above) are to be returned to their high original volume, open to the concourse ceiling (above right), according to the MTA plan, which is now under public review. By using a vacant bank building on Lexington Avenue, a new 43rd Street entrance passage would be created, lined with food stores and connected to the main and lower concourses by new escalators. These and other improvements would be carried out by MTA in conjunction with private developers LaSalle Partners/William Jackson Ewing, the same development team that turned Union Station in Washington, D.C., into a bustling shopping emporium.

How’s That for a Student-Teacher Ratio?

Stanley Tigerman, the Peck’s bad boy of Chicago architecture, has a new project—Archeworks (pronounced AR-key-works), a design school dedicated to socially useful projects. Opened in September in donated space in a Near South Side loft building, the school—described in the catalog as a “multipurpose educational and retraining design laboratory”—has 10 student “interns from academia and industry” and two full-time faculty members: Tigerman, who is its director, and interior designer Eva Maddox, the program director. It also has several adjunct “facilitators” and plans to add 10 to 12 students a year, for a total of about 60, says Beverly Russell, the former Interiors editor who is acting as communications director. Tigerman resigned from the University of Illinois at Chicago after being removed last year as director of the architecture program, following repeated faculty complaints about his management style. He has said that in contrast to existing schools, Archeworks is truly interdisciplinary, like the Bauhaus. This semester, for instance, one of the two “research and development” teams is designing learning tools for a daycare center at a local YWCA. Eventually, prototypes will be built in an in-house workshop; donations of shop equipment have been promised. The school is not accredited, but Russell says it has reciprocal relationships with several universities. The students, ranging in age from 21 to 50, come from varied backgrounds including architecture and graphic design. One year’s tuition is $7,000.
Temporary Dance Studio for UC Santa Barbara

Faced with the need to upgrade an existing facility or a long period of construction for a new building, clients are increasingly inviting architects to design temporary structures to accommodate ongoing needs. The Temporary Dance Facility at the University of California at Santa Barbara is just such a project. Its simple and upbeat design, by DesignARC of Santa Barbara, serves dance students effectively. The 2,400-square-foot facility, (in service until a new complex is completed in late 1995), is a tentlike structure with translucent, mylar-coated fabric stretched between prefabricated, extruded metal frames. It is reminiscent of the temporary library at UCLA by Hodgetts + Fung (P/A, June 1993, p. 104). The structure's two solid walls—a sound wall to dampen noise from the street and a parapet along a ramp for the disabled—are clad with corrugated metal panels. Two yellow-painted metal strips support signage and announce the entrance.

Tennessee Aquarium IMAX Competition Decided

A state-wide competition for the Tennessee Aquarium's new IMAX 3D® Theater complex has been won by Tuck Hinton Architects of Nashville; technical assistance was provided by Ove Arup & Partners, New York. The program called for a design that would complement Chattanooga's existing Tennessee Aquarium, Creative Discovery Museum, and riverfront master plan and would use sustainable materials and technologies. The winning scheme is organized around a central linear atrium off which a three-level office/educational education center and a 400-seat theater are configured. The architects will explore materials choices during design development, focusing on recycled and recyclable products. The theater's serrated roof will hold photovoltaic panels to help reduce energy use and costs. The second place winner was Garnet Chapin, Chattanooga, with Finegold Alexander Associates, Boston, and the third place winner was Derthick, Henley & Wilkerson, Chattanooga, with Croxton Collaborative, New York.
Study Center at Cambridge University

London architects Jeremy Dixon and Edward Jones have designed an elegant study center for postgraduate students at Cambridge. Located on a narrow site overlooking the River Cam, the building has a curved, book-lined street wall and a slightly curved roof culminating in a continuous clerestory. A series of enclosed computer rooms aligned within the timber-framed loft space are separated by book-lined stairs leading to second-floor study desks, some of which occupy the "roofs" of the computer rooms, and others a low-ceilinged alcove that projects over the river. The interior, as the architects put it, "is like one large piece of furniture," with oak framing, floors, windows, bookcases, and desks. The beauty of the project lies in its modesty and simplicity; it is perfectly tuned to its place, while remaining every bit a modern building.

Lombardi's "Lighthouse"

In the San Diego suburb of Ocean Beach, architect Steven Lombardi intends to expand a cottage for himself by building an addition that will contain two stories plus a basement. The problem is that the 140-foot-deep lot overlooking the Pacific is only 25 feet wide and is very close to a neighbor's house, making privacy difficult. Lombardi's solution is a design featuring hundreds of one-inch-diameter acrylic tubes embedded in wall panels of lightweight concrete. During the day, the tubes will bring a modicum of natural illumination into the interior; at night, indoor lighting will give the exterior a pattern of glowing dots. Sandblasted glass is to be used on other parts of the exterior, similarly gaining light without incurring total exposure. Inside, Lombardi expects to use rough-cut trees as structural columns.
A Psychiatric Institute for New York State

Ellerbe Becket's design for the New York State Psychiatric Institute is now under construction on a narrow parcel of land that sits between the Henry Hudson Parkway and Riverside Drive, just south of the George Washington Bridge. Although the site has appeared to be part of Riverside Park it was privately owned until the state bought it for the institute project; the south end of the site, however, will be designed and designated as a public park. The six-story, 365,000-square-foot institute will allow an open view corridor from the local neighborhood to the river (pending demolition of the existing facility) and will take advantage of its own water views with a sweeping, glass-clad west elevation. Two bridges (one is shown in model) will connect the new facility to medical buildings across Riverside Drive. The building will function as two distinct, but operationally related, entities: laboratory research and patient care. A six-story, tilted atrium connects the two wings and is the focal point for both grade and bridge arrival and circulation.

A Pluralistic Arts Center for UC Riverside

In an effort to encourage interaction among arts students, the departments of dance, music, studio art, art history, creative writing, and film at the University of California at Riverside will be housed in a single building designed by BOORA Architects, Portland, Oregon, in association with Israel Callas Chu, Beverly Hills. The 162,000-square-foot Fine Arts Building is designed to be both expressive of its interdisciplinary mission and responsive to the Southern California climate. The building, centered on a multilevel courtyard that steps up and down from a new Fine Arts pedestrian mall, is designed as "a series of kinetic sculptured volumes, implying movement and encouraging the users to explore the building's plazas, rooftop terraces, and the extensive outdoor circulation." Overhanging roofs and covered, open-air corridors provide shaded transition from outdoors to indoors. Located on a site bounded by a freeway to the west and the pedestrian mall to the east, this is the first project in the creation of a new gateway entrance to the campus. Completion is scheduled for 1998.
A Modern Art Museum by Aldo Rossi

Maastricht, the southernmost city in The Netherlands, is the home of a new museum of modern art designed by Aldo Rossi’s Studio di Architettura. The Bonnefanten Museum, set to open next March, is located along the River Maas on a 54-acre site between the city’s historic area and its modern municipal zone. Part of a citywide building program, the museum, E-shaped in plan, is an exploration of procession and volume, and of history and region.

Upon entering the museum, visitors will find themselves in a tall telescopic volume (a “Lichtraum” or light room) painted an aquamarine color. From there, they will ascend a grand central stair, in traditional Dutch design, that connects the museum’s gallery spaces. The procession ends at two spiral stair towers attached to a monumentally scaled domed structure that holds the museum café. In a 1991 article Rossi noted that the “grandiosity” of the zinc-clad dome was motivated by “its link with the purest architectural tradition from the Classical world to Turin’s Alessandro Antonelli.”

GRAND STAIR

VIEW FROM THE WEST

SECTION AND PLAN STUDY

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Unifying a Campus

The new Living Learning Center will bring a welcome clarity to the 400-acre rural campus of Lincoln University, the nation's oldest college for youths of African descent, near Chester, Pennsylvania. The design by Kelly/Maiello of Philadelphia establishes a new campus center containing a women's dormitory, a men's dorm, a residence hall for 18 visitors, a dining hall, a commons, and other facilities, all convincingly tied together by an arcade and open spaces. The Living Learning Center reinforces a new master plan that seeks to resolve the chaotic placement of older campus buildings. In a further attempt to increase coherence, the new buildings will use materials such as brick and limestone found on prominent older Lincoln University structures.

A Shared Worship Center

Halfway through designing a replacement for the original St. Alban's Episcopal Church in Cleveland Heights, Ohio, which had burned to the ground, architect William B. Morris of Shaker Heights was told that space in the new church would be leased to a reformed Jewish congregation. "This produced quite a bit of conflict for both groups," Morris said, "because overtly religious symbols couldn't be used." Permanent displays of stained glass or crosses were ruled out. Symbols such as a torah, an ark, and a crucifix have instead been placed on the altar behind hinged doors and curtains, which are opened during services. Morris reports that the Episcopalians nonetheless see allusions to the trinity in the three apse-end gables, while members of Temple Ner Tamid see the building's form and materials as symbolic of Noah's ark. One person poetically interpreted the plan as "a worshiper whose whose arms are outstretched towards heaven."
On The Streets of Hanover, The Artful Bus Shelter

Last year the German city of Hanover's ÜSTRA transit agency commissioned nine designers from Europe and the United States to produce a series of bus and streetcar shelters, all of them for locations the designers had examined. The highly imaginative results of International Design Project Hanover 1994 are now on the streets. California's Frank Gehry created a shelter with a curving roof of colored tiles (top right), which commentator B. J. Archer said "looks like some friendly lumbering armadillo stopped in its tracks to wait for humans to gather under its woven skin." Lothar Romain, the project's artistic director, suggested that Gehry's shelter resembles a tropical hut, and remarked, "One could imagine the framework for the roof being made out of bamboo poles."

Massimo Iosa Ghini, a member of the "bolidist" movement of Italian designers interested in curves, tension, and strong lines, created a ship-like structure (center right), which stands on an island in a busy street. Unquestionably it conveys a sense of motion, though Hanover's bus riders might have appreciated a bit more protection from the rain. Italy's Ettore Sottsass produced a shelter with a simple flat roof on muscular yellow supports (above left). For a streetcar stop containing two very narrow 50-yard-long boarding areas, the Italian designer Alessandro Mendini made checkered yellow-and-black structures (right) that practically shout their presence.

British designer Jasper Morrison created an elegant stainless steel canopy (top left) so free of quiriness that it is possible to imagine its being mass-produced for use on streets worldwide. With spare lines and built-in receptacles for advertising posters and transit schedules, Morrison's looks like what a bus shelter should in most cases be - a structure that refrains from outdoing the buildings around it. These five shelters, along with designs by Andreas Brandolini, Wolfgang Laubersheimer, Heike Mühlhaus, and Oscar Tusquets, are handsomely presented, with biographical profiles, in the large-format 232-page book BUSSTOPS, published in English and German by Verlag Th. Schäfer, Hanover. Among others supporting the project were the Niedersachsen Foundation and Toto-Lotto Niedersachsen.
Indirect Lighting with Compact Fluorescents

LAM has introduced a shallow-depth, ceiling-suspended pendant fixture called Litedisc that employs four compact fluorescent tubes in an offset-square pattern. Designed to increase both light output and energy efficiency, the fixture also has a proprietary reflector system attached to the interior perimeter. It is constructed of two 20-gauge steel spinnings, an outer housing, a trim ring, and an opalescent acrylic luminous disc. Litedisc is six inches deep and its outer housing is available in eleven textured paint finishes. Specifiers may choose four 40-, 50-, or 55-watt lamps, depending on the degree of illumination required.

Circle 100 on reader service card

Guide to Concrete Forming Techniques

APA-The Engineered Wood Association has published a design and construction guide for concrete formwork. Noting that formwork represents close to one-half the cost of a concrete structure and that its proper design and construction are directly related to the quality of the finished structure, the APA has compiled this 28-page guide for architects, engineers, and contractors. It includes APA panel grade information, form maintenance recommendations, design data, and project case histories. (Shown above: the 1963 assembly hall under construction at the University of Illinois.)

Circle 200 on reader service card

Tile, Limestone Flooring

Blue English Limestone (shown above) from Paris Ceramics has been used since the 11th Century in English houses and churches, Canterbury and St. Paul’s Cathedrals among them. It is one of many quarried and antique limestone flooring materials and terra cotta and decorative ceramic tiles available.

Circle 101 on reader service card

Skid-Resistant Waterproofing

Auto-Gard II from Neogard is an elastomeric waterproofing system that bridges cracks and protects concrete from leakage and moisture intrusion while providing a skid-resistant surface. Surfaces protected with Auto-Gard II can resist heavy traffic, natural elements (ice, water), and chemicals (battery acid, brake fluid). It is a single-component polyurethane coating system that is applied to concrete surfaces, where it leaves a film. Available colors include gray and tan.

Circle 102 on reader service card
**Chair with “Load-Sensitive” Mechanics**

Picto is a swivel chair with "load-sensitive" mechanics from Wilkahn, a contract manufacturer recently established in the U.S. by Wilkahn of Germany and Vecta of Texas. The chair is designed so that body weight and backrest pressure balance each other in any position. The slope of the backrest adjusts in response to body pressure exerted by the user. The seat, connected to the backrest with pivot joints, is pushed forward and slightly upward, gliding on an inclined roller track. Said to be environmentally responsible, the chair is demountable (there are no glued or welded joints) and recyclable because almost all of its components are of pure raw materials. The propylene seatshells, for example, are blackened with carbon black rather than heavy-metal-based pigments.

Circle 103 on reader service card

**Replacement Air Diffusers**

PKP™ SpotPac™ from Seiho are designed for easy replacement of existing register grilles or diffusers. With one standard duct opening, up to four spaces can be conditioned. The diffusers are manufactured with heavy-gauge machined aluminum and come with a stainless steel mounting plate. They are suitable for use in kitchens, studios, office buildings, concourses, exercise rooms, factories, and shops.

Circle 105 on reader service card

**Chemical Stains for Concrete**

Bomanite's Chemical Stains produce mottled and drifted color tones when applied to interior and exterior concrete surfaces. Made of various combinations of metallic salts in a blend of water and acid solutions, the stains are formulated to "color etch" new, existing, or worn horizontal surfaces. Eight standard stains can be mixed or diluted to produce an extensive palette of colors. They are also suitable for porous tile, stucco, and marble surfaces.

Circle 104 on reader service card

**Newsprint and Soybean Flour Panels**

A new finishing material from Phenix™ Biocomposites is a rigid thermoset panel primarily composed of recycled ingredients, including newsprint (40 percent) and soybean flour (40 percent), a by-product of soybean oil manufacturing; the remaining 20 percent is colorants and proprietary adhesives. Replicating natural granite, the nonrepeating pattern of the Environ™ biocomposite is present throughout the sheet stock; the material, however, has characteristics similar to hardwood and can be fabricated using standard woodworking techniques and machinery. Available in four colors, it is suitable for furniture, countertops, wall systems, and architectural detailing. The 3' x 6' sheets are offered in several thicknesses.

Circle 106 on reader service card
Protective Coatings

Tnemec protective coatings are manufactured to withstand a variety of conditions, such as harsh weather, salt spray, corrosive chemicals and fumes, freeze/thaw cycles, or abrasion. They are suitable for application on many types of construction materials, including steel, galvanized steel, aluminum, and concrete among others. In addition to the 260 standard colors, the manufacturer offers a custom color service.

Circle 107 on reader service card

Fiber Glass Insulation Guide

The North American Insulation Manufacturers Association has published the Guide to Selecting Fiber Glass Insulation Products for New Home Construction and Remodeling. In addition to product descriptions and recommended installation locations, the guide covers performance characteristics and offers advice on properly insulating attics, ceilings, side walls, floors, crawl spaces, and basements.

Circle 201 on reader service card

Wood Environmental Information Directory

A coalition of North American wood product trade associations has published the Environmental Information Directory, a compendium of information sources and materials on forest and wood product environmental issues. The directory lists more than 100 brochures, booklets, flyers, and videos on environmental issues available from organizations in the wood products industry. Each entry includes a description, a contact, and price information. For a copy send $2 to Wood Works™, Dept. EID, Yeon Bldg., 5th fl., 522 SW 5th Ave., Portland, OR 97204.

More Decorative Metals

WILSONART has introduced four anodized aluminum Decorative Metals, three with a cross-brushed finish and one with a satin-brushed finish. They are available in 4' x 8' and 4' x 10' sheets of various thicknesses and may be ordered with a phenolic backing.

Circle 108 on reader service card

Folded Window Treatment

The Vignette™ window treatment from Hunter Douglas Window Fashions has contoured fabric folds that overlap one another. The shades are raised and lowered with a continuous cord loop. When lowered the semi-opaque fabric provides privacy without darkening the room. When completely raised, the fabric is concealed in a curved headrail. Two types of fabrics are offered: satin weave and basket weave.

Circle 109 on reader service card

Waterproofing for Residential Roofing

Installed between the roof deck and asphalt shingles, cedar shakes, concrete tile, slate, or metal roofing, WeatherLock™ Self-Adhesive Waterproofing Underlayment from Owens-Corning helps to prevent damage from wind-driven rain and ice-damming. It is appropriate for both new construction and reroofing projects.

Circle 110 on reader service card

An Intelligent Ceiling

America Cable Systems, manufacturer of the Intelligent Floor™ system, has introduced the Intelligent Ceiling™ a system that integrates horizontal wiring for data, voice, and power into modular, plug-in packages. With either system, floor plans can be reconfigured, and furniture, computer workstations, and office equipment can be moved without rewiring.

Circle 111 on reader service card
AutoCAD Release 13

Autodesk has just unveiled Release 13, a substantial upgrade of the most popular CAD software in the field. The user interface, now modeled on Windows, includes multiple floating toolbars with flyouts and pop-up explanatory text. Drawing preview functions, user-defined accelerator keys, the ability to link and embed remotely created files and databases, associative hatching, user-defined dimensioning standards, solids modeling, and improved rendering time are among the many updated capabilities.

Circle 112 on Reader Service Card

Plotter Pens

Pentel has developed what it calls "the next generation" of ceramic-tip plotter pens: CTV Techni-Plot. An extension of Pentel's CXP plotter pen, with its ceramic tip and innovative delivery system, the Techni-Plot eliminates the use of an adapter.

Circle 115 on Reader Service Card

Windows on Windows

Marvin Windows & Doors offers Marvin Design System (MDS) software for Windows. It features Rulebase, which prevents designers from making errors in specifying Marvin products. The program also has the capability of figuring out window-unit dimensions when given rough dimensions and frame widths. The software is compatible with AutoCAD as well as with Microsoft Windows.

Circle 116 on Reader Service Card

Low-Cost E-size Plotter

The DesignMate 3036 from CalComp is a low-cost, E-size plotter that provides professional-quality drawings in up to eight colors and in A through E sizes. The machine can plot as fast as 42 inches per second, with a resolution of .00005 inches, twice as high as some competitive plotters. It consumes only 32 watts of power, ideal for home-office use.

Circle 113 on reader service card

Video Presentations

Intergraph's Intervideo Media Station (IVMS) is a hardware/software package that enables users to capture, edit, and play back real-time video or animated computer graphics. Consisting of a 486 workstation, with 17-inch monitor and animation software, the system offers complete desktop video production capabilities.

Circle 117 on Reader Service Card

Fast 3D Modeler

Facade 2.5, by Eclipse Software, is a major upgrade of the company's 3D modeler for AutoCAD Release 12. The software automatically converts elevations into 3D models, and the upgrade allows users to edit walls and openings in 3D; to copy, mirror, and array 3D doors and windows; and to construct quick perspectives.

Circle 114 on Reader Service Card

Pay-per-view Software

Graphisoft has initiated a program to reduce the initial cost of ArchiCAD and other software by as much as $10 to 20 times with PayPerUse. After a low set-up fee, PayPerUse bills users less than $4 per hour for only the time the software is running. Technical support and software updates are free.

Circle 118 on Reader Service Card
Computer Products

Color Laser Copier
Canon’s new line of color laser copiers – CLC 700 and CLC 800 – has an add-on image-editor feature that allows users to adjust the color of copies and to add background colors and graphics. The ColorPASS 1000 color print controller lets the machine double as a printer and scanner, and the Film Projector and Film Scanner III convert 35mm slides or film into color copies.
Circle 119 on Reader Service Card

Simultaneous Plotting
DigiPlot 1000, from AXAMA Corporation, is a plotter that creates a plotted image as a drawing is input into a CAD program. A master mylar plot can be downloaded and reloaded for updates and ongoing work. The machine is ideal for offices that do large, complex drawings and for projects that require repeated plotting.
Circle 120 on Reader Service Card

Project Management Software
ACCI’s Project Management/Accounting Software (PMAS) is an IBM-compatible scheduling and accounting program designed for architects and other design professionals. For users of Micro Mode’s System VI software, which has been discontinued, ACCI is offering special financial terms for those who wish to convert to PMAS, which is similar to System VI.
Circle 121 on Reader Service Card

Freehand Drawing Tablet
KYE International has released its 5”x5” EasyPainter Graphics Drawing Pad, which comes with a two-button pen-shaped stylus and SoftKey’s PC Paintbrush software for Windows. An addition to KYE’s line of Genius digitizing tablets, EasyPainter provides precision and speed in freehand drawing and tracing.
Circle 122 on Reader Service Card

Visualization Service
Using Silicon Graphics and Macintosh workstations, Simulacra uses technology designed for the automobile and film effects industry to provide visualization, animation, and presentation services for architects. The goal of the service bureau “has been to provide a quality of product and scope of services previously not available to the architect.”
Circle 123 on reader service card

Fastest Personal Computers
The Personal Power Station, by NekoTech, is said by its manufacturer to offer “the fastest processing speeds currently available.” The Mach 2-245 and Mach 2-289 machines, using reduced instruction set computing (RISC), combine the cost advantages of personal computers with the speed and power of workstations.
Circle 124 on Reader Service Card

Animation Software
Electric Image Animation System 2.0 is a 3D graphics system for high-end Macintosh and Silicon Graphics computers. Offered by Electric Image Incorporated, the software imports, renders, and animates objects from various modeling programs and various platforms. Soundtrack overlays are also possible.
Circle 125 on Reader Service Card
Reports

Born-Again Urbanism in Canada

The gospel of walkable, mixed-use development is vigorously preached north of the border. Governments are among its strongest disciples. by Albert Warson

New Urbanism might seem to be stamped “Made in USA.” But ambitious work is taking shape in Canada, where governments take a stronger hand in determining development patterns than in the U.S. More than a dozen developments based on principles of New Urbanism are being built or planned — the largest of them three communities in the Toronto and Calgary areas that together will accommodate 91,000 residents.

Five of these developments are the work of Miami-based Andres Duany and Elizabeth Plater-Zyberk, who proclaim the Cornell development in the town of Markham, adjoining Metro Toronto, to be the “best, our flagship project” of their more than 70 communities in six countries. Support from the province, which owns most of Cornell’s 2,400 acres and established a Crown corporation that collaborates with the private sector on development, enabled the architect-planners to carry their work to a level of refinement rarely possible when the client is a debt-burdened private developer unsure about government approvals, Duany says. Among DPZ’s other projects are the 2,000-acre Markham Centre, also in Markham, for 36,000 residents; the 2,400-acre McKenzie Towne development outside Calgary, for 28,000 residents; and the 1,560-acre Bamber ton development near Victoria, British Columbia, for 12,000 residents.

A half-dozen large projects in the Toronto area have been laid out by Berridge Levinberg Greenberg Ltd., a Toronto urban planning and design firm that worked in the city and internationally in the 1980s. BLG has taken its advocacy of higher-density, mixed-use development to the outlying metropolitan area in the past several years as Canadians have begun to rethink suburban expansion. Other projects have been planned by Jenkins & Associates architects and town planners of Calgary and by firms such as Gabor + Popper Architects in Toronto.

Corner Stores and “Telecommunity”

Like their counterparts in the U.S., Canadian developments associated with New Urbanism call for building varied kinds of housing and situating it so that residents will be within about a five-minute walk of parks and small commercial areas. At Cornell, a 1,544-acre development abutting an 877-acre greenbelt in Markham, 27,000 people are to be housed in 10,000 residential units — some of them in a mixed-use downtown made up of buildings generally three to six stories high, the rest in a series of neighborhoods sprinkled with parks and corner stores.

Some New Urbanist developments look toward a future in which high-tech communications will be part of everyone’s living environment. Berridge Levinberg Greenberg’s “Montgomery Village,” in Orangeville, 50 miles north of Toronto, is being billed as Canada’s “first telecommunity.” Builders are equipping the housing with residential Integrated Services Digital Network (ISDN) wiring, capable of transmitting video, voice, and data information simultaneously, at 128

Albert Warson is a Toronto freelance writer specializing in real estate development topics.

Many streets in DPZ’s Cornell (above) curve slightly to eliminate long dull views. A long mall flanked by buildings a few stories high (left) is planned for DPZ’s Markham Centre. In Montgomery Village (top left), planned by Berridge Levinberg Greenberg, a four-story mixed-use street leads toward a school.
Canada (continued from previous page)

kilobits per second. (A standard telephone line converts voice and data into an analog format and transmits it at no more than 64 kilobits.) The developer says Montgomery Village will be the first community with a local area network connecting the computers in homes, schools, and businesses by coaxial cable.

The Canadian projects purport to capture the joys of small-town neighborliness, including strolls along wide sidewalks on narrow, tree-lined streets to grassy commons enclosed by low-rise shops, cafes, restaurants, and businesses. Garages are in most cases placed at the backs of the lots, along "laneways" (the Canadian term for alleys) so that the fronts of the houses can have porches, balconies, and other sociable features. Marvin Green, president of River Oaks, which is developing both Montgomery Village and another BLG planned community called Morrison, in Oakville, Ontario, says, "You need density to support sociable, livable places that also support transit." Green makes the case for densities of 15 units an acre — high enough that public transit is economically feasible.

Delays in British Columbia

Bamberton, if built, will be a neotraditional temple of environmental correctness. Its codes promise "ecologically sustainable use of natural resources." Up to half its land has been set aside for public parks and gardens. Ironically for a project seemingly so eco-friendly, Bamberton may be done in by the provincial ministry, which decided to apply some untested environmental legislation to the development at the expense of the South Island Development Corporation and the union pension funds that invested in it. The required studies, and still more hearings, have delayed the project and caused Bamberton's investors to debate whether to sell the land rather than sink more than the $18 million they have already invested. Other Canadian forays into New Urbanism are faring better. At Montgomery in Orangeville and Westridge Village in Okotoks, near Calgary, builders are already selling houses.

George F. Dark, a principal with BLG, says the Ontario government has embraced New Urbanism because "a lot of the best farmland in Ontario is in the Toronto area" and conventional sprawl has been "gobbling it up at a tremendous rate." He says development in recent decades has given the suburbs an "anonymous" feeling and has made it impossible for residents, whether adults or children, to "walk to things that are important in life." In both conservative Alberta and democratic socialist Ontario, the provincial governments have cleared away some of the bureaucratic hurdles that can hold a project in limbo for years. Green says that partly because of the province's stance, his Montgomery project won approval in about a year — twice as fast as a conventional project.

Skeptics express qualms about governments' embrace of New Urbanism. Frank A. Clayton, president of a Toronto-based economic consulting firm specializing in real estate market analysis and urban growth management, says, "What worries me most about the neo-traditional proponents, especially those in positions of power in government, is that in their misguided enthusiasm, they endeavor to 'force' all new development to follow the tenets of the neotraditional approach." Certainly there remains resistance to tightly built, higher-density suburbs. Frank Lewinberg of BLG says public works officials dealing with road widths, location of services, and related engineering issues, can be hard to persuade. Dark, however, suggests that the New Urbanism will prove popular in a country that wants to preserve agriculture and make metropolitan life less scattered. "With municipal politicians and ratepayers (taxpayers)," he says, "it really strikes a chord."
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The demographics of the architecture profession have changed remarkably little since the gentlemen above were photographed in 1925. Lowering the obstacles to the full participation of women and minorities would benefit the entire profession. by John Morris Dixon

We may think that membership in this profession has changed drastically over the past few decades, but even today more than 80 percent of architects are still white and male. And we draw all but a few of our architects from comfortable homes, with college-educated parents. But how many of us believe today that middle-to-upper-class white men are more capable than others of carrying out an architect’s responsibilities? How many believe that we can ensure an effective profession by drawing the vast majority of our architects from that diminishing fraction of our population that is white, male, and affluent?

"Wait a minute," I can hear some of you saying. "These white guys have accomplished great things; American expertise has long been respected the world over. And we have not been all that exclusive. Some of our most successful and honored architects have been Asian-American or Latin; some have been gay. Women have been moving into our schools in great numbers and becoming more visible in
practice. And we regularly see blacks as speakers, jurors, and educators. There are even government set-aside programs that give preference to minority- and women-owned firms. As time goes by, the profession is bound to get more diverse."

Others in the profession are frustrated with the current rate of change and see the profession's diversity lagging behind other professions and industries. Women entering our schools drop out of architecture at far greater rates than men, and the small number of African-Americans embarking on architectural careers is not rising at all. They see greater diversity in the profession as both an issue of fundamental fairness and a pragmatic need: a profession that wants to prove it can shape a superior environment for all Americans must have more than an arm's-length familiarity with society's needs.

The need to promote diversity could not be stated better than it is in a letter P/A received from architect David Watkins, president-elect of AIA Houston, who describes himself as a straight, white firm owner. When his chapter held a diversity orientation seminar for large-firm owners, he was asked "David, why do you care?" His answer: "First, it is the right thing to do. Racism and sexism are by no means dead in this country, and we should take every opportunity to put an end to such socially and economically destructive attitudes. Second, the U.S. has uniquely benefited from its diverse population, and we should continue to nurture that diversity. Third, and more pragmatically, as the owner of a relatively large architectural firm, I have an obligation to my clients to continue to provide them with the most responsive service we can offer through the combined talents of a relatively large architectural firm, I have an obligation to my clients to continue to provide them with the most responsive service we can offer through the combined talents of the highest caliber of staff we can assemble. It would be foolish for me to ignore the fact that an ever increasing number of our clients will be women and minorities. It is counterintuitive to expect an all white male staff to be able to convince these clients that we are sensitive to their concerns."

Look Who's in the Profession Now

Hard statistics on the gender and race of architects are hard to come by; federal labor statistics define architecture too loosely to be meaningful. We can get a reasonable picture from AIA statistics, granted that AIA members are on the whole better established than those who haven't joined, so are probably more preponderantly white and male.

Today's AIA regular membership stands at about 93 percent white and about 92 percent male, hence about 85 percent white and male. For every 100 AIA members, you would probably find 8 women, 3 Asian-Americans, 2 Latinos, and 1 African-American; you would be unlikely to have even one Native American.

Some clues to membership trends over time can be found in the two groups outside AIA's "regular" member category. Of the the emeritus members - retired and representing AIA past 95 percent are white males; of the associate members - not yet registered, presumably representing AIA future - probably about 62 percent are white males (race is "unknown" for many associates).

Despite AIA's stated commitment to diversity, its leadership does not look very diverse. True, 1993 president Susan Maxman broke ground as the first (white) woman to head the AIA, but her successors, now elected through 1996, are white men. The 49-member AIA Board of Directors includes four women and two men of color, but this moderate diversity is accounted for almost entirely by its nationally elected or appointed members. Of the 34 regional directors who constitute the bulk of the Board, 33 are white men, one a white woman. It is as if members can accept some diversity on a national slate, but when they elect regional board members, one at a time, white men almost always get the nod.

The architecture schools, of course, show greater diversity than the profession: of those getting degrees in 1993, 27 percent were women, 7 percent were Asian-American, 4 percent were Latino, 3 percent were African-American, and 1/2 of 1 percent were American Indian. White males therefore constituted about 62 percent of these graduates, roughly the same as they do for AIA Associate members. This seems to confirm that the proportion of women and minority students has not been rising in recent years.

Lower Pay and Motherhood

The biggest gap between men and women in this profession turns out to be something very concrete: money. As Kathryn Anthony's preliminary research findings indicate (Glass Ceiling sidebar, page 61), women are the only ones in the profession suffering, as a group, from inequalities in pay: women typically make 75 cents for every dollar earned by equally qualified men, regardless of race. Even in a profession where money is not the prime motivation, unfairly low pay can drive some women out of the profession, and in this case pay inequity reflects other problems.
Wherever women discuss their roles in practice, they speak of being passed over for promotions in favor of men with less experience. The classic obstacle is the reluctance to expose women to the construction site, and their lack of site experience is then used to justify limiting their responsibilities. This problem has been easing somewhat in recent years, as women appear even among the construction workers (and as firms expand into areas such as programming and urban design), but it remains real. The male principal of a New York firm hears often from the contractor on a job with a woman project manager: the contractor seeks confirmation, starting “The girl says we should...” to which her boss consistently replies, “If she says so, then do it.”

Women’s progress in firms is also undermined by the profession’s reluctance to adopt “family-oriented” employment policies: maternity leave without penalty, and flexible schedules that allow for the responsibilities of parenthood. Family considerations also figure prominently in discussions of women’s place on architecture school faculties, where women who get appointments seem to have a harder time than men in getting tenure.

At a panel of black women architects discussing discrimination at the 1993 National Organization of Minority Architects convention, the consensus was that being a woman was a much greater obstacle to success in this profession than being an African-American. There was a particular frustration in the fact that black men in the profession – black male teachers among them – could be as insensitive to their sisters’ concerns as white males.

School is of course where women’s difficulties in this profession begin. A study by Mark Paul Frederickson of architecture school design juries concluded that women’s efforts got relatively little of the faculty’s attention. Their jury presentations were statistically briefer than those of men, they were typically interrupted more frequently, and the women more often acquiesced to juror criticisms (Journal of Architectural Education, September 1993). The design studio, historically a site of playful and not-so-playful harassment for women, is becoming less threatening as the enrollment of women increases, except that proportionately more women drop out before graduation. University of Nebraska architecture dean (and past AIA president) Cecil Steward expresses concern about attrition: “While we are approaching 50 percent in the number of women entering schools of architecture, we are nowhere near

HAVE YOU FACED ANY OF THESE OBSTACLES?

Problems confronted by anyone who is not a straight white male:
Your boss is reluctant to give you responsibilities for fear clients or fellow-workers will not accept you as an authority figure.
If you make an issue of equality, you are branded as overly aggressive, to have a “personal agenda” or to be a “one-issue” person.

Problems confronted by people of color:
You are expected to help your firm get jobs involving minority clients or neighborhoods and concentrate your work in these areas.
Whatever respect you earn in the office abruptly disappears when you go out onto the street.
At least initially, coworkers and clients will not feel confident about how to deal with you.

Problems confronted by women:
You are passed over or discouraged from taking on contract administration or site observation
You are passed over for more responsible positions, in favor of white males.
You are getting paid less than white males with similar qualifications
Your office is not “family friendly” with regard to time for childbirth and childcare.
You are likely to be exposed to sexual harassment, ranging from mean jokes to outright grabbing.
If you make an issue of sexual harassment, you are branded as an uncooperative, unfriendly “one-issue” person.

Problems confronted by gays and lesbians:
You probably find it difficult to talk with most fellow-workers about your personal life or to join in their off-hours activities.
You have to face the disturbing issue of whether to be “out” or not to your colleagues and clients.
Your boss and/or clients are likely to press you – openly or more subtly – to conceal or minimize your gay/lesbian visibility.
If you are an employee, your boss is likely to isolate you from clients or potential clients he fears will find working with you distasteful.
50 percent in those graduating.” And, as he points out, this attrition continues as women enter practice, with more women than men leaving the profession.

The overall proportion of women in practice nevertheless continues to rise, with some interesting – and potentially positive – implications for the profession’s future. Research by Sherry Ahrentzen and Kathryn Anthony (Journal of Architectural Education, September 1993) concludes that women tend to prefer cooperation to competition, and they typically pay much more attention than male colleagues to people, as against objects and abstractions. Since collaboration in the office and with other firms is crucial to success today – as is a genuine interest in individuals, from the client to the subcontractor – these attitudes can be of crucial value to today’s profession.

**Color and Conscience**

A major concern about minority participation in this profession is the low number now entering the field through our schools. In many departments outside the historically black schools there is the annual threat that the few minority students will feel too isolated to stay the course. Most major architecture schools have faculty or staff people assigned to recruiting minorities. At state universities, the effort may be undercut by standardized admission policies poorly related to the skills needed in potential architects, minority or otherwise. Private universities typically have more latitude to weigh the applicants’ real potentials, and to offer scholarship inducements that state schools cannot match. Cornell has a reputation for attracting prospective minority architecture students that other schools wanted.

While in school, many minority architects recall, they got scant attention in studio crits, compared to white classmates. And Frederickson’s study of design juries showed that African-American students, like women, were granted statistically less discussion time, but in their cases the jurors’ comments tended to be diplomatic, sometimes to the point where the researchers found them “condescending or at times insipid.” It may be understandable that many faculty members are deterred by communication styles different from their own, but the problem underscores Frederickson’s contention that teachers of architecture need training in communication and group dynamics (not to mention cultural diversity), which could make studio time and juries more positive experiences for all students.

Once they enter practice, minority architects may have some difficulty claiming their right to mainstream assignments, outside the inner-city arena assumed to be their area of interest. Two of the few African-Americans who have become partners in “majority” firms (I could identify only four nationwide) ascribe their success in part to resisting being pigeonholed: Ralph Jackson at Shepley Bulfinch Richardson Abbott in Boston designs institutional buildings; Gary Bowden of RTKL in Baltimore specializes in shopping centers.

Even for the most successful minority architects there is the distraction of outside-world biases. Entering a shop, approaching a receptionist, attempting to hail a taxi present daily potential for humiliations a white professional would never face. As Ralph Jackson of Shepley Bulfinch puts it, “In the office, I have an accepted leadership role. In the larger community, I’m viewed simply as another ‘black male’ – constantly challenged by the stereotyping of both whites and other minorities.”

**The Unmentionable Question of Class**

Beneath the issue of race, as such, lies that of class. Architecture was once a gentleman’s profession, and common wisdom is that only those from privileged backgrounds have an early awareness of architecture as a career choice or the wherewithal to pursue it. Architects have made outreach efforts to inform school children about the profession, but how can we encourage underprivileged students to undergo several years of expensive education for a career with uncertain economic rewards? Ideally, this dilemma could establish a goal for our profession: if we can make architecture an economically rational choice for poor kids, then it will be a more rewarding field for us all.

Now it’s virtually inevitable that a large proportion of the women and minority students entering the schools are from middle- or upper-class families – all the more so at the most expensive schools. Darell Fields, an African-American assistant professor at the Harvard Graduate School of Design, observes that virtually all of the school’s minority students come from the middle class, many with their undergraduate degrees from schools such as Yale and Berkeley. The real challenge in his view is recruiting less privileged students – of any color. He is convinced that an infusion of students from really different cultural and economic backgrounds could “give
academia a shot in the arm.” And achieving a socio-economic mix, he says, “would take care of the racial mix.”

Breaking the class barrier cannot depend on recruiting alone, however, but demands some support during the school years. Patricia Harris, an architect and Director of African-American Student Affairs at the North Carolina State College of Design, points out that students from underprivileged backgrounds often have to cope with family opposition to their efforts, along with the deficiencies in their earlier education, burdensome loans, and part-time work. Wesley H. Henderson, an assistant professor and Minority Affairs Liaison at the University of Texas School of Architecture concurs: the few lower-income minority students at Austin can feel isolated from fellow students and may need understanding mediators in their dealings with faculty. And, needless to say, such students can feel even more alienated than other students if handed a program for a yacht club.

Set-Asides: Boost or Bust?
Affirmative action programs in government procurement, intended to increase the roles of minority-owned and women-owned business enterprises (commonly known as M/WBE programs) have clearly helped some firms to be launched, to survive, and to prosper. But they have by no means accomplished their goals or met with unmixed enthusiasm among those they were intended to support.

The essential flaw in the most widely applied federal “set-aside” programs is that they don't require government agencies to commission minority- or women-owned firms as prime contractors, says Robert Easter, President of the National Organization of Minority Architects (NOMA). Instead, the responsibility for diversity on the design team is placed on the prime contractor, almost always a white-male-owned firm; that prime contractor then tries to meet goals by bringing M/WBE certified consultants and/or architects onto the team. Under such arrangements, the M/WBE firms brought on board often have only marginal roles and get little applicable experience. Architects accepting M/WBE work must, says Easter, insist on doing meaningful work, getting fair compensation for it, and sharing contact with the client throughout.

The promise of M/WBE work has encouraged many minority and women architects to set up their own firms, sometimes without the experience and business savvy they

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**RESEARCH STUDY: ARCHITECTURE STUDENTS**

A study of women and minorities in schools of architecture is being carried out under the direction of Linda Groat of the University of Michigan and Sherry Ahrentzen of the University of Wisconsin-Milwaukee. The National Endowment for the Arts is funding their study of 650 architectural students from 6 schools. While the findings are being analyzed now, a few general findings can be discerned.

Women and men students disagree, as might be expected, on the extent to which unwanted sexual advances occur and the “perception that women have to outperform men to be taken seriously.” But the broadest gap between genders is in their view of the ideal school experience: women expressed much greater interest than men in incorporating socio-cultural issues and projects of social relevance into their programs, in alternative approaches to studio teaching, and in having the contributions of women architects presented and discussed. This suggests that revision of curriculum and teaching methods may be as important as correcting discriminatory attitudes in attracting and retaining women in schools of architecture.

In terms of staying with architecture, fewer women students than men are now “very satisfied” with their career choice of architecture (41 percent vs. 52 percent). And in contemplating career switches, women are twice as likely as men to consider a clean break into business fields; engineering and other design fields lead the alternatives for men. All in all, equal proportions of men and women—a high 35 percent—feel that “the rewards of an architecture degree are not worth the effort of getting it.”

Differences of opinion along racial lines occurred in the perceived need for social relevance in the program, with African-Americans giving it the greatest importance, followed in order by Latino/Hispanics, Asian-Americans, and whites. While all groups named several possible alternative careers, it is notable that the most seriously considered ones for whites were other design fields and engineering (although, as we have seen, this was not necessarily so for white women); for African-Americans it was law, for Latinos it was fine arts, and for Asian-Americans, business.
A WHITE GENTLEMAN'S PROFESSION?

A 1978 P/A showed that year's AIA Gold Medalist, Philip Johnson (above) with the eight "kids" he chose to represent the "cutting edge" at the AIA Convention; the all white male group included (standing) Graves, Pelli, Gwathmey, and Eisenman, (seated) Gehry, Moore, Johnson, Tigerman, and Stern. The cover of P/A's March 1977 issue on Women in Architecture showed Julia Morgan's outdoor pool at the Hearst Castle. The first P/A Awards jury (facing page, top, from Jan. 1954 issue) included Victor Gruen, Eero Saarinen, George Howe, and Fred Severud. The first woman juror was Cloethiel Smith, 1961; the first African-American juror was Donald Stull, 1973. The jury for the 1994 awards (facing page, lower photo) included (l. to r.) David Lee, Andrees Duany, William Mitchell, Mary McLeod, Sharon Sutton, Rafael Viñoly, and Christine Killory.

need for success. A shortcoming of all these programs is that they encourage segregation of firms by race and gender, offering no comparable inducement to integrate partnerships or staff.

In any case, MWBE programs have not accomplished anything like their announced economic goals. A NOMA newsletter reports that between 1979, when these laws took effect, and 1993, the goals of the programs called for minority firms to be awarded $67.8 billion in business; the actual figure for those years was $5.77 billion.

Many minority- and women-owned firms have tried not to depend on such set-aside programs. Steven Lewis, one of the African-American partners who head the firm RAW in Los Angeles, reports that his firm has grown mainly on private commissions and is now getting a range of work from such public clients as the General Services Administration. He encapsulates the MWBE role with a quip about the architect driving past a towering complex and saying, "Look, son, there's the subterranean garage we designed."

African-American architect Charles McAfee of Wichita asks rhetorically, "How many minority architects have minority/disadvantaged degrees? How many have minority/disadvantaged licenses?" With the same qualifications, he implies, all architects should be playing in the same arena.

While some of NOMA's leaders are questioning the validity of set-aside programs, as now constituted, Verner Reed, a white male architect from Kansas City (and a former AIA Board member) stresses that they can offer genuine opportunity: "When I opened my office in 1965, I was not hired to do a $1-million project for 15 years. These days, talented young women and minorities are encouraged to leave their employers and set up their own practices, and are able to get a $3-million or $5-million job as their first project! And that first project is not just a passing advantage. In Kansas City, set-aside programs have created several good, solid, women and minority firms that get lots of work and do great projects."

**Same-Sex Success?**

The "sexual minorities" in this profession are just now beginning to be heard as a group. Only three years ago, a few persistent individuals succeeded in broadening the AIAs Code of Ethics to rule out discrimination based on sexual orientation. Since then, the Organization of Lesbian and Gay Architects and Designers has become a vocal force (P/A, August 1994, p. 36). Stephen A. Glassman, an outspoken gay architect in Baltimore, has held workshops on gay and lesbian issues at the past three AIA annual conventions, and he was the chairman of this year's AIA national conference on diversity, "Breaking the ICE" (more on that below).

The overriding question for gays and lesbians in architecture is whether to acknowledge their sexual orientation where they work. Gays and lesbians are aware that this dilemma over whether to expose themselves to potential discrimination is considered a "luxury of choice" by some minority architects who cannot choose to blend in with the majority. Employers and clients may not be fazed by the knowledge that an architect is gay or lesbian, but if that person becomes an activist for gay/lesbian issues in the community beyond, the professional connection may become strained. Little wonder that most gay and lesbian professionals, even today, keep their sexual orientation from their colleagues.

Gay white male architects know that many men like them have attained widespread recognition in this profession - AIA Gold Medalist Philip Johnson being the most honored among them. When asked whether gays may even have a special edge in the world of design - a certain cachet - Glassman says he never encounters such a false notion.

**Somebody Do Something!**

Of course, organized groups of women and minority professionals have a key role in addressing problems of inequity. The National Organization of Minority Architects was established in 1971 by a group of black architects, and the great majority of its members today are African-American; its annual conventions bring together hundreds of practitioners, educators, and students. AIA efforts also go back decades: the Institute's long-standing committees on Women and on Minority Resources - the latter including a range of groups - have just merged to form what will be known in 1995 as a committee on Diversity, to cover as well the issues of gays, lesbians, and the disabled.

This merged effort follows one recommendation of the AIA's Diversity Task Force, established in 1992 by president Cecil Steward to propose specific Institute action. Among the other steps recommended by the AIA Task Force were to make "under-represented groups ... part of all AIA Boards, committees, task forces, and staff" and to offer "diversity/cultural awareness training ... at all levels of..."
AIA.” Since 1992, there have been speakers on diversity at each annual Grass Roots meeting and more diverse speakers at annual conventions – e.g., Sharon Sutton's well received address this year (P/A, June 1994, p. 25).

One outcome of the Task Forces efforts was the “Breaking the ICE” national conference on diversity held in Washington this August. Anyone who attended this meeting and heard the testimony on experience, the research findings, and the recommendations enunciated there came away convinced that barriers could be swept away, to the benefit of the entire profession. The active involvement of the AIA president and president-elect, among others, gave some reassurance ICE would not be forgotten Monday morning.

**Grassroots Realities**

The support of concerned white gentlemen is definitely needed if we are to progress on the diversity front. As David Watkins of Houston writes, “The task ahead is not solely the responsibility of women and minority architects.”

The potential backlash against all such efforts should not be underestimated. In a profession that sees all of its members as beleaguered, many white males will profess not to know “what all the whining is about.” “This is a free country,” “I don’t want the government – or the AIA – telling me who to hire or promote.” “If they want to be treated just like me, why are they asking for special consideration?” Among those who feel more secure, there is the more callously self-serving notion that “political correctness” is just a passing fad that can be laughed off by the guys in the club. Are people who voice such sentiments aware of the deeper ethical question: does the continued domination of the profession by white men suit them because it actually serves their personal self-interest?

Ultimately, only a profession that embraces diversity can be relevant to an increasingly diverse American society. We must not only celebrate the accomplishments of women and minorities in this profession and expose the obstacles they now face, but we must reform the objectives and practices of the profession so that all its members are adequately rewarded. It will then be sought after as a career by young people of all kinds. Only if the profession can deal knowledgeably with its role in the world and with the minorities it includes can all the gifted Americans who want to succeed at architecture have the opportunities they deserve.

**RESEARCH STUDY: SHATTERING THE GLASS CEILING**

The barriers to professional achievement by women and minorities are the subject of a study now in progress under the direction of Dr. Kathryn H. Anthony of the University of Illinois at Urbana-Champaign entitled “Shattering the Glass Ceiling: the Role of Gender and Race in the Architectural Profession.” Citing the low percentages of women and people of color in this profession – which make it seem “incredibly insular and, compared to many other fields, far behind” – the study takes up the more complex question of the quality of their experiences. Anthony stresses that the findings of this study (which is being supported by the Graham Foundation and the University of Illinois at Urbana-Champaign Campus Research Board) are strictly preliminary.

Applying the U.S. Labor Department definition of “glass ceiling” as “artificial barriers, based on attitudinal or organizational bias, that prevent qualified individuals from advancing within their organization and reaching their full potential,” Anthony and her staff surveyed over 200 diverse AIA members, including white males, and found the glass ceiling perceived more often by minority members than by whites; but women were much more sharply affected than were minority men.

Salary was the key gender-related issue; the researchers found no significant difference in salary between whites and minorities, but found that women typically make only 75 percent as much as equally qualified men, regardless of race. In part because of their rough salary parity, minority men are more likely than women to report that they have been able to break through their perceived glass ceiling. Findings indicate, as well, that more women than minority men quit their jobs because of discrimination. Other findings: women cite the lack of “family-friendly” policies on maternity leave, flex-time, etc.; in firms where both men and women are principals, men are perceived as being in charge; while most respondents agreed that women can have school-age children and work full time, many added that it is not easy.

The barriers cited most often by minority men were race- and ethnic-based stereotyping which, like gender-based stereotyping, is more subtle and harder to pin down than pay or personnel policies.
Machines for Discovery

Planning highly specialized laboratories demands a marriage between functional necessity and the human interaction that propels research.

by Michael J. Crosbie

Laboratories appeared as a distinct building type in the late 19th Century, but over the past few decades they have been refined as research has become more specialized. In an economy that continues to be driven by developments in biotechnology and in other scientific fields, laboratories are occupying the attention of more and more architects. As the factory shaped American industrial culture in the 19th Century, and the office building helped capitalism expand in the 20th, the laboratory will define the economic culture of the next century.

The laboratories featured on the next six pages exhibit a variety of planning strategies that help them to function as machines for discovery. Because labs are expensive to build, loaded with delicate equipment, and highly specialized in use, their design is driven primarily by function. “A big concern for us is how lab technology and electronics are tied together in the building,” says Stanley Stark of HLW Architects. “Lab design verges on industrial design. The building is an instrument to some other end for the client, not an end in itself.”

The laboratory’s complex program demands that the architect analyze its various components carefully to juxtapose functions that work best together: direct access to support equipment from areas where research work is conducted, for example, or adjacency of animal areas to biology labs, or provision of ample mechanical space for chemistry labs, which require more powerful ventilation equipment than biology labs. Overlaid on these physical proximities are human dynamics. As scientific investigations become more interdisciplinary (biologists and chemists teaming up for research, for example) lab planning must accommodate cross-specialty collaborations and the sharing of ideas. This often occurs serendipitously, by chance meetings in stairways or hallways. “We wanted the architects to break the barriers, with an open lab concept,” says Augustine Pushparaj, director of engineering and facilities planning at CIBA-Geigy Pharmaceuticals. Mitchell/Giurgola responded with a building that offers atriums, lounges (above), and light-filled corridors as settings for chance meetings.

As the future of healthcare and the pharmaceutical industry hang in the balance of Federal policy decisions, laboratory projects on the boards are already changing. “There’s increasing demand for more flexibility in labs, and more generic research spaces,” observes Leevi Kiil of HLW. “The focus now is on built-in flexibility for quick changes in research direction. Pharmaceutical labs are now more directed toward applications research, refining their manufacturing processes.”

Whatever the result of the healthcare debate, laboratories will continue to assume the role of “factories” for the 21st Century.
CIBA-Geigy
Life Sciences Building
Summit, New Jersey

CIBA-Geigy, a Swiss pharmaceutical company founded in the 1700s, tends to take a long view when building a lab. The company wanted one that would be easily adaptable over many years. Other requirements were that it be made of concrete (which led to the selection of Mitchell/Giurgola, given the firm's experience with the material) and that, at nearly half a million square feet, it not feel vast.

The plan arrangement of three stepped blocks with interstitial space over each lab floor works to satisfy these requirements. According to Augustine Pushparaj, CIBA-Geigy's director of engineering and facilities planning, the company's initial idea was to build a single rectangular building, 600 feet long. The architects quickly realized that this would give the building an inhuman scale, and be awkward given the site's configuration in and around existing buildings. The stepped plan permits the expression of the 13,000-square-foot labs, ideally sized for various research teams and their equipment. The arrangement also gives each lab block an identity and makes the facility seem smaller.

The east and west blocks have labs separated by an atrium (2), with a cascading watercourse. At first glance the fountains seem to be a grandiose gesture in such a rarefied research environment. But they provide just enough white noise to prevent conversations in this collegial space from being overheard. The fountains also mask the noise of mechanical equipment, which occupies about half the building's volume. During my visit the fountains were turned off, and the difference in the lab's acoustics was profound.

Flexibility is achieved as it was at Louis Kahn's Salk Institute (P/A, Oct. 1993, p. 40), with interstitial floors above each lab to allow the unobtrusive and swift modification of mechanical services as lab demands change. The interstitial floors are occupied by 88-foot-long prefabricated concrete trusses, allowing the labs below to be column-free. To ensure the efficient installation of mechanical systems, the architects had an interstitial floor mock-up built for the contractors, indicating the location of all pipes, ducts, and conduits.

Architect: Mitchell/Giurgola, New York (Jan Keane, principal in charge; Margaret DeBolt, project architect; David Bogle, Romaldo Giurgola, Tilman Globig, Tony Hartz, John Kurtz, Stefano Paci, Susan Stando, Gabriel Toros, project team).

Consultants: Weidlinger Associates (structural); Earl Walls Associates (mechanical, electrical, plumbing, laboratory); Rolland/Towers (landscape); H.M. Brandston & Partners (lighting); Torcon (construction manager).

Lounge spaces (1) are important in encouraging dialogue between researchers in interdisciplinary teams. The lab block atrium (2) also encourages interaction; the fountain provides white noise.
Schering-Plough
Drug Discovery Center
Kenilworth, New Jersey

At nearly a million square feet, this research facility is the largest one Schering-Plough has ever built. The client had apprehensions about how such a building could be made comprehensible to a staff of 1,600. "We knew it had to be big," notes architect Stanley Stark, "but it also had to be humanly scaled."

The planning strategy breaks the building into discrete components that accommodate separate staff populations. The "head" of the building takes the form of a long, narrow block containing executive offices, a seminar room, a cafeteria, and a library. Everything but the offices is shared with other Schering-Plough employees on the corporate campus. The "foot" of the building contains mechanical spaces and other lab support areas.

Between head and foot are five four-story laboratory blocks, arranged in checkerboard fashion, and separated by three internal courtyards. Stitching the blocks together is a long spine running east-west, containing all of the lab management offices (5) and meeting rooms. "We wanted to bring scientific management staff close to the work in the labs," says Schering-Plough project director Tom Cannizzo. "The interaction between lab groups has worked very well." The corridor allows relatively quick circulation between the blocks and close proximity of the research managers to the labs and to each other. Each lab floor is bisected by a utility corridor for the distribution of ducts, pipes, and conduits, and the storage of assorted equipment.

The labs' checkerboard arrangement also breaks down the scale of the building, giving each lab block its own identity. The paving and planting of each courtyard is different, although only the north one is accessible. The color of the corridor floor covering and window and door trim is also different in each block, which aids way-finding.

Architect: HLW (Haines Lundberg Waehler), New York (Leevi Kil, partner in charge; Stanley Stark, project manager; Steven Viehl, M/E/P engineering team leader; Evan Schwartz, Steven Oakely, project designers; Harvey Wendel, Stephan Fried, Michael Nagy, Kent Holliday, Ivi Karady, Pratrima Malhotra, Luke Gong, architectural team; Rene Nazar, interior designer).

Consultants: Federman Construction Consultants (cost estimating); John Van Duren Associates (elevator); Thomas Bank Associates (food services); Louis Goodfriend Associates (acoustics); KBI (audio/visual); Tom Cannizzo (Schering-Plough project director); Torcon (construction manager).

From the air (3) the lab blocks and courtyards can be seen. Each lab courtyard is of a slightly different design; the east one (4) combines paving and vegetation. Lab management offices (5) are connected by internal stairways to foster staff interaction. Lab spaces (6) include adjustable benches.
Joslin Diabetes Center Addition
Boston, Massachusetts

Joslin is the premier diabetes research institute and clinic in the U.S., drawing researchers and patients from all over the world. Because of its tight urban site, there was nowhere to go but up when expansion became necessary. The addition of four floors on top of the existing four-story building involved the careful juxtaposition of laboratory spaces in section as well as plan. The addition had to be built without disrupting ongoing research, which involved coordinating construction activities around existing lab use. Vertical exhaust ducts from the existing labs to the roof also had to be preserved during construction.

The 20-year-old building had been designed for an addition, so sufficient structure was already in place. But new codes required that the building be seismically upgraded with cross-bracing in stairwells and at ground level. Almost half of the 80,000-square-foot addition comprises new laboratories, with the remainder devoted to new clinical, administration, and support spaces. The addition's first two floors are devoted to labs, allowing close proximity to the existing clinical functions below. Administration and more lab spaces are found on the addition's third floor, while the top floor is completely dedicated to mechanical equipment. A new eye clinic is at grade level in the rear of the building, below a new courtyard.

The existing building's generous width of just over 100 feet made it possible to concentrate all of the shared lab support space in the plan's center, flanked with double-loaded corridors. Vertical duct space is located between the labs and the corridors. Lab offices are in corner suites, offering them the best views and proximity to research spaces. This arrangement also encourages the casual exchange of information and ideas among investigators.

Architect: Ellenzweig Associates, Cambridge, Massachusetts (Harry Ellenzweig, design architect; Michael Reagan, project manager; Miltos Catomeris, project architect; Rob Tullis, assistant project manager; Arto Kurkjian, job captain; Gregory Berndt, Gary Gwon, Tom Kahmann, Mark Hammer, Cynthia Howes, Thomas Lam, Jeffrey Salocks, design team).

Consultants: LeMessurier Consultants (structural); BR+A Consulting Engineers (mechanical, electrical); Robert W. Sullivan (plumbing and fire protection); The Halvorson Company (landscape) Lloy Hack Associates (furnishings); Jim Gui Associates (specifications).

From the south the four-story addition (7) of metal panels and glass seems well suited to the existing concrete building. Labs (8) have large windows affording views and natural light. A new interior courtyard (9) is an amenity for both lab workers and clinic patients.
Form Follows Safety

Biosafety labs are in demand by today's researchers. Here's a checklist of design issues that architects should keep in mind.

by William N. Bernstein

With a growing awareness of the dangers of working with infectious agents such as AIDS and TB in research, architects are taking a more active role in the integration of basic biosafety principles into laboratory design.

The first or “primary containment” of infectious agents involves the safe operation of the laboratory, including the use of containment equipment such as biosafety cabinets within the laboratory. This initial layer of containment protects the laboratory workers and the internal laboratory environment from exposure to infectious agents, an exposure that can occur either through physical contact or through the air. The “secondary containment” entails protecting those outside of the laboratory from exposure to infectious agents.

The Centers for Disease Control and National Institute of Health (CDC/NIH) have jointly established four levels of biosafety guidelines for the design and operation of labs: Biosafety Level-1 (“basic”); BSL-2 (“basic” lab, but with more stringent requirements than BSL-1); BSL-3 (“containment”); and BSL-4 (“maximum containment”). BSL-3 labs are receiving the greatest attention now as the research community seeks a level of protection commensurate with the level of risk associated with highly infectious agents.

Design Guidelines

Whether a single lab or a suite of laboratories, BSL-3 facilities share common attributes, as prescribed by the CDC/NIH:

1. Plans should incorporate a vestibule, with two sets of entry doors, through which all users of the lab must pass when entering the lab from corridors or other public spaces.

2. All wall, ceiling, and floor finishes should be monolithic and sealed (or capable of being sealed) to prevent accidental air leakage out of the space, as well as to allow cleaning and/or decontamination of the space. Typically, finishes include concrete block or gypsum wallboard with an epoxy finish for walls, gypsum wallboard with an epoxy

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for ceilings, and sheet vinyl with an integral, coved base and heat-welded seams for the floor. An additional advantage of monolithic finishes is that when the laboratory requires decontamination, a small number of remaining open joints (for example, between door and floor) can be simply and temporarily sealed during the decontamination process.

3. Bench tops should be waterproof as well as resistant to acids, alkalis, organic solvents, and moderate heat.

4. Spaces between casework and equipment should be accessible for cleaning.

5. A sink that is foot- or elbow-operated should be located near the entrance to the laboratory. A High Efficiency Particulate Air (HEPA) filter also should be located at each vacuum outlet in the laboratory with an additional HEPA filter for the entire system of vacuum outlets. Special filtering for acid waste should also be provided. As a matter of safe practice, all liquid mediums containing infectious agents are decontaminated before being placed in a drain.

6. All windows in the laboratory should be closed and sealed to prevent air leakage. While the concept of containment motivates sealed barriers between the BSL-3 lab and the rest of the building, as well as between spaces within the BSL-3 facility, safety of the occupants within the facility argues for maximum visibility from one part of the lab to the next. Therefore, the location of piping runs and equipment should be planned to allow for glazed openings between all spaces, ideally aligned to provide visibility through several spaces. Safety glass is recommended for all glazed openings in a BSL-3 lab to minimize the danger of airborne shards of glass from an explosion.

7. Doors into laboratory and/or into containment modules should be provided with closers.

8. An autoclave should be provided within the laboratory for decontamination of waste.

9. The HVAC system should be carefully designed to create a directional airflow from the cleanest area, which should be at the highest positive pressure, to the most contaminated area, which should be at the lowest positive pressure. In a facility where both the BSL-3 lab and surrounding corridors are new, it is desirable to design the air system so that the air flows from the access corridor (which is the cleanest space, ideally at the highest pressure), through the vestibule, through the common working area, and finally into the labs (the most contaminated spaces, ideally at the lowest pressure).

In existing installations where, for example, the approach to the BSL-3 is from an existing corridor, it may be either too difficult or too costly to positively pressurize the corridor, so it may be necessary to positively pressurize the lab vestibule to prevent air flow from traveling from the lab to the corridor. In addition, exhaust air from the laboratory cannot be recirculated and must be exhausted directly out of the building. Although the CDC/NIH guidelines note that this laboratory exhaust air does not need to be filtered or treated before being discharged to the outside, this should be checked against local codes; in New York exhaust air must be filtered before being discharged outside.

10. There are two possible approaches to the treatment of exhaust air from the biological safety cabinets. If the cabinets are tested and certified at least once a year, then the guidelines permit the cabinet exhaust air to be recirculated within the laboratory. However, for safety reasons, it is best to exhaust the air from the biosafety cabinets out of the building and not to recirculate it within the room. If this route is chosen, the guidelines recommend the use of a “thimble connection” between the biosafety cabinet exhaust and the exhaust duct. This thimble connection, which fits over the cabinet exhaust but maintains an air gap between cabinet exhaust and the exhaust duct, avoids the potential interference with the air balance of the room or cabinet exhaust that would occur if a direct or “hard” connection were made between the cabinet exhaust and the exhaust duct.

11. Electrical requirements include sealing all penetrations through walls and ceilings, including all lighting fixtures and conduits. An intercom system should provide communication among various parts of the facility, and a card-key access system should be designed to record identity of visitors, including entry and exit times.

Before Commissioning

As a final step before the facility opens, the BSL-3 lab should be independently evaluated and commissioned. Commissioning procedures should be developed in conjunction with the institution's department of environmental health and safety, and should include pressure tests of the architectural envelope, pipes, and ductwork, and tests of the HVAC system, including all monitoring and fail-safe procedures.

Acknowledgments

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Recommended Reading


Peter Eisenman, the author contends, is a master self-promoter who has assumed an avant-garde persona while maintaining a safe position. by Diane Ghirardo

The inauguration of Peter Eisenman's Wexner Center in Columbus, Ohio, in 1989 was the confluence of an interesting but not spectacular building with spectacular celebration (P/A, October 1989). This points up the perils of discussing Eisenman's work: so deftly does he operate as a self-promoter that building and persona commingle inextricably. The ratio of production to prestige is seriously distorted, for he holds the distinction of having built only a handful of projects, yet his name, face, and designs regularly grace the covers and pages of everything from architectural to airline magazines.

My first clue to Eisenman's success came 18 years ago when I engaged in a fierce debate with him over the relevance of politics to architecture. In a discussion centered on Giuseppe Terragni's Casa del Fascio, Eisenman insisted that the work should be perfectly understood without any reference to Fascism. He dismissed any but formal considerations as thoroughly irrelevant.

The divorce of architecture from the contamination of the real world has been a constant in Eisenman's work, the precondition for his self-creation as a cultural figure of international repute. There are four essential ingredients to Eisenman's success: his ability to corral a wide range of architects, architectural theorists, critics, and historians into the fabrication of the Eisenman Mystique; the claim that his designs attempt to record the ambiguities and uncertainties of the era; his unerring ability to avoid taking a position on anything of consequence; and an emphasis on formal autonomy to guarantee that though his work may offend visually, aesthetically, or experientially, it will never offend politically. Each ingredient is deftly woven into the full range of Eisenman activities from the design of buildings to publications to personal appearances.

Eisenman learned the art of attaining prominence from the master himself, Philip Johnson. Johnson holds the dubious honor of achieving disproportionately greater success with even more modest talents, to the point of overcoming (without ever renouncing) the taint of his earlier Nazi sympathies. Eisenman is not the sole heir to this tradition: if he is a shrewd Svengali, Daniel Libeskind is the sinister Rasputin of significantly fewer accomplishments. What distinguishes Eisenman is his successful seduction of intellectuals, something that has eluded other media heroes.

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A Man on the Make

In the early years of his career, Eisenman's work entailed the elaboration of an autonomous, self-referential architectural language that defied the particularities of site, not to mention the conveniences of daily life. Undeterred by conventions, history, and commonplace about how people live, he labored to achieve a pure, uncontaminated architecture that would transcend the real. The Cardboard House series (P/A, March 1972, p. 80) involved a sequence of mathematical and geometrical steps, thereby substituting a rational design process for an intuitive one. His Cardboard Houses were architecture, he argued, even when unbuilt, which most were. They were followed, in 1978, by the Cannaregio Project for Venice, in which colors symbolized things (gold for the mysticism of the alchemist, red for the martyrdom of Giordano Bruno), and a grid of Le Corbusier's unbuilt hospital design was superimposed on the irregular contours of Venice's streets. Two years later, another set of imaginary lines - the Mercator grid, 18th-Century walls, and 19th-Century urban demarcations - were devised and overlaid upon one another in order to generate an IBA housing project for a Friedrichstrasse location adjacent to the Berlin Wall (P/A, March 1987, p. 81).

From the early methodology - based on the linguistic work rather than on the political studies by Noam Chomsky - Eisenman moved rapidly through one infatuation after another: excavations, Boolean cube, Moebius strip, DNA, scaling, or what would appear to be randomly piled strips of cooked fettuccini in the Columbus Convention Center (P/A, Feb. 1994, p. 78), each of which promised to give structure, order, and diversity to his designs. They also conveniently substituted rational methodology for creative imagination, something that has also been a constant in Eisenman's projects. Just as stringent design methodologies shaped his designs, Eisenman's masterful public relations work gave shape to his public persona.

More than almost any of his peers, Eisenman's prominence rests on his extraordinary ability not only to advance his own cause with unparalleled skill, but also to convince others to thrust him into prominence. Rarely has a building been inaugurated as was the Wexner Center, where the leading elder statesman of architecture, Philip Johnson, joined some of the current leading lights, Charles Gwathmey, Michael Graves, Richard Meier, Harry Cobb - not to mention representatives of the so-called avant-garde art circuit such as Laurie Anderson, the Kronos Quartet, and Twyla Tharp. They honored Eisenman's first major project in the U.S., presented to the public nude, with no visual art to distract from the building.

A recent Canadian Center for Architecture catalog of his urban excavations projects featured a roundtable discussion on Eisenman by Jean-Louis Cohen, Michael Hays, Alan Ballfour, Yves-Alain Bois - and, of course, Eisenman himself. By hook or by crook, Eisenman has enticed an extraordinarily diverse range of architectural critics and the cultural elite to write about his work - from Mario Gandelsonas to Kurt Forster, from Kenneth Frampton to Jacques Derrida. Each participates in the giant public relations game that Eisenman has set up, a smoke screen almost as efficacious as the design methodology concealing a rather plodding approach to building.

More Barnum than Disney

The concept that best describes Eisenman's enterprise in general is that of the game, a game with the double objectives of winning and never ending. With a canny talent for showmanship more akin to P.T. Barnum than to Walt Disney, Eisenman in the early 1970s managed to parlay a minuscule design portfolio and a wide range of acquaintances into the New York-based Institute for Architecture and Urban Studies. In a decade when he designed approximately one small house per year, Eisenman propelled his own name to the forefront of the architectural community through periodic articles in the Institute's journal, Oppositions, its monthly magazine Skyline, and a regular series of events at the Institute. Even though his reputation as an architectural impresario was at its zenith, he suffered the taunts of those who accused him of being engaged in nothing but the construction of paper architecture. By the early 1980s he abandoned the Institute and entered into a partnership with Jaquelin Robertson in order, as he said, "to get dirty and practice." By the early 1990s Eisenman founded a second institute, ANY, which caters to a new generation of theorists and architects, and also publishes its own books and magazines.

Through it all, Eisenman has displayed an awesome ability to fabricate a new persona - and camouflage the old - for all occasions: to an audience of literary critics, theorists, and philosophers at a conference on Post-Modernism in the fall of 1989, Eisenman was just one of the guys, out there sweating, rolling up his sleeves, and building in the real world. A couple of weeks later, to an architectural audi-
Eisenman represents a desire to embrace an avant-garde aesthetic, to stake out the margins of culture in a defiant expression of independence while simultaneously enjoying all of the benefits of being a very centrist cultural icon.

ward Eisenman with his earliest and most important built projects: the Wexner Center and the IBA housing in Berlin, two buildings that sealed his reputation as a practicing theoretician and offered him an early opportunity to give body to his ideas about design, building, and the contemporary world. Victory in the Wexner competition was especially big news: Eisenman’s project (with Trott and Bean) defeated opponents with far stronger records of building but with remarkably banal competition entries. More than anything else, this revealed the shortcomings of the invited competition: tired ideas recycled by slick professional offices. Fresh from several years of writing and publishing but precious little building, Eisenman now had the opportunity to realize his theories about the contemporary world in built form.

The Master of Gridlock

In the overcomplicated and overdetermined Wexner design, Eisenman embodied what he saw as a revelation of the repressed and hidden, an expression of the theory known as Deconstruction. Destabilizing, decentering, deconstructing, or displacing traditional hierarchies or repressive conditions, came to mean, in Eisenman’s designs, recovering things such as preexisting but subsequently lost land divisions, or abstract divisions such as the Mercator grid, which in turn are to be understood as critiques of humanism and anthropocentrism.¹

To the visitor, however, the experience of the Wexner is an adventure neither in poetry nor in cool logic, but rather in irritation and frustration — hardly responses destined to win many clients. Less luxurious than ludicrous, the building suffers from the relentless insistence on carrying out the demands of the axes and grids carried forward even to details in the bathrooms.

In a telling incident, Eisenman once visited the Etruscan tombs at Cerveteri, but he saved himself the trouble of touring them by purchasing postcards. Perhaps in part because I never have the sense that he loves to walk through or be in buildings, or to touch materials and devise ways of putting them together for others to enjoy, Eisenman seems to invite reflection on himself rather than thoughtful analysis of his buildings. The simple abstraction of his design — however gamely clad in a rhetoric of displacement, dislocation, deconstruction — is a constant reminder that here there is no joy in building, no passion, no poetry, either in the spaces and materials or in the craft, let alone an underlying desire to make places that excite visitors, intellectually or otherwise. The surprise effect of a dangling column (marking one of the many grids and axes underlying this project) or adjacent but different passageways, or the complexity of grids overlaying grids in shadows, reflections, and reality is quickly exhausted. Once these tricks have worn thin, there is often little left but cramped, dark interiors.

More recently, in a design for Friedrichstrasse in Berlin, Eisenman fashioned an unusual, multifaceted profile for an urban skyscraper by proposing an adaptation of the Moebius strip. Whatever variety the skyscraper promises to add to Berlin’s skyline (other than violating the local height ban) the rest of the enterprise promises no such generosity: with its standard complement of restaurants, shops, offices, boutiques, spas, gourmet grocers, and movie and video enterprises, this is just another speculative multipurpose complex. The vain search for a subversive element, for a definite position, insistently poses the question: where is the cultural critique? Where is the ironic commentary on the flaws of contemporary culture that so stud Eisenman essays and talks; where is the brave avant-garde rebelliousness?

A Bogus Avant-Garde

Eisenman represents a desire to embrace an avant-garde aesthetic, to stake out the margins of culture in a defiant expression of independence, while simultaneously enjoying all of the benefits of being a very centrist cultural icon. Such, I might add, was the am-

bition of Giuseppe Terragni and a host of other architects in fascist Italy: to design modern, avant-garde architecture, thereby occupying the margins of culture, while also becoming state architects and having Rationalism declared the state architecture of Fascism, thereby occupying the dead center.

How could this be done? To be eternally poised with one foot firmly planted on each side of the fence without being impaled is possible only in the make-believe world of formalism, where adventures in appearance substitute for challenges of substance. Eisenman’s architecture, explicitly based on a synthesis of insights from disciplines such as literary criticism and philology, is particularly resistant to the notion of taking a position. Much of the writing by exponents of Deconstruction – mostly self-proclaimed theorists afflicted with serious snobisme – suffers from the depressing notion that language somehow seems more real and more interesting than those who speak it, more interesting than architecture or the people who daily use buildings.

Theory in these terms acts as a substitute for engagement with political realities or – with respect to architecture – with building that confronts the problems of everyday life. In other words, Eisenman’s formalism, worked out as it is in strictly formal terms, is itself a suppressio veri, an ideological maneuver that deflects attention from the other factors involved in the production of building, in order to ensure the survival of a notion of architecture that transcends history, social circumstances, and politics by excluding such matters from consideration. Among other things, this represents a classically elitist architectural position: it effortlessly summons nostalgia for the days when architecture was a gentleman’s enterprise rather than a profession, when the field was uncontaminated by the lower classes or, heaven forbid, women.

Since in some places it is less tasteful to voice class and gender antipathies today than might have been the case a couple of decades ago, the elevated stature once accorded to the architect can be replicated only through decisive action. One solution is to adopt an exclusivist theoretical position, much as Eisenman has done, which, if it works properly, neatly denotes status. Much the same strategy is adopted by contemporary academics who have seen their prestige undergo a similar erosion over the last hundred years: they respond by sealing themselves in ever more solid bastions of obscurantism, incomprehensible and uninteresting to all but a tiny core of initiates. This strategy allows academics – and architects – to define themselves as players in contrast to the rest of the world’s spectators. To their other failings must be added blindness: they haven’t noticed that the game is being played in an altogether different stadium.

Above all, such maneuvers operate to secure the persistence of the prevailing power relations through the simple expedient of never naming or counting them. Dissent is inscribed in such a narrow circle of formal choices that it loses any capacity to challenge all but the most banal of issues. Aesthetic dissent mimics the practices of power elites by using form to mask ruthless control – in Eisenman’s case, over everything from master narratives of autonomy to those of cultural critique. At some points in his career, he has even acknowledged that his architecture is a form of therapy, where he works out personal demons in the guise of universals. One is invited, in effect, to buy into his neuroses and to accept his buildings as appropriate responses to them. For most of us, other people’s neu-

For most of us, other people’s neuroses are tough enough to deal with one-on-one, never mind trying to confront them blown up to the size of a skyscraper.

In the end, however, the most disturbing thing about Eisenman is not the endless self-promotion, or even the moderately good buildings; it is his success in preempting the notion of the radical. An entire generation of young architects and scholars (and, to be sure, an entire group of critics and self-labeled theorists) is growing up heeding the scheme advanced by Eisenman that to be radical means to design complicated forms, or to speak and write in ways incomprehensible except to a few people. Held in thrall by what appear to be profound and dense disquisitions on architecture, they too often fail to realize that dense verbiage altogether too often conceals utter confusion. For those architects who follow in the steps of Eisenman, the network of power relations that sustains the entire institution of building as a panacea for the upheavals of deindustrialization and unemployment remains unexplored, and unchallenged.
Sprawl Control

The defeat of “Disney’s America” contains a lesson for other metropolitan areas: In the right circumstances, sprawl-generating projects can be stopped. by Philip Langdon
There is great uneasiness about the way metropolitan areas in the United States are expanding, and nothing expresses this disquiet more tellingly than the fate that befell “Disney's America.” In the 11 months after the Walt Disney Corporation unveiled its plan for the 3,000-acre development to a surprised group of public officials in Prince William County, Virginia, the project tapped enormous discontent.

The troubles of Disney may dissipate now that the company has given up its intention of building a history theme park on fields where beef cattle graze, 35 miles west of Washington, D.C. But metropolitan sprawl, that longtime nemesis of urban thinkers - de voted in design circles since at least the time of Lewis Mumford - is likely to emerge as a key issue for the rest of the 1990s. Architects, planners, and developers will confront questions about outward movement not only in the capital region, but also in other parts of the country where suburbanization is running at a breakneck pace.

In the Washington area, the public jostling came down to this: First, the NIMBY reaction, which has figured in an untold number of development battles in the past decade, took a different turn. Prince William County enthusiastically welcomed Disney's proposal for building a history theme park on 100 acres and developing 2,281 housing units, 1,340 hotel rooms, 630,000 square feet of office space, and 1.3 million square feet of retailing on the 2,900 acres surrounding it. Only one of the eight county supervisors, the voluble Bobby McManus, who represents the area closest to the park, asked bluntly and persistently what the development would do to traffic congestion, rural character, the cost of living, and the water supply. For all her effort, McManus remained an isolated voice in County Hall. Most officials in Prince William - where the population has more than quadrupled since 1960 and where property taxes have risen higher than in any other Virginia county - are eager for nonresidential development and for the tax relief they think it will bring.

Where the Opposition Came From

The most powerful cries of “not in my back yard” came not from Prince William but from the next county to the west - Fauquier (pronounced Faw-KEER), a lovely rural-looking county where old homesteads, some of them now handsome horse farms for the wealthy, complement wooded hills, agricultural valleys, and well-maintained 18th-Century towns. These are landscapes eminently worth saving, and in recent years the Piedmont Environmental Council had successfully pressed for placing some 400,000 acres of Fauquier and eight other Piedmont counties under permanent conservation easements or multiyear forest and agriculture districts (augmenting land held by governments and public-interest organizations). It was the PEC, based in Warrenton, the Fauquier County seat, that orchestrated one of the most masterly of several groups' campaigns against Disney’s America.

Second, many developers and officials in Washington and the close-in suburbs felt the Disney project belonged on a site nearer to the District of Columbia and other built-up areas. They shuddered at the idea that development would, in one jump, leapfrog the suburbs by a dozen miles and land in western Prince William County, next to the unincorporated hamlet of Haymarket, population 483. Oliver Carr, Washington's leading office developer, called the Disney project in Prince William "a really bad idea," one that was "out of scale" with such a remote location. Carr said the District of Columbia, on the other hand, "does need entertainment centers" and would be a more appropriate site. E.M. Risse, whose Synergy Planning consulting firm conducts studies for developers in the Washington suburbs, produced scathing reports for the PEC that seemed aimed at stirring up a not-in-their-backyard reaction. The biggest impact of a successful Disney's America at Haymarket, Risse warned, "would be relocation of market and tax base." Developers who were already having trouble finding tenants for new office and retail buildings near Dulles Airport and in locations closer to Washington would, according to Risse, suffer greatly from the loss. And so would governments. Risse pointed out that the recent expansion of Route 28 near Dulles Airport into a major six-lane highway is being financed by $135 million of bonds that depend, for their repayment, on taxes to be generated by the construction of 1.5 million square feet of taxpaying office and "flex-tech" space per year. Few tenants are now filling the space on Rt. 28, he said. Why encourage projects much farther out, which undercut public and private investments already made or planned in the District and close-in counties? Though much of the business community supported Disney, the controversy demonstrated how NIMBY forces on the region's outskirts can work in tandem with opponents closer to the urban core to block large-scale development. The lesson for other regions trying to draw a line against suburban sprawl is that allegiances may be created on both sides of the line.

The Effect on History

Third, the Disney case introduced an issue that might be classified as "authenticity." Disney threatened to undermine genuine appreciation of the nation's history by reducing the nation's past to an assemblage of fun and games. The company's initial plans featured a Lewis and Clark Whitewater raft ride, a thrill-packed trip through the Industrial Revolution ("culminating in a narrow escape from its fiery vat of molten steel"), and a chance to "parachute from a plane or operate tanks and weapons in combat" - as if sensations were the key to understanding. At the same time, Disney, in the view of historians like the Pulitzer Prize-winning James McPherson, threatened to harm northern Virginia's historic sites by spurring a burst of intrusive development. Manassas National Battlefield Park, four miles east of the Disney site, was only one of the many notable places that might have been affected. In a sense, the Disney project is similar to the large, inward-focused developments that crop up in many metropolitan

Rural scenes like the one shown above left, in Western Loudoun County, Virginia, are giving way to suburban strips like Prince William County's Rt. 234 corridor, left, near Manassas. On this page, a "ban the Mouse" button from the stop-Disney campaign.
areas. Regional shopping malls offer a simulation of public life that makes it harder for truly public retail streets to remain healthy; gated residential developments substitute their own controlled environment for the less scripted reality of established cities and towns.

Fourth, federal clean air and transportation acts posed a genuine threat to the development. The Chesapeake Bay Foundation, opposing the Prince William site, claimed Disney's America would worsen air pollution. The Washington area violates federal restrictions on ozone (smog), and is required to cut ozone emissions 24 percent by the year 2000. The region as a whole would probably have to adopt more stringent measures if Prince William throbs with lots of extra traffic. The Clean Air Act and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA) can, at the very least, hobble developers by producing delays and uncertainty. In withdrawing the Haymarket site proposal in late September, Peter S. Rum-mell, president of Disney Design and Development Company, said, "Despite our confidence that we would eventually win the necessary approvals, it has become clear that we could not say when the park would be able to open -- or even when we could break ground." Environmental questions similar to those faced by Disney's America may confront developers of traffic-generating projects in other regions where air pollution and transportation are issues. Architects, urban designers, and environmentalists have an opportunity to make common cause against the misdirection of regional growth.

**Rising Public Discontent**

Why did the arguments against Disney register so strongly? Part of the reason is that conventional development, and the onerous traffic congestion it brings, threaten to make everyday life disagreeable. When architecture critic Benjamin Forgey damned Disney's America in the Washington Post, he did so by portraying it as a bigger version of Tysons Corner, suburban Washington's biggest "edge city." Well before Disney arrived on the scene, Prince William had zoned land in the Haymarket vicinity for up to 78 million square feet of commercial, retail, office, and industrial development. This, said Forgey, in the cruelest of mathematical calculations, is "nearly three times as much development as in Tysons Corner."

Some went so far as to argue that Disney's America in western Prince William would cause the breakdown of the region. Risse warned that Interstate 66 would become so bogged down between the Beltway and the Disney site that it would cease to be a reliable transportation route. Disney high-pressured the state into agreeing to provide $163 million in public improvements, including widening a long portion of I-66 ahead of schedule, but this would have solved nothing in the long run. Once the road enlargements were completed, they would have attracted many developments, not just Disney's, according to Katherine Imhoff, executive director of the Virginia Commission on Population Growth and Development. Commuters would have wanted to work in western Prince William and live much farther out -- destroying much of the beauty of the Piedmont. Fauquier County's population rose 38 percent in the 1980s. With the impetus of Disney and expanded roads, it would have exploded in the years ahead.

Sandy Hillyer, director of the National Growth Management Leadership Project, a network of state and regional non-profit advocacy groups that was founded by 1000 Friends of Oregon, contended that jobs like Disney's should be located closer to those who most need them -- the unemployed or poorly paid people in such places as the District, Arlington County, Virginia, and Prince George's County, Maryland. It's worth noting that this argument ultimately played only a minor role in the Disney imbroglio. The American middle class, in Virginia and elsewhere, seems so hungry for income for itself, and so desperate for tax relief, that it is not swayed much by the idea of making jobs and training accessible to poor people. The falling standard of living among much of the American population may hinder regionalism by making people more apt to grab whatever immediate advantages they can, rather than considering the long-term health of the region. As an antidote to such suburban self-concern, governments in the urban core may have to take a more vocal stand on regional matters.

Many in the capital region echoed the lament of Alexandria, Virginia, Mayor Patsy Ticer: "We have never advanced to being regional in our thinking." A Washington Metropolitan Council of Governments exists, but it has no teeth. The biggest bonehead in the entire controversy was probably Virginia Governor George Allen, a Republican who eagerly committed the state to providing $163 million in public improvements (mainly roads) to help Disney build near Haymarket. The state ignored its usual procedures for reviewing transportation expenditures as it rushed to give Disney what it wanted. "You can't blame the county, but you can blame the state," said Washington-based urban design consultant Jonathan Barnett, noting that the aid package would have ended up hurting northern Virginia outside Prince William.

**Reasons for Optimism**

Some positive results came from the Disney controversy. Disney's failure was a signal, broadcast nationwide, that large developments with troubling consequences for their regions may encounter substantial opposition.

Prince William, which has never been known for close attention to urban design, recognized that without adequate guidance, the areas around the Disney site could become as ugly and unlivable as the commercial areas around Disney World in Orlando. The county supervisors appointed

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*Map on facing page indicates how urbanization spread outward from Washington between 1950 and 1990, creating a vastly enlarged metropolitan area that threatens to encroach on some of Virginia's finest rural terrain. Opponents of Disney's Haymarket site distributed the bumper sticker at top.*

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a Citizens Development Task Force to recommend ways of preventing that from happening. Although Disney is unlikely now to settle in Prince William – at this writing, the company says simply that it is looking for another site in northern Virginia – the 78 million acres zoned for commercial development still need supervision, and perhaps the task force will help provide it. The task force's leader, Leslie Ruth Stallknecht, said the group has considered calling for pedestrian access and private transportation between sites, experimenting with neotraditional development, and other options. To advise the citizens task force, Disney assembled a national group of individuals experienced in planning and growth management, led by Eric Damian Kelly, of Iowa State University – a group that presumably would not recommend action hostile to Disney's interest.

For the first time in its history, the Council of Governments is going to gather the development plans of all the counties and municipalities in its 4,000-square-mile area and produce a detailed map showing what they authorize. At least equally important, there is more talk about the need for regional approaches than has been heard in the Washington area in a long time. Sooner or later, suggests Patrick F. Kane, a planning consultant in Reston, Virginia, the region will have to start organizing development more compactly and efficiently. To accomplish that, a whole series of difficult actions may be required. One of these would be the sharing of tax revenue from new development among the region's governments, so that each county or municipality would—at least in theory—be less desperate for revenue-producing projects. Sharing of about 40 percent of new tax revenue has been under way in the Minneapolis-St. Paul area since 1975, involving seven counties and about 190 municipalities. "I think governments still go after whatever they can get," says Philip Meininger, director of research for the Minneapolis City Planning Department. But, he notes, some restraint is exercised by the Metropolitan Council, appointed by the governor, which has the ability to discourage development beyond what's called the "metropolitan urban service line." Says Meininger: "The Metropolitan Council is an inhibiting factor to urban sprawl."

Devising New Techniques

Kane suggests that it may also be necessary to devise programs that allow development rights to be transferred from one jurisdiction to another, so projects can be built at sufficient densities, in the most appropriate locations. He sees this as being good for designers: "It would move architecture from its focus on the building and its site to a focus on the building and its site in context with the adjoining properties and interrelated activities." In the northern Virginia suburbs, one example of the attempt to knit a variety of buildings and uses together is the Reston Town Center, which has some of the characteristics of a traditional Main Street. Besides being physically coherent, the Reston center is tied into both local and regional bus systems.

It is encouraging that despite a lack of true regional planning, some metropolitan initiatives that were launched years ago have succeeded in influencing the area's governments and private interests. The Metro rail transportation system, which opened its first Virginia station in 1976 and has since expanded deeper into the suburbs, was cited by Disney's opponents as an example of far-sighted planning—a system the region should support through intelligent development policies. Metro, with the support of Arlington County, has helped bring into being intensive mixed-use development in the Roslyn-to-Ballston corridor, within walking distance of a series of transit stations. Mixed-use development, including the fabulously successful Fashion Center Shopping Mall, has also been built on top of the Pentagon City Station in Arlington. By focusing development along commuter rail, the county has taken some traffic off the overloaded roads and helped "to protect other areas from encroachment and development," according to Tom Parker, Arlington's economic development chief.

Some have tried to persuade Disney to build its theme park along an existing or future Metro line. The Disney attraction, if placed between Dulles Airport and the District, might help the region attain its long-range goal of extending Metro to the airport. Regardless of the outcome of Disney's America, momentum now appears to be moving toward closer coordination of transportation and land use. In a number of other parts of the U.S., there is a similar growth of interest in tying transportation development and land development together. Years of effort will be required before the results become apparent, but if this more coordinated approach takes root, it should push development into locations that benefit rural landscapes, urban needs, and architectural potential.

Northern Virginia escaped being mangled by its own shortsightedness—but just barely. Let us hope that other regions act with more forethought. Architects and urban designers might seize the story of Disney's America, now familiar to nearly everyone in the U.S., to bring a message to their own cities and towns—the message that communities must focus their energy on achieving healthy and satisfying regional design. Not every metropolitan area will be lucky enough to have a project of Disney's magnitude, unwittingly reminding everyone of the consequences of galloping toward the horizon.

Not every metropolitan area will be lucky enough to have a project of Disney's magnitude, unwittingly reminding everyone of the consequences of galloping toward the horizon.

Mixed-use, pedestrian-oriented developments such as the Reston Town Center, above right, and Fashion Center Shopping Mall, right, built atop the Pentagon City Metro Station, are alternatives to low-density sprawl.
Upper floor of Congrexpò showing the various auditoriums in their actual plan relationships.
No one sees a country clearer than a foreigner, and that is certainly true of Rem Koolhaas's observations of American architecture. In his 1978 book *Delirious New York* (which has been reprinted by The Monacelli Press to coincide with the opening of an exhibition of his work this month at New York's Museum of Modern Art), Koolhaas made a convincing case that America's most important contribution to urban design has been what he called "Manhattanism"—the congested, high-rise cores of our largest cities.

A similar insight underlies Koolhaas's newest book, a 1,300-page tome entitled *S,M,L,XL* to be released in early 1995 by The Monacelli Press. In the essay on Atlanta excerpted here, Koolhaas suggests that we have once again taken for granted one of our greatest legacies: the bigness of our cities and buildings. He argues that big things differ in kind and not just in degree from their smaller kin, countering the popular belief in our field that the same design principles apply to all scales. And he suggests that, in not coming to terms with the difference that bigness makes, the architectural community has been largely ineffectual in addressing the problems of our exploding metropolises or in improving the quality of the large-scale developments now being built at the edges of our cities.

Accompanying the essay are photos and drawings of the Congrexpo that Koolhaas's Rotterdam firm, Office for Metropolitan Architecture, recently completed in Lille, France, part of a 8.5-million-square-foot development of shopping, offices, parking, hotels, housing, and a train station, for which the firm served as master planners. Like so much of what Koolhaas found in Atlanta, the Congrexpo exemplifies some of the characteristics of bigness, such as a disconnection between simple exterior forms and complicated interiors or the creation of islands of intensity within low-density sprawl.

But Koolhaas, a master of paradox, can get caught in paradoxes of his own. While he has always admired American architecture for generating buildings so large that a single structure can, itself, create urban conditions of intensity and diversity, Koolhaas sometimes misses the conformity that can underlie surface differences. Is the giant food hall he admires in Atlanta an island of intensity and diversity or is it, despite the variety of products sold there, a uniform and monotonous place?

Koolhaas does us a service in opening our eyes to the revolutionary and liberating character of big sprawling cities like Atlanta. And he demonstrates, in projects such as the Congrexpo, that there is still plenty of room for invention in big-box architecture. But the gap, evident in the forthcoming book, between his broad vision and the limited amount of his built work shows that one of the big problems we must tackle as a profession is the disconnection between our potential contributions and our actual power. Thomas Fisher
Sometimes it is important to find out what the city is – instead of what it was, or what it should be. That is what drove me to Atlanta – an intuition that the real city at the end of the 20th century could be found there...

- Atlanta has CNN and Coca-Cola.
- Atlanta has a black mayor, and it will have the Olympics.
- Atlanta has culture, or at least it has a Richard Meier museum (like Ulm, Barcelona, Frankfurt, The Hague, etc.).
- Atlanta has an airport; actually it has 40 airports. One of them is the biggest airport in the world. Not that everybody wants to be there; it's a hub, a spoke, an airport for connections. It could be anywhere.
- Atlanta has history, or rather it had history; now it has history machines that replay the battles of the Civil War every hour on the hour. Its real history has been erased, removed, or artificially resuscitated.
- Atlanta has other elements that provide intensity without physical density: one building looks innocent from the outside – like a regular supermarket – but is actually the largest, most sophisticated food hall in the world. Each day it receives three cargo planes of fresh products from Holland, four from Paris, two from Southeast Asia. It proves that there are hundreds of thousands, maybe millions of gourmets in Atlanta.
- Atlanta does not have the classical symptoms of city; it is not dense; it is a sparse, thin carpet of habitation, a kind of Suprematist composition of little fields. Its strongest contextual givens are vegetal and infrastructural: forest and roads. Atlanta is not a city; it is a landscape.
- Atlanta's basic form – but it is not a form – its basic formlessness is generated by the highway system, a stretched X surrounded by an O: branches running across the city connecting to a single perimeter highway. The X brings people in and out; the O – like a turntable – takes them anywhere. They are thinking about projecting a super-O somewhere in the beyond.
- Atlanta has nature, both original and improved – a sparkling, perfect nature where no leaf is ever out of place. Its artificiality sometimes makes it hard to tell whether you are outside or inside; somehow, you're always in nature.
- Atlanta does not have planning, exactly, but another process called zoning. Atlanta's zoning law is very interesting; its first line tells you what to do if you want to propose an exception to the regulations. The regulations are so weak that the exception is the norm. Elsewhere, zoning has a bad name – for putting things in their place simplistically: work, sleep, shop, play. Atlanta has a kind of reverse zoning, zoning as instrument of indetermination, making anything possible anywhere.

Atlanta has changed at an unbelievable speed, like in a nature film when a tree grows in five seconds. It reveals some of the most critical shifts in architecture/urbanism of the past 15 years, the most important being the shift from center to periphery, and beyond.

No city illustrates this shift, its reasons and its potentials, better than Atlanta. In fact, Atlanta shifted so quickly and so completely that the center/edge opposition is no longer the point. There is no center, therefore no periphery. Atlanta is now a centerless city, or a city with a potentially infinite number of centers. In that way, Atlanta is like LA, but LA is always urban; Atlanta sometimes post-urban.

When I first went there in 1973, the notion of downtown in America was in crisis. Downtown Manhattan, downtown Boston, downtown San Francisco: the cores of most American cities were in total, demonstrative states of disrepair – crime, rotting infrastructures, eroding tax bases, etc. There was an apocalyptic atmosphere of down-
KOOLHAAS CRITIQUES BIGNESS

town doom, doubt that they could ever be rescued.

But Atlanta was an exception. Construction was resuming in former disaster areas. Block by block, downtown was being recovered (literally, some downtowns looked like accidental checkerboards: half-full, half-empty) and actually rebuilt. Atlanta was the test case for an American renaissance, for the rebirth of the American downtown. And you can't talk about Atlanta's rebirth without talking about John Portman.

John Portman, artist-architect, is said to be a very rich billionaire, his story shrouded in rumors of bankruptcy. He works in offices crowded with his own Pollock-like paintings. He is undoubtedly a genius in his own mind. In a book on John Portman by John Portman, John Portman writes, “I consider architecture frozen music.” The lobby of his newest building downtown is a private museum for his own sculptures, gigantic homages to fellow artists such as Dubuffet, Brancusi, and Stella: megalomania as welcome.

John Portman is a hybrid; he is architect and developer, two roles in one. That explains his tremendous power: the combination makes him a myth. It means, theoretically, that every idea he has can be realized, that he can make money with his architecture, and that the roles of architect and developer can forever fuel each other. In the early seventies, to a power-starved profession, this synthesis seemed revolutionary, like a self-administered Faustian bargain. But with these two identities merged in one person, the traditional opposition between client and architect – two stones that create sparks – disappears. The vision of the architect is realized without opposition, without influence, without inhibition.

Portman started with one block, made money, and developed the next block, a cycle that then triggered Atlanta's rebirth. But the new Atlanta was a virgin rebirth: a city of clones. It was not enough for Portman to fill block after block with his own architecture (usually without very interesting programs), but as further consolidation, he connected each of his buildings to each of his other buildings with bridges, forming an elaborate spiderweb of skywalks with himself at the center. Once you ventured into the system, there was almost no incentive to visit the rest of downtown, no way to escape.

John Portman is also responsible for single-handedly perfecting a device that spread from Atlanta to the rest of America, and from America to the rest of the world (even Europe): he (re)invented the atrium. Since the Romans, the atrium had been a hole in a house or a building that injects light and air – the outside – into the center; in Portman's hands it became the opposite: a container of artificiality that allows its occupants to avoid daylight forever – a hermetic interior, sealed against the real. Actually, the evacuation of the center implied by the atrium, the subsequent covering of the hole, the mostly cellular accommodation of its perimeter – hotel rooms, office cubicles – make it a modern panopticon: the cube hollowed out to create an invasive, all-inclusive, revealing transparency in which everyone becomes everyone else's guard – architectural equivalent of Sartre's No Exit, "Hell is other people ..." Downtown becomes an accumulation of voided panopticons inviting their own voluntary prisoners: the center as a prison system.

Portman's most outrageous atrium is the Atlanta Marriott, a tour de force transformation of the slab – democratic, neutral, anonymous – which he splits in two halves, then eviscerates to bend its carcass into a sphere – as nearly as concrete permits. This interior is not "frozen music" but "arrested maelstrom." Its accumulated architectural intensity is beyond a single perceptual grasp. Is the result of this convulsive effort beauty? Does it matter?
Congreexpo, Lille, France

Upper floor plan showing the concert hall seating, the congress auditoriums, and the exposition hall.

Entrance floor plan showing the concert hall, congress, and exposition hall lobbies and a level of parking.
KOOLHAAS CRITIQUES BIGNESS

The new atrium became a replica as inclusive as downtown itself, an ersatz downtown. Downtown's buildings are no longer complementary; they don't need each other; they become hostile; they compete. Downtown disintegrates into multiple downtowns, a cluster of autonomous. The more ambitious these autonomies, the more they undermine the real downtown – its messy conditions, its complexities, its irregularities, its densities, its ethnicities.

With atriums as their private mini-centers, buildings no longer depend on specific locations. They can be anywhere. And if they can be anywhere, why should they be downtown? At first the atrium seemed to help rehabilitate and stabilize Atlanta's downtown, but it actually accelerated its demise. That was Portman's Paradox.

The rediscovery of downtown quickly degenerated into a proliferation of quasi-downtowns that together destroyed the essence of center. By the eighties, building activity had moved away from Portman's part of the city, north toward the perimeter highway, then beyond .... Atlanta was the launching pad of the distributed downtown; downtown had exploded. Once atomized, its autonomous particles could go anywhere; they gravitated opportunistically toward points of freedom, cheapness, easy access, diminished contextual nuisance. Millions of fragments landed in primeval forests sometimes connected to highways, sometimes to nothing at all. Infrastructure seemed almost irrelevant – some splinters flourished in complete isolation – or even counterproductive: in the middle-class imagination, not being connected to MARTA, the subway system, meant protection from downtown's unspeakable "problems."

The new program was usually abstract – offices for companies that were no longer tied to geography, fueled by an unlimited demand for insurance (cruel equation: hell for the insured – Elsewhere; paradise for the insurers – Atlanta). Sometimes an area becomes suddenly popular. Attractions appear: it might be the proximity of a new, or even a rumored highway, beautiful nature, or comfortable neighborhoods. Attraction is translated in building. Sometimes the nature of the attraction remains a mystery; seemingly nothing is there (that may be the attraction!) – it might be the building itself. Suddenly clumps of office and residential towers spring up, then a church, a mall, a Hyatt, a cineplex. Another "center" is born, stretching the city to apparent infinity.

North of downtown there is a place where a highway starts to fork, leaving downtown behind. There is an area of nothingness, and beyond the nothingness you see outposts of a new architecture that has the intensity of downtown, but it's not downtown. It's something totally different. In 1987, somewhere near here, two skyscrapers were built facing each other, one hyper-modern (i.e., clad in mirror-glass), the other almost Stalinist (covered in prefabricated concrete). They were built by the same firm for different corporate entities, each searching for its own elusive identity. Two buildings, so close together, built by a single firm in opposite languages .... A new aesthetic operates in Atlanta: the random juxtaposition of entities that have nothing in common except their coexistence, or – favorite formulation of the surrealists – "the accidental encounter between an umbrella and a sewing machine on a dissecting table."

I wanted to find out what kind of firm could design with such equanimity, what kind of firm could generate the same enthusiasm for such different architectures. So I made a tour of Atlanta's architects' offices. They were usually located in idyllic situations – dense forests, hills, on lakes. Designed as corporate villas, they were large, sometimes very large: 250–300 people. The typical architect was a southerner, 26, laundered at an Ivy League school, who then returned to Atlanta to produce buildings like these two towers. They (continued on page 94)
The largest auditorium (6) has a corrugated translucent ceiling that recalls the cladding on the exterior of the building. Stairs cascade down from the meeting rooms to the Congress lobby (7) through a space that is at once Modern and Piranesian.
Relief From Post-Tensioned Headaches

This guide will help you to understand and to minimize the cracking inherent in post-tensioned concrete technology. by Paul Lukes

Abstract

Post-tensioned structures take advantage of concrete's inherent compressive strength, and they can reduce construction costs. However, the behavior of post-tensioned structures, which often results in cracked slabs and walls, needs to be taken into account at the earliest stages of a building's design. The author presents various techniques for minimizing cracking in post-tensioned structures.

Concrete is a complex material, with several unique characteristics. One of these is that it shrinks as it cures (2), which introduces stresses in the material if it is constrained by supporting elements and the building's geometry. Because of this shrinkage, the floors and walls of post-tensioned structures face special hazards such as cracking or settling, which can also damage the building's cladding.

Post-tensioning consists of embedding unbonded steel cables within concrete spanning elements. The concrete is allowed to cure for a period ranging from several days to several weeks. The cables are then placed in tension to induce a compressive force within the concrete, allowing it to work more efficiently. This allows larger spans and reduces the weight and cost of construction. However, post-tensioning also alters the structure's behavior, which must be accounted for to preclude potentially devastating consequences.

Behavior of Post-Tensioned Structures

All concrete frame buildings are inherently constrained against horizontal shrinkage by supporting elements such as columns, beams, foundations, and walls. This induces tension within the horizontal elements. In non-post-tensioned buildings, this results in the development of cracking perpendicular to the direction of shrinkage. Much of this shrinkage cracking occurs within the first week, though some persists for up to about two years.

In a post-tensioned floor, the tension resulting from the restraint of curing shrinkage is partly offset by the compression induced by the post-tensioning. Thus, the number of shrinkage cracks is significantly reduced. However, depending on the relative strengths, rigidities, and geometries of the floors and the restraining elements, several other effects may result.

Unlike normally reinforced structures, post-tensioned structures can experience significant plan shrinkage or creep. While the amount of movement depends on many factors, something on the order of ⅜ inch per 100 feet of length...
is not uncommon. About 20 percent of this occurs in the first week, and 85 percent occurs in the first year. However, some building owners report perceptible movement for up to a decade.

The inherent tendency of a post-tensioned floor to creep is also resisted by columns, beams, shear walls, and other supporting elements. The resulting forces and their associated symptoms are typically greatest at the outermost edges of the post-tensioned slabs. Stress symptoms include sheared column tops, cracking of columns on the sides where tension is induced by the movement, and cracked shear walls (1,3). Post-tensioned-induced wall cracks usually occur near the ends of the walls, are closely spaced, and occur at 45-degree angles, with the bottoms of the cracks pointing in the direction of the slab creep.

Where the restraint exceeds the structure's capacity for movement, large cracks may appear in the slab. These cracks are typically much less frequent than those in conventionally reinforced slabs, but can also be much larger, ranging up to ⅜ inch in width. They generally run perpendicular to the direction of creep. Thus, at outer corners of slabs restrained in both directions by corner walls, the slab cracking tends to radiate from the corner, while in typical field locations, the cracks tend to be relatively straight and perpendicular to the shrinkage direction. These cracks may occur along edges of supporting beams or at mid-span.

**Post-Tensioning and the Building Envelope**

In addition to the structural implications of post-tensioning stresses, the behavior of these structures can have profoundly detrimental effects on the integrity of the building envelope. In order to anticipate these effects, architects should analyze each structure to take into account all the complex interactions between its elements. A complete listing of all possible implications is beyond the scope of this article. However, some of the more common problems include:

- **Waterproof plaza decks and roofs.** Post-tensioned slabs often serve as roofs, where their tops are waterproofed, and pavers or a topping slab are installed over the membrane as a walking or driving surface. Typically, the membranes are fully adhered to the slabs. While most membranes have significant elongation capacity, they can rarely survive the sometimes severe and large cracks in post tensioned slabs. This generally leads to leakage and degradation of the concrete.

- **Waterproof sub-grade walls.** Sub-grade concrete walls are often connected along their top edges to post-tensioned slabs above to brace against and help retain soil. The movement in the slabs tends to crack these sub-grade walls, leading to leakage and degradation of the concrete walls.

- **Exterior wall claddings.** Creep can have a major effect on the integrity of exterior wall claddings. One common situation is a post-tensioned concrete structure with brick veneer cladding. Typically, the brick veneer is supported on the perimeter foundation at the bottom, on ledger angles higher up, and on steel lintels over windows and similar openings. The ledger angles and steel lintels are typically connected to a back-up wall or to the concrete structure. In addition, the brick veneer is tied to the back-up wall via anchor ties.
As the structure shrinks, the ledger angles, steel lintels, and anchor ties move with it. However, the brick at the building's base, laid on top of the foundation, resists this movement, and cracks (5). The movement can force adjacent brick panels together at expansion joints and, if the movement is sufficiently severe, the edge brick can experience compression spalling (7). The back-up walls, if connected to perimeter columns, can also become compressed by the dimensional shrinkage between columns. Window openings in the bottom brick panel, which sits atop the foundation, can experience significant damage, too, as the steel lintels move with the post-tensioned structure. The movement inherent in post-tensioned structures presents problems for particularly brittle types of cladding such as stucco and stone veneer.

**Alleviating Post-Tensioned Problems**

Accommodating movement in post-tensioned structures involves minimizing the movement and allowing it to occur without excessive restraint. Many of the following guidelines have significant structural implications, which must be accounted for. As the industry's knowledge about post-tensioned concrete develops, more detailed guidelines may evolve which may conflict with those provided here.

**Reduce Post-Tensioning Forces**

This is somewhat counter to the point of post-tensioning, which is to reduce cost by limiting the amount of concrete. However, initial installation costs must be balanced by the costs of repairing problems resulting from excessive movement. Thus, it is generally better to use a little more concrete or mild steel and less tension to reduce movement. The Uniform Building Code requires a minimum compressive force of 125 psi in post-tensioned slabs, while the American Concrete Institute recommends a minimum of 150 psi. Some post-tensioned slabs exceed several hundred psi. A range of 150 psi to 200 psi is a reasonable compromise.

**Delay Post-Tensioning**

This limits overall movement by allowing the concrete to gain strength before applying the compressive force. Often, the tensioning is applied within days of pouring, when the concrete is gaining strength rapidly. At this stage, waiting even a few days can have a substantial positive effect. The delay in application of post-tensioning is fre-
quently defined as a percentage of the concrete’s 28-day strength. Commonly, a delay sufficient for the concrete to reach 75 percent of its 28-day strength is specified. Increasing this requirement to 85 percent is better yet.

Delay the Connection of the Slab to Restraining Elements

This technique limits stresses by allowing much of the differential movement to take place before making a fixed connection between the slabs and restraining elements. The creep of the post-tensioned element is most rapid at the beginning, then drops off over time. About 20 percent of the movement takes place in the first week, 50 percent occurs in the first 40 days, and 85 percent occurs in the first year. Allowing the connections to be made as late as possible reduces the stresses resulting from the residual movement. This can be accomplished in several ways.

Steel dowels embedded in the walls or columns can be wrapped with foam block-outs in the post-tensioned slab. The adjacent juncture between the two elements is detailed as a slip joint to allow movement. After allowing much of the movement to take place, the dowel can be firmly grouted into the post-tensioned slab, allowing the two elements to act integrally.

Another method is to delay pouring the outer edge of the floor (4). Yet another is to connect these elements via steel angles (9). These would be connected to the wall or column with embedded rods or bolts. The connection between the angles and the slab could float with the use of oversized holes, or by welding embedded steel connectors in the slab to the angles after most of the movement has taken place.

Locate Restraining Elements Near the Slab’s Center

Since the movement is typically greatest at the outer edges, it is best to avoid connecting the slab to restraining elements, such as columns and shear walls, at these outer edges. While there are no general guidelines for all slab geometries, limiting the fixed connections to the middle 30 to 40 percent of the slab dimension can substantially reduce cracking. This guideline has obvious structural implications, and it may not always be feasible, but should be applied in both directions in two-way slabs, while in one-way slabs the restraining walls and columns may go to the outer edges of the slab that are parallel to the post-tensioning tendons.

Allow Differential Movement Between Slabs and Other Elements Near Slab Edges

Ideally, the outer edges (outside of the central 30 to 40 percent of the slab) should allow for differential movement by the use of slip joints. Where this does not provide adequate shear capacity, additional restraint connections can be extended toward the outer edges of the slab, to approximately half way between the slab edge and the permanent restraining elements. However, these peripheral restraints should be delayed connections, as outlined above. As much of the movement as possible should be allowed to take place before these connections become fixed. The remaining outer perimeter should remain unrestrained.
Separate the Slab into Rectangles

Post-tensioned floors tend to crack at inside corners of monolithic slabs, because of the differential movement and the resulting stress at these locations. Thus, in buildings with L, T, H, and similarly shaped plans, it is best to lay out the post-tensioning to divide the floor into rectangular sections, with appropriately designed closure strips or isolation joints between them. This allows each section to act and creep independently and relatively evenly, without inducing concentrated stresses between adjacent sections.

Accommodate Movement in the Cladding System

The cladding implications of post-tensioned slab shrinkage are evident in brick veneers, which can experience significant damage from slab movement. Some of the concepts for accommodating this movement in brick veneers can be extrapolated, with appropriate modifications, to other claddings.

As was mentioned above, brick support ledgers move inward as the floor plan becomes compressed by post-tensioning. The bottom brick courses, which are typically laid on the perimeter foundations, resist this movement. Along walls that run parallel to the tendons, the cladding also becomes compressed. In some cases, this compression can be so severe that adjacent brick panels press against each other, spalling the brick. Because of the variable degree of movement along the wall, much of the overall movement should be allowed to take place before placing the veneer.

Steps for accommodating the residual movement include isolating the back-up walls from the slabs above and from any adjacent columns, which are connected to the slabs above. This step will allow the back-up wall to move solely with the supporting floor slab, greatly reducing the degree of uneven movement along the vertical dimension of the wall. This measure has significant structural implications, and may not be feasible in many cases.

Ledgers should be placed at each floor line, allowing the brick panels to move differentially. To conceal the movement, the upper panel would ideally be corbelled out beyond the lower brick (6). Properly executed, this can have a positive effect on the wall's weatherability, as well as providing visual interest. Most important, as the upper panel moves inward, this merely reduces the degree of corbelling, rather than creating a horizontal ledge.

Along the walls that run parallel to the tendons, the veneer must accommodate not only the normal movement resulting from thermal variations and moisture absorption, but also the compression resulting from the post-tensioning. Vertical expansion joints typically need to be spaced more frequently, and must be sized adequately for the total of all movements. The joints should coincide with gaps in the supporting ledger angles. Ideally, vertical joints should be spaced about 20 feet apart or less. Other recommendations, such as limiting the slab dimensions to 100 feet and delaying the post-tensioning and the installation of the brick, should be followed. The combination of these strategies may limit the maximum movement at the joint to about 1/8 inch. Depending on the type of sealant, this would still require a joint width of a bare minimum of about one inch, which may be visually unacceptable. For this reason, it may be best to
design the veneer to provide protruding brick pilasters at the joints, which would help conceal the joints, as well as sheltering them against water intrusion (8).

Add Mild Steel Reinforcing at Strategic Locations in Slabs

Where isolation between the slab and shear walls cannot be achieved in locations of probable movement, the addition of mild steel in the slab can reduce cracking by distributing stresses over larger areas (10). Locations appropriate for the use of mild steel to reduce slab cracking include outer slab perimeters restrained by shear walls, outside corners of slabs restrained by corner walls, and at partial interior or exterior shear walls connected to the slabs. In general, the steel reinforcing at these locations should be placed perpendicular to the anticipated direction of the cracks, or parallel to the anticipated direction of movement.

Along perimeter shear walls, the steel should be placed parallel to the wall, along a width of about 10 feet. The bars should be spaced apart about one-and-a-half times the slab thickness, alternating between the slab top and bottom. The amount of steel should equal .0015 times the cross area of the slab over a third of the transverse span.

At slab corners restrained in both directions, the reinforcing should point from the corner toward the slab center. Along partial shear walls, the reinforcing should run parallel to the walls. In addition, near the wall ends, bars running at 45-degree angles to the walls should be placed.

It may be advisable to increase general field distribution of mild steel beyond code-required minimums. A uniform, two-directional mat of steel, such as #4 bars at 32 inches on center, generally helps distribute local stresses, reducing cracking.

Plan on Corrective Measures After Movement Subsides

It is very difficult to completely preclude post-tensioned slab cracking. Corrective actions can be taken once the movement subsides, generally after two years. Corrective actions consist of epoxy injection of cracks to “reglu” the concrete sections and restore the water integrity of the envelope. This solution is usually appropriate for static cracks, which are not likely to experience continued movement. Dynamic cracks, which may move with thermal variations, need to allow for movement.

For budgeting purposes, an estimated repair cost in the range of $.07 per square foot of slab area has been proposed in the ACI publication referenced at the end of this article. In some cases, the proper execution of all details to accommodate post-tensioned behavior may raise the cost of these structures, partly or entirely offsetting the cost savings produced by the reductions in concrete materials inherent in post-tensioned structures.

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Koolhaas Critiques Bigness

(continued from page 86) could generate an entire oeuvre in one afternoon – receiving instructions over the phone – then have it rejected without pain. They would plan symmetrical projects, then find them distorted overnight by economics – shrunk by failure, inflated by success – and have to perform adaptive amputations or stitch on additional limbs with the urgency of a field hospital: infantry on the frontline of an architectural panic.

The partners were very accessible and eager to talk about Atlanta, their work, the present situation, the dilemmas they faced – a cluster of issues that formed a very plausible argument for the emergence and consolidation of Post-Modern architecture, the only architecture, it seemed, that could be generated quickly enough to satisfy the needs of the clients.

In a situation where architecture is no longer the construction of city but, like a new branch of physics, the outcome of the dynamics of force fields in perpetual motion, that precious professional alibi of the architect – the mystical “spark” of inspiration – is obviously outdated. No one can wait for it, least of all the architect. His task is truly impossible: to express increasing turbulence in a stable medium.

Architecture has always equated greatness with the breaking of rules. Now you can be great through their effortless application. Only a Post-Modern architect can design building proposals of huge scale and complexity in a day, any day. Post-Modernism is not a movement; it is a new form of professionalism, of architectural education, not one that creates knowledge or culture, but a technical training that creates a new unquestioning, a new efficacy in applying new, streamlined dogma. Post-inspirational, past erudition, intimately connected with speed, a Futurism, Post-Modernism is a mutation that will be from now on part of architectural practice – an architecture of the flight forward.

One of the offices I visited had a room; it was locked. Inside was a model of a large piece of Atlanta – particular features: none. Twelve people were working on four schemes, each as big as Rockefeller Center, each composition hypersymmetrical but placed arbitrarily on the huge map, surrounded by single-family homes; there was no sign of highways.... At the last moment the table had been enlarged to make room for one additional Rockefeller Center.

The model was a complete inversion of metropolis as we know it – not the systematic assembly of a critical mass but its systematic dismantlement, a seemingly absurd dispersion of concentration. Alarmingly, it suggested that the elements that had once made the city would now cease to work if they got too close together. Spaced out, far apart, they needed the space of concentration. Alarmingly, it suggested that the elements that had once made the city would now cease to work if they got too close together. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration. Spaced out, far apart, they needed the space of concentration.

The reason the room had to be secret – the only vault in the otherwise open office landscape – was that none of the clients of these five centers knew that the other projects were being prepared. The architects believed that there were probably still other architects working on similar projects, maybe for the same neighborhood – in similar rooms in other offices – but nobody could really be sure. This deliberate disinformation, lack of adjustment, represents a revolutionary reversal of the role architects traditionally
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Koolhaas Critiques Bigness

(continued from page 94) claim. They no longer create order, resist chaos, imagine coherence, fabricate entities. From form givers they have become facilitators. In Atlanta, architects have aligned themselves with the uncontrollable, have become its official agents, instruments of the unpredictable: from imposing to yielding in one generation. Working on the emergence of new urban configurations, they have discovered a vast new realm of potential and freedom: to go rigorously with the flow, architecture/urbanism as a form of letting go ....

Atlanta is a creative experiment, but it is not intellectual or critical; it has taken place without argument. It represents current conditions without any imposition of program, manifesto, ideology. As extrapolation, each site in Atlanta is exposed to a theoretical carpet bombardment of "centers," possibilities hovering somewhere, waiting to be activated by a mysterious process – only vaguely related to money – according to laws not yet identified, at least not by architects.

It is now possible, at any point in Atlanta (and Atlanta is just a metaphor for the world) to create a brutal, often ugly container that accommodates a wide variety of quasi-urban activities and to turn anywhere, with savage competence, into a point of density, a ghost of city. In the future, a "realistic" frisson about the periphery as a new playground for architects, a field of one-liners, will not be enough. If the center no longer exists, it follows that there is no longer a periphery either. The death of the first implies the evaporation of the second. Now all is city, a new pervasiveness that includes landscape, park, industry, rust belt, parking lot, housing tract, single-family house, desert, airport, beach, river, ski slope, even downtown.

Atlanta's is a convulsive architecture that will eventually acquire beauty. Sometimes there are prefigurations, occasional schemes that seem to intellectualize the new freedoms: a project by I. M. Pei for a chain of skyscrapers very close to the highway, causing short, stroboscopic sensations for passing cars, even at 55 mph. Paradoxically, a more convincing premonition of this potential architecture is the prefabricated landscape that is being prepared to receive it. Atlanta has an ideal climate. Because it approximates jungle conditions it was used as training ground for the war in Vietnam. Everything grows there immediately and energetically. Landscaping carries authority, the vegetal sometimes more robust than the built. A thick tapestry of idyll accommodates each architectural appearance and forms its only context; the vegetal is replacing the urban: a panorama of seamless artificiality, so organized, lush, welcoming, that it sometimes seems like another interior, a fluid collective domain, glimpsed through tinted glass, venetian blinds, and the other distancing devices of the alienated architecture – almost accessible, like a seductive fairy tale.

Imagine Atlanta as a new imperial Rome – large urban figures no longer held together by small-scale urban cement but by forest, fragments floating in trees. After John Portman rescued the center, he could only react to its explosion as a developer must – by following the "demand." To outbid its centrifugality he proposed an entirely new city way up north, beyond the periphery even, and named it Northpark. It is presented in an impressionistic bro- (continued on page 98)
Life is Full of Tough Decisions.

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(Shown left to right: Venetian, Arpeggio, Carrington, Avenue and Collage.)
Koolhaas Critiques Bigness

(continued from page 96) chime with a conscious fuzziness (derived from recent breakthroughs in science). “The first of the series symbolizes the gaseous state,” says the caption, “beginnings of an idea with only a hint of structure. The second expresses the solidification of ideas into emerging forms. And the last adds shading, form, and structure, bringing Northpark closer to reality.”

Looking at the Northpark renderings, you may laugh, but you may also think, “Where have we seen these forms before?” Are they ugly or accidentally, unbelievably beautiful? Is this the reappearance of the sublime? Is it finally possible to identify them as the same shapes that Malevich launched at the beginning of the century – Architectons – abstract pre-architectures, the vacant but available volumes that could contain whatever program the century would generate in its ruthless unfolding?

If the forms of Northpark can be traced back to Malevich’s Architectons, the most extreme streak of Modernism, Atlanta itself can be described as a mixture of the imaginations of Malevich and Frank Lloyd Wright, whose Broadacre City described the American continent as a continuous urban – that is to say, artificial – condition: homogeneous, low intensity, with an occasional high point of visible concentration. In other words: there was advance warning. It did not come as a surprise. Atlanta is a realized prophesy.

Are these inhabited envelopes in their thick forests the final manifestation of modernization? Is this modernity? Modernity is a radical principle. It is destructive. It has destroyed the city as we know it. We now inhabit “what used to be the city.” In a bizarre way, Portman’s Northpark – in fact, Atlanta as a whole – comes close to fulfilling that kind of modernity, a post-cataclysmic new beginning that celebrates revolutionary forms in liberated relationships, justified, finally, by no other reason than their appeal to our senses.

Portman lost his nerve with Northpark. Maybe it was the economy, or maybe he never believed in it. He returned to the center, this time applying the aesthetics of the periphery: a singular tower no longer interested in belonging, in being part of his web, but a needle, standing simply on its own. It is in downtown, but not of downtown. Downtown has become anywhere. Hiding behind it, a private dream: his very last, most secret project is a touching relic – it shows the depth of his own misreading.

Now, maybe as a personal testament, he wants to bring the European city to the heart of Atlanta: arrogance or sentimentality? A rip-off of Leon Krier’s “community” emblem: glass pyramid over pedestrian plaza supported on four pylonlike buildings. When I asked in Portman’s office whether he was inspired by Krier, I was officially told, “Mr. Portman doesn’t need inspiration.”

Portman has three identities according to Portman: artist, architect, developer. He has yet to discover a fourth: that of the thinker or theoretician. He could assert that each city is now an Atlanta – Singapore, Paris – what is the Louvre now if not the ultimate atrium?

He could have been – or maybe is – disurbanist to the world.
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P/A November 1994
Division 01-
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72 page catalog from Dataprint offers brand name drafting and plotter supplies at discounts up to 60% with same-day shipment. Also furniture, calculators, and media.

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### Division 06-

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<td>Comprehensive information on western lumber products, including physical properties, base design values, and adjustment factors. Framing, appearance and industrial lumber uses are also described.</td>
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<td>161</td>
<td>162</td>
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<td>Georgia Pacific Wood I Beam joists for roof and floor systems, and for window, door, and garage-door headers. I-shaped design provides more load-bearing capacity per pound, permitting longer spans.</td>
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<th>Laminates</th>
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<tr>
<td>Vinyl-to-metal laminates from Borden, formerly Columbus Coated Fabrics. Available in faux stone and wood, decorative patterns, and solids.</td>
<td>Fire retardant treated lumber and plywood, strength-tested at high temperatures, for structural applications. Brochure lists strength adjustments and use recommendations.</td>
<td>Brochure presents the Curved Staircase Collection from Arcways. Stairs are custom built in fine hardwoods such as American Cherry, Birch, Red Oak and Honduran Mahogany.</td>
<td>FORMA seamless solid surfacing, for counters, sills, and other interior applications. Uses a thermoset polymer and acrylic composition. Competitively priced, and no fabrication is required.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Millwork</th>
<th>Laminates</th>
<th>Wood Treatment</th>
<th>Wood Stairs</th>
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<tr>
<td>Style-Mark 170</td>
<td>Borden 171</td>
<td>Hoover 172</td>
<td>Arcways 173</td>
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<tr>
<th>Millwork</th>
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<th>Wood Treatment</th>
<th>Wood Stairs</th>
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</thead>
<tbody>
<tr>
<td>Prefab Wood Joists &amp; Trusses LPI Joists and Gang-Lam LVL from Louisiana Pacific. Engineered for superior strength and consistent performance. Manufactured from renewable (non-old-growth) trees.</td>
<td>Prefab Wood Joists &amp; Trusses Georgia Pacific Wood I Beam joists for roof and floor systems, and for window, door, and garage-door headers. I-shaped design provides more load-bearing capacity per pound, permitting longer spans.</td>
<td>FORMA seamless solid surfacing, for counters, sills, and other interior applications. Uses a thermoset polymer and acrylic composition. Competitively priced, and no fabrication is required.</td>
<td>FORMA 174</td>
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<tr>
<th>Millwork</th>
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<th>Wood Treatment</th>
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## Thermal & Moisture Protection

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<th>Resultant</th>
<th>Description</th>
<th>Material</th>
<th>Source</th>
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<tr>
<td>Waterproofing</td>
<td>Proko's SUPER FLEX elastomeric waterproof systems protect against wind-driven rain and other hazards on above-grade exterior surfaces. Available in a variety of textures and 10 standard as well as custom colors.</td>
<td>Proko</td>
<td>175</td>
</tr>
<tr>
<td>Waterproofing</td>
<td>This flier describes SEALIGHT, a premoulded membrane vapor seal, with a plasmatic core. Product data, physical properties, and application information are included.</td>
<td>W.R. Meadows</td>
<td>176</td>
</tr>
<tr>
<td>Insulation</td>
<td>CertainTeed's complete line of fiberglass air-handling insulation products for residential, commercial and industrial use. Physical properties, and thermal and acoustical performance values are listed.</td>
<td>CertainTeed</td>
<td>177</td>
</tr>
<tr>
<td>Insulation</td>
<td>Brochure introduces K-13 spray-applied cellulose insulation for thermal and acoustical insulation. Lists physical properties, acoustic performance figures, R-values, and U-values.</td>
<td>International Cellulose</td>
<td>178</td>
</tr>
<tr>
<td>Insulation</td>
<td>Louisiana-Pacific's Nature Guard insulation costs less than any blown-in fiberglass or rockwool and has a higher R-value: 3.8 per inch. Made from 100% recycled news paper.</td>
<td>Louisiana-Pacific</td>
<td>179</td>
</tr>
<tr>
<td>Insulation</td>
<td>Literature details the use of Perlite loose-fill insulation for masonry block, veneer, and cavity walls. Thermal design values are given for 6 inch to 12 inch lightweight and heavyweight block. Lists R-values and U-values.</td>
<td>Perlite</td>
<td>180</td>
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<tr>
<td>Roof &amp; Deck Insulation</td>
<td>Vent-Top ThermaCal is an improved nail-base roof insulation with a vented air space below the top sheathing; used over structural decking in cathedral-type roofs.</td>
<td>Cornell</td>
<td>181</td>
</tr>
<tr>
<td>Roof &amp; Deck Insulation</td>
<td>Guide to Rmax brand commercial roof insulation for asphalt, tile, shake, or metal roofing systems.</td>
<td>Rmax</td>
<td>182</td>
</tr>
<tr>
<td>Roof &amp; Deck Insulation</td>
<td>Brochure from U.S. Brick Systems shows color samples for thin brick. Panelized wall system consists of 1/2&quot; brick applied to polystyrene foam insulation, with an R-5 rating.</td>
<td>U.S. Brick Systems</td>
<td>183</td>
</tr>
<tr>
<td>EIFS</td>
<td>USG Exterior Products and Systems brochure includes technical and specification data on the USG EIFS, the DUROCK EIFS, and the DUROCK Direct-Applied Exterior Finish System.</td>
<td>USG</td>
<td>184</td>
</tr>
<tr>
<td>Fireproofing</td>
<td>Brochure describes the entire CALFCO line of spray- ed fireproofing, insulation and acoustical products. Lists specifications, code compliances, and performance ratings.</td>
<td>Isolatek</td>
<td>185</td>
</tr>
<tr>
<td>Shingles</td>
<td>Cal-Shake Roofing Products are Class 'A' rated and lightweight, and they carry a 50-year warranty. Distributed throughout the Sunbelt states and Hawaii. Free consulting from the project planning stage on.</td>
<td>Cal-Shake</td>
<td>186</td>
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<tr>
<td>Shingles</td>
<td>Panelized cedar shingle siding system from Cedar Valley Shingle Systems. Patented interlocking end joints solve water penetration problems.</td>
<td>Cedar Valley Shingle</td>
<td>187</td>
</tr>
<tr>
<td>Shingles</td>
<td>Fiber-cement siding and shingles from Supradur for residential and commercial applications. Available with straight, wavy, or thatched edges. Identical in dimension and shape to former asbestos styles.</td>
<td>Supradur</td>
<td>188</td>
</tr>
<tr>
<td>Roofing Tiles</td>
<td>Clay roof tiles, in a variety of styles and specifications, from Ludowici-Celadon. 75-year limited warranty; Prime Protection 20 provides 100 percent coverage for the first 20 years.</td>
<td>Ludowici</td>
<td>189</td>
</tr>
<tr>
<td>Roof &amp; Wall Panels</td>
<td>Architectural Specialty Products offers exterior pre-insulated metal siding and custom metal panels. Brochure lists specifications, typical details, and R- and U-values.</td>
<td>ASP</td>
<td>190</td>
</tr>
<tr>
<td>Roof &amp; Wall Panels</td>
<td>Tuff Span fiberglass-reinforced plastic beams have a long, maintenance-free life, even in corrosive industrial environments. Roofing and siding panels, roof decks, beams, louvers, and ventilators.</td>
<td>Curveline</td>
<td>192</td>
</tr>
<tr>
<td>Roof &amp; Wall Panels</td>
<td>Metal roofing and wall components from N.A.T. Exposed fastener, concealed fastener, and standing-seam panels available. Specifications, details, and installation information are listed.</td>
<td>N.A.T. Industries</td>
<td>193</td>
</tr>
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</table>
Division 08-

Doors & Windows

- **Wood Doors**
  - Custom door designs including beveled, sandblasted, and stained glass doors.
  - French doors, wood paneled doors, hand carved doors, and metalized doors. Insulating glass is available.

- **Traffic/Impact Doors**
  - Brochure features Eliason Easy Swing® double action doors and door accessories.
  - Includes models for light, medium, or heavy traffic applications.

- **Metal Windows**
  - RONDO is a unique new line of round windows made of lacquered aluminum. A wide selection of sizes and operating systems – pivoting, fixed, awning, French, Italian, and other styles – are available.

- **Sectional Doors**
  - Guide to the Benchmark line of redwood casement windows. Redwood is kilndried, clear, all heart wood. Naturally durable, with a wider sash for extra solid.

- **Access Doors**
  - Offers four new metal access panels for specialty applications.

- **Wood Windows**
  - 156-page catalog includes Caradco's new lines of simulated divided-lite products, outswinging Manor patio doors, a new section on transoms, and an expanded display of custom windows. Specifications listed for each.

- **Wood Doors**
  - Series 1000 collection features an extensive selection of standard design elements which may be inventively combined. Doors of Honor mahogany accented by carved wood, bonded metal, or patterned glass.
  - Forms + Surfaces 215

- **Door Louvers & Lights**
  - Guide to Kelley's high-speed, low-maintenance traffic doors.
  - RT-Series roll-up doors are available with revolutionary, flexible TUFFLEX BEAM™ providing major reductions in maintenance costs. Also freezer and cooler doors.

- **Metal Windows**
  - Catalog describes the extensive commercial capabilities of Marvin's line of wood and clad wood windows and doors. Information given on product styles, performance, and design capabilities, and Marvin support services.

- **Wood Windows**
  - Triomphe™ interior decorative and French bi-fold doors from Morgan Brochure highlights door construction, with V-grooved etched and beveled glass, and brass casing.

- **Wood Doors**
  - Full-color catalog from Simpson Door Company introduces the interior and exterior lines of Mastermark® doors. Door photos and descriptions, specifications, and care and finishing information is provided.

- **Sectional Doors**
  - Brochure features a new universal latch mechanism for fire-rated access panels designed for wall and ceiling installations. In addition, J.L. offers four new metal access panels for specialty applications.

- **Wood Doors**
  - Full-color catalog from EFCO Product Catalog features photos of finished projects along with detailed information on the company's complete line of architectural windows, entrances, storefronts, and curtain wall systems.

- **Access Doors**
  - J.L. brochure features a new universal latch mechanism for fire-rated access panels designed for wall and ceiling installations. In addition, J.L. offers four new metal access panels for specialty applications.

- **Wood Windows**
  - Full-color catalog from Benchmark illustrates custom aluminum windows for churches, chapels, mausoleums, memorial buildings, hotels, offices, malls, schools, and restaurants. Includes product selection guide, window sections.

- **Wood Windows**
  - Brochure highlights door construction, with V-grooved etched and beveled glass, and brass casing.

- **Wood Windows**
  - Brochure presents photos of windows, doors, and patio doors in residential settings. From practical easy-clean windows to Vintage doors with designer glass, all come with Peachtree's Non-Stop Warranty.
To Design The Perfect Glass Colors, Our Engineers Didn’t Go To The Lab. They Went On Vacation.

Admittedly, it’s a strange place to design glass colors. But not when that glass is Azurlite® from PPG. Because no other glass can match the beautiful Mediterranean-blue color of Azurlite. And when combined with one of four exciting coatings, you’ll understand why the gulf between us and the competition is ever widening. Our Solarcool® coating lends Azurlite a distinctive deep-sea green color. While Stainless adds reflectivity to a deeper blue tint. Antique cuts down on reflectivity, while creating an even richer ocean blue-green hue. And Titanium reduces reflectivity even further to heighten a blue color so deep, you can almost dive right in. Solarcool coating is available directly from PPG, while Stainless, Antique and Titanium applications are available from your fabricator. Like Azurlite itself, coated Azurlite offers superior energy efficiency, especially when used in an insulating unit with Sungate® coated low-E glass as the inner light. And, of course, both Azurlite and coated Azurlite keep structures cool and well lit on the inside. And strikingly beautiful on the outside. So if you’re looking for the right glass color, turn to Azurlite from PPG. Because with new colors like these, you’re guaranteed to make a splash on any skyline. Call 1-800-2-GET-PPG for more information.

Azurlite, Solarcool and Sungate are registered trademarks of PPG Industries, Inc.

Circle No. 857 on Reader Service Card
Plastic Windows
Georgia-Pacific Grand View™ Windows offer the warm look of real wood, yet are virtually maintenance-free. Window line extends from single- and double-hung to bay, bow, and garden windows.
Georgia-Pacific 233

Bi-Folding Patio Doors
Nana's bi-folding French door system allows large openings (up to 18 feet wide). Made from select grade Douglas Fir, this engineered system is both weather tight and secure.
Nana 234

Bi-Folding Patio Doors
Mirage folding glass wall system looks like a progression of weathertight windows when closed, yet opens wide (92% unobstructed). Frame available in widths up to 20' and window heights up to 49-1/2'.
Skytech 235

Acoustic Windows
Windows from Industrial Acoustics feature STC ratings from 35 to 50 dB. Single-glazed, double-glazed, and bullet-resistant models. For any application requiring a combination of sound isolation and full vision.
Industrial Acoustics 236

Finish Hardware
32-page Product Guide is designed as a quick reference to Corbin Russwin products, including locksets, exit devices, door closers, and key systems. Brochure highlights all ADA-compliant products.
Corbin Russwin 237

Weatherstripping
Brochure provides specifications for Zero International's line of fire and smoke control gaskets, all with integral intumescent material for protecting door openings from penetration by heat, flames, and smoke.
Zero International 243

Glass
Globe Millwork provides variety of glass for use in fire-rated locations. Product usage, specifications, comparative technical data and design aspects are described.
Globe Amerada 245

Glass
ECLIPSE reflective glass from Libbey-Owens-Ford is highlighted in a brochure providing detailed information on product performance and specifications. Available in a full range of colors, including the new Gold ECLIPSE Glass.
Libbey-Owens-Ford 247

Glass
Libbey-Owens-Ford is known for its high-quality glass. Literature provides details on product performance and specifications.
Libbey-Owens-Ford 247

Glass
Brochure introduces FireLite and FireLite Plus glazing for use in fire-rated locations. Product usage, specifications, and design applications are described.
Technical Glass 249

Granite has long been perceived as one of the most beautiful and spectacular elements an architect or designer can employ. Often overlooked, however, is its remarkable cost-efficiency.

Minimal maintenance and repair expense mean granite simply cannot be beaten in the context of life cycle cost over a typical 20-year span.

Whether for new construction, modernization or renovation, Granite cladding will add elegance and endurance to both the client’s image and your design. Affordably.

If you are interested in the latest innovations in Granite construction technologies, call 1-800-551-7502.
Division 09-

**Finishes**

**Suspended Ceilings**
Full color, 60-page brochure provides specification and performance data on USG's line of acoustical ceiling panels and suspension systems. Brochure gives metric as well as English measures.

**USG Interiors 253**

**Lath & Plaster**
1994 product catalog for stucco and plaster, drywall, and EIFS accessories. Constructed of PVC material, they provide an economical, rustproof alternative to metal. More than 30 products in a variety of sizes.

**Plastic Components 254**

**Gypsum Board**
FiberBond® fiber gypsum panels provide a solid, impact-resistant surface with thermal insulation, moisture tolerance, and fire resistance. Available for wallboard, exterior wall sheathing, and floor underlayment.

**Louisiana-Pacific 255**

**Gypsum Board**
Gold Bond® Durasan prefinished gypsum wallboard eliminates the time, labor, and material involved in finishing and decorating walls. 49 functional and decorative choices.

**National Gypsum 256**

**Gypsum Board Accessories**
Guide to fine English ornamental plasterwork, from Aristocast. Center pieces, panel mouldings, cornices, archways, corbels, fire surrounds, porticos, door surrounds, and columns are all described.

**Aristocrat 257**

**Gypsum Fabrications**
Palo is a unique modular wall system for enhancing interior vertical spaces. The system includes 16" x 16" and 16" x 32" wall panels, base, crown and chair rail moldings, light coves, and column covers.

**Forms + Surfaces 258**

**Tile**
American Olean catalog lists full range of commercially-rated, quality ceramic tile, and describes installation materials, design services and the Sample Xpress loose tile sample service for designers. ADA - compatible.

**American Olean 259**

**Ceramic Tile**
1995 Product Catalog from Dai-Tile, North America's largest ceramic tile manufacturer. Includes installation photos and specifications, and size, color, and trim information.

**Dai-Tile 260**

**Ceramic Tile**
Brochure shows applications for vitreous unglazed ceramic tile. Featured are hand-glazed METRO® Accents, IRONROCK™ "X" colors with a metallic additive for slip resistance, plus flashed and solid color unglazed tile.

**Metropolitan Ceramics 261**

**Ceramic Tile**
Brochure reviews Summitville's lines of quarry tiles, porcelain pavers, marbles, decorative wall tiles, custom murals, and tiles. Cleaning and installation products also described.

**Summitville Tiles 262**

**Tile Setting Materials**
CeramaSeal features the industry's widest selection of scientifically-formulated tile and stone maintenance products. A complete line of cleaners, polishes, sealers, repellents, and specialty products are discussed.

**Bestik 264**

**Gypsum Board**
LATICRETE's 16-page product catalog introduces an expanded grout palette and features pertinent product characteristics and specification compliances. Also technical drawings and physical properties reference charts.

**MAPEI 267**

**Terrazzo**
Thin-set terrazzo from General Polymers is an easily-maintained, hard-working, flooring system proven in a large number of installations. The terrazzo's rich colors will not fade or become dull.

**General Polymers 268**

**Acoustical Treatment**
SONEX acoustical foam comes in panels, barriers, ceiling tiles, and columns. Also SONEX 1 fire-resistant melamine foam, Fabrix fabric-covered interior panels, and MetalSONEX for industrial applications.

**Illbruck 269**

**Acoustical Treatment**
Pyrok Acoustement wall and ceiling plaster finishes are Portland cement and gypsum based. Available in a variety of textures and colors. Products offer design flexibility, durability, and sound absorption.

**RPG Diffusor Systems 270**

**Special Wall Surfaces**
Complete line of Tambour in wood, wood veneers, metallic, and HPL. Many woods including Ash, Cherry, Mahogany, Maple, Teak, Walnut, and White Oak. New Unicolor Tambour is solid white and Class A fire rated.

**Global 271**

**P/A November 1994**

114
### Special Ceiling Panels

Original tin ceilings and walls available in 26 patterns in 2'x2' and 2'x4' lay-in panels. Finishes in steel, brass, copper, mirror, and prepaint-baked white. Quick shipping available.

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<tr>
<th>AA Abbingdon 272</th>
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### Resilient Flooring

Installation photos of over thirty different imported woods suitable for residential and/or commercial flooring. Flooring is grouped by color, grain, hardness, and country of origin. Includes a wood species cross-reference chart.

<table>
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<tr>
<th>International 277</th>
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</table>

### Resilient Flooring

Johnsonite’s Permalight system integrates color with a new self-illuminating technology co-extruded in vinyl sheet flooring. Johnsonite's Permalight technology co-extruded in vinyl sheet flooring. Product descriptions and comprehensive technical information. Meets the slip resistance static coefficient requirements of the ADA and OSHA.

<table>
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<tr>
<th>Johnsonite 282</th>
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### Resilient Flooring

Lonseal’s line of resilient sheet vinyl flooring includes unique colors and embossed designs, as well as conventional smooth surfaces and solid colors. All are heavy-duty commercial grade, with some exterior applications.

<table>
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<th>Lonseal 283</th>
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### Resilient Flooring

Mannington Commercial's fields™ & forms™ inlaid sheet vinyl flooring from Mannington Commercial. Available in 52 colors. Thirty percent thicker than the industry standard; sheets can be welded for a continuous, nonporous surface.

<table>
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<th>Mannington 284</th>
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### Resilient Flooring

Mercer wallbase, stair treads, stair nosings, rubber flooring, rubber stair treads, vinyl moldings, and adhesives. Uni-Color system facilitates color coordination.

<table>
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<tr>
<th>Mercer 285</th>
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### Resilient Flooring

Dura has been a manufacturer of quality rubber and vinyl flooring products for over 35 years. Brochure features installation at the Aquarium of the Americas in New Orleans.

<table>
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<th>Roppe 288</th>
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### Carpet Cushion

Brochure describes Dixie Manufacturing Corporation's natural fiber carpet cushions. Made with jute fibers and clean, washed cattle hair. Lists specifications, flammability tests, and noise reduction coefficients.

<table>
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<tr>
<th>Dixie Manufacturing 290</th>
</tr>
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### Wood Flooring

Design Idea catalog from Bruce Hardwood Floors is full of decorating ideas for residential/commercial installations. Also includes information on colors, finishes, installation, and maintenance.

<table>
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<tr>
<th>Bruce 276</th>
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<tbody>
<tr>
<td>Special Coatings</td>
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<tr>
<td>------------------</td>
</tr>
<tr>
<td>Hylar 5000 is a PVDF resin used by paint manufacturers as a base resin for long life finishes on metal and glass substrates. Coatings exhibit exceptional color fidelity and resist degradation by UV radiation and pollutants.</td>
</tr>
<tr>
<td>Degussa USA 293</td>
</tr>
</tbody>
</table>

**Wall Coverings**

Xorel is the most durable, stain-resistant, and easy-to-maintain fabric on the market. Ideal for wallcovering, panels, or upholstery. In standard or flame-retardant versions. Brochure shows test results and project photos.

- Carnegie 297

**Division 10 Specialties**

**Chalkboards & Tackboards**

TACTICS PLUS™ advanced training system features a double track to allow for the overlapping of reversible writing surfaces, tackable panels, flip charts, and projection screens. For presentations and training seminars.

- Peter Pepper Products 302

**Toilet Compartments**

Marlite® MCP and HPL restroom compartments come in four basic styles: floor-mounted, overhead braced, screens, and heavy duty systems for vandal resistance. Available in 4'x8', 4'x9', and 4'x10', and in a host of designer fabrics.

- Marlite 303

**Prefinished Panels**

A 3/8" thick Acrovyn panel system from C/S combines sound absorption and impact resistance. Available in 4'x8', 4'x9', and 4'x10', and in a host of designer fabrics.

- C/S Group 300

**Access Floors**

Tate Access Floors brochure gives a complete listing of all types of floor systems. Includes detailed specifications, load support charts, and cutaway details.

- Tate Access Floors 310
Access Floors

A 20-page brochure describes the features and benefits of DONN Access Floor Systems from USG Interiors. An ideal choice for new offices or for renovating older office space. Floors adapt quickly to changing needs. USG Interiors 311

Fireplaces & Stoves

Catalog gives descriptions, features, benefits, and dimensions of all Heatilator heat-circulating and radiant woodburning fireplaces. Convenient feature matrix and accessory listing. Also photos of gas alternatives. Heatilator 312

Flagpoles

A complete catalog of flagpoles and accessories from Concord Industries. Includes wind-speed ratings for the various poles, and a national wind velocity map for reference. Concord 313

Lockers

Single, double, and triple tier lockers from Lyon Metal Products, available with a choice of accessories. Doors and door strikes are of Class I, 16-gauge steel for extra strength and durability. 14 standard colors. Lyon 314

Fire Protection

Catalog features a full line of fire extinguisher cabinets, including the Fire-FX™, which is designed to semi-recess into walls without compromising fire wall integrity. Also fire extinguishers, fire blankets, and accessories. J.L. Industries 315

Protection Covers

Aluminum and acrylic walkway covers in a variety of profiles to aid in ADA compliance. Flat deck, pyramid, and barrel-vault designs, available in both standard and custom finishes.

Mapes Industries 316

Toilet & Bath Accessories

48 pages of comprehensive material on stainless steel washroom accessories. Soap dispensers, towel dispensers, tissue dispensers, hand dryers, mirrors, waste receptacles, shower seats, and grab bars.

A & J Washroom 317

Toilet & Bath Accessories

Four-page brochure gives a complete listing of push button and no-touch hand dryers, in surface-mounted and semi-recessed styles. Suggested mounting heights and color samples are listed.

Jetair 318

Toilet & Bath Accessories

McKinney (a division of Essex Industries) washroom accessories. Soap dispensers, towel dispensers, hair dryers, and washroom accessories. Soap dispensers, towel dispensers, mirrors, waste receptacles, and mounting diagrams.

McKinney/Parker 319

World Dryer 320

Library Equipment

Kompakt® movable shelving systems can reduce the amount of space devoted to storage by 50 to 70 percent. Modular design accepts any type of new or existing shelving to provide space-efficient, high-density storage.

Kardex Systems 322

Library Equipment

Aisle-Saver® high-density mobile shelving system saves space by eliminating unnecessary aisles. Utilizes existing shelving or cabinet to double file room capacity. Applications, system layouts, and safety features are listed.

White Office Systems 323

Library Equipment

Milnor’s Laundry Planning File contains design information for on-site laundries. Capacities range from 35 lbs. per load to 6,000 lbs. per hour. Includes sample layouts, case histories, and survey forms.

Milnor 324

Loading Dock Equipment

A 16-page brochure presents the full line of Kelley dock-levelers. Mechanical and hydraulic models shown in application photos. Brochure describes features for longer life, easier operation, and reduced ownership cost. Kelley Company 325

Detention Equipment

J.L. Detention Specialties flyer features security panels and cabinets. New Lift-out High Security Panel is hingeless, with a 1/4" formed plate steel door for maximum security in areas where door removal is necessary. J.L. Industries 326

Sewage Treatment Plants

Pollution Control, Inc. manufactures prefabricated package biological wastewater treatment plants. Sizes from 1000 GPD to 100,000 GPD. Systems are completely pre-engineered for easy field installation.

Pollution Control 327

Kitchen & Bath Cabinets

A 70-page brochure presents the Folio collection from Rutt. Custom cabinetry for kitchens, baths, living rooms, offices, and more. Also paneling, wainscoting, mantels, and other custom work.

Rutt 328

Laboratory Equipment

Visionaire View 2010 ventilated workstation is designed specifically for use in instructional laboratories. It provides protective ventilation without sacrificing the visibility required by teachers and students.

Kewaunee 329
Division 12-
Furnishings

Blinds, Shades & Shutters
Catalog introduces eight new louver styles. Plus new WINDOWMASTER zero-clearance shutters for doors, windows, and casings. Shutter sizes in 1/2" increments, offering considerable choice.

Office Furniture
Sequence is a modular desk system with a variety of storage options. Features wire management capabilities including Data-Flex®, a communications harness that can be mounted to accommodate varying cable sources.

Classroom Furniture
Kinder-Link™ maple bent-plywood interlocking stools for children 3 to 8 years old. A foot tall and only 5.5 lbs, the stools are easy to stack and carry. Can withstand 500 lb. loads. Available in a clear finish or in primary colors.

Auditorium Seating
The JG Ovation chair offers an upholstered inner seat and back panels with outer protective blow-molded, double-wall shells, which are virtually indestructible. Designed for comfort, durability, and economy.

Office Furniture
Kron offers executive office swivel/tilt chairs and conference chairs in high-back and low-back heights, plus a panel guest chair, lounge chairs, and sofas in three widths.

Office Furniture
Marcadet® cabinets by Kwik-File are low cost and space-saving. Unique horizontally-recessed doors operate quietly, provide total accessibility to media. End-tab files eliminate the need to accommodate open drawers.

Floor Mats & Frames
Kadee Industries catalog presents a wide array of mats, gratings, and other products in bronze, stainless steel, aluminum, and carpeted aluminum.

Floor Mats & Frames
Brogue from Musson Rubber shows recessed and surface entrance mats, in rubber and vinyl or vinyl/olefin. Also fluff cord and traffic entry tiles, aluminum/ vinyl roll-up mats, and aluminum mat frames.

JG Furniture Systems 348
**Division 13-**

**Special Construction**

**Integrated Ceilings**

Ultra-Beam ceiling treatments from Shogun. Beams are fabricated in electro-galvanized steel formed into a U-channel shape. Widths from 1" to 4" and heights from 1" to 6" with main beams of 8' in length.

**Shogun** 349

**Bullet Resistant Protection**

Literature describes bullet-resistant security and detention products. Doors, window framing and assemblies, pass-through windows, guard enclosures, modular partitions, and fire-rated and custom products.

**National Bullet Proof** 350

**Radiation Protection**

CLEAR-Pb lead-impregnated, transparent shielding combines radiation protection with exceptional visibility. Fixed or track-mounted shields, or mobile and adjustable-height barriers in many sizes.

**Nuclear Associates** 351

**Glazed Structures**

Catalog shows over 96 types of solariums in bronze or white extruded aluminum, or in laminated poplar wood with exterior aluminum cladding. Insulated, 1/4"-thick, bronze-tinted, tempered glass is standard.

**Skytech** 353

**Glazed Structures**

Sunbilt sunrooms feature thermally broken aluminum frames and tempered insulated glass. Roof fans, skylights, and shade systems are shown.

**Sunbilt** 354

**Swimming Pools**

Catalog from KDI Paragon includes diving stands and towers, lifeguard chairs, competitive starting platforms, grab rails and ladders, underwater windows and loudspeakers, and water polo goals.

**KDI Paragon** 355

**Ice Rinks**

Ice Rink Buyers Guide includes information on rink flooring, refrigeration, ice temperature control, dehumidification, waste-heat recovery, and dasher boards. For those involved in rink planning or renovation.

**Rink Systems** 356

**Building Automation**

Brochure details the LOGIC ONE® advanced control system for institutional, commercial, and industrial buildings. Features integrated digital controls for HVAC and lighting. Examples of cost savings are provided.

**Novar Controls** 357

**Division 14-**

**Conveying Systems**

**Elevators**

Montgomery's systems approach to elevator modernization keeps disruptions to a minimum. Temporary microprocessor overlays can actually improve service before modernization is complete.

**Montgomery** 358

**Residential Elevators**

"Elevee" by Inclinator is custom built to adapt to any space requirement. Can carry weights of 500 to 750 lbs., and can be fitted with up to three gates permitting access from different sides of the cars.

**Inclinator** 359

**Wheelchair Lifts**

VPL™ Series 2000 Vertical Platform Lifts from Access Industries provide indoor or outdoor stairway access. Lifting heights from 1" to 144" for loads up to 750 lbs. Available for both commercial and residential applications.

**Access Industries** 360

**Material Handling Lifts**

Brochure describes Pflow's complete line of vertical reciprocating conveyors (VRCs) including mechanical, hydraulic, and fully automated systems for through-floor, interior or exterior applications.

**Pflow Industries** 361

**Division 15-**

**Mechanical**

**Plumbing Fixtures**

"Specifically Eljer" is a Windows-based program that makes specifying Eljer products easy. Program generates specification sheets for each product selected. It also offers on-screen viewing and printing of catalog pages.

**Eljer** 362

**Plumbing Fixtures**

All-brass faucets, fixtures, and accessories for the kitchen, lavatory, and bath. Kroin washbasins, manufactured from seamless formed steel, are suited for commercial and residential use in the kitchen, lavatory, and bar.

**Kroin** 363

**Plumbing**

Mito solid-brass faucets have 180° ceramic disk valves. Faucets are available for bath, kitchen, bar, tub, and shower. Available in polished chrome, brass, gold, and graphite. Enamel finishes in white, black, grey, and marine blue.

**Watercolors** 364

**Water Coolers**

Guide to new Elkay no-lead water coolers and drinking fountains. Includes the Design 2000® water sentry lead removal system, as well as new HFC-134a refrigerant models and ADA compliance information.

**Elkay** 365

P/A November 1994
### Water Coolers
Haws catalog showcases indoor and outdoor drinking fountains and water coolers designed to meet both ADA requirements and lead-free standards. Featured are "Hi-Lo" wheelchair models and "Hands-off" models. Haws 366

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<td>Water Coolers</td>
<td>Boilers &amp; Water Heaters</td>
<td>Prefabricated Chimneys</td>
<td>Cooling Towers</td>
<td>Radiant Heating Systems</td>
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<tr>
<td>Haws catalog showcases indoor and outdoor drinking fountains and water coolers designed to meet both ADA requirements and lead-free standards. Featured are &quot;Hi-Lo&quot; wheelchair models and &quot;Hands-off&quot; models.</td>
<td>Brochure presents the B-II WaterWizard Potable Water Heater. Includes detailed color illustrations of the unit's component parts. Illustrates unit's benefits from sub-cooling condensate and accurate temperature control.</td>
<td>Brochure presents the HT-10 Chimney System, the first and only prefabricated Class A chimney able to be installed with zero clearance to combustibles. Includes parts list and planning guide.</td>
<td>Fiberglass cooling towers with corrosion-resistant components. All nuts and bolts are stainless steel and internal piping is made of PVC. Towers operate at considerably lower horsepower than conventional towers.</td>
<td>Infloor Heating Systems for residential, commercial or industrial buildings. Floor warming and snow melting systems are described and illustrated.</td>
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<td>Air Handling Fans</td>
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<td>Registers &amp; Diffusers</td>
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<td>Brochure describes high-performance industrial and commercial ceiling fans and air circulators. Up to 44% energy savings when used for heat recirculation in winter. Reduces air conditioning load in summer.</td>
<td>Air Filtration products and equipment for indoor air quality control. Over 30 product lines including ASHRAE filters and hardware, HEPA filters/hardware, cleanroom products, gas and vapor absorbers, and dust collection.</td>
<td>Purelite is a patented task light and air purifier designed to circulate and purify approximately 79 CFM. Fan operates at 48 DBA, producing a &quot;white noise&quot; within the workstation.</td>
<td>The Clean Air Digest from United Air Specialists presents facts about indoor air pollution and solutions that work.</td>
<td>Unlike conventional linear slot diffusers, the Titus FlowBar system can be custom painted or given an anodized finish, and diffusers can be curved to almost any radius, in any direction.</td>
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### Division 16-

### Electrical

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<td>Raceways &amp; Conduits</td>
<td>Raceways &amp; Conduits</td>
<td>Distribution Correction</td>
<td>Luminaires</td>
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<td>The IESNA Lighting Source Catalog contains a complete list of documents and standards, as well as information on the IESNA Lighting Handbook.</td>
<td>Raceway Components brochure illustrates through-floor electrical fittings. Four basic floor types: Poke-Thru, Raised Floor, Concrete Boxes, and Cellular Floor Fittings are described.</td>
<td>Guide to Walker in-floor components, including distribution raceways, feeder raceways, transitions, multi-level installations, and end-point activations. Sample layouts demonstrate efficient system design.</td>
<td>APC produces uninterruptible power supplies (UPS), surge suppressors, power conditioners, and related software for mission-critical applications. UPS provides line filtering and instantaneous battery backup.</td>
<td>This 200 page color catalog shows the complete line of Bega lighting products, including 125 new items. Wall and ceiling luminaires, surface and buried fixtures, step lighting, floodlighting, bollards, post-lights, and pole lights included.</td>
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<td>Historical Arts and Casting designs, manufactures, and installs architectural cast-metal ornament. Brochure features custom light fixtures, from street lamps to chandeliers.</td>
<td>Robert's Step-Lite Systems' A-Series works for surface-mounted or recessed applications. May be used indoors or outdoors with either standard or extra-bright fixtures. Custom manufactured to exact dimensions.</td>
<td>Guide to parabolic lighting louvers, which eliminate glare in offices and other interior applications. Includes a glossary of lighting terms, installation instructions, and specification information.</td>
<td>The KSH-34 HSS was designed for supplemental hospital surgical suite lighting. Lens elements direct maximum candlepower to the surgical site area, with generous peripheral illumination.</td>
<td>This 200 page color catalog shows the complete line of Bega lighting products, including 125 new items. Wall and ceiling luminaires, surface and buried fixtures, step lighting, floodlighting, bollards, post-lights, and pole lights included.</td>
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joints provide good contact of seamless acrylic.
cubes or cones constructed for performance. Fixtures are one

daytime appearance with fixtures combine an attractive

tures to meet a broad variety of needs. Models for aethetistic lighting, security, sign-

gage illumination, or displays.

unique level setting operation uses linear slide con-

rollers.
The University of California, Berkeley invites nominations and applications for Dean of the College of Environmental Design appointment to be effective 1995-96. The dean is responsible for the leadership and administration of the College and reports to The Vice Chancellor and Provost.

The College of Environmental Design includes departments of Architecture, City and Regional Planning, and Landscape Architecture, plus an organized research unit. Staff includes 70 full-time faculty, 40 part-time instructors, and 35 non-academic staff. Students include 600 undergraduates in non-professional, 300 graduates in professional majors, and 100 Ph.D. students.

The successful candidate should have: a distinguished record in teaching and research or creative work warranting a full professorship, 2) a record of administrative accomplishment, 3) an ability to represent the diverse departments within the College both within and outside the University, and 4) an ability to maintain and promote relationships with and to raise funds from industry, alumni, and other extramural sources.

Applications and nominations should be received no later than January 9, 1995 and should include a detailed curriculum vitae and a list of references.

Send by:
Chair, Search Committee for the
Dean of CED
The Vice Provost
Office of the Chancellor
200 California Hall
University of California, Berkeley
Berkeley, California 94720-1500

The University of California is an equal opportunity, affirmative action employer.

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Primary responsibility for teaching, research and graduate advisement in structures and construction.

VISITING APPOINTMENT

Primarily responsible for teaching, research and graduate advisement in environmental controls.

VISITING APPOINTMENT

Primarily responsible for teaching, research and graduate advisement in materials, methods and theory of technology.

The University is a major AAU research institution and firmly committed to providing equal opportunity for outstanding men and women of every race, creed, and background. We encourage women and minorities to apply.

Please send resume, letters of reference, materials from prior teaching and selected publications to: Marc Schiler, Technology, Search Committee, School of Architecture - WAH 204, University of Southern California, Los Angeles, CA 90089-0291

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College of Architecture and Urban Planning
Position Descriptions for Faculty Search 1994-95

Design: One tenure-track (assistant professor) or tenured (associate professor or professor) position to teach design that makes use of information technologies. The position requires an ability to make substantive contributions in design teaching at the undergraduate (B.S.) and graduate (M.Arch.) levels. There will also be opportunities to contribute to the post professional (M.S. and Ph.D.) programs of the College. Candidates will be considered based on their ability to make substantive scholarly contributions through design using the computer. Qualifications: Applicants are expected to have experience as studio instructors with substantial theoretical and applied knowledge in the use of information technologies in design. A professional degree in architecture and evidence of creative design ability and/or scholarship are required. An advanced degree in architecture and/or information technology and a professional license are desirable. An appointment will be made which is commensurate with previous professional and academic experience.

Structures: One tenure-track or tenured position to teach the design of architectural structures. Responsibilities include teaching required and elective courses in the professional (B.S. and M.Arch.) and post professional (M.S. and Ph.D.) programs and participation in design studio instruction, as well as supervision of doctoral dissertations and the conduct of research. Qualifications: Applicants should hold a doctoral degree in architecture or civil engineering or equivalent professional credentials. Alternatively, applicants must demonstrate their aptitude for scholarship and research as well as the integration of knowledge of structures within an architecture program. Professional registration and experience are highly desirable. An appointment will be made which is commensurate with previous professional and academic experience.

Applications for the above positions will be reviewed by the Architecture Program Search Committee beginning January 11, 1995. All positions will be available in September 1995. Applicants should specify the position being applied for and send: 1) letter of interest, 2) curriculum vitae, 3) names of three references, 4) a portfolio containing all the examples of professional work, research, scholarship, teaching, and/or other creative activity you wish the committee to examine. Mail application materials to Chair, College of Architecture and Urban Planning, School of Architecture, The University of Michigan, Ann Arbor, MI 48109-2069. The University of Michigan is a non-discriminating, affirmative action employer. Ethnic minority and women applicants are strongly encouraged to apply.
P/A Classified

SITUATIONS OPEN

Head
Department of Architecture
Penn State University
University Park, PA

Nominations and applications are invited for the position of Head of the Department of Architecture, effective July 1, 1995. Rank and salary negotiable.

Candidates must have an accredited master's degree in architecture, or its equivalent; must have attained a distinguished record of professional, scholarly and academic accomplishments; be licensed to practice architecture in the U.S. or eligible for reciprocal licensure; and qualify for tenure. Previous administrative experience desirable.

The Architecture program is centered on a five-year studio-based professional Bachelor of Architecture degree, which is NAAB accredited. The Department also offers a non-accredited M.S. Architectural degree and an optional pre-professional B.S. degree. Architecture is one of 7 departments/schools in the College of Arts and Architecture and maintains an active relationship with the Dept. of Arch. Engineering in the College of Engineering.

Send nominations, or application expressing interest in pursuing intellectual goals through scholarship, research, and professional practice and have the ability to communicate effectively with students.

Architectural Design
(two or three positions)

Teaching responsibilities include teaching required undergraduate and graduate design studios as well as elective courses in one of the following areas: Theory, Computer Applications, Drawing or Urban Design. Candidates should demonstrate a capacity to teach undergraduate and graduate studios, have a professional degree in Architecture with experience in professional practice. Applicants should explicitly state their area of secondary expertise. An M. Arch. degree is required and the salary level will be commensurate with experience.

Architectural Technologies

Teaching responsibilities include teaching basic technology sequence, as well as related elective courses. In addition, candidates should have a willingness to serve on design reviews. A professional degree with advanced degree in architecture or technical (or equivalent experience) is required.

Architectural Structures

Teaching responsibilities include teaching required basic structural design, as well as related elective courses. Candidates should have a willingness to serve on studio design reviews. PhD in Civil Engineering or Architectural Structural Design is required and the salary level will be commensurate with experience.

Candidates should send curriculum vitae, ten photocopied samples of design work (not to be returned), a statement of interest and goals, and the names of at least three references by Friday December 30, 1994 to: Chair, Faculty Search Committee, 103 Slocum Hall, School of Architecture, Syracuse University, Syracuse, NY 13244-1250. Syracuse University is an Equal Opportunity/Affirmative Action Employer.

Applications received by January 6, 1995 will be assured consideration. However, applications will be accepted until position is filled. An Affirmative Action/Equal Opportunity employer. Women and minorities encouraged to apply.

URBAN DESIGNER
CITY OF ALBUQUERQUE, NEW MEXICO
PLANNING DEPARTMENT

Seeks progressive urban designer experienced in developing community plans and reviewing design projects. BA/MA in Urban Design, Arch., LA or related, plus proven experience. Submit resume plus SSN by December 5, 1994. Contact Richard Seftich, Planning Dept. P.O. Box 1293 Albuquerque, NM 87103 (505) 768-5291 for job description, EOE-AA employer and service provider.

YALE UNIVERSITY

The School of Architecture invites applications for a position in architectural theory and design to commence in the Fall of 1995. Appointment will play a primary role in the teaching of architectural theory in the professional program and supervision of advanced studies in the post-professional and research programs. Candidates should be able to conduct architectural design studios at various levels. Candidates should have a record of publication, design work, and teaching experience commensurate with a leadership role at a major institution and in the international field. The School is considering a tenure-track or adjunct appointment at the level of Assistant or Associate Professor. Salary and rank are negotiable based upon qualifications and experience.

Applicants should send a letter of interest, accompanied by a curriculum vitae and a list of referees by December 15, 1994 to Alan Plattus, Associate Dean, School of Architecture, Yale University, P.O. Box 208242, New Haven, CT 06520-8242. Do not send additional supporting materials at this time. Yale University is an Equal Opportunity/Affirmative Action Employer.
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If you're taking NCARB's Architect Registration Examination, be sure to add these two valuable study guides to your study program. This year, NCARB has published two separate books that explain the A.R.E. and help you prepare for it.

**Graphic**
In 1994, the format of Division C: Building Design will change to a multiple vignette format similar to that of Division B: Site Design Graphic. You'll want to get a head start with this book since it contains current information about the exam. The 1994 A.R.E. Graphic Handbook contains sample vignettes for Site Design and the new Building Design. Vignettes for both divisions have been structured to give you one complete graphic exam for each division. Solve the sample vignettes and then look at actual candidate solutions red-lined by graders.

**Written**

A separate handbook for the written divisions of the exam is now available. In a smaller 8 1/2" X 11" format, this useful reference tool contains sample question types for all written divisions.

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Make checks payable to NCARB. Delivery takes 2-3 weeks.
According to the U.S. Environmental Protection Agency, between 7,000 and 30,000 lung cancer deaths are caused by radon each year. Nearly one out of every 15 homes in the U.S. is estimated to have elevated radon levels. The colorless, odorless radioactive gas is most often found in basements, entering through crawl spaces, dirt floors, cracked foundation floors and walls, and openings around drain pipes and sumps.

The EPA reports that more than 20 percent of new homes are now built with radon-resistant features. The agency has recently released drawings (two of which have been abstracted here) to help architects properly detail radon abatement devices.

The key to reducing radon is to plug leaks through basement floors and walls and to vent radon gas through a stack that runs from the basement through the roof (1). The concrete slab is poured over a gas-permeable material such as a four-inch-thick layer of clean aggregate or sand, overlaid with a gas-retarder membrane that allows the lateral flow of soil gasses. A three- to four-inch-diameter pipe extends through the slab to the aggregate or sand, with a T-fitting at the base to capture gasses. All cracks and penetrations through the slab, and junctures between the slab and the walls, should be sealed with caulking or grout. As radon gas pressure builds, it will flow to the vent pipe and be exhausted.

In crawl spaces (2), perforated pipe should be laid over the soil, parallel to the house's long dimension, and should extend no closer than six feet from the foundation wall. A T-fitting joins the perforated pipe to an exhaust stack that extends through the roof. The entire crawl space and the pipe are then covered with a gas retarder membrane, which is sealed against the foundation wall and all vertical penetrations.

For free technical support documents on radon abatement and detail drawings contact the EPA at: 800-55-RADON. Michael J. Crosbie

[Diagram of radon abatement features in a basement]

[Diagram of radon abatement features in a crawl space]