

ARCHITECTURAL RECORD

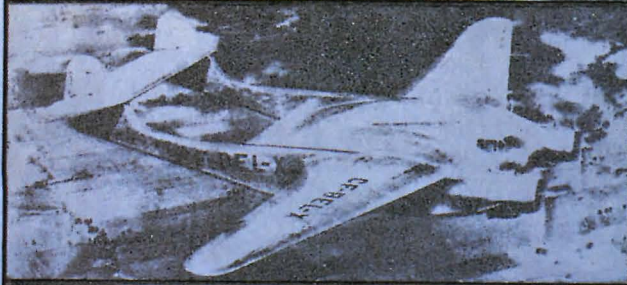
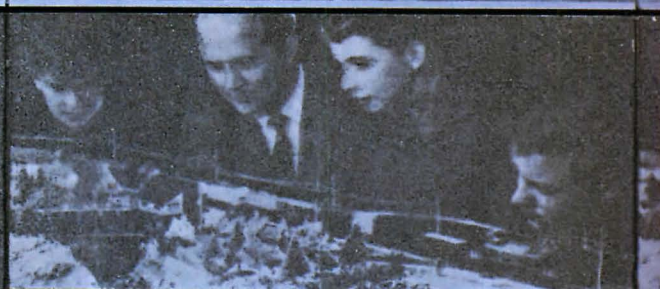


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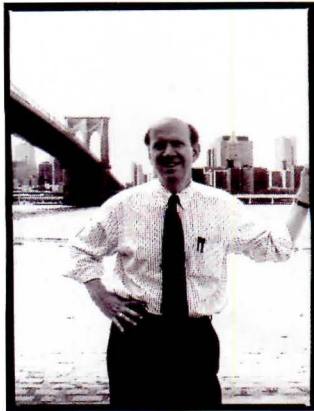
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EDITORIAL

Summoning Collective Will

BY ROBERT A. IVY, FAIA



Are you a straphanger? As an architect, you probably drive to work, but the odds are that you harbor sympathy for public transportation. It's part of the ethos about what makes good cities, a legacy remaining from your long-hair days. Despite your own migration from Birkenstocks to close-cropped hair, the question deserves revisiting by our entire professional community. In fact, no artifacts of human design, except highways, affect more people than public transportation systems.

More than mere movement is involved in transit. The entranceways, tunnels, and trains—even signage—of these arteries of urban life provide temporary habitation for millions of persons, touching their daily lives much as the offices in which they work or the houses and apartments to which they repair in the evening do. Moreover, the best transit solutions engage architecture.

Washington, D.C.'s Metro system may be the best example. Anyone who has glided down the tubes and been whisked from Farragut West to Tenleytown experiences a sense of well-being and grandeur appropriate to the capital of the United States. There is a cohesiveness to the design at all scales, from the gridded concrete coffers to the clean and simple graphics, that establishes a public language. Architect Harry Weese Associates, together with engineers DeLeuw Cather and Co., helped devise a metropolitan transit system that arguably ranks among this century's greatest architectural achievements. Two billion riders have taken the trip thus far.

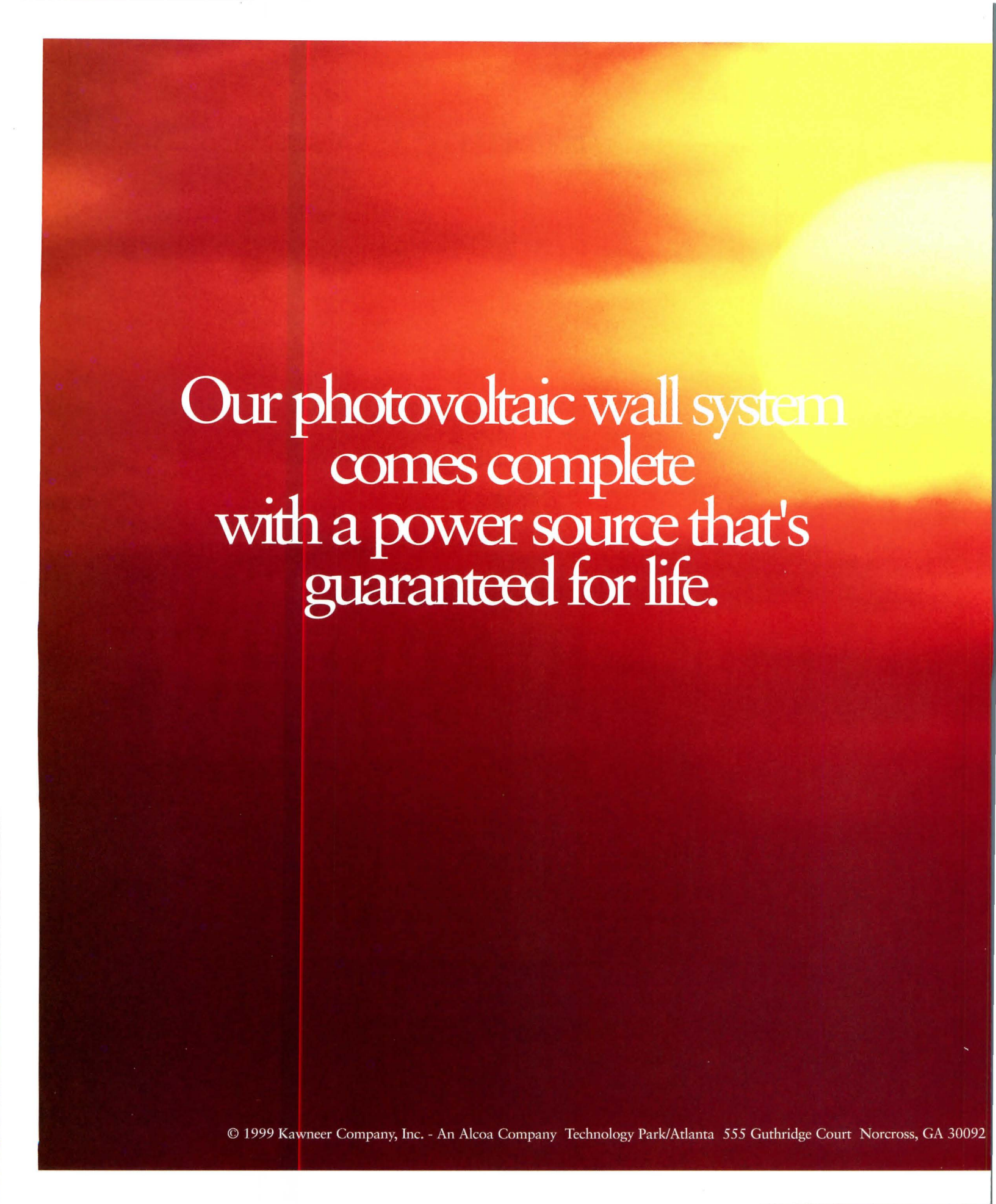
Washington's system came at high cost. Over the last three decades, as economies nose-dived and city budgets floundered, we lost our taste for massive public works. Such expensive undertakings had the tang of 20th-century optimism gone sour, a sort of metallic aftertaste from the last days of disco. They always seemed to cost more or take more time than we had planned (San Francisco's BART or Atlanta's MARTA); or ridership was sometimes lighter than hoped for (as in Los Angeles). Who feels such ambition and confidence today?

The reasons for taking up the challenge again are manifold. Sprawl demands it. According to the American Public Transit Association, public transit reduces congestion by eliminating the need for 22 million auto trips each workday. A well-considered system shapes the development of our cities, as Toronto's experience proves. Successful examples of contemporary transit systems pepper the globe, from Bilbao, Spain, to Singapore. Stations on London's Jubilee Line will highlight the work of a generation of architects.

In this country, enlightened cities like San Francisco and Boston use architecture and art to enrich transit stops, investing public nodes with public dollars. Not all well-considered systems require expensive holes in the ground: In Dallas and San Diego, light rail knits the wide-open spaces into greater proximity, and Saint Louis and other cities are following suit.

Perhaps nowhere is the need for new subways more apparent than in New York City. There, despite significant improvements in cleanliness and safety, as well as plans for an additional line, metropolitan riders struggle with a 19th-century system, a Dante-esque netherworld characterized by belching heat, screeching trains, and filthy tracks. Millions of riders and billions in revenue set it apart as a candidate for big thinking, a primary laboratory for the best new ideas. Could the entire system be remade?

It may sound heroic or naive, but the coming century should be a time for a courageous appraisal of all our transit systems, conceiving seamless, integrated networks that would be the envy of the world. Such expressions of positively directed, collective will would improve the daily lives of millions of persons and announce this nation's commitment to the future. While the power may reside in others' hands, the vision can be our own.



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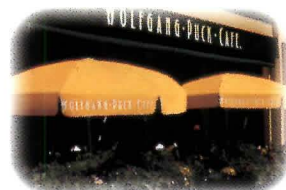
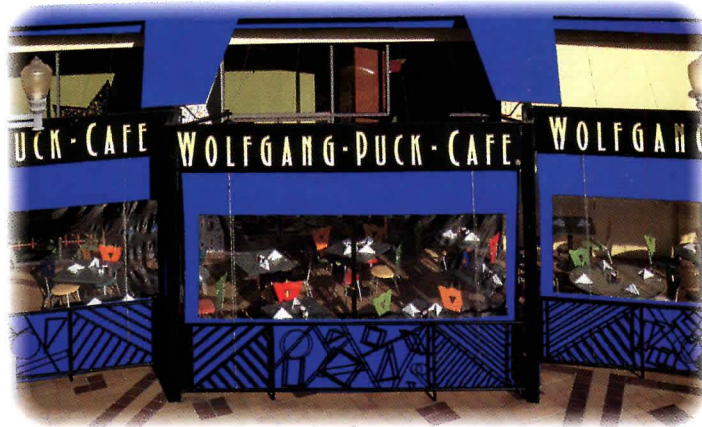
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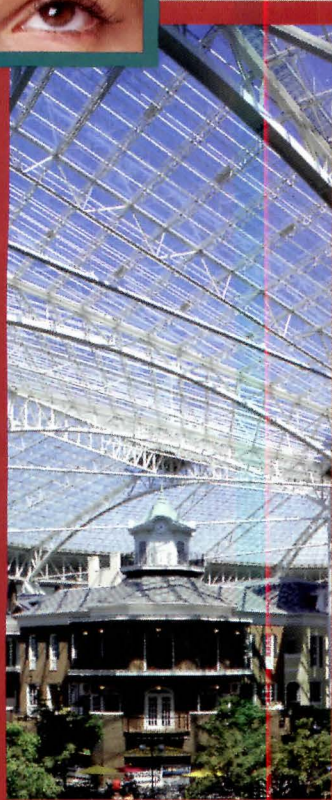
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CIRCLE 13 ON INQUIRY CARD

LETTERS

A peaceable kingdom of architects

I read Carter Wiseman's column [Critique, May, page 49], and I substantially agree with his views on private practice and private institutes (such as the defunct Prince of Wales Institute), but I totally disagree with him where higher education in the U.S. is concerned. In a true university in this country, the "tortoise" and the "hare" Mr. Wiseman writes of are not at war with each other as they are portrayed to be in practice and, as he points out, at some prestigious universities in America. University students in this nation have the right, and the intellect, to learn about both the "tortoise" and the "hare"; in fact, they and/or their families, and/or the taxpayers, pay mega bucks (not just "a tall stack of chips") for them to gain a balanced and unbiased education so that they may eventually have sufficient knowledge to choose if they wish to become a tortoise or a hare or a donkey for that matter—it's called academic freedom, and a true university has the responsibility to safeguard this fundamental freedom. What Mr. Wiseman suggests is Knowledge Discrimination. Mr. Wiseman should read Gerhard Casper's concise but insightful inaugural address as the ninth president of Stanford University where he writes of the "wind of freedom"; it might add to his understanding of true institutions of higher learning in this country. He might also discover why Bob Stern selected Johnson and Eisenman to be among the speakers for his first lecture series at Yale University.

—Robert L. Amico
Via E-mail

Substance over style

Your interview with Frank Gehry ["Frank Gehry: Plain Talk with a Master," May, page 185] on the occasion of his being awarded the AIA Gold Medal provokes an important discussion of the state of architecture today. Mr. Gehry's intentions have always seemed earnest. But do earnest intentions always manifest themselves as responsible actions? Not always. It seems that the built works of the members of today's Deconstructivist hegemony, which Frank Gehry has unfortunately become a part of, represent a self-indulgent attack on the conventions of architecture.

Similar charges were, of course, made against European Modernism earlier in this century, but it is important to remember that two of the fundamental intentions of Modernism were formal purity and economy.

Deconstructivism, however, represents an

architecture of a fundamentally different nature. It is based not on a rational analysis of program, but on expressive response, often related to factors totally foreign to the functions or context of the building. Its form is generated not by program but impulse, and the program must be forced to correspond with that form. In the process, comfort, convenience, efficiency, and serviceability are marginalized so the vision of the architect may remain unadulterated. But what exactly is that "vision"?

Gehry, who is clearly rooted in the tradition of sculpture, rarely speaks in depth about his ideas. Whatever problems one might have with Gehry's work, at least he refuses to ascribe unto it a bogus philosophy. Architects like Peter Eisenman have written extensively about their concepts, but in many cases the relevance of these ideas to the architectural program is negligible at best.

Recently Eisenman's attitude has changed, though, probably because he has had the opportunity to build more in the last few years. At a recent lecture at Columbia University, Eisenman was asked by a student, "What is the theory about? How did the shapes get to be that way?" to which Eisenman responded, "Let me ask you a question: When Frank Gehry lectures, do you ask him how his shapes got that way? I have no idea."

I studied with Eisenman several years ago at Cooper Union, and back then, "I have no idea" would not have been an acceptable response for a student to utter during a critique. It should not be acceptable now, either, and unless a fundamental change occurs, our nation's already dumbed-down architecture pedagogies will stray farther away from legitimate architectural concerns. Style is quickly becoming the sole issue of architecture. Once an idea becomes a personal and subjective style, though, it ceases to be in the realm of objective criticism, which is imperative to the advancement of rigorous architectural thought.

—Scott Springer
New York City

Corrections

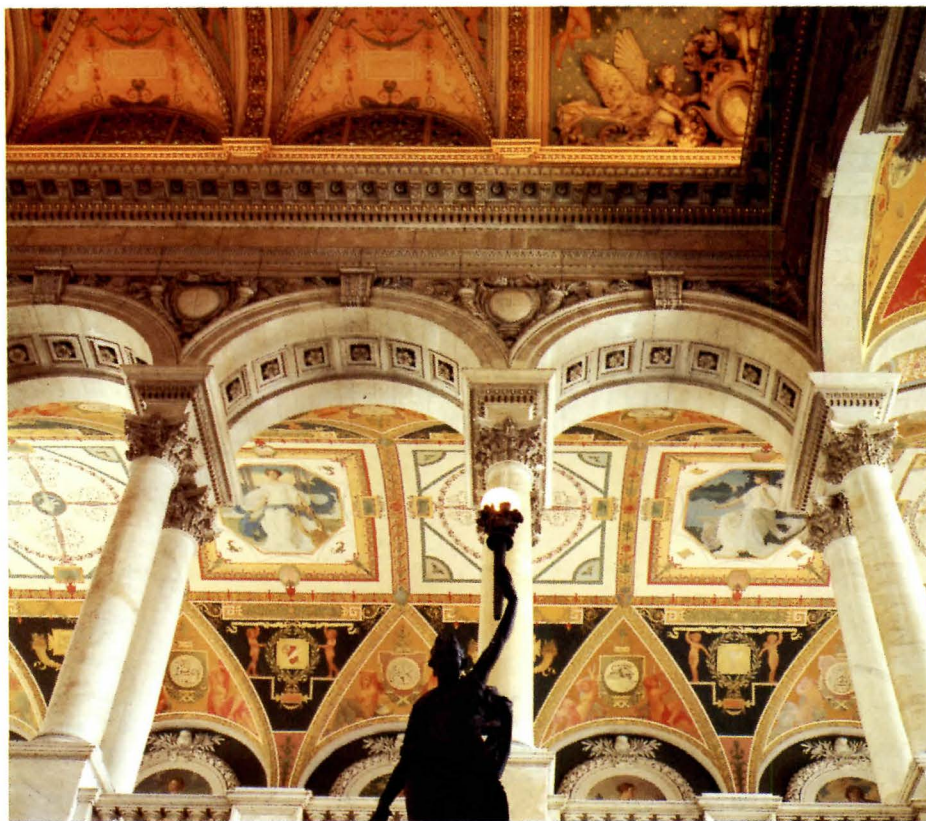
In our news story "San Francisco Firm Contributes to an Ever-Expanding Sao Paulo" on page 100 of our May issue, we misspelled McLaughlin in Kaplan/McLaughlin/Diaz.

In our May article on the 1999 AIA Honor Award winners, the name of the firm Robert A.M. Stern Architects [page 148] was misstated, as was the title of Harrison Fraker, FAIA, Dean of the College of Environmental Design at Berkeley, who was quoted [page 162]. We sincerely regret the errors.

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The Library of Congress. One of the finest examples of 19th Century architecture in America. This magnificent structure has just gone through a thorough interior masonry restoration. Commissioned by the Architect of the Capitol, the work was done by union masonry contractors and craftworkers. Only they have the skill to restore the original beauty of the tile, marble, stone and mosaic materials that give this building its character. The International Masonry Institute has a wealth of information, as well as a fully trained staff of architects and engineers who can help answer your questions about masonry restoration or the design and construction of new masonry buildings. Find out more: Call us at 1-800-IMI-0988, or visit our Web site: www.imiweb.org



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SPEAK OUT Architects need to expand the scale of the profession to include the design of regions. If not us, then who?

BY DANIEL WILLIAMS, FAIA

Daniel Williams, FAIA, is founder of Daniel Williams Architect, a Coconut Grove, Fla.-based design studio working in architecture, planning, interior design, and industrial design. He is director of the Miami Education and Research Center, an extension of the University of Florida's College of Architecture. He was given the 1999 AIA National Honor Award in Urban and Regional Design and the Catherine Brown Award from the Congress of the New Urbanism in February. Williams will serve as president of the Miami AIA Chapter in 2000.



It's time for architects to expand their problem-solving realm. The design of regions is the challenge, but we haven't risen to it.

Opportunities have been missed. In the aftermath of Hurricane Andrew in 1992, south Florida stood at a crossroads—would we rebuild the sprawl and pave over the last 100 square miles of the regional recharge area (the land that receives rainfall and passes it back into the groundwater table) or redevelop the territory in a forward-thinking and environmentally sensitive way? Unfortunately, there was no overall plan, and development continued unabated. Now, local officials—having realized the region was running out of potable water—have launched a project called the South and Central Florida Restudy that will cost taxpayers as much as \$9 billion, will change the face of the region forever—and still will have zero input from the architectural and planning profession.

How could architects have done better? We are educated in and understand the issues of comprehensive regional planning and design. We must use our knowledge to be proactive in the stewardship of our communities and their relation to the preservation of the natural environment. Regional design is a nationally overlooked challenge, and to complicate matters, there are no agencies that approach complex 3-D systems as a design rather than a policy problem. Involving architects can provide an answer.

Playing a new role

We must expand our profession by

incorporating regional design into our practices. But it takes hard work. Urban regions must be approached on a large scale, and an essential step toward the solution rests in the education and expansion of the architect's role as a 3-D problem solver. Regional design that incorporates environmental sensitivity with sound urban and community planning criteria starts with an understanding of the resources

If properly educated, architects and planners could apply regional, bioclimatic knowledge—touching on ecology, hydrogeology, soils, vegetation, and topography—and develop a regional plan that will provide sustainable visions and the incremental steps to get there. In addition, while improving the usefulness and value of buildings, the profession will ensure the future health of the built and unbuilt environments.

ARCHITECTS AND PLANNERS COULD PROVIDE SUSTAINABLE VISIONS FOR URBAN REGIONS—AND THE STEPS TO GET THERE.

and energies that have historically sustained the region. The outcome of this work will be the creation of desirable, smart, livable communities linked to both renewable materials and the region's natural resources.

Projects such as the one in Florida and others of similar scale are occurring around the country with increasing regularity. Portland, Ore., for example, is controlling sprawl—but other communities are not. Opportunities to improve transportation, local image, community design, and the functioning of urban, agricultural, and natural systems are missed if they are not woven into a regional fabric that works environmentally, socially, and economically.

The profession must not only be involved in these projects but must also lead; we can't take a backseat to politicians and developers. We can design more roadways, hurricane-resistant buildings, affordable housing, sustainable communities, transportation links, storm-water plans, and solar-based structures.

Virtually every existing building and community needs major design work to function energetically and efficiently. As architects and planners, it is a great challenge to learn the systems and to provide sustainable solutions—but we must move to expand the profession. Yes, it will mean additional education and time commitments, but the rewards will be great. Ultimately, it will mean additional business and leadership opportunities. Regional design is the calling of architects, because we are the best equipped to deal with it. ■

Contributions: *If you would like to express your opinion in this column, please send submissions by mail (with a disk) to Speak Out, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Essays must not exceed 700 words. The editors reserve the right to edit for space and clarity. Where substantial editing occurs, the author will receive text approval.*

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MENTORS

By joining ranks, pooling resources, and sharing their time, smaller firms can create strong intern mentoring programs.

Roy F. Gilley III, AIA, is a principal of Gilley-Hinkel Architects in Bristol, Conn. The firm (www.gilleyhinkelarchitects.com) won the IDP Outstanding Firm Award in 1991.

Architects often complain that recent graduates are ill-prepared for practice. Meanwhile, interns are up in arms about low pay, a demanding Intern Development Program (IDP), and even the term intern. RECORD asked Roy F. Gilley III, AIA to describe his methods of mentoring young architects and helping to navigate the troubled waters.

The architectural community can benefit greatly from using IDP and other mentoring programs to ease the transition to postgraduate employment. True, practicing architects are trying to fit continuing-education programs into their already tight schedules at a time of unprecedented client expectations and demands on architects. Fortunately, we have opportunities to improve the situation.

Large firms such as RTKL are able to offer interns sophisticated programs with seminars, field trips, civic programs, exam preparation, mentoring, and advocacy programs. Small offices can do the same by cooperating with each other to spread the workload. Several offices in the same region can pool resources; the various principals can rotate mentoring responsibilities, serving as advisers to interns in other offices, sponsoring their own employees, and acting as seminar leaders for combined programs.

The AIA has published *The Architect's Supplementary Education Handbook*, which contains lesson guides for 32 seminars. Using these guides, a principal from one office and the interns from all the involved offices can meet to dis-

cuss a monthly subject. Meetings can be under two hours, and between the meetings interns should do assigned readings and participate in activities. Outside speakers might also be invited to share their expertise. The principals of the firms might rotate in the leadership role so that no one has an unfair burden. At each meeting, one intern should keep minutes, while another should act as chairperson. Principals shouldn't run a meeting; the interns need the experience.

The AIA's lessons are keyed to NCARB's reporting forms and enable interns to gain experience in the subjects that pose the most difficulty with regard to getting exposure. Meetings are an opportunity to review progress toward earning reportable hours in other IDP areas. Encourage the interns to get an NCARB Council Record started and maintained.

Our firm approaches mentoring as a process that depends on the intern's dedication and participation. No exams are given. After all, interns are adults and their efforts are ultimately on their own behalf. Actually, we have found that the interns' questions tend to keep the principals on their toes; the principals acquire some new knowledge while brushing up on old lessons.

An easy commitment

It may seem that large firms have more resources and, therefore, can afford more complete programs. But from our experience, time is about the only cost. On average, a principal—sharing responsibilities with other principals—can expect to

spend less than four hours per month leading a program. Books, magazines, and other supplies should be less than \$300 per intern for a three-year program. And many of the materials may already be on hand in the office.

Don't stop here. You can establish or support an Associates Group or Young Architects' Forum through your local AIA chapter. Educational seminars and civic programs shared by recent graduates and older practitioners satisfy common educational needs, promote employment options, and create a mutual understanding of the problems inherent in the practice of architecture. The goals of practitioners and interns are often the same, just couched in different terms.

The benefits of a mentoring program to an office are tangible. Principals learn a great deal. They get to know the interns well and understand many of their goals and concerns. Mutual understanding improves morale, reduces turnover, and strengthens firms. And the interns become more dedicated and capable employees. There may be negative sides to undertaking a mentoring program, but we haven't found any yet. ■

Questions: *If you have a question about your career, professional ethics, the law, or any other facet of architecture, design, and construction, please send submissions by mail to Mentors, Architectural Record, Two Penn Plaza, New York, N.Y. 10121; by fax to 212/904-4256; or by E-mail by visiting www.archrecord.com and clicking on News/Features/Dialogue. Submissions may be edited for space and clarity.*



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PULSE RECORD readers were asked:

Do American architects have much to learn from their British or European counterparts?

Yes. Americans have a purely “American” way of looking at the world. We must learn to see architecture their way, as it will surely reveal new possibilities in American architecture and urban planning.

—Jennifer Paloski
Warren, Ohio

Yes. American and European architects have a great deal to learn from each other. I am a student and studied the past year at an architecture school in France. The American and French have their similarities, but methods and cultural practice of architecture are very different. The American viewpoint is often, well, blatantly American. Being exposed to the European mindset let me see differently.

American architects exposed to European (British, French, Dutch, German, or Italian . . .) architecture gain a mentality of true urbanism, one that is being reinvestigated now in the States . . . (New Urbanism, Revitalized Urbanism). Europe often allows for a more liberal approach to outstanding architecture, often criticized at first but then accepted by society; France is notorious for this. But the culture is exposed to urbanism on a much grander scale . . . the suburbs are integrated into the city, they are not as sprawling as our suburbs, which have become a monster of their own. We also see how, at times, American architecture is very wasteful and how many environmentally friendly and minimalist European designs are effective and perhaps long lasting.

—Justin Molloy
Champaign, Ill.

Yes. I feel that we can learn a great deal of information from our peers. There is a romantic quality that can be found in almost everything the Europeans do that is not always apparent in American culture. The reason is that, there are many laws that limit what can be done in the States, whereas there are few in Europe. The key, I believe, is to join the two to make a product that is romantic and safe.

—Chad M. St. Pierre
Boston

Yes. It's a global market. Think global, act local. To limit yourself to your immediate surroundings is being narrow-minded. Narrow-mindedness strangles creativity and culture. Not only should there be things to learn from Europe but from Asia as well. There should also be influence in the other direction: From America.

—Peter Collings
Moscow, Idaho

Yes. They have a much better architectural education in Europe. Less sports in school and a better attitude toward architecture. Here, we just have factories turning out churches, schools, or whatever else they can make money at.

—Charles R. Gilliland, AIA
Webster, Tex.

More answers to: Has the digital revolution changed your perception of time?

Yes. The digital revolution is here to stay. I hope we don't forget history, though, because that is where the roots by which we live and design

come from. Too much time is spent dealing with machines and learning how to apply them toward a purpose, instead of carrying out the function of our profession, which of course is architecture. We may be able to exchange information quickly, but it is still the human mind that creates, not a plastic box.

—Nick Pappas
APA Architects
New York City

No. While technology has a direct effect on all of our lives, I don't feel my “perception” of time has changed. In the practice of architecture, the perception of time is abstracted in forms such as rows of columns and tile and ceiling patterns. Time resolves itself as a sequence of events as one passes through a building. Great architec-

ture comes about when all the elements of form, space, and time come together to tell the story of the building. The “perception” of time in architecture is up to the architect. Technology is merely one of his many tools.

—Henry F. Pierce, Jr.
Hagen Cameron Architecture PC
Monument, Colo.

Yes. Where has time gone? The distribution of information has become so fast that projects are being put together at an amazing pace. The time between them is disappearing.

And we all know what that means . . . where do the years go? I am looking forward to the next 10 years in this business, but I am afraid it will feel like just a week or two.

—Jennifer St. John
Edmonton, Alberta

This Month's Question

Should architects be more political?

Architects play a major role in shaping our cities, but, as Jane Loeffler states in this month's Critique [page 33], “Key decisions are often clinched long before designers enter the picture.” Is it important for architects to join the political fray—lobbying Congress, endorsing candidates, speaking out about issues—or should they stick to designing?

Fax your response to ARCHITECTURAL RECORD, 212/904-4256, or visit www.archrecord.com and click on News/Features/Dialogue to voice your opinion by E-mail.

Note: Pulse reflects individual responses to each month's question and is not meant to be construed as formal research.

CRITIQUE New designs of embassies and courthouses expose the politics of architecture. But, are architects political enough?

BY JANE C. LOEFFLER

Nonjoke: How many architects does it take to design a new federal building to meet emerging security standards? Answer: Zero.

Architects certainly can and have designed workable, safe, and good-looking embassies and courthouses, but key decisions are often clinched long before designers enter the picture. Absent from the policy-making arena, architects cede the decisions that shape their work. Once a client sets specifications for location, size, massing, setbacks, window/wall ratio, glazing, structural redundancy, and access control, how much is really left to the imagination?

Take the new U.S. embassy in Santiago, Chile, for example. Minneapolis architect Leonard Parker, FAIA, designed the building for the Department of State in the aftermath of terrorist bombings in Beirut, Lebanon. The architect found his design options seriously constrained: The multipurpose office building had to stand 100 feet back from a high perimeter wall, no more than 10 percent of its wall area could be windows, no hand-holds or openings could be within 15 feet of the ground. Parker regrets the constraints, but understands the need. He echoes colleagues when he describes Washington's prevailing outlook as "a fortress mentality."

Before we become totally trapped in a maze of bollards and barriers, it is important to ask

Jane C. Loeffler, PhD, is a planner, architectural historian, and author of The Architecture of Diplomacy: Building America's Embassies (Princeton Architectural Press, 1998).

whether current security standards accomplish their goals and to what extent they may undermine the very purpose of the public and quasi-public buildings they are designed to protect. If embassies are so remote that diplomats are cut off from the people they are supposed to know and serve, or if courthouses are so fortified that judges and jurors are sequestered within their walls, then the ultimate cost of such security may outweigh its benefit. It's a matter of finding a balance. But with politicians and experts in ballistic and blast analysis, counterterrorism, crime prevention, and risk management making most decisions, there is real danger that architects and other design professionals will find themselves left out of the mix.

Public advocates

Who is speaking out on behalf of the public's buildings? No one has more eloquently identified such buildings as political symbols than Sen. Daniel Patrick Moynihan (D-N.Y.), the former U.S. ambassador to India

TO WHAT EXTENT DO SECURITY STANDARDS UNDERMINE THE VERY PURPOSE OF THE PUBLIC BUILDINGS THEY PROTECT?

who authored President Kennedy's "Guiding Principles for Federal Architecture" nearly 40 years ago and continues to champion the cause of open architecture. Moynihan laments both the closing of Pennsylvania Avenue in front of the White House and the ominous proposal to exclude the public from the General Service Administration's newest Washington office structure,



The Leonard Parker Associates, Architects' design for the U.S. embassy in Santiago, Chile, complete with perimeter wall and moat.

the Ronald Reagan Building. He has called for "a national conversation" focused on reconciling our needs for security with the "openness and fearlessness" we must maintain. Moynihan's challenge prompts us to ponder the expression of democracy through design and to ask whether

attractive buildings and spaces can also be safe.

Through hands-on experience, U.S. District Judge Douglas P. Woodlock of Boston has emerged as another articulate spokesman for public buildings. He chaired the committee overseeing the design and construction of Boston's new federal courthouse, centerpiece of the GSA's \$8 billion, 13-year plan to

build and renovate 160 courthouses. Speaking to elected officials, architects, neighbors, and even schoolchildren, Woodlock has taken a firm stance linking quality architecture with civic betterment. "Courthouses were the places where people engaged in the formative process of American democracy," he declared, and they should contribute to "our nation's architectural conversation." When Boston's new courthouse, designed by Henry Cobb, FAIA, opened last year, some critics faulted its "imperial" character, its somewhat remote location, and cost. But given Boston's topography, the size and scope of the court's program, its commitment to public purposes, and security issues, the brick structure is remarkably welcoming.

U.S. District Judge James M. Rosenbaum of Minneapolis, another

architectural watchdog, worked closely with the design team from New York's Kohn Pedersen Fox and Minneapolis' Architectural Alliance to ensure that his new 15-story federal courthouse satisfied the needs of its many users, incorporated the latest courtroom technology, and struck a balance between public access and security. The city's pedestrian skyway leads into the building's lobby, making it an easy all-weather destination, and grass-covered mounds on the exterior entrance plaza (designed by Cambridge, Mass., landscape architect Martha Schwartz) prevent cars or trucks from approaching the building's perimeter.

Bunker mentality

Joe Brown, president of landscape design firm EDAW, needs no convincing that "buildings and spaces can look beautiful and still be secure." He is trying to reconcile security and design on the grounds of the U.S. Capitol—scene of a bomb

explosion in 1983 and, last summer, an attack by a crazed gunman. As a landscape architect, Brown is committed to the concept of security as "an underlay that is seamlessly integrated, rather than imposed" on a site. He warns, however, of the tendency among bureaucrats to favor results that are "showy, ugly, and quick—the uglier the better, so people are sure to notice." Brown emphasizes that he can best integrate security when he joins a project at the very beginning, not after pivotal decisions have been made.

Embassies are no less prominent than courthouses as public symbols, but they are far more vulnerable to terrorist attack. As a result, they are being turned into bunkers, and not always with finesse. Part of the problem is their absence of life-tenured advocates, like federal judges. Ambassadors come and go, as do Foreign Service officers, and the buildings have no identifiable constituency at home. No one seems to notice when historic embassy proper-



Kohn Pedersen Fox's design of the U.S. Courthouse in Minneapolis balances public access with security.

ties are sold, neglected, abandoned, or brutally altered.

Sound design judgment is too often ignored. Officials did not heed the advice of Chicago architects A. Epstein & Sons, hired by the State Department to design the U.S. embassy in Nairobi nearly 30 years

ago. Those who visited the site argued that it was too small (with a setback of only 12 feet), and even then, unprotectable. Pressure from the Kenyan government, they said, led the department to build on the ill-fated site, where, last August, terrorists' bombs killed 213 people and injured 4,000 others. It is noteworthy that the five-story reinforced concrete embassy did not collapse; most fatalities within the building occurred because glass flew and people, who should have taken cover, rushed to the windows when they heard the first grenade explode. Layers of mylar film on the windows were worthless when the aluminum frames failed.

Expanses of glass have been identified with political openness since the post-World War II era when American Modernists and transplanted Europeans equated historicism with oppression and adopted the glass box as an expression of democracy. Despite the obvious problems of adapting glass

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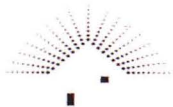
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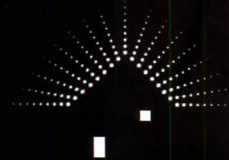
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walls to regional differences, Edward Durrell Stone (New Delhi), Ralph Rapson (Stockholm), Walter Gropius (Athens), and Harry Weese (Accra) were among those who designed embassies with glass walls. Hailed as

dows can compromise structural integrity. No building is 100 percent blast-proof, but new federal buildings will have to be blast-aware.

Hillier Group principal Gus Ardura points out that there are

BUREAUCRATS WANT RESULTS THAT ARE "SHOWY, UGLY, AND QUICK — THE UGLIER THE BETTER, SO PEOPLE NOTICE."

evidence of America's open society, such buildings also featured sidewalk access and an array of programs and services to attract the public.

Transparent problems

Times have changed. Admittedly, the Bauhaus model may have never been right for American public buildings. Extensive use of glass is still an option, but protective glazing is one of the many emerging technologies that architects need to understand. Designers should know what applied films can and cannot achieve, how laminates need to be secured, and how the added load of stronger win-

ways to convey openness without glass. "Democratic values don't necessarily reside in the expression of a building's edge," he says. His concern is finding new and different ways "to symbolize the collective values of our society." And he'll likely have the chance soon enough. The State Department recently prequalified his firm, along with 19 others, to design new embassies—as long as Congress provides the money.

A new American embassy is desperately needed in Beijing. A vicious mob nearly overran the embassy in May, but even before that, a State Department report rated the

Beijing property as the worst among many poor U.S. facilities in China. The price tag for a new embassy in Beijing is \$200 million (less than the overall cost of the Boston courthouse) and the time frame is seven to eight years, but the 2000 Federal budget doesn't include funds for this important project, which still lacks a site.

Sadly, there is no real political commitment to decent public buildings abroad. Admiral William J. Crowe Jr., former chairman of the Joint Chiefs of Staff and former ambassador to Great Britain, is the only public voice calling for real investment in embassy renovation and new construction. Crowe headed the State Department's accountability review boards on the bombings in Africa. Architects did not contribute to that team effort any more than they did to the similar assessments of 1985 following the twin bombings in Beirut. True, the reports were not intended as design manifestos, but they certainly made recommendations with

architectural and engineering implications. Crowe is not interested in fortresses, nor in allowing terrorists to set the design agenda, but he is rightly interested in saving lives.

Without architectural input, buildings designed solely to meet blast criteria will be neither dignified nor diplomatic. George Hartman, FAIA—chair of the State Department's architectural advisory board for nine years—compares some recent embassies to "maximum security prisons."

Architects might consider becoming more politically engaged. By tradition or by temperament, they tend to avoid the political fray, but they may have to change their quiet ways if they want to be heard. The Hillier Group's Ardura decries the profession's lack of political strength: "Architects are used to working with the challenges presented to them, but if we could get in front of the challenge, maybe we could affect it at a more global level." Good idea. ■

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DIGITAL ARCHITECT Computer gurus at AEC Systems predict the future and assess how far the industry has come.

BY B. J. NOVITSKI

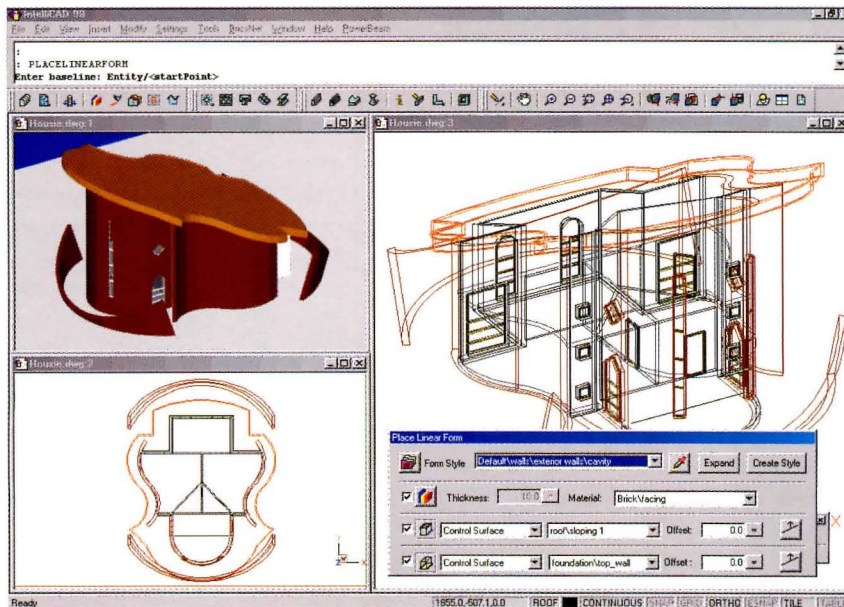
In May, the AEC Systems conference and trade show celebrated its 20th anniversary of bringing new technology to architects, engineers, and contractors. The past two decades have witnessed a revolution from astronomically priced, proprietary drafting workstations to low-cost, high-speed design communications systems. While the design and construction world struggles to adapt, technological development just zips along.

The latest offerings

In keeping with tradition, the chief executive officers of several CAD companies gave the keynote address. Participants were Keith Bentley, of Bentley Systems; Gábor Bojár, of Graphisoft; and Carol Bartz, of Autodesk. Not surprisingly, each CEO's view of the future was colored by his or her company's software offerings.

Bentley asserted that projectwide productivity is the AEC industry's greatest challenge. Specifically, everyone on the design team needs to do better at tracking design changes, collaborating, and overcoming incompatible data formats. His company addresses these problems through a new data storage strategy called ProjectBank, which records all the changes made throughout a project's history.

Architects who use the software will be able to document why certain decisions were made and be able to revert to earlier versions if necessary. ProjectBank also allows multiple users to work on the same drawing simultaneously and enables DGN files created by Bentley's



BricsNet Architect supports free-form solids modeling. Parameters for modeling can be customized, as in the box (lower right), while the model is viewed in shaded perspective, plan, and wire frame. The properties of each object in the model can be extracted and imported into a spreadsheet for further analysis.

MicroStation and DWG files created by Autodesk's AutoCAD to coexist within the same drawing. This new technology, Bentley claims, will improve communication and productivity within a design team.

Bojár said that Graphisoft's product, ArchiCAD, was pioneered in the 1980s as the first architect-specific 3-D CAD system for personal computers. He compared its history to the evolution of CAD in general: Stage One was the improvement of visual communication early in design. Stage Two was the modeling of a virtual building as a way to make 2-D drawings more efficient. Stage Three, the current challenge, is to add value to the process by bypassing paper entirely and taking model data directly to the computers used to fabricate actual building components. Autodesk's Bartz extolled the

breakthrough of the intelligent building model, made up of architectural objects, such as doors, windows, and furnishings, that seem to know what they are and how to behave in relation to each other. Moreover, the appearance of these objects is dictated by view and scale.

AutoCAD Architectural Desktop is one of the first object-oriented systems to implement the Industry Foundation Classes (IFCs) developed by the International Alliance for Interoperability, an independent organization. The IFC technology, which defines the properties and behaviors of architectural objects, promises flawless data exchange between Architectural Desktop and other IFC-using systems.

Bartz also emphasized that Autodesk is moving aggressively into Web-based project communica-

tions—with its many benefits. She cited one firm that is saving 20 percent of its original construction budget using project extranets.

A newcomer makes waves

Not represented on the CEO panel, but much discussed during the conference, was BricsNet (formerly Brics), newly arrived from Belgium. BricsNet created the architectural modeler that became MicroStation TriForma. Now the company has written BricsNet Architect, a version of the architectural modeler that runs on DWG-formatted files. BricsNet will sell this to architects as an add-on—first for Visio's IntelliCAD and later for Autodesk's AutoCAD.

BricsNet Architect features a flexible, object-oriented solids-modeling environment, including Boolean operations for adding and

subtracting forms, all within a single building model. True to the latest breakthrough in building models, the objects behave intelligently. For example, a wall automatically "heals" when a door is removed. Reports generated from the database can include 2-D drawings and spreadsheets for analysis.

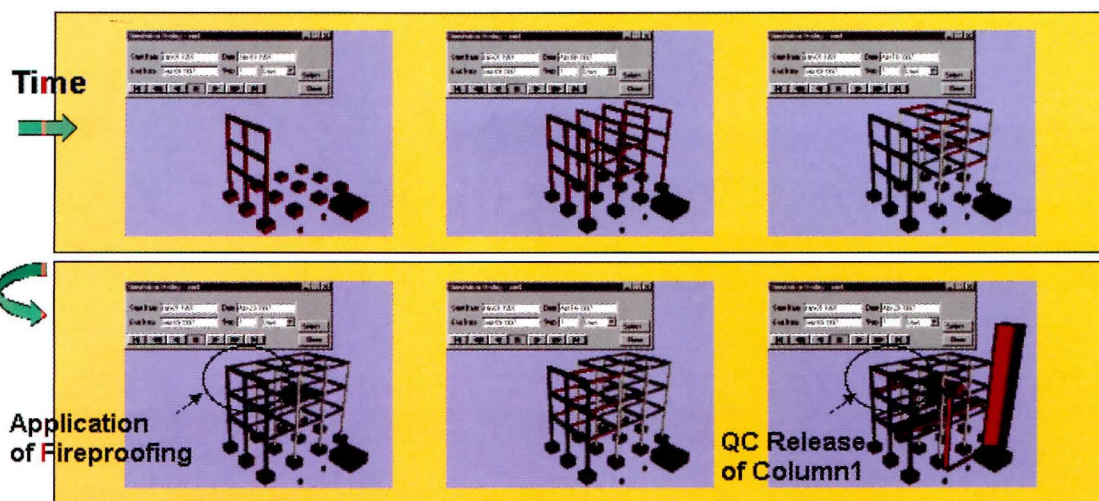
Signaling its serious ambition to capture the North American market, BricsNet is merging with EVOLV, a leading project-extranet host that enables geographically dispersed teams to share drawings and other project documents on a centralized but private Web site. BricsNet is also merging with AEC Info, a leading Web-based building data resource, ultimately allowing BricsNet to offer design, communications, and information all in one package.

Most other promising software imported from Europe has failed to sew up a significant share of this market, in part because American architects have less need for sophisticated systems than their European counterparts, who are responsible for quantity material takeoffs. Only time will tell if BricsNet goes the way of its European cousins or takes center stage on the CEO panel in a year or two.

Expert system revival

One powerful argument for object-oriented models is the role they can play in expert systems. These systems, mostly confined to academia for the past two decades, embody architectural knowledge and offer advice during design.

For example, a code-compliance checking program could read digital drawings and inform the architect of violations. That's the theory, anyway. In practice, these systems are quite difficult to program, cumbersome to use, and not generally available. But new tools that link expert rules and reasoning to 3-D object models are bringing expert systems closer to reality for practitioners.



Construction engineer Martin Fischer is working on expert systems with students and colleagues at Stanford University's Center for Integrated Facility Engineering. In a seminar, Fischer described the center's work with 4-D models in which 3-D objects are linked to particular phases of a construction sequence. By connecting the CAD model with Primavera scheduling software, architects, engineers, and builders can create animations that show the progress of construction through time, noting points on the critical path where construction delays could be problematic.

In addition to helping visualize construction planning, such a system could be useful early in design when choosing a structural system. This and the code checker are only two examples of the countless systems that will be made possible as individuals and institutions begin to apply their expertise to new development tools.

Expert systems will not replace humans in the foreseeable future, Fischer says. Rather, these systems are like grammar checkers in word-processing programs. They can make suggestions and point out potential problems, but final decisions still require human judgment. Fischer called on all AEC software companies to make their databases more open to facilitate data exchange. Standardization efforts, like the American Institute of Steel

Construction's adoption of the CIMSteel Integration Standard, will make the information available to all project participants. Such expert systems could become commercially available within two years.

The pundits speak

Culminating the conference's week of presentations was a forum called "20 Questions for the 21st Century," featuring four well-known experts in the AEC technology world: W. Bradley Holtz, editor and publisher of *The CAD Rating Guide*, an industry reference; Carl Machover, president of Machover Associates, a computer-graphics consulting firm; Joel Orr, president of Orr Associates International, a computer-graphics consulting firm; and David Weisberg, publisher and editor of *AEC Automation Report*, an industry newsletter. Although the four didn't always agree, their debate generated important ideas about the future of technology. Among the highlights:

- AE firm CEOs must not leave purchase decisions to junior-level CAD managers. A CEO whose key priority, for example, is better design will make different choices than a junior-level manager interested in faster drawings. That CEO may decide that the most courageous decision is to not buy the latest and greatest technology but to allow staff to enjoy familiar tools.
- The incompatibility problem is

An example of 4-D visualization, created by linking a CAD model to a Primavera schedule, shows a manufacturer's chemical-processing unit in successive stages of construction. When viewed as an animation, it alerts design professionals to points where work must pause until a quality-control staff member has evaluated it.

here to stay. Despite valiant attempts to standardize data formats, AE firms will probably always have old, inaccessible data. The archival medium with the longest staying power is still paper.

- Is there a future for 2-D systems? Now that 3-D model-based design systems, which improve consistency and make changes more efficiently, are becoming the norm, drawings are increasingly seen as by-products of the modeling process.
- Where will the next innovation come from? Established technology companies focus on the incremental improvements their customers demand, so look to the start-ups for the exciting software creations.

Given the current rate of change in this industry, it won't be too long until the next innovation. It may even make its debut at next year's AEC Systems show, to be held in June in Washington, D.C. ■

SOFTWARE REVIEWS Souped-up CAD for tight budgets. Spec-writing software for the design-build set. A task-tracking package for the overwhelmed.

BY JERRY LAISERIN, AIA

Quality CAD for less

TurboCAD Pro V6, IMSI USA

Architects lacking the money for high-end CAD need not settle for lightweight versions. Features once available only in costly CAD programs are filtering down to affordable levels. TurboCAD Pro abounds with architect-oriented features. A wall tool makes walls drawn with double lines match up at corners and intersections—something formerly reserved for high-priced variations. Symbol palettes bristle with predrawn elements that can be dropped into drawings. Automatic construction lines and snaps (CAD terminology for gridlike guidelines), enhance drafting productivity.

The program even converts scanned, or raster-based, drawings into CAD vector drawings. Drawings in 2-D can be extruded into 3-D models, and the operations of Boolean logic are available to add, subtract, or combine 3-D solids based on powerful ACIS modeling, made by Spatial Technology, a software developer in Boulder, Colo.

TurboCAD can plot conventional drawing output, with multiple, differently scaled views (or viewpoints) combined on one sheet. Other output options include TIF and JPG image files suitable for desktop publishing of brochures and proposals, or for posting to Web sites. TurboCAD also reads and writes DWF, a popular format for publishing CAD vector files on the Internet.

With its ability to define text or drawing entities as World Wide Web-style hyperlinks, and a built-in Web browser, TurboCAD Pro's Internet

connectivity is second only to that of Autodesk's AutoCAD 2000. Using OpenDWG technology, TurboCAD can import widely used DWG or DXF files from any CAD program, and export in these formats as well. Version 6 adds similar compatibility for Microstation DGN files.

Modest firms trying their first CAD system, or midsize firms equipping additional seats, should give TurboCAD Pro a try.

System requirements: Windows 95/98/NT4.0, Pentium166 Processor, 32MB RAM, 4xCD-ROM. Optional voice recognition: 16-bit audio, microphone, and headphones. **Contact:** IMSI USA, 75 Rowland Way, Novato, CA 94945-5001; 415/878-4000; www.turbocad.com

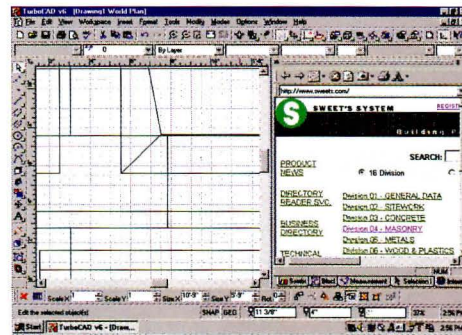
Specifications for design-build

CSI/DBIA PerSpective, Building Systems Design

The traditional process of spec writing is ill-suited to design-build, which requires a full set of drawings and specifications before a contract price is settled on. So building owners often want to work with the design-build team to define projects in performance-based terms well in advance of design details.

PerSpective, specification software developed under contract to a joint venture of the Construction Specifications Institute (CSI) and the Design-Build Institute of America (DBIA), fulfills the design-build need for a performance-based specification system. Set up as a master database of specification sections, PerSpective offers a checklist-style interface that automatically identi-

TurboCAD Pro V6 reasonably priced CAD.



fies other sections related to, or in conflict with, each menu choice. This guided-tour approach to selecting building systems defines performance separately from design and product selection, although PerSpective also supports up to five levels of subclassifications.

PerSpective is available as a subscription-based service with biannual updates.

System requirements: Windows 95/98/NT/2000, Pentium166 processor, 64MB RAM, 32xCD-ROM. **Contact:** CSI/DBIA-PerSpective, Box 85050, Richmond, VA 23285-9242; 877/893-0896; www.perspectivenet.com

Task handler

FastTrack Schedule 6.01, AEC Software

As projects grow, tracking the order of events and the people responsible for them becomes increasingly complex. Project management software often provides elaborate monitoring and reporting capabilities suitable for rocket scientists designing space stations.

FastTrack breaks scheduling tasks into compact, understandable components. It is suited to a project architect who uses schedules more for communication than for management. With rows representing tasks and columns representing increments of time, FastTrack's interface provides a simple framework for drawing horizontal bar

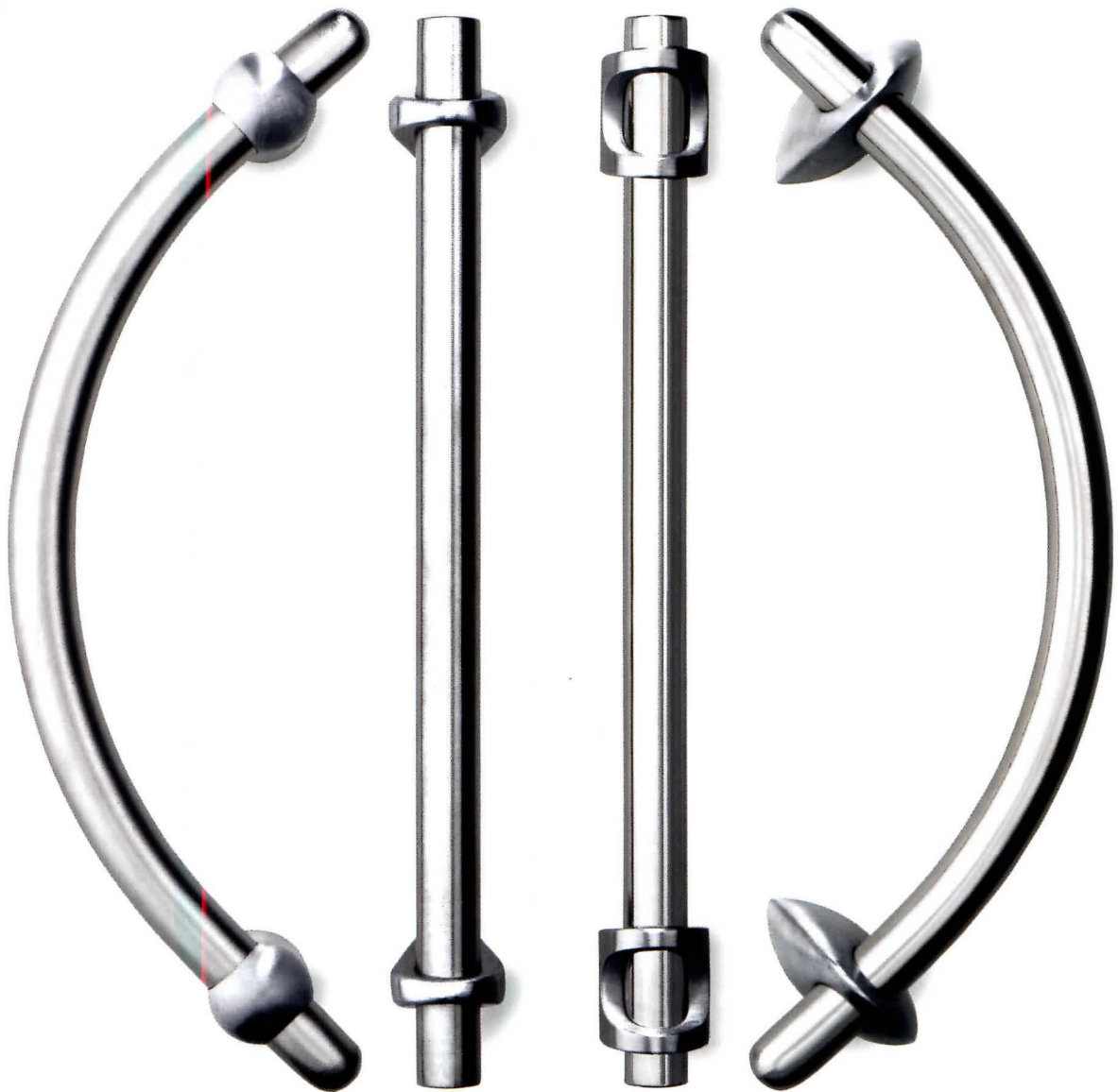
graphs of linked activities. Task bars can be rearranged by dragging and dropping with the computer mouse, while the software takes care of task labels, durations, start/stop dates, and other pertinent data.

Repetitive steps can be automated with the internal FastSteps scripting tool or linked to other programs via AppleScripting (Macintosh) or Microsoft Visual Basic (Windows PCs). Version 6.01 links to full-blown project management programs (the ones used for space stations) by opening or saving MPX files—used by the market-leading Microsoft Project.

The goal is to keep architect-client relationships on track with clear timelines for decisions and deliverables. In-house staff and consultants can mesh their roles more effectively with a shared schedule. And the software is easy to use.

System requirements: Apple Mac Plus with OS7.1 or higher, 4MB of application RAM; or any Windows 95/98/NT/2000 PC. **Contact:** AEC Software, Inc., 22611-113 Markey Court, Sterling, VA 20166; 800/446-9413; www.aecsoft.com ■

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CORRESPONDENT'S FILE Pastels and preservationists: Miami Beach navigates the tension between heritage and contemporary design.

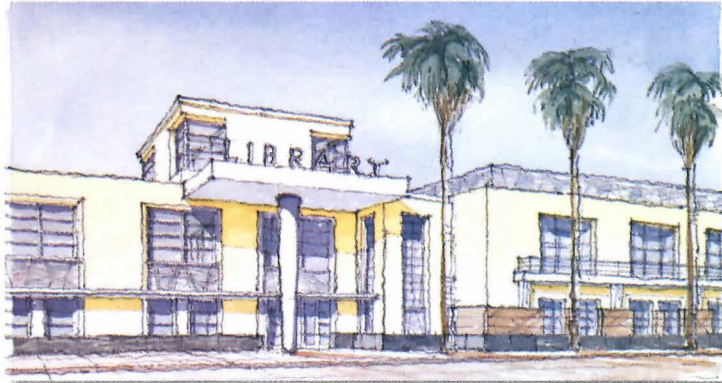
BY BETH DUNLOP

Miami Beach has its share of apocryphal stories. There's the one about fashion photographer Bruce Weber posing models against a starkly etched backdrop of Art Deco buildings. When the results were displayed, his client, Calvin Klein, said, "I don't know where this is—but I like it." Another is television producer Michael Mann's supposed "no earth tones" edict for his show *Miami Vice*, which made the pastel-hued Art Deco hotels the star of the show's flashy camera work. The world fell in love with Miami Beach's Art Deco district from a distance.

Only a few years earlier, preservationists were having a hard time persuading public officials that the mile-square repository of some 800 Depression-era stucco structures was much more than a bunch of old buildings with lots of code violations. Most people couldn't look behind the layers of peeling gray and beige paint to see the crisp geometry and whimsical architectural details.

The Art Deco District was finally designated a national historic district in 1979. But even in the early 1980s, the spot was not widely celebrated. Indeed, it has been a quick two decades from that relative obscurity—when just a handful of preservationists led by the late Barbara Capitman fought to have the district recognized and protected—to worldwide renown. Miami Beach's buildings are more than familiar today as backdrops for

Beth Dunlop is a contributing editor at RECORD and was the Miami Herald's architecture critic from 1979 to 1993.



Robert A.M. Stern's prospective design for the new Miami Beach Library.

films, photo shoots, and television shows. It is glamorous and funky, but it is also a historic district. And it is the consistent style and scale of the buildings—most of which were constructed between 1933 and 1941 and designed by just a handful of architects—that make it so captivating and spirited.

The paradoxes of preservation

Today, those buildings are painted in an array of ice-cream-parlor pastels and draw tourists from around the globe. And they are being joined by a number of new buildings designed by a list of prominent architects that ranges from Arquitectonica to Carlos Zapata. But as in any historic district, difficulties abound.

Primary among these is maintaining the historic architecture without losing its integrity, a trickier problem than one might expect. Many of the buildings were constructed with beach sand and salt water and are failing. In recent months, two important structures—the 1939 Royal Palm Hotel and the 1920s-era Sender Building, a Moorish revival

structure—were demolished because they had, at least according to city inspectors, become unsalvageable.

Also causing problems is a narrow municipal interpretation of the

Preservationists argue that this doesn't mean glass-and-steel in an all-stucco historic district, citing other portions of the standards that insist that new buildings be compatible with the old. A growing group of preservationists and architects is urging a new look at the secretary of interior's standards to allow historicist buildings, and even replicas of lost ones.

Arthur Marcus, AIA, the Miami Beach architect responsible for the renovation of the Palm Court Hotel and chairman of the city's design review board, says he often walks a fine line. In the case of the Sender Building, the board exhorted the architects replacing it to reuse as many Afro-Moorish elements—par-



Isozaki's addition to the Bass Museum should be completed this year.

secretary of the interior's standards for new buildings in historic districts. Miami Beach officials emphasize the standards that call for a new building to be of its own time.

ticularly the cast stone arches—as possible. The design, by Miami Beach architects Hawrylewicz Robertson, invokes the old and the new, with a strong allusion to the work of Antoni



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CIRCLE 26 ON INQUIRY CARD

Gaudi. The Royal Palm, demolished earlier this year, was to have been incorporated into a new Crowne Plaza hotel; now the Crowne Plaza architect, Arquitectonica, is hoping that by recreating the Royal Palm as part of the new hotel's design, a precedent can be set.

The official Art Deco District is one-mile square and runs from 6th Street at the south to 23rd Street at the north, and from the Atlantic Ocean at the east to Alton Road—a rather bustling commercial thoroughfare—at the west. Despite the relative homogeneity of the architecture, the district has its own variants—oceanfront hotels, quieter (though one could hardly say quiet) residential neighborhoods, the promenadelike Lincoln Road, and the Museum District.

In the hotel district, along Ocean Drive and Collins Avenue, several points of contention have emerged, among them whether to allow rooftop additions to hotels and whether to maintain stricter standards on interior renovations. Architects and developers have taken varying approaches to renovation: Philippe Starck's redo of the 1947 Delano Hotel, where the designer did not pay homage to the existing interior architecture but invented his own Alice in Wonderland-like world, differs from architect Gail Baldwin's, AIA, elegant but straightforward restoration of the 1940 National Hotel next door. Baldwin actually turned to the city's archives, finding detailed plans on microfilm, and returned the hotel to a near-original state. A third model is

found in the small, jewel-like Tiffany Hotel, where owner Tony Goldman hired fashion designer Todd Oldham to do the interiors. The result: A blending of old and new, expected and unexpected.

The latest in lodging

At the northern terminus of Ocean Drive, three new buildings underscore other issues—relating to scale and style—that highlight the inconsistencies between the formulaic, mass-merchandise approach to hotels and condominiums today and the gentler, simpler buildings of the past.

Ocean Drive now dead-ends into a condominium called 1500 Ocean, designed by Michael Graves, FAIA, and still under construction. The color palette is paler than Graves' usual and the form of the building—an apartment slab atop a parking podium—is less stylized than many of his other structures. The Graves touches are comparatively subtle, including an unexpected angularity at the building's top and decorative wavelike balcony railings.

Next to 1500 Ocean sits a complex called Il Villaggio, which is painted in Graves' more predictable Tuscan-inspired hues. The design and coloration of the building, in fact, provoked at least a momentary rivalry, prompting Graves to term it the "Il Village" in a lecture. Colors aside, Il Villaggio—the work of Miami architect Luis Revuelta—does not recall Graves necessarily, though it is designed in what might be called "condo-postmodern" style.

Arquitectonica's new headquarters for the Miami City Ballet.



Around the corner is the vast new Loew's Hotel, built as Miami Beach's primary convention hotel and designed by Nichols Brosch Sandoval & Associates. The Loew's strikes an odd balance between context and modernity; it is indeed Deco-ish, but is also vast and bulky, the kind of hotel one would expect to encounter along one of Orlando's theme-park-dominated highways or perhaps in Las Vegas. Inside, the connection to the historic district is even more tenuous; with fountains and figurative sculpture, the interiors seem to belong more to an upscale suburban shopping mall.

Meanwhile, in the Museum District, three new buildings hold out the promise that Miami Beach could have the cultural underpinnings necessary to make it a desirable place to live, as well as visit. The setting is one of enormous potential: Three cultural institutions and a number of handsome old hotels border on redone Collins Park, which some day—with the elimination of a beachfront parking lot—will connect with the ocean.

Arata Isozaki, Hon. FAIA, working with the Miami firm Spillis Candela and Partners, has designed an addition to the Bass Museum, which should be completed within the year. Arquitectonica has designed a new headquarters for the Miami City Ballet. Next to that is

For a restoration of the 1940 National Hotel (left and below), Gail Baldwin turned to Miami Beach's archives, finding detailed plans on microfilm. The hotel was then returned to a near-original state.



the site of a new library being designed by Robert A.M. Stern, FAIA. These three buildings—different from one another but respectful of both the scale and cadence of the surrounding historic buildings—offer the possibility of a new architectural district-within-the-district. Each pays homage to one of Miami Beach's great architectural jewels, the original 1930 Bass Museum building. It is arguably the Beach's first Art Deco structure and certainly one of the city's most beautiful buildings. Eventually, all three cultural institutions will flank the reconfigured Collins Park.

Change has also overtaken Lincoln Road, once Miami Beach's premier shopping street (home to Saks Fifth Avenue and Bonwit Teller, along with other luxury retailers), which had been converted into a pedestrian mall in the early 1960s by 96-year-old architect Morris Lapidus. At the time, Lapidus paved the sidewalks in jazzy black-and-white striping and designed a number of '50s-style futuristic shade structures that still

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stand today. Nonetheless, the street began a decline in the 1980s as fashionable shops moved to upscale malls or closed, leaving behind a handful of shoe stores, electronics outlets, and souvenir shops.

Taking action

At the mall's lowest point came several interventions. Under the auspices of the South Florida Arts Center, a group of artists took up occupancy in Lincoln Road's empty storefronts, turning them into studios and galleries. One of the street's old movie houses was renowned as a small performing arts hall; a second, the Lincoln Theatre, was transformed into a concert hall for the New World Symphony, a world-recognized orchestra of young musicians conducted, at the time, by the San Francisco Symphony's Michael Tilson-Thomas.

The Miami City Ballet, headed by Edward Villella, took over the former Bonwit Teller store. Today, it is

well on its way to recovery. A renovation plan by the Cambridge, Mass., firm Wood and Zapata (in consultation with Lapidus) and Cambridge-based landscape architect Martha Schwartz kept most of the '60s-era mall design. Schwartz's proposals, which would have given each block a unique tropical landscape, were not executed, but a sleek, dramatic information kiosk by Carlos Zapata is now being installed.

Zapata has gotten more notice for the Publix supermarket he designed just outside the boundaries of the historic district—a sleek, postindustrial shopping machine of polished steel and glass. At a recent Miami Beach gathering of arts journalists from across the country, a number of participants organized a field trip to the grocery store. Zapata's Publix, however sleek, fits into its context of a neighborhood that includes auto-body shops, postproduction studios, and animal hospitals.

In historic districts, success often breeds as many problems as it solves, and various controversies continue to surface in and around the Art Deco District. Where once there were innovative shops and restaurants, chains are beginning to proliferate—three Starbucks, two Gaps, and a TGI Friday's restaurant at Fifth Street and Ocean Drive, the gateway corner to the district. There are, by rough estimate, twice as many cars as parking spaces, and even several sizable garages (including Arquitectonica's inventive Ballet Valet garage, almost a mile away from the new Miami City Ballet building) has not solved the problem.

Along its periphery, Miami Beach also has an abundance of new construction—including a number of condo towers in the 30- to 40-story range—raising the question of whether the already clogged streets and overloaded service industry can bear the load; this is a narrow strip of an island.




Todd Oldham's Tiffany Hotel interior.

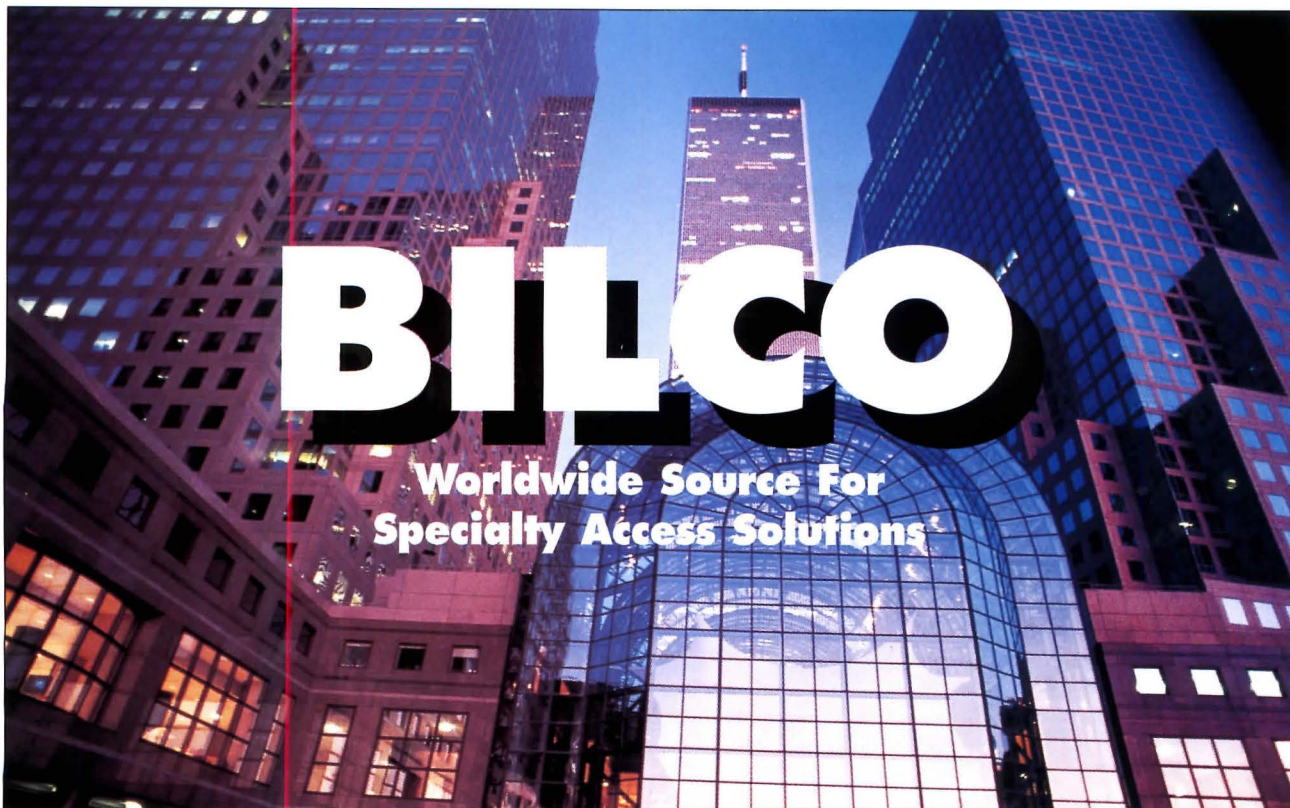
These conundrums loom as large as the more subtle issues of appropriate architectural intervention and conscientious preservation. Yet when one looks back 20 years to the day when a collection of dilapidated buildings became a national historic district, the transformation seems almost miraculous. ■

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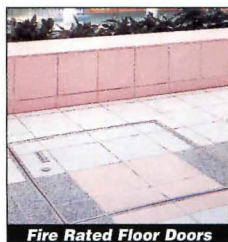
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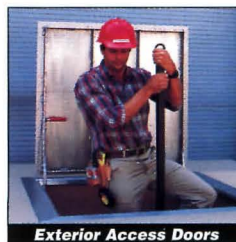
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CCA'S DESIGN COMPETITION YIELDS BOLD PLANS FOR NEW YORK

Will it be built? Not likely. But it certainly will generate discussion. New York architect Peter Eisenman, FAIA, has won the Canadian Centre for Architecture's first Competition for the Design of Cities with a provocative scheme (above) for Manhattan's West Side that involves an undulating public path from Eighth Avenue to the Hudson River, terminating in a sports stadium built over the river.

The participants in the competition—which carried a \$100,000 first prize—were asked to develop designs for a 3 million-square-foot area in the West 30s, much of it occupied by railyards or isolated and lacking public access. The five architects—Eisenman; Van Berkel & Bos UN Studio of Amsterdam; Morphosis of Santa Monica, Calif.; Cedric Price of London; and Reiser & Umemoto RUR Architecture of New York City—proposed varying degrees of new construction.

Eisenman called for an office development on the current site of Madison Square Garden, an addition to the Jacob Javits Center, and the extension of subway service to the area. RUR imagined a huge public

commons with a glass roof, big enough to accommodate 90,000 people. Van Berkel & Bos conceived a larger and more technologically advanced Javits Center, along with a new pier and public gardens. Morphosis proposed a long structure along the railyards, with public areas on its roof. Perhaps the most unexpected proposal was Price's; he chose to leave the area basically undeveloped, simply placing windmills along the river. *Soren Larson*

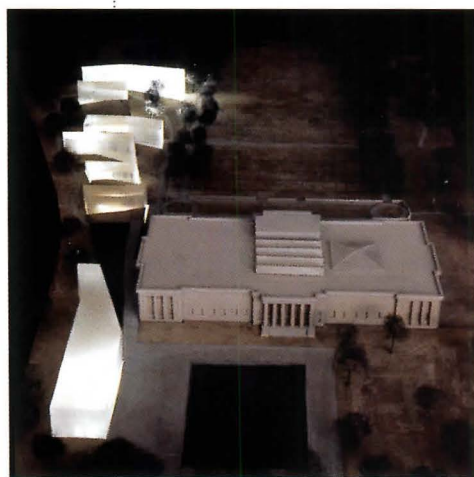
HOLL TO GIVE KANSAS CITY MUSEUM A STRIKINGLY MODERN PARTNER

The Nelson-Atkins Museum of Art in Kansas City will soon have an addition that differs dramatically from its Beaux-Arts predecessor. Last month, the museum selected New York's Steven Holl, FAIA, to design the expansion—and Holl's scheme isn't short on daring. The 140,000-square-foot addition will be mostly submerged and features seven glass extrusions, which appear to be strewn about on the grass along a 17-acre sculpture park east of the older building. Visitors arrive at a large stone plaza with a reflecting pool and enter either a glowing three-story lobby or an underground parking garage lighted by glass lenses inset in the pool. From the lobby, a ramp leads down to what Holl calls an umbilical connection, allowing passage through to the new galleries or west to the old building.

Holl took a risk with his submission, because the program called for adding onto the existing structure's north face. "We looked at the site and felt that the east made more sense," he says. "It opens up the site, and people can experience the sculpture

garden better." The design is more than interesting forms, Holl stresses: "It has a lot of practical aspects as well." The galleries are all on one level, making for an easy procession, he notes, and the glass lenses contain structural components that carry light to the galleries and hold HVAC ducts. The galleries will also have rotating walls, allowing exhibitions to be built on either a north-south or east-west axis.

Holl bested five other competition finalists, including Tadao Ando,



Christian de Portzamparc, Annette Gigon and Mike Guyer of Zurich, Carlos Jimenez of Houston, and Rodolfo Machado and Jorge Silvetti of Boston. Construction is expected to begin in 2001. *S.L.*

BRITAIN BATTLES DECLINE Curtailing England's love affair with the semidetached house, suburban densities and an ingrained anti-urbanism are the ambitions behind *Towards an Urban Renaissance*, a 300-page report just published by England's Urban Task Force, chaired by Lord Rogers of Riverside. Set up by Deputy Prime Minister John Prescott in May 1998 to identify causes of urban decline in England and recommend solutions to bring people back to city neighborhoods, the task force included leading academics, developers, architects, planners, government officials, and groups interested in urban and rural environments.

The report argues that changes in demographics and technology mean that English cities must now compete with Continental ones as desirable places to live and work. It also found that England has the worst quality of urban life in Europe, rating 20 years behind places like Amsterdam and a rejuvenated Barcelona. "People make cities, but cities make citizens," Rogers has stated, and the report argues that while regeneration must be design-led, it will fail if problems of economic and social exclusion aren't tackled. Its 100 recommendations set out the policy mechanisms needed to create sustainable urban areas that are compact and neighborhood-focused, with a mix of different activities to strengthen social activity and civic life, and that favor walking, cycling, and public transport.

The report forms part of the first major review of urban policy in England in 20 years, a review that will include economic, social, and educational policies. It remains to be seen if the legislation and the necessary funds will be forthcoming, though the report has been well received by the public and the government. *Steven Spier*

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BERLIN PROVES FITTING SETTING FOR FOSTER'S PRITZKER FETE



Sure, last year's bash for the Pritzker Architecture Prize at the White House with Bill and Hill was cool. But having the 1999 ceremony in Berlin brought architecture, more than power and celebrity, into clear view. While the architecture comes in varying degrees of quality, there is much to see. Furthermore, the newly renovated Reichstag [July, page 102] by the 1999 Pritzker recipient, Lord Norman Foster, HON. FAIA, glacially dominates the landscape of a reported 700 building cranes, historic buildings, trees, and empty lots.

The \$100,000 prize, given by the Hyatt Foundation, was awarded to Foster in June in a black-tie ceremony at the resplendently Neoclassical rotunda of Schinkel's Altes Museum. Speakers included the mayor of Berlin, Eberhard Diepgen; the president of the German Parliament, Wolfgang Thierse; J. Carter Brown; and foundation president Thomas J. Pritzker. Foster graciously announced the money would go to his own foundation, which sponsors architectural education and research.

A reception followed at Mies van der Rohe's stringently elegant National Gallery, where former laureates (Rafael Moneo; Hans Hollein, HON. FAIA; Gottfried Bohm; Frank Gehry, FAIA; and Renzo Piano) mingled with colleagues (Lord Richard Rogers; Zaha Hadid; Helmut Jahn,

reminiscent of the ones Schinkel painted (without the cranes) almost 200 years ago. The interior of the dome, where ramps swirl around a central mirrored funnel, captivated viewers; one of them even suggested having it turned into a disco by night.

Gehry guided the tour group to his soon-to-be completed DG Bank on the nearby Pariser Platz, with Michael Blackwood's documentary film crew trailing in his wake. Though the atrium's biomorphic conference room had not received its steel cladding yet, most of the offices around the open space were finished. The highly crafted wood walls were the source of some (envious?) ribbing of Gehry, who has admitted

midable Holocaust Tower, they were prodded into debate by the graphic boldness of the windows in the galleries—for which displays are yet to be installed.

After Berlin, what could the Pritzker people do for an encore? They have made a point of not necessarily having the ceremony venue and the choice of architect converge; Richard Meier, FAIA, got his prize at the National Gallery in Washington, D.C.; Moneo his at the Getty; and Piano his *chez* Clinton. Yet the appropriateness of Berlin strengthened this year's occasion. The Pritzker jury argues that it gives an award for "lifetime achievement," hence no "struggling architects or dark horses," in Carter Brown's words. Presenting the award in a location where it is possible to see testimony for the decision makes the choice seem more credible. *Suzanne Stephens*



Hans Hollein and Richard Feigen enter the Altes Museum (top); Thomas Pritzker speaks (left).



Lord Norman Foster and J. Carter Brown (left); the museum rotunda (right).

FAIA; Henry Cobb, FAIA; and James Freed, FAIA) and jurors (Ada Louise Huxtable, HON. AIA; Toshio Nakamura, HON. FAIA; and Jorge Silvetti, ASSOC. AIA). Then guests were whisked off to dine in the low-key, lushly modern ballroom of Moneo's Grand Hyatt on Potsdamer Platz.

As part of the celebration, a small but intense architectural tour of the newest Berliner architecture was organized for the day before the awards. Obviously, a visit to the Reichstag was in order. Foster's glass dome afforded panoramas of the city

he is not a "details man."

Opportunity for drive-by criticism was allowed during the tour bus' jaunt past Jahn's gargantuan Sony project at Potsdamer Platz, not far from Piano's tailored Daimler-Benz development [October 1998, page 124]. A separate side trip was needed to take in the glass-coned interior of Jean Nouvel, HON. FAIA's Galeries Lafayette.

The final stop was Daniel Libeskind's arresting Jewish Museum [January, page 76]. If the visitors were hushed into silence by the for-



MORE BIG PLANS FOR BERLIN

Berlin has approved a master plan for Museum Island, a site in the historic center of the city that hosts an assortment of cultural attractions—including the Altes Museum, Neues Museum, National Gallery, Pergamon Museum, and Bode Museum—all buildings constructed between 1825 and 1930.

The plan, conceived by London's David Chipperfield Architects in association with Hilmer & Sattler and Heinz Tesar, strengthens the interactive, campuslike quality of the buildings and creates new links among the museums, unifying the various collections. In addition, a new exhibition and entrance building will be constructed.

Chipperfield won the master-plan commission shortly after winning an international competition in 1997 to restore the Neues. Local officials expect to spend 10 years and almost \$1 billion to implement the plan. *Soren Larson*



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CIRCLE 32 ON INQUIRY CARD

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PAUL ALLEN STAKES CLAIM IN AN OLD SEATTLE NEIGHBORHOOD

Paul Allen is making his mark in Seattle. Apart from new stadiums for his sports teams and a Frank Gehry-designed music museum, the Microsoft cofounder and billionaire is busy renovating historic Union Station as the centerpiece of a \$250 million development. At the core of the scheme, NBBJ is design-

ing a sleek, sculpted headquarters next to the station for Vulcan Northwest, one of Allen's development companies.

The design for the headquarters, by Peter Pran, AIA, of NBBJ, with John Savo as principal-in-charge and Joey Myers as lead senior designer, is angled on its site

to form a direct axis with the Space Needle. "It's going to be very transparent, with a tilting wall," says Pran. "[Allen] wanted something different—but that we got this building through in a historic district is somewhat amazing." The 300,000-square-foot project should be finished next May. *Soren Larson*

NCARB RATIFIES AGREEMENT TO WORK WITH CHINESE

The National Council of Architectural Registration Boards (NCARB) took a dramatic step toward interaction with the People's Republic of China at its annual meeting in June. At the Charleston, S.C., gathering, delegates voted to ratify a two-phase cooperation agreement that starts a process of establishing the mutual recognition of architects between the two countries. NCARB has been working with its Chinese counterpart, NABAR, since the early 1990s to develop mutual standards. Now, an accord will go into effect next July that enables architects to practice in the respective foreign country under specified conditions and in affiliation with a local architect. Eventually, the two bodies would like to create an agreement that enables and regulates an exchange of architectural practice between the countries.

NCARB also addressed the growing concerns of interns—many feel underpaid and underacknowledged—by passing a model law allowing use of the term *intern architect* or *architectural intern*. But it is still up to the states to decide whether to allow the terms. *S.L.*

UNDER THE BRIDGE The Bridgemarket complex, under the western arches of Manhattan's landmarked Queensboro Bridge, has good bones. The space—featuring 36- to 40-foot arches that were masked with ivory tiles the Guastavino Fireproof Construction Company early in the century—once hosted a thriving market. But the site has been squandered for the last 50-odd years, awaiting its next incarnation.

After many years of redevelopment plans, a new Bridgemarket—revamped for \$24 million—is set to open in November. New York's Hardy Holzman Pfeiffer Associates (HHPA) was tapped in the 1970s to begin restoration of the 98,000-square-foot area, and the firm designed the core and the shell around the new spaces. Pamela Loeffelman, AIA, senior associate with HHPA, describes the space as "the belly of a whale," and the arches do suggest an awesome Jonah's-eye view.

CD Partnership is the architect of a new Terence Conran Shop and a new

Conran's restaurant called Guastavino's; Sam Burman and Roland Gebhardt designed a Food Emporium under the vaulting, and landscape designer Lynden Miller created a public plaza. Conran's restaurant will have a ritzy branch on the mezzanine that will take advantage of the arch perspectives facing west, while customers in the less-grand brasserie, Club Guastavino, below will have a dramatic view facing east under the bridge's main pylons. The entrance to the chic Conran's housewares shop in the basement will be a

glass pavilion with a stainless-steel canopy, enticing consumers down a spiral stair to the enormous sublevel space.

Though the site suffers from traffic noise and a bracing wind-tunnel effect at times, Miller is confident the modest park planned for the 59th Street side will be inviting; the focal point will be the restored 1919 granite and mosaic Abundance fountain, designed by Charles W. Stoughton and originally located on the southeast bridge pier. *Victoria C. Rowan*





James Rosenquist's *The Swimmer in the Econo-mist*, installed in Mass MoCA's Tall Gallery (left); Natalie Jeremijenko's *Tree Logic* (right), installed in the courtyard.

LONG IN THE MAKING, MASS MOCA TRANSFORMS A BLUE-COLLAR TOWN

After 13 years of near-death experiences, the Massachusetts Museum of Contemporary Art (Mass MoCA) has finally opened in downtown North Adams, a recovering blue-collar town in the state's northwest corner. With six 19th-century mill buildings and 220,000 square feet of exhibition and performance space, Mass MoCA is the largest contemporary art museum in the country—and another 20 buildings and 550,000 square feet await recycling into galleries, theaters, studios, and commercial space. “We were conceived as a laboratory for collaborations between the visual and performing arts, as well as a home for monumental art that otherwise would be unknown,” explains director Joe Thompson. “Few institutions are better equipped to deal with these issues.”

The mill buildings previously housed Sprague Electric, a leading capacitor manufacturer that dissolved in 1985, eliminating 4,200 jobs. Overnight, the North Adams economy collapsed; unemployment soared to 25 percent. The following year, neighboring Williams College was looking for a place to show raw and edgy contemporary art. Museum director Thomas Krens—now director of the Guggenheim—approached the city about converting the abandoned Sprague buildings into a museum and appointed his

associate Joe Thompson to lobby the state for money. These efforts, circumscribed by a recession and the implosion of the National Endowment for the Arts, eventually produced \$22 million in public funding and another \$9 million in private support, enough to renovate six buildings and launch the institution.

Subtle alterations

The Sprague buildings were not designed by architects. They were assembled by carpenters, masons, and machinists, who added and subtracted pieces in response to

changing conditions. Bruner/Cott Associates of Cambridge, Mass., not only respected the structures' quirky, circumstantial qualities, but also dignified them with subtle and nearly seamless interventions: Rugged ceiling trusses in the main galleries that look original; mottled brick and rough timber flooring blending with sleek metal doors and ducts; new clerestories coexisting with bricked-in windows.

Mass MoCA's inaugural exhibition, *Test Site*, has no particular theme other than showing off the museum's stunning spaces. One of them, nearly 300 feet long, is devoted to Robert Rauschenberg's *¼ mile or 2 Furlong Piece*. Joseph

Beuy's *Lightning with Stag in its Glare* occupies its own two-story room, next door to an installation by Italian sculptor Mario Merz.

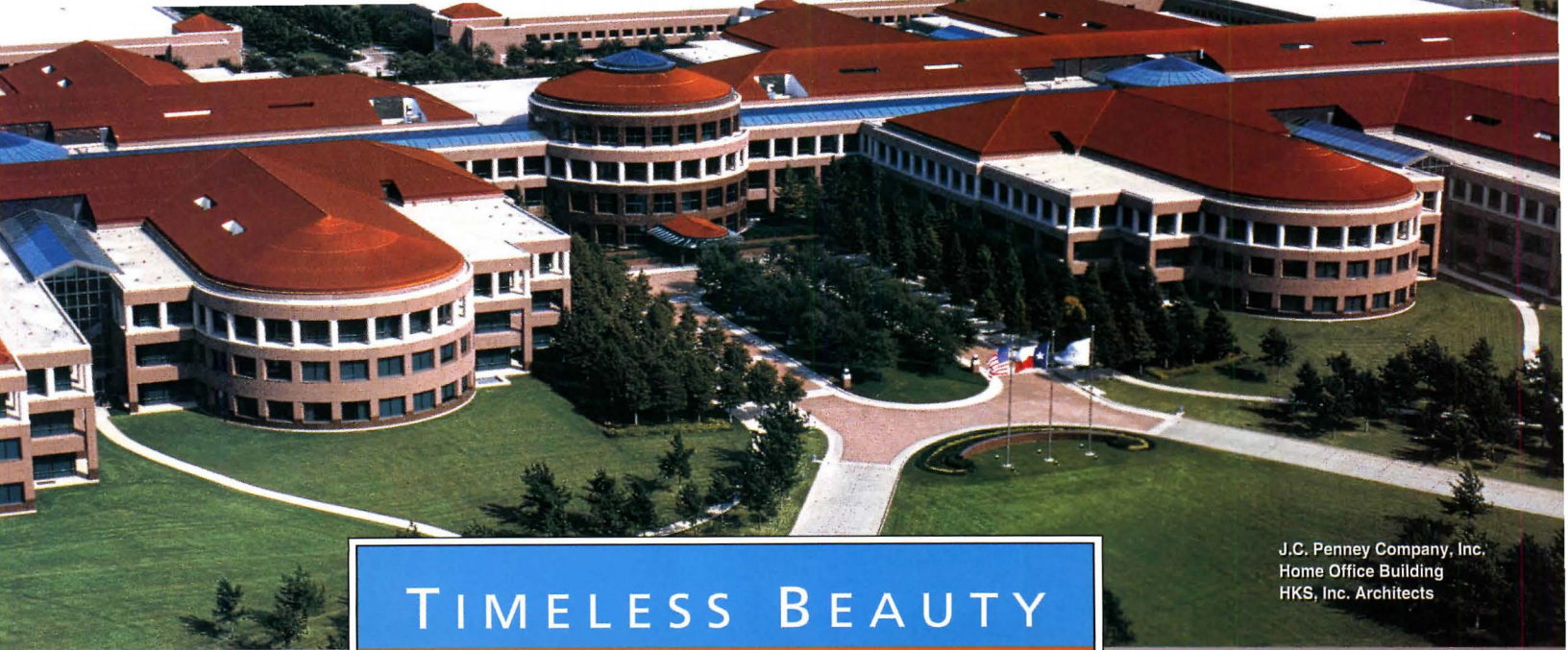
North Adams is not a cultural mecca, where visitors can move from attraction to attraction. Those who make the pilgrimage will expect to be rewarded with innovative programs. Mass MoCA must also cultivate local audiences that will support it when the summer tourists have gone. This summer's activities are in full swing, marking a good debut for an institution that used to be derided as MegaloMoCA, a place even some supporters once conceded might have been better off left for dead. *David Dillon*

SHEDDING LIGHT ON SOLAR OPTIONS Are we experiencing a new dawn for solar energy? Better technology and a surge in government support worldwide point to just that, according to presentations at Solar 99, the AIA Committee on the Environment's June conference. The biggest news: The growing use of photovoltaics (PVs). From the upper floors of a Tokyo skyscraper clad with energy-producing glass to a new PV rainscreen wall on an IKEA factory in Sweden, PVs increasingly serve as architectural features not afterthoughts. PVs backed by clear glass are used for daylighting on atria and vertical facades across northern Europe. Large area panels are utilized as a building material to replace expensive finishes, such as polished stone. Even vision glass, which converts sunlight to electricity (rather than reflecting it onto a neighboring building), is now available in Japan. Intended to compete with other architectural glass, it should hit the U.S. market within two years.

Government backing of solar design is on the rise. A California rebate covering nearly half of PV system costs could result in 10,000 new installations. The Clinton Administration's proposed federal budget contains a \$2,000 residential PV tax credit on top of the 10 percent commercial credit already in place.

Ambitious national programs already exist across Europe. Schools make favorite solar sites—Austria and Holland have vigorous school programs, according to Steve Strong of Solar Design Associates. Closer to home, Ohio recently committed to 200 new school solar installations. Wisconsin Public Service, an investor-owned utility, intends to install PVs on every school in its territory under a special green-power program. Numerous public and private programs, as well as local initiatives, also target school facilities.

The biggest boost of all may come from state utility deregulation legislation. Texas, for instance, just mandated 2,000 megawatts of renewables-based electricity—equivalent to a large nuclear plant—over the next decade. The entire U.S. production of PVs last year was only 52 megawatts. *David Kaufman*



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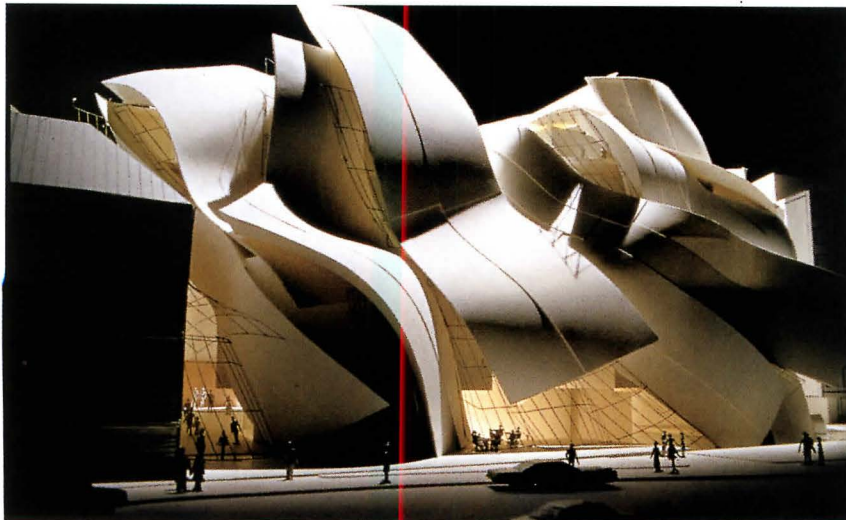


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GEHRY THROWS ANOTHER CURVE WITH EXTENSION TO CORCORAN GALLERY



Add another museum to the portfolio of Frank O. Gehry, FAIA. Gehry has won an invitation-only competition to design an addition to the Corcoran Gallery of Art and College of Art and Design, in Washington, D.C., besting fellow finalists Daniel Libeskind and Santiago Calatrava. After being winnowed from a field of 10 prominent architects recommended to the Corcoran by *New Yorker* critic Paul Goldberger—who acted as consultant to the museum—the finalists made presentations to both museum trustees and a selection committee in mid-June; Gehry was then named the winner. In addition to the design of an addition, Gehry's commission (his early concept model is shown at top) includes a substantial renovation of the original Beaux-Arts building, designed by Ernest Flagg in 1897, with a 1928 addition by Charles Platt.

Corcoran Director David A. Levy intends to consolidate the college, currently spread throughout the city, and expand gallery space, bringing everything under one roof. Local architects Malesardi Steiner Keyes and McCommons prepared the competition program, which



included the following key points:

Entry: The current museum entry, flanked by sculptural lions, is on 17th Street and includes a grand stair with axial galleries around an atrium. The school is entered from New York Avenue. It is possible to visit either institution without being aware of the other, and the committee was looking for a solution that encouraged interaction.

Connection: The juncture of old and new was important. Gehry's scheme kept the two existing entrances, while proposing to open up an existing gallery in the old

museum for access to the new addition. New school spaces, studios, and offices would overlook this interior atrium, which Gehry refers to as "the canyon." Calatrava (left middle) also kept the two entries, but developed the existing rotunda, which sits at the head of Flagg's grand stair, using it as an organizing focal point. Libeskind's scheme (left bottom) proposed a single entry from New York Avenue, with an atrium that included a ramp within, intended to enhance participation in the space.

New spaces: In addition to housing most of the school, the addition would hold administrative offices and a donors' lounge. An oversized freight elevator for art and a truck dock were

also included.

Form: Museum trustees were looking for a bold design to draw attention to the institution. Gehry referred to "a certain pleasantness and sensibility" that characterizes design in the nation's capital. "Hopefully," he added, "we'll be able to shake that up a little."

What clinched the commission for Gehry, according to Levy, was his willingness to work with the Corcoran trustees and staff and his "meticulous study of our program and his ability to combine his progressive vision with our practical needs."

A long approval process still remains, but construction is optimistically slated to commence in fall 2001. With a current budget of \$40 million, the extra time could help beef up the coffers so that Gehry's scheme won't be compromised too severely by limited funds.

Ellen Palmer Sands

WASHINGTON UPDATE

Architects are working on a passel of public projects in Washington. Charles Atherton, secretary of the Commission of Fine Arts, provides updates:

World War II Memorial: The commission, awarded through a competition to Friedrich St. Florian, has been going through approvals for two years. Early negative reactions led to a revamped scheme, and criticism remains about scale and symbolism. Some object to the insertion of the memorial across the entire breadth of the Mall, arguing it will destroy vistas and impede pedestrian circulation. Notes Atherton: "Everything has been approved except the central focal point; whether it's a piece of sculpture or something else has to be resolved. The last thing we need, though, is another eternal flame."

National Museum of the American Indian: Douglas Cardinal, the original architect, continues to bicker with the Smithsonian over rights to the design. After Cardinal was dismissed and replaced by Polshek & Partners, the Commission of Fine Arts objected to some of Polshek's design changes, saying, "we wanted all the subtleties of Cardinal's design preserved." After another crack at it, the Polshek scheme, with Cardinal's features, received approval in May.

The Martin Luther King Jr. Memorial: The original schedule—a competition with a December deadline and a commission in January—now seems highly unrealistic. The King memorial committee's proposed site—adjacent to the FDR Memorial—is not prominent enough, according to critics on Washington's National Capital Planning Commission (NCP). An alternative site proposed by the NCP, near the Vietnam Memorial, has been rejected by the King memorial committee.

National Music Museum & Center: D.C. firms KCF-SHG and Leo A. Daly are working with several public institutions on the center, which will be downtown, on the site of the to-be-demolished convention center. *E.P.S.*

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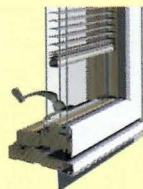
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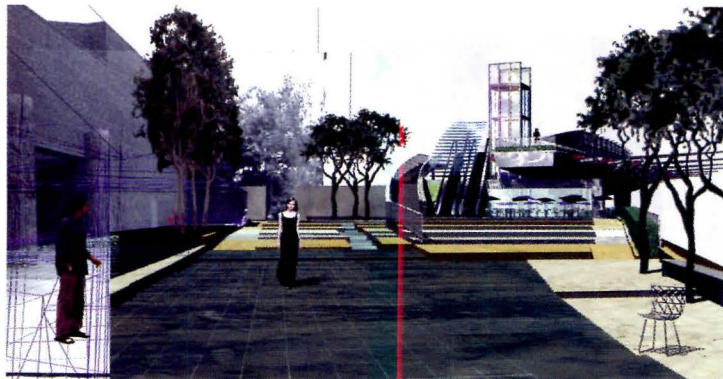
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A UNIQUE, BIRDLIKE BRIDGE JOINS TWO CALIFORNIA SHOPPING CENTERS

Landscape artist Kathryn Gustafson's project linking Costa Mesa, Calif.'s South Coast Plaza and Crystal Court shopping centers—a curving 600-foot long, posttensioned concrete and steel bridge, mimics a bird in flight. The structure's trajectory, backbone, and vine-covered promenade merge into one swooping form.

At one end, the elegant bridge, which will channel pedestrians from one complex to another, will fuse with the glass facade of Crystal Court. At the other, it will touch down on a new terrace, Strata Garden, attached (above grade) to South Coast Plaza. What Gustafson calls the "flying bridge" will comprise a 14-foot-wide stroll section, shaded north-facing benches, and outriggers to balance the soaring form while providing support for bougainvillea vines.

The outriggers—tapered galvanized steel I-beams—are suggestive en masse of the outstretched wings of a soaring bird. A galvanized steel

frame will surround and cover the bridge, while perforated and solid corrugated stainless-steel panels are to cover the walkway and benches, respectively. The bridge will meet the terrace in a linkage of multiple forms, including an elevator, escalators, a monumental stair, and a cafe with hidden kitchen.

Ellerbe Becket Architects (Seattle) collaborated on the bridge, and Anderson and Ray Landscape Architects (Seattle) partnered on the garden terrace.

The Strata Garden (above)—a figurative tableau interpreting the ecology, plate tectonics, and cultural history of Southern California—is to be planted and paved with materials that evoke the tranquility of the Mediterranean climate, as well as local anxiety over latent seismic activity. Light and shade will alternate across a series of ramped and stepped planes leading through the Strata Garden to the relative sanctuary of the shopping enclave.

Gavin Keeney

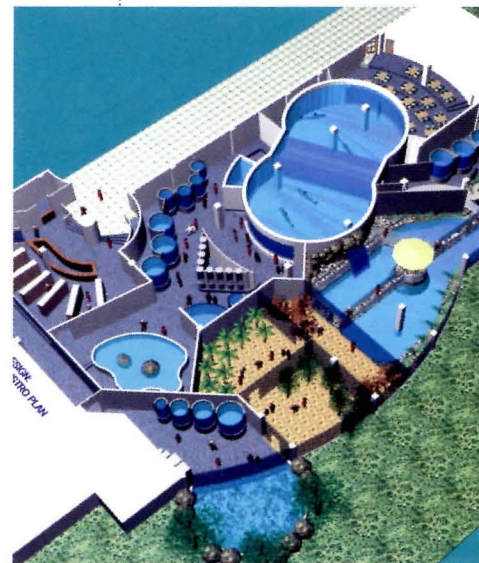
SHOPPING WITH THE SHARKS IN A NEW BUDAPEST COMPLEX

Future diners at a restaurant in a sprawling shopping complex currently under construction in Budapest might begin to feel a bit appetizing themselves. Swimming nearby, and possibly staring at them through the six-inch-thick, transparent acrylic walls of a 416,000-gallon tank, will be 8 to 10 sharks.

The toothy denizens will represent just one of the species of sea and land creatures cruising the waters and prowling the artificial rain forest of Central Europe's first tropicarium and oceanarium. The attraction will be an integral part of the \$85 million, 780,000-square-foot Campona shopping center being built in the Hungarian capital's District XXII, approximately five miles from the city center.

At the southeast end of the complex, the three-story tropicarium also will include saltwater tanks for rays and octopi; freshwater aquariums for indigenous Hungarian fish and African, Asian, and South American species, including piranha; a rain forest featuring monkeys, snakes, and alligators; a gift shop; and the aforementioned restaurants.

Taking its name from a 1st-century Roman village that once occupied the area, the Campona complex was designed by the Budapest-based architectural and structural, mechanical, and electrical engineering firm Hungaro-Austro Plan Kft. and is being developed by the German-Belgian consortium Core Ltd. In addition to the fauna, it will house 170 stores and shops, an 11-screen cineplex, an 8-lane bowling alley, bars, a



food court, an adjacent 3-level parking facility, a bus terminal, and a train stop.

The first phase of the project is scheduled for completion in September, and the tropicarium is slated to open next March.

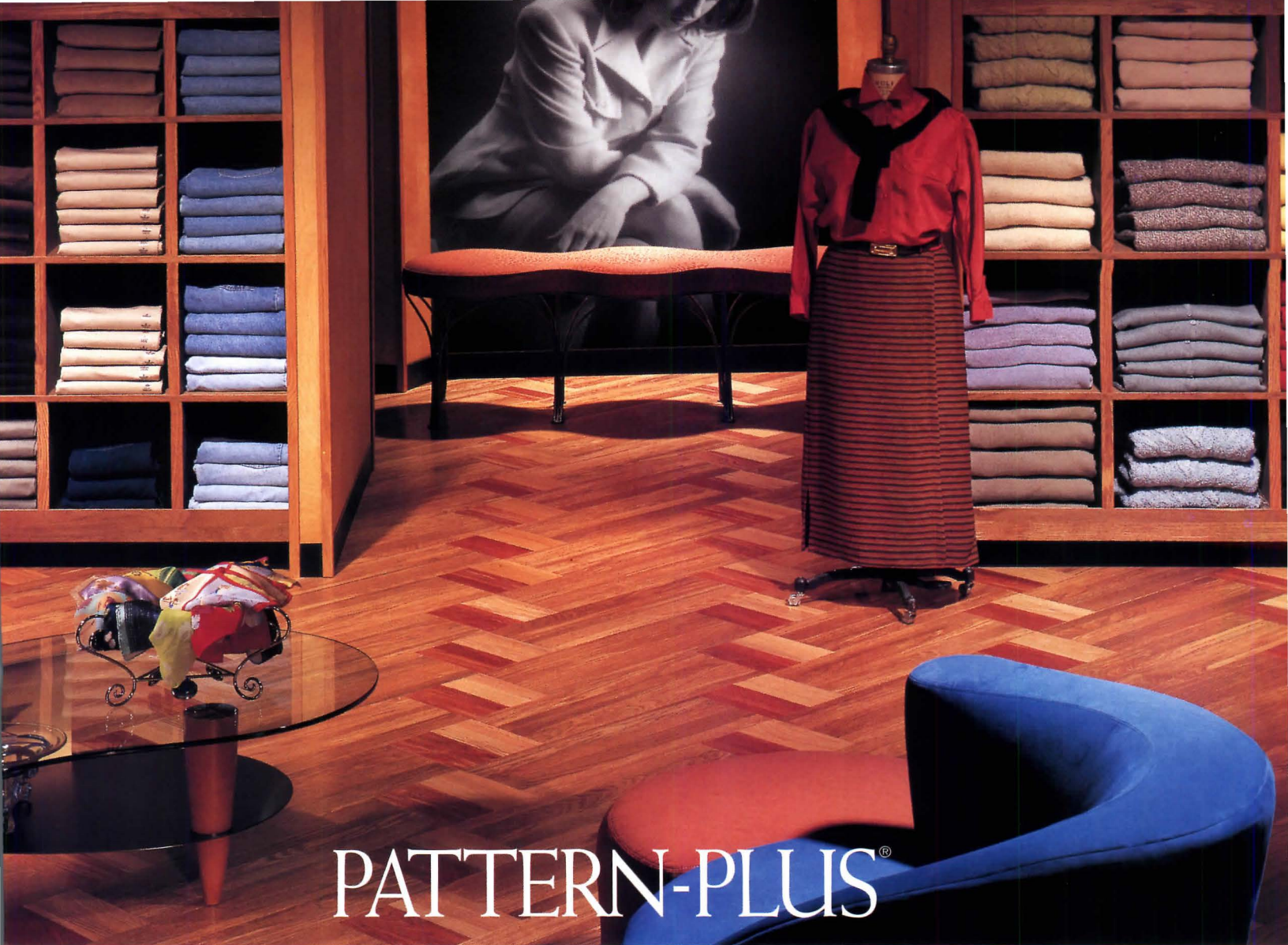
Carl Kovac

A NEW HOME IN CANADA The U.S. will open a new embassy in Ottawa, Ontario, in late September—30 years after the U.S. State Department started looking for the right piece of property. Designed by the New York City office of Skidmore, Owings & Merrill (SOM) under the direction of partner David Childs, FAIA, and senior designer Gary Haney, AIA, the 138,000-square-foot embassy will eventually house 175 employees. Construction of the \$30 million building began in January 1997 on the last available site in the Parliament Hill zone.

A stone plinth wrapped around most of the embassy's base visually unifies the building, which is split lengthwise between three- and four-story heights. One long, glass elevation facing Parliament Hill creates a reflective, ceremonial approach; the opposite elevation, clad in granite and limestone,

includes punched windows and vertical elements that respect a traditional market neighborhood nearby. Nicknamed the *U.S.S. Embassy* because of an upper superstructure and lantern tower that vaguely resemble a cruise ship, the design hasn't been universally loved. One local municipal officer described it as "a 19th-century railway station" during a committee hearing. On the other hand, the building is shorter and set farther back from the street than was required.

The two sides relate to one another because they are joined by a central atrium, points out Patrick Collins, AIA, chief architect for the Office of Foreign Building Operations of the State Department. Two one-way streets on either side of the building "form a processional route in much the same way Pennsylvania Avenue does in Washington," he adds. *Albert Warson*



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UIA TRAVERSES THE GREAT WALL TO TALK GLOBAL DESIGN

Orders for Peking duck increased significantly in Beijing from June 23–26 as 6,102 delegates converged for the International Union of Architects' (UIA) 20th Congress. About 2,100 international architects from 100 countries hobnobbed with 4,000 of their Chinese peers at the triennial gathering of the UIA, a federation of professional societies and institutes of architecture.

During their week in China, architects such as Wu Liangyong (China), Ken Yeang (Malaysia), Ricardo Legorreta (Mexico), and Kenneth Frampton (U.S.) presented papers, while delegates voted on resolutions affecting the profession and the built environment worldwide, elected leadership, and attended educational symposia. In their spare time, most managed to check out exhibitions on Chinese architecture, visit the Great Wall, and hop red taxis to shoot past

Beijing's burgeoning construction sites (below, a typical view), in what proved to be an exhausting but exhilarating sojourn.

United by the theme, "Architecture in the 21st Century," delegates discussed the relationship of architecture to social development—a topic that varies significantly between countries and economies. The contrast between the issues posed by two presenters on the first day, Jean Nouvel, HON. FAIA, of France and Charles Correa, HON. FAIA, of India, underscored the disparities between national agendas, as well as architects' common concerns for humanistic values.

In another development, Mexico's Sara Topelson de Grinberg,

who has headed the UIA for the last three years, will relinquish her voluntary position to the next president, Vassilis Sgoutas from Greece. He will share responsibilities for directing the federation with the new Secretary-General, Frenchman Jean-Claude Riguet. From the U.S., Chicago architect Don Hackl, FAIA, was elected treasurer of the interna-



tional organization, while former AIA president Ron Altoon, FAIA, will join the organization's council.

Another American, former AIA executive director Jim Scheeler, FAIA, has labored for several years on a professional-practice resolution with

broad implications for the globalization of architecture. According to Scheeler, "This is the first step by representatives of the international community of architects to reach consensus on standards of practice that will best serve their communities." Right now, all persons, and all architects, "are not created equal," he says, particularly in the ways that they are educated or in the ways that they are designated. Scheeler's resolution passed, to a standing ovation.

Highlights for this visitor included the opening ceremony and banquet, held in the Great Hall of the People, the historic structure adjacent to Tianenmen Square that overlooks the Forbidden City, as well as the city of Beijing itself—an urban phenomenon whose reconstruction parallels Berlin's. Energy is almost palpable in the immense, polluted city of 10.5 million persons, and their national accomplishment suggests that our children should all learn Chinese. *Robert Ivy, FAIA*

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Visit RECORD's site and see the newest additions to our Web content,

including a new section called The Green Architect. You'll find information on environmentally sensitive products and news about some of the most successful sustainable buildings. Also new: Digital Architect, our monthly column that looks at the ins and outs of incorporating new technologies into practice, and the complete transcript of the thought-provoking Listening to Computer Experts panel discussion [page 74].

What in the World?

Each month, RECORD's Web site gives clues, including photos, to the identity of a unique and remarkable



work of architecture and asks readers to guess what it is. Drawn at random from correct entries, the winner gets a free one-year subscription to the magazine. Go online and test your knowledge!. *This month's challenge:* This landmark alpine structure holds more than 400 people, and until recently, no one could drink

inside its walls. The twins involved in its design were not architects. *Solution #7-99:* Dunsmuir Flats, a four-family building in Los Angeles designed in 1937 by Gregory Ain. Erected on a small inside lot, the building met rigorous demands: Four complete homes with cross ventilation, sunlight, patios, and privacy. Ain grew up on a commune in the California desert and learned early the challenges of living with other families in close quarters. Most of his work was residential design.





Location courtesy of Hallmark Homes, Scott Koehn, builder, Atlanta, GA.

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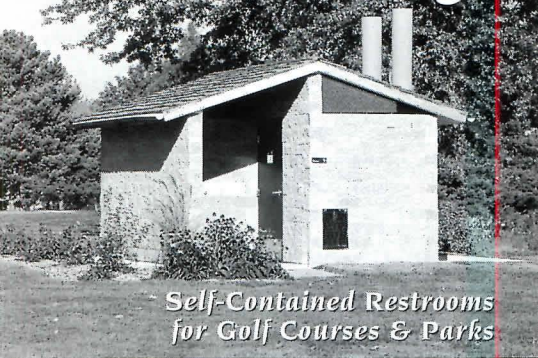
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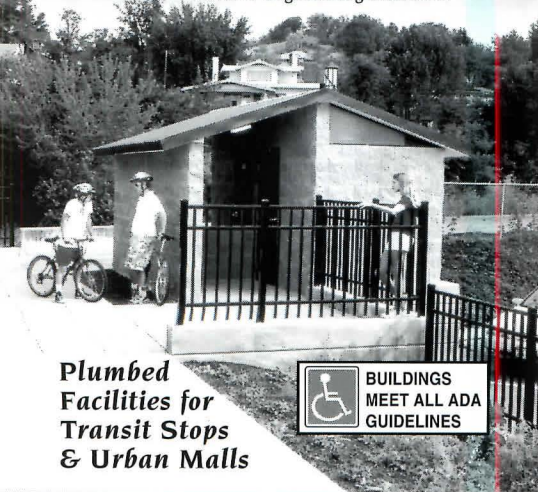
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NEWS BRIEFS

Moving toward shelter Architecture for Humanity has compiled its jury and is moving forward. The project—a teaming of War Child USA with Christidis Lauster Radu Architects—was created to meet the housing needs of Kosovo refugees; the competition [July, page 60] calls for designs for transitional dwellings that could house refugees until they rebuild their own homes, a process that could take years. Last month, Bianca Jagger joined a jury that includes architects Alexandru Beldiman (president of the Union of Architects of Romania); Steven Holl, FAIA; Tod Williams, FAIA; and Billie Tsien, AIA. The winner will be chosen in November. For more, visit www.arch-forhumanity.com.

More for Milwaukee Santiago Calatrava, architect of the Milwaukee Art Museum's \$50 million expansion, could be spending more time in Wisconsin. The Milwaukee School of Engineering has enlisted Calatrava to design a gymnasium and classroom building; school officials already have pledged of \$11 million for land acquisition and construction and, if everything falls into place, the building could be in place late in 2002. That would make Milwaukee the first city in the U.S. to have two structures by Calatrava.

Deep pockets Businessman and philanthropist A. Alfred Taubman is giving \$30 million to the University of Michigan College of Architecture and Urban Planning, which is to be named in his honor. According to school officials, the donation is the largest ever made to an American school of architecture. The gift will allow the college to improve the faculty/student ratio, enable a new program in urban design, engage in more community work, and start new initiatives.

Designs for discounts The TKTS booth in New York City's Times Square, built to distribute reduced-price theater tickets, was an instant hit when it opened in June 1973. Now, after more than 36.5 million tickets have been sold, the city, under the direction of the Van Alen Institute, is launching a competition to design a replacement facility. The institute expects at least 200 entries by the October 14 deadline. First prize is \$5,000.

Spouting off Antonio Costa of the Dutch architecture firm BBVH has designed a Web site he says is the first platform for Internet discussion on bad architecture. The Architecture Hate Page, www.bbv.nl/hate, offers visitors the opportunity to criticize a variety of buildings and to have interactive discussions. A main feature of the site is

the election of the ugliest/worst architecture; any visitor can vote for a most hated building or submit a sample themselves.

The big news In Chicago, developer European American Realty Ltd. has hired Adrian Smith, FAIA, of Skidmore, Owings & Merrill to design a 1,537-foot-tall tower (below). If plans go ahead, the structure—which would top Petronas Towers as the world's tallest—could be completed in 2002. Meanwhile, in Sao Paulo, businessman Mario Garnero is teaming with the Maharishi Global



Development Fund to build the 1,622-foot Sao Paulo tower. The design, modeled on Vedic temples in India, is by Minoru Yamasaki Associates—which has developed similar plans with the Maharishi company for a 2,222-foot skyscraper in India.

Looking back (and forward) The New York State chapter of the AIA has put together what it thinks will be a resonant schedule for its convention this year, slated for late September in Rochester. Dubbed "Celebration and Reflection," the event will look at the last 100 years of architecture in New York. The retrospective will be used as a launching point for discussions on what issues and developments will have the greatest effect on architects in the 21st century.

Israeli addition James Freed, FAIA, of Pei Cobb Freed & Partners, has completed a design for a new entrance pavilion and visitor center for the Israel Museum in Jerusalem. The 130,000-square-foot, \$50 million project is the centerpiece of the art and archaeology museum's stated aim to enhance its role as the country's premier cultural institution. ■

DATESEVENTS

Calendar

Breaking Through: The Creative Engineer Zion, Ill.

Through August 31

Exhibit looks at the role of creativity in engineering feats ranging from roller-coaster design to the construction of Colorado's Hanging Lake Viaduct to finessing Voyager 2's in-flight maneuvers from Earth. Power House. 847/746-7494.

Milestones of Modernism 1880-1940: Selections from the Norwest Collection Minneapolis

Through September 12

Furniture, metalwork, ceramics, glass, and works on paper from a collection that spans from 1880 to 1940 are displayed in this exhibition, which also features works by Frank Lloyd Wright, Georg Jensen, and William Morris, among others. The Minneapolis Institute of Arts. 612/870-3131.

Yasuhiro Ishimoto: A Tale of Two Cities Chicago

Through September 12

Works by the Japanese photographer known for his street photography of Tokyo and Chicago. The Art Institute of Chicago. 312/443-3600.

Copper in Architecture Chicago

September 16

Craig Thompson, regional manager of the Copper Development Association, presents architectural applications, life-cycle costs, and environmental issues affecting copper products. Merchandise Mart Plaza. 312/670-7770.

Prairie Lights Chicago

September 17-18

The Illuminating Engineering Society of North America-sponsored Light Show and Conference includes topics such as How to Get What You Specify, Mesopic Vision, and Lighting Design Ethics. Hyatt Regency Chicago. 312/640-8900.

An Urban Experiment in Central Berlin: Planning Potsdamer Platz Washington, D.C.

Through September 19

Development concepts and building designs for Potsdamer Platz. National Building Museum. 202/272-2448.

IIDEX/NeoCon Canada Toronto

September 23-24

Merchandise Mart Properties, Inc., is holding its exposition and conference for interior design and facilities management at the new National Trade Centre. 800/677-6278.

Paper Architecture Denver

Through October 3

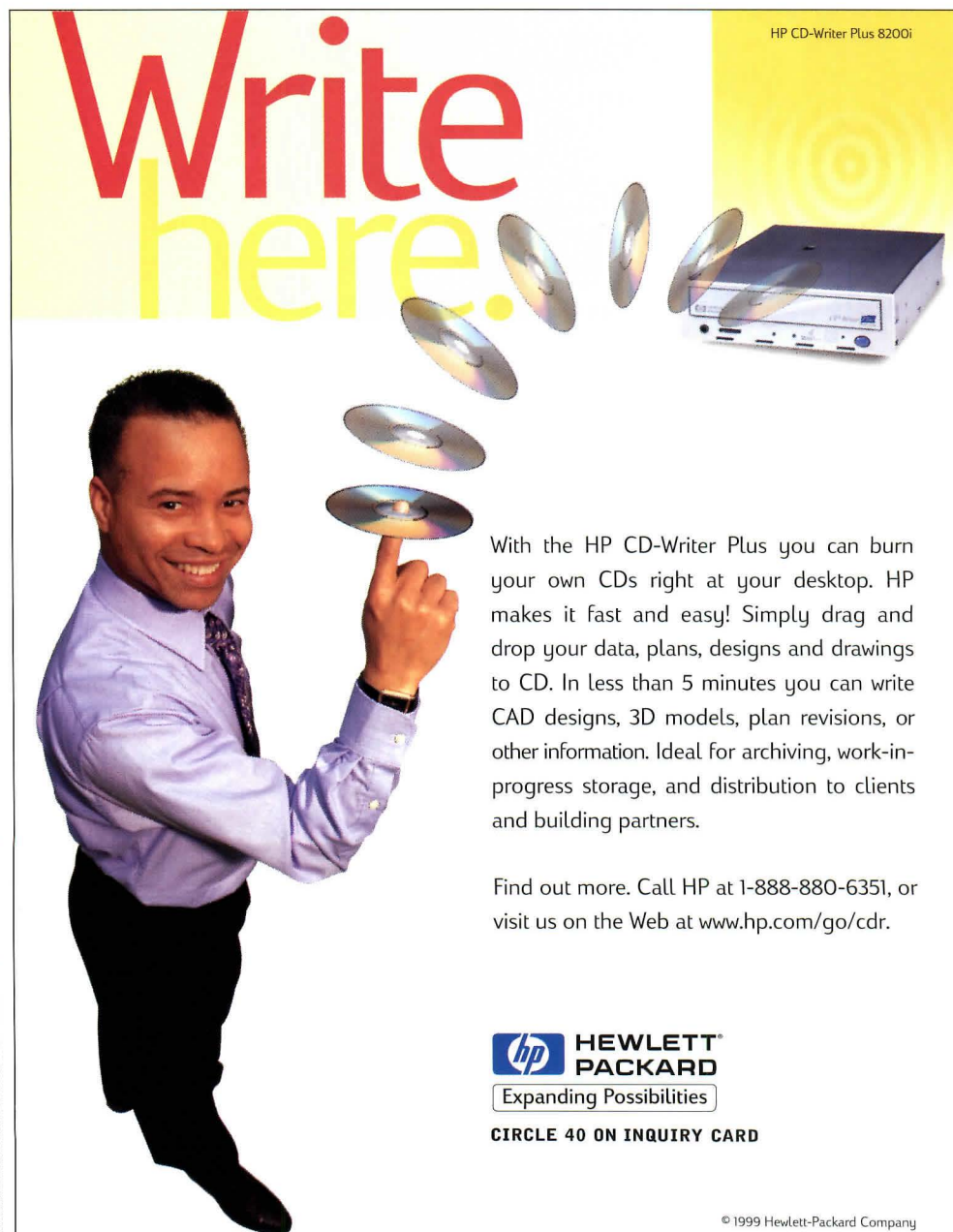
Show highlights drawings and renderings from

the museum's collection. Works by Ponti, Wright, and Piranesi, among others, are on view. The Denver Art Museum. 303/640-4433.

Merchant Prince and Master Builder: Kaufmann and Wright Pittsburgh


Through October 3

An exhibition exploring the belief shared by Frank Lloyd Wright and his client Edgar Kaufmann—for whom Wright designed Fallingwater in 1936—that good design has the power to change the lives of human beings. Heinz Architectural Center, Carnegie Museum of Art. 412/622-3131.



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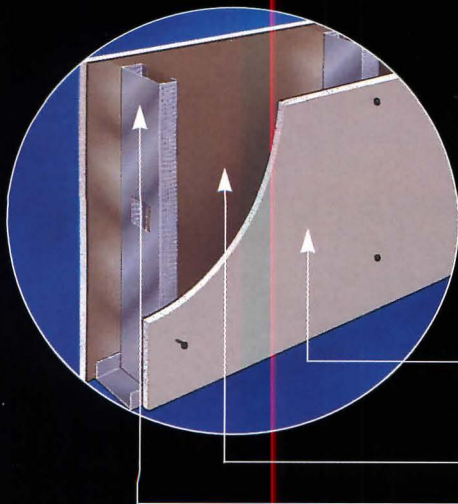
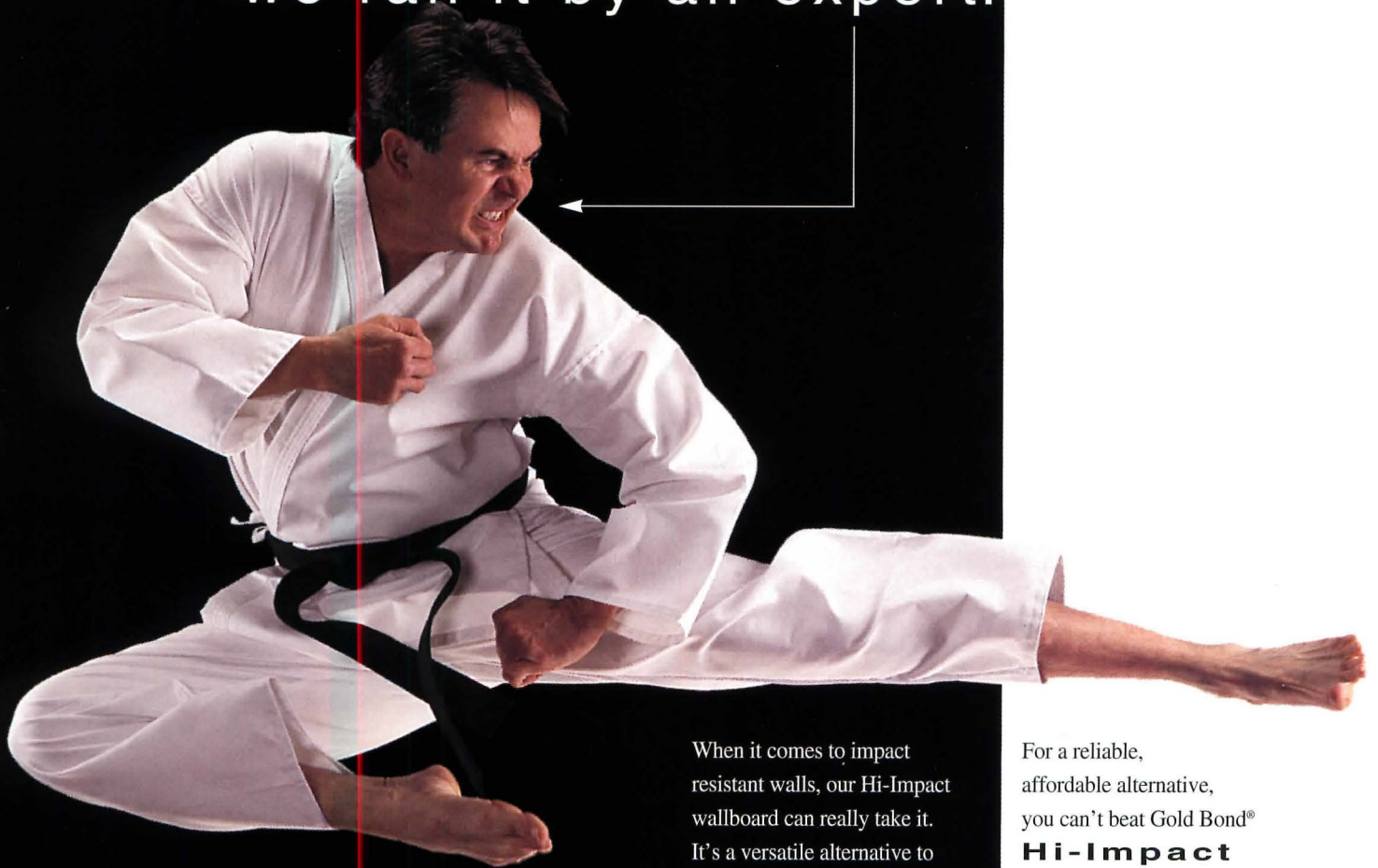
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Competitions

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**1999 Design Awards Program
New York City***Submission deadline: September 8*

The American Institute of Architects New York Chapter announces the 1999 Design Awards Program eligible to AIA New York chapter members or registered architects practicing in New York City. The categories are Built Work, Interiors, and Projects. For more information, call the AIA, New York Chapter, 212/683-0023.

Graphisoft Prize '99 Competition*Submission date: September 10.*

Graphisoft—developers of the integrated architectural CAD program—is holding this year's Graphisoft Prize competition based on a collection of diverse and inspired themes. Each year, the collection of themes is drawn from literature, film, poetry, mythology, music, and fine art. Architecture students and professional architects are invited to interpret buildings that exist only in the imagination. Competitors must register to participate at www.gsprize.com.

**Jubilee 2000 Design Competition
Our Lady of Guadalupe, Milford, Ind.***Submission and judging: December 1999*

The Roman Catholic Diocese of Fort Wayne-South Bend in Indiana is sponsoring a design competition for a new church with social and

educational facilities for a rural Hispanic parish. First prize will be the contract for complete architectural services for design and construction. Second and third prizes will be cash awards. This competition is open to all. Collaboration between designers, architects, liturgists, theologians, artists, students, etc., is encouraged. For more information, call 219/483-3661.

The Dryvit International Design Competition*Submission deadline: December 1*

Dryvit Systems, Inc., a manufacturer of Exterior Insulation & Finish Systems, is seeking entries in

the annual Dryvit International Design Competition. A \$5,000 first prize will be awarded to the architect whose work best reflects the design freedom Dryvit provides in the building process. The winning design will also be featured in a two-page spread that will appear in the February 2001 issue of ARCHITECTURAL RECORD. For more information, call 1/800/4DRYVIT. ■

Please submit information for events and competitions at least six weeks prior to the magazine's publication date (August 15 for the October issue).

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LISTENING TO: Computer Experts

by Wendy Talarico

The team of computer experts that convened in RECORD's offices for a panel discussion on computers in architecture are clearly entranced by hardware, software, and the power of the Web. Who else but this bunch of computer enthusiasts would get to know each other—digitally at least—on a Web site set up specifically for the panel? Those who participated in the panel, moderated by Jerry Laiserin, AIA, represented almost every discipline in the building process. The following are some of the highlights of their discussion. For a full transcript, visit RECORD's Web site, www.archrecord.com.

Speed

Before computers, drawing a building meant understanding its musculature and its ligaments. Pencil in hand, there was time to refine the connections, the systems, and the envelope. But with each update of CAD, the drawing process—which is really the creative process—becomes that much quicker.

The course of the creative process has changed as a result. It used to be that an architect began a drawing with the pencil on the upper left-hand side of the paper, working across and down. The details were added later, after the floor plan was finished. With the computer, any little detail can have a life of its own. "I can design half the building to great detail and leave the other half generic," Laiserin said.

The panelists lamented the loss of what Ethelind Coblin, AIA, called, "ingestion time." Architects are called upon to "get the lines down and get the dimensions straight without really understanding how they affect the outcome of the building," she added. "I don't want to go back to the pre-CAD days. But somehow we need to take better control of the process."

Computers, though they speed communication and repetitive tasks, cannot make architects more adroit thinkers. "In fact, with all the additional information to process, we probably think slower," Laiserin said. And somewhere in the midst of all that speed and efficiency, many

architects, engineers, consultants, and other design professionals are afraid they've lost the one product for which they believe they are most valued: Professional judgment. They ask themselves: "What is the client paying us for if so much can be delivered with a few mouse clicks?"

The answer, the panelists agreed, is to build value into other aspects of the design and construction process. For example, when a building is completed, Rob Friedel's firm, Syska & Hennessy, is often asked to collect all the last-minute changes, via computer, and create a set of as-built drawings. "These are documents that have real value, instead of just an outmoded roll of drawings," Friedel said. Providing them is a service that is paid for by the clients.

How much is enough?

"Raise your hand if you think you have all the technology you ought to have," Laiserin said. Members of the panel glanced at each other and laughed. Not a single hand went up.

Worries about being technologically behind are not unique to architects. "So many of our concerns are the same ones that other professions are experiencing," Glenn Goldman, AIA, said. How much software is enough? How quickly should new hardware and software be purchased? What percentage of revenue should firms devote to information

technology? "An architectural practice used to be easy to start. Now it requires big expenditures in technology," he added.

For most of those in the construction industry, technology is the third largest expenditure, behind salaries and rent. Scott Hershman's firm, Fisher Marantz Stone, tries to evaluate how long it will take for a purchase to justify itself. "There are a lot of technologies out there that don't," he said. "They are eclipsed by the next



Wendy Talarico, senior editor, and Robert Ivy, FAIA, editor in chief at RECORD, helped moderate the two-hour panel discussion, which took place in the magazine's offices earlier this summer.

WWW On The Web: Go to www.archrecord.com for an expanded version of the story.

Computers are improving and ruining everything about architecture. Isn't it wonderful that when a client wants to move a room, it can be done with just a few clicks of the mouse? Isn't it terrible, though, that there's no time to ponder the consequences of that room switch?



Jerry Laiserin, AIA, a contributing editor to RECORD and a technology consultant and lecturer, moderated the panel.

thing before you really learn to use them. As consultants, we can't get too far ahead of our clients. When half of them switch to whatever the newest thing is, then it makes sense for us to do so."

Friedel has a different approach. The focus of technology for his company is to spend less time on repetitive tasks and more time on communicating and thinking. Products that do this are purchased. "We try to stay just behind the leading edge," he said.

All of the panelists admitted succumbing to the temptation, the allure, of the newest thing. "As a result, I've spent hours doing something that I could have done in 10 minutes with a pencil and paper," Thomas Doremus, AIA, said. "Sometimes I can't resist."

When asked what was the most significant recent technology development, the group agreed that Web-based project management sites are most significant—in money-saving potential, convenience, and efficiency. "Distributing paper copies of drawings is just colossally slow and you get less information than when you distribute drawings via the Web," Doremus said. Friedel agreed: "If it was up to me, I'd demand a site for every project right now. Five years from now, they will be a given."

Drawing conclusions

It takes a certain amount of time to become a skilled architect. And while people aren't maturing in the profession any faster, anybody competent in CAD can put together what looks like a well-organized set of drawings. That concerns seasoned practitioners for many reasons.

"People can develop virtually anything on the screen—almost any shape can be made," Robert Ivy, FAIA, said. "But the building technologies are not necessarily there to support them. The design looks great, but it lacks integrity." That means inexperienced architects are designing structures that are practically impossible to build.

Also, while computer ability doesn't always fall into age-defined categories, it is often the young architects who perform the digital gymnastics while the principals stand by, blinking and embarrassed. They are often too dazzled to see when a building has problems. Yet it is the principals who need to mentor the young architects and check their work.

A lack of integrity in drawings translates to problems all the way

down the line. "The people who understand technology spend all their time on technology," Hershman said. "Those who understand the construction process, those who know how a building comes together, are out of the loop."

This is a management problem, not a technology problem, Goldman said. "It's easy to blame the computers, but in reality, it is the fault of the principals who don't want to intervene, who won't take the time to check the work that goes out of the office."


The result, Ronald Eberhard added, is drawings in which, figuratively speaking, the lines don't connect. "In facilities management, we have to clean up the drawings to operate from them. We find that the designers aren't thinking of all the people who will use the information they generate. This is where a good set of as-builts becomes valuable."

But Kenneth Stowe had a different take on the importance of drawings to the construction process. "Architects shouldn't do more drawing than they have to. The construction industry can fill in the details—connect the lines, so to speak. The architect's product is not the drawings. It is the information and experience behind them," he said. "A building is, in some ways, a living thing. It takes more than drawings to create it. Architects have that knowledge, management, and creative ability." Added Doremus: "Architects are trained to know a lot about many different things. They are in a position to control the computerization of the construction industry. They can serve as integrators of knowledge."


The way business is done

Computers, in some ways, are the great equalizers. They've opened new vistas for small firms, giving them a way to compete on major projects that, in the past, would have required a cavalcade of designers. They've given every member of the firm equal access to design tools, word processing, and product knowledge. They've given firms in Wisconsin a chance to compete on buildings in Arizona. And they've given the term *collaboration* a whole new meaning.


With these changing capabilities comes prosperity—and confusion. "We're moving away from one well-established way of doing business and trying to map out another," Laiserin said. "No one is sure



Rob Friedel is vice president and a member of the technology management committee for Syska & Hennessy in New York City.




Ronald Eberhard is engineer and Web master for Visser Software Services, software vendors in New York City.



Kate Sherwood, AIA, is CAD management and training director with Dan Peter Kopple & Associates in Philadelphia.

Isn't it convenient that engineers, contractors, and everybody else on the team can work with the design online as it matures?

Isn't it difficult to track the progress of a project when it's whizzing over phone lines to everyone?



Glenn Goldman, AIA, is a professor and director of the imaging laboratory at the New Jersey Institute of Technology School of Architecture in Newark.

how or in what ways roles should change." Architecture used to be empirical, defined by stages. That's no longer true. For instance, changes can be made at almost every stage, clients are more involved than ever, and there is no clear entry and departure point for consultants.

But the infrastructure of architecture, particularly the legal system, is mired in the old ways. Contracts are written to reflect a paper-based process of slower communication and less collaboration. There is a legal framework, and then there is the way things are being done, and often the two don't fit together.

For example, "Designers are drawing every little detail partly because they can; CAD lets them. But they are also afraid of being sued. Most contractors will not take much initiative on a project unless they are backed up by the architect's documentation," Fredric Bell, AIA, said.

Friedel agreed. "On a good project, this isn't a problem. But I need a good record set of drawings. In the end, I'm responsible. If there's a problem, the team evaporates and I'm standing alone, at least legally."

Drawings that are exchanged on the Internet are especially vulnerable to legal problems. It's difficult to tell what changes were made when and by whom. "We need some way to establish responsibility," Eberhard said. "In the end, again, it is the facilities management people who have to know who to go to if they need to understand a decision."

"Technology may have blurred the differences between large and small architecture offices, but it has exaggerated the differences between large and small projects," Bell said. When the budget is small, those involved must set their own rules and hope the other team members work with them. But when the budget is sufficient and the project is important, these legal questions are addressed up front, as they should be.

Drowning in E-mail

"I remember, about five years ago, we were on CompuServe and only a few others were connected," Hershman recalled. "We'd print out our E-mail and fax it to whoever needed to see it. Now what's waiting in your box when you come in every morning or, worse yet, return from a trip—is phenomenal."

Goldman agreed: "The only phone calls I get anymore are people calling to see if I got their E-mail."

Increasingly, what's in the paper inbox is junk mail; E-mail is where one goes for the important information. With such ready access to a digital inbox, it's too easy to work longer hours. "The other night I was answering my E-mail at midnight," Bell says. "I could, potentially, never stop working. The office is just as available from home." E-mail has created a whole new time management problem that didn't exist before.

The immediacy of E-mail gives it added importance; it demands a prompt response. When an E-mail is sent, clients and team members expect that it is read, analyzed, and acted upon. If the recipient is out for the day, or for some other reason doesn't answer, it creates the appearance that no one is reacting to what was sent. That may be perceived as holding up the job.

"I waded through 50 E-mails from clients who copy everyone on everything. Somewhere in there is the one guy who really needs an answer," Friedel said. "What is appropriate E-mail etiquette, especially in a team environment? This is something that must be decided at the outset of a project and within the firm itself."

What's to come

Technology can help architects pinpoint the profit centers in their businesses—which clients make money for them and what projects are best for the firm. While there was a great deal of argument among panel members about whether fees are going up or down, they all agreed that productivity is most definitely on the rise. The best firms are systematically analyzing data to find out how to make their fees rise, too. "Here's where we can learn from what other businesses are doing," Bell said. "A lot of businesses are investing money pulling together all of their historical data so that they can analyze it. The kinds of questions they are asking are: What is the cost of doing business with each of my customers? How much profit do I make from each of my customers? Which is the best way for me to go to develop new business? I don't think the construction



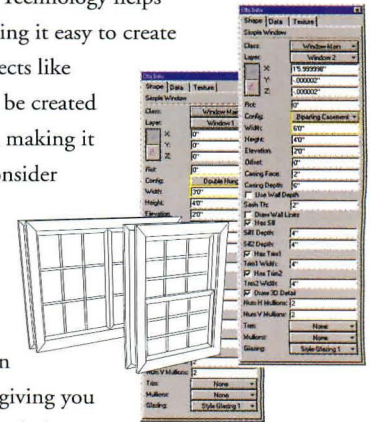
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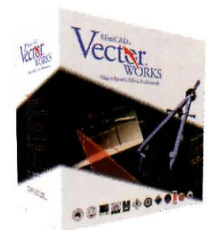
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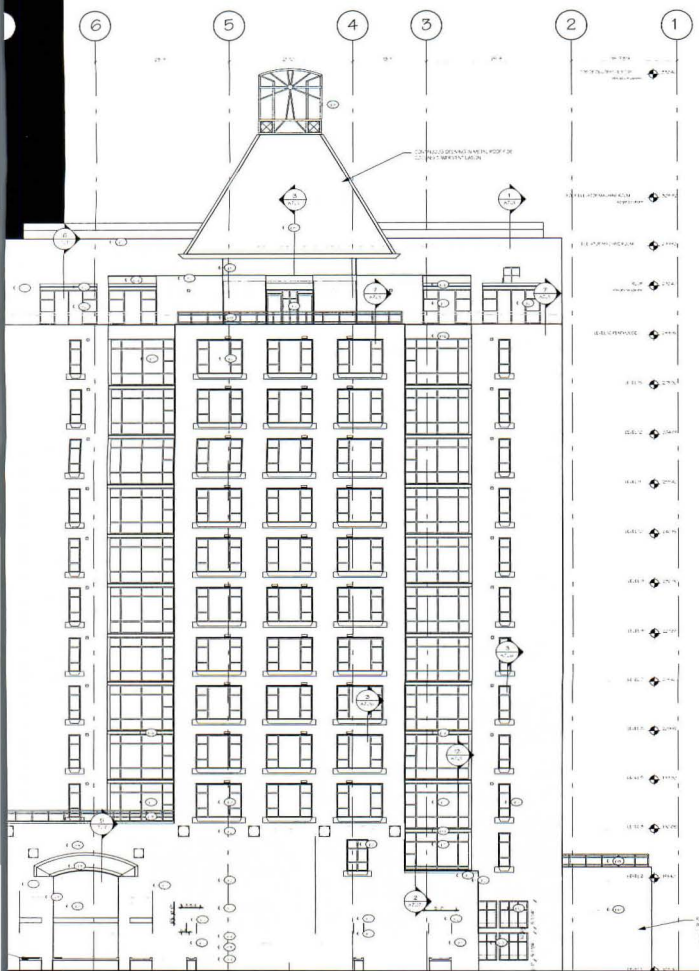
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CIRCLE 43 ON INQUIRY CARD



Mike Huggins, Burrows Huggins Architects, Vancouver, Canada





Kenneth Stowe is director of project services and technology research for George B.H. Macomber Company, builders and construction managers in Boston.

Ethelind Coblin, AIA, has her own three-person architecture firm with a strong emphasis on the importance of technology in New York City.



The effects of technology may be contradictory and irrevocable. But they are undeniably powerful.

Fredric Bell, AIA, is assistant commissioner with the New York City Department of Design and Construction.



Scott Hershman is an associate principal who oversees technology for Fisher Marantz Stone, lighting consultants in New York City.



industry or architecture firms even have that on the radar screen yet.”

Doremus agreed: “I know of one owner who is doing that. It’s a large state university system that uses their project Web sites to gather data and monitor the performance in cost and schedule growth with different contractors and different designers. When they’re finished, they’re going to look at that data and say, ‘We’re not going to deal with this guy anymore; his documents must be bad because we get too many change orders.’ Things like that.”

Architects can look to car-rental companies as an ideal for how to use and relay information. “Those standing in the parking lot know as much as anybody in any office,” Sherwood says. They know instantly which cars are in demand and what upgrade people will pay the most for. Armed with this knowledge, they design their business accordingly.

Five-step program

After more than two hours of debate, the role of technology in design and construction, as well as what’s to come, was summed up in a five-step process that Stowe summarized and the other panel members accepted. The first step is for all the team members to make a commitment to share their data. The second is to establish a protocol that assigns responsibility for data integrity. The third step is to expand on the interactions among the various specialties, capitalizing on the strengths of a consultant, the knowledge of a subcontractor, or the architect’s holistic view of the project. Next, everyone involved needs to respond to that advice and expand on it. Finally, the design profession needs to redefine the flow of work so that it jibes with the knowledge gained in the first four steps.

Most of those present agreed that the field of architecture is somewhere between the second and third steps. But as the profession progresses, the practice of architecture will become more efficient. The biggest benefit technology can grant contractors, designers, engineers, and everyone else involved in the building process is to make the process smoother. Said Stowe: “Extraordinary architecture grows out of an expeditious process, one in which there is a philosophy of sharing data.” ■

SOFTWARE DEVELOPERS HAVE THEIR SAY

In interviews after the panel discussion, Keith Bentley, CEO of Bentley Systems, and Chris Yessios, president of auto*des*sys, discussed architects’ lingering ambivalence toward technology. “They see it as an asset to their business, but a constraint on their creativity,” Bentley says. “Architects originate a substantial amount of information. Harnessing and marketing it increases their value and influence in the design and construction process.”

Yessios adds: “Computers can be great design aids, not just production tools.” His view of the future includes greater intelligence, integration, and customization in design software. By “intelligence” he does not mean automated design, but ways of generating ideas to supplement the architect’s creativity. “Possibly the most practical manifestation of intelligence will be in evaluating building performance before the physical structure exists,” he says. This suggests that architects could


use digital models to test not only quantitative items, like energy consumption, but also more elusive qualitative functions, like the ways occupants will interact.


Integration means that the distinctions between modeling, drafting, and rendering software will disappear. And customization implies that there will be no one standard software interface. Each office will set its own, either from scratch or by selecting one of several available variations. “How the software operates will be completely and easily customizable, even by nontechnical people,” Yessios adds.

In the future, software will link project participants via the Web and make it easier for them to work together. “Finding ways to do this, rather than having software that is merely an amalgamation of separate tasks, promises the biggest opportunity for improvement in the industry,” Bentley says. B.J. Novitski

 you're all together  you're

all together discussing the

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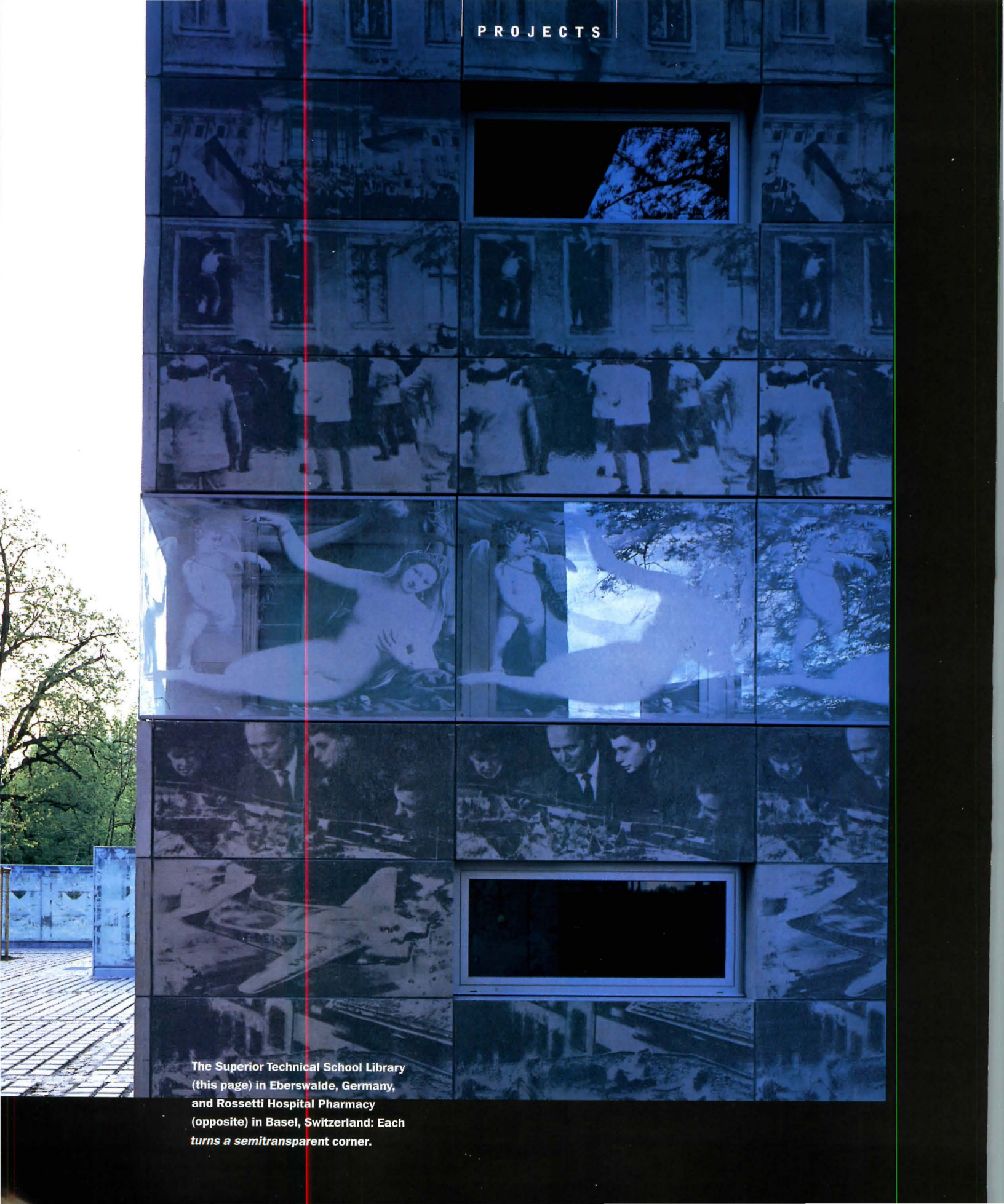
 you're  not  all  together

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CIRCLE 45 ON INQUIRY CARD



The Superior Technical School Library
(this page) in Eberswalde, Germany,
and Rossetti Hospital Pharmacy
(opposite) in Basel, Switzerland: Each
turns a semitransparent corner.

TWO HERZOG & DE MEURON projects reveal deep skin.

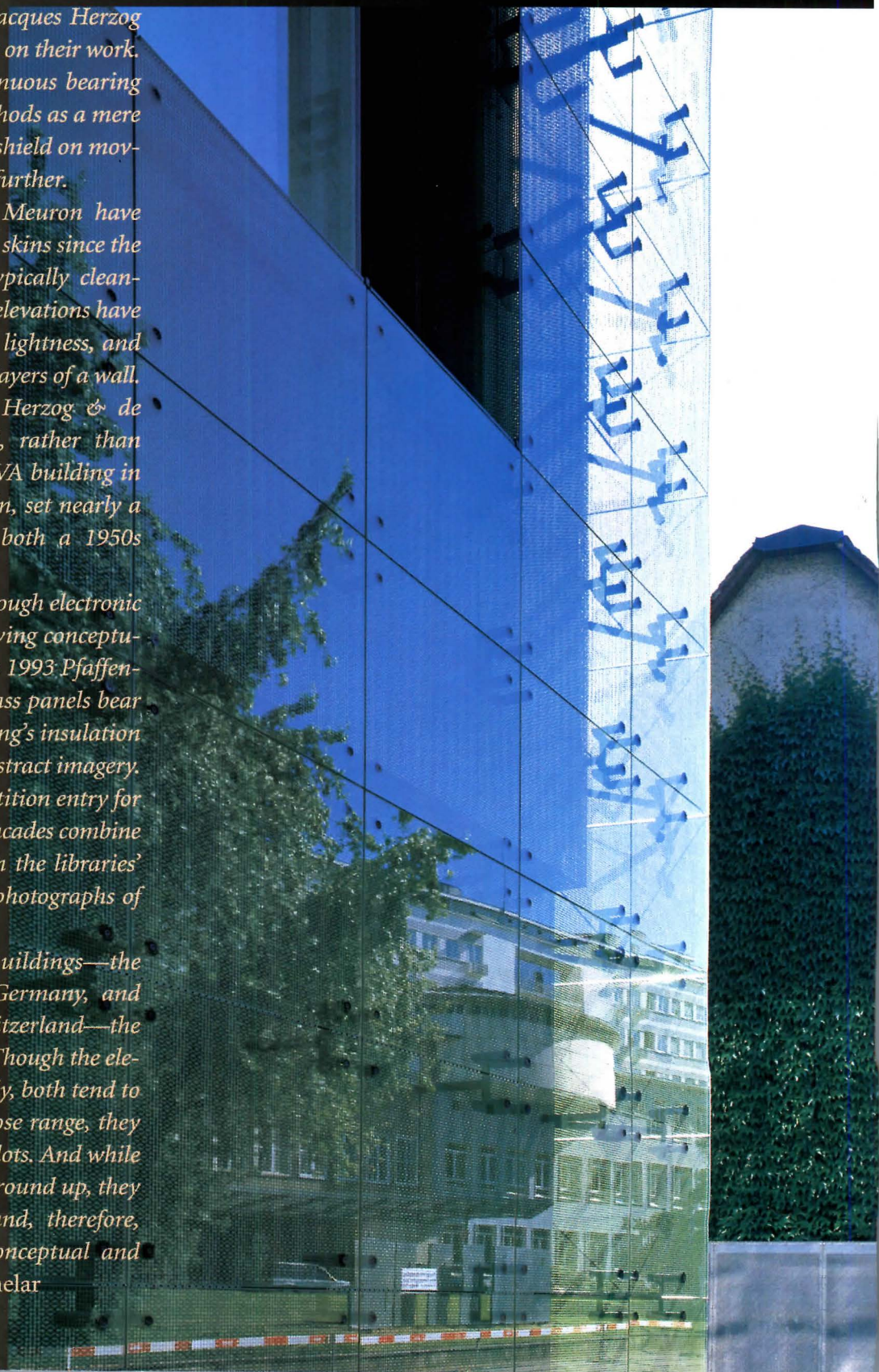
“What exactly is a wall?” Swiss architects Jacques Herzog and Pierre de Meuron once asked in an article on their work. They suggested that the “old, reliable, continuous bearing wall” has survived modern construction methods as a mere image of its former self—a flimsy “copy” or “shield on movable supports.” But their answer went much further.

Almost obsessively, Herzog and de Meuron have investigated the nature of building shells and skins since the firm’s inception 21 years ago. Wrapping typically clean-edged, rectilinear structures, their designs for elevations have explored qualities of surface, depth, texture, lightness, and transparency, often visibly differentiating the layers of a wall.

In public buildings, in particular, Herzog & de Meuron has favored translucently layered, rather than opaquely monolithic, shells. At the 1993 SUVA building in Basel, Switzerland, for example, a glassy skin, set nearly a foot outside the existing walls, envelopes both a 1950s masonry building and its new addition.

In some cases, the elevations speak through electronic text strips or figurative imagery, often conveying conceptually or literally what lies behind them. At the 1993 Pfaffenholz Sports Complex in St. Louis, France, glass panels bear the photo-silk-screened patterns of the building’s insulation material while concrete panels carry more abstract imagery. And in Herzog & de Meuron’s unbuilt competition entry for the University of Jussieu-Paris Libraries, the facades combine electronic text strips, fed with material from the libraries’ holdings, with glass panels imprinted with photographs of writers and scientists.

With two recently completed buildings—the Technical School Library in Eberswalde, Germany, and Rossetti Hospital Pharmacy in Basel, Switzerland—the question of what is a wall emerges yet again. Though the elevations of the two buildings contrast markedly, both tend to dematerialize visually in intense light: At close range, they diffuse like pointillist paintings into fields of dots. And while the architects built both structures from the ground up, they were denied full charge of the interiors and, therefore, focused on the massing, along with the conceptual and material definition of the skins. —Sarah Amelar



AT EBERSWALDE, IN FORMER EAST GERMANY, HERZOG & DE MEURON'S LIBRARY IS A VIRTUAL MOSAIC OF IMAGES.

At Eberswalde, Herzog & de Meuron carried the idea of a pictorial facade further than in any of its earlier built projects. Collaborating with artist Thomas Ruff, the architects created a 16,000-square-foot open-stack library for forestry and applied sciences on a small campus of 19th-century buildings.

The library's simple three-story volume is sheathed in flush horizontal courses of glazing and cast-concrete panels. On each band, a single repeated image encircles the building. Silk-screened glass appears in several Herzog & de Meuron buildings, but only at Pfaffenholz Sports Center—with a pictorial program far less ambitious than Eberswalde's—did the architects devise a technique for transferring photos to cast concrete.

Their serilith method involves lining the formwork with a dot-screen positive that is printed with a concrete cure-retardant, instead of ink. When poured concrete is released from this form, its surface is washed with water. The concrete that lay in contact with the retardant remains liquid and rinses away, leaving areas roughened and darkened by exposed gray aggregate. Though no pigment is applied, the effect is of a tattooed concrete skin.

Ruff culled many of the facade's images from his archive of old newspapers and magazines, mixing tame with symbolically and politically charged selections. A photograph of women lying on a lawn, relating to the library's grassy rooftop and ground plane, occupies the top and bottom registers. Allusions to technology, natural and applied sciences, and learning include shots of a 1950s Canadian aircraft, a father and sons with a train set, a beetle, and students studying in a library. Paying homage to architecture—modern and ancient—Walter Gropius' 1923 Weimar house appears beneath a romantic view of a decaying Italianate palazzo.

But if the innocuous procession of airplanes obliquely suggests a fleet of bombers, the most potent image occupies the central courses: An infamous scene of a man on Berlin's Bernauer Street falling to his death as the newly built Berlin Wall imprisons him. The controversial inclusion of this widely recognized photograph was accepted by the client only after Ruff inserted a vintage photograph of the Reichstag—a symbol of Reunification—to counter the divisive nature of the Wall imagery.

Between concrete courses bearing harsh documentary reality, long strips of silk-screened glazing (clerestory windows) carry more fanciful tableaux: Lorenzo Lotto's *Venus and Cupid* seems to float, one story below Peter Potter's *Vanitas Still Life* with a skull and two stories below Eduard Ender's portrait of the Eberswalde Technical School's founder.

Like Warhol's silk-screened multiples, the library's repeated images and photomechanical dots generate rhythms of their own, producing tension between the figurative and the abstract, between surface and depth, real or illusory. Intensifying the ambiguities, distinctions between aggregate and dot screen blur at close range. And the "wallpapering" of concrete and glass (conventionally an unpainted material) with a continuum of images transforms these disparate surfaces into a single textile, into which deeper, more traditional, task-level windows are cut. ■

Project: Eberswalde Technical School Library

Client: Land Brandenburg

Architect: Herzog & de Meuron—
Pierre de Meuron, partner in charge;
Philippe Fürstenberger and Andreas

Reuter, project architects

Engineers: GSE (structural); Dörner + Partner (climate control, plumbing);
Ingenieure Büro Penke (electrical)

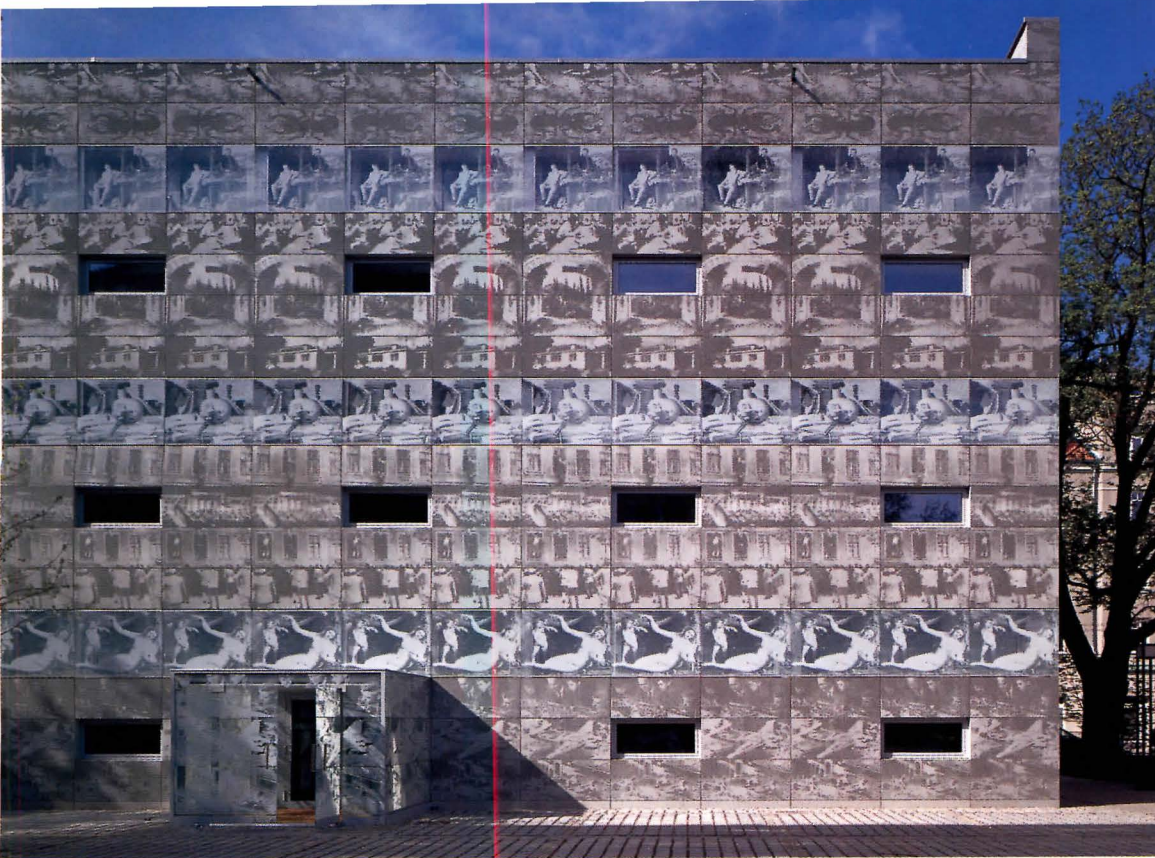
Consultants: Betonsteinwerk Uetze
(concrete); glazing (Fensterwelt)

PHOTOGRAPHY: © MARGHERITA SPILLUTTINI (OPENING PAGE); CHRISTIAN RICHTERS (THIS AND PREVIOUS PAGE)

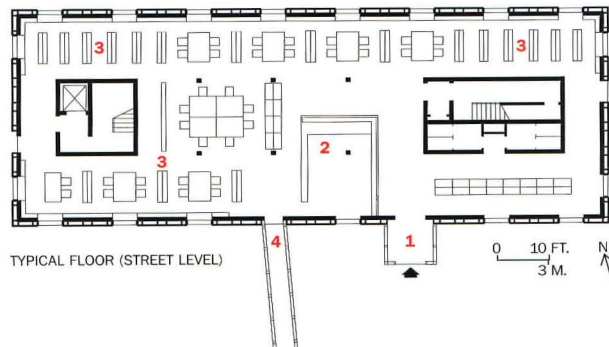




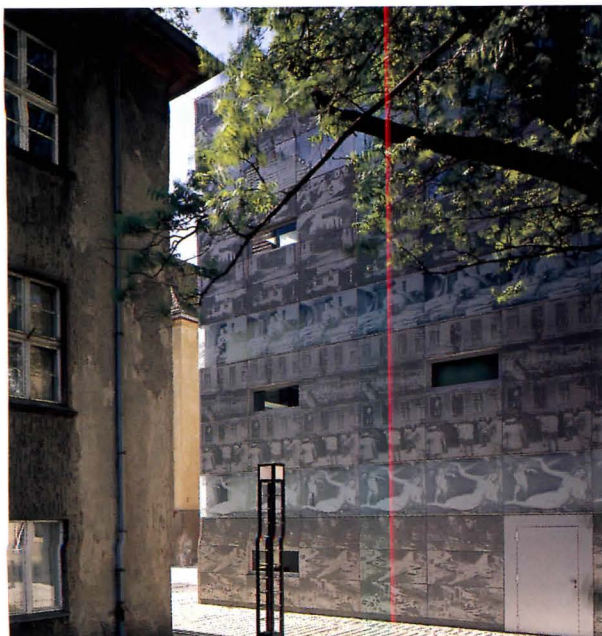
At night, the backlit glass panels glow like a light box. Flush bands of clerestory glazing bring reflection-free light deep inside. Top-hinged and backed by interior windows, these panels open with an electrical switch.

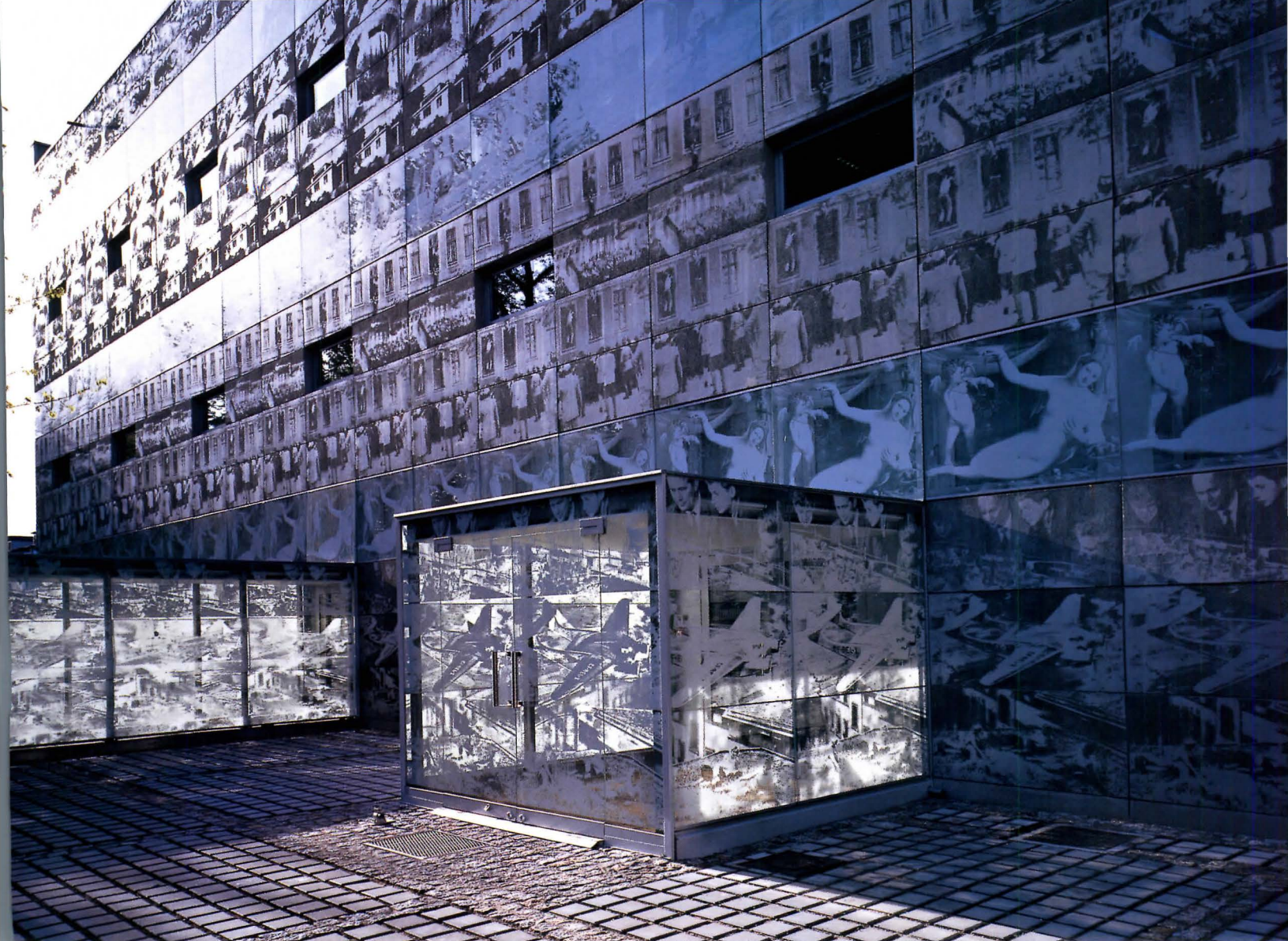


Though the architects cite no formal historical references, the massing and panel proportions (below and right) recall a Florentine Renaissance palazzo, a precedent befitting a library's humanistic spirit.



1. Entry
2. Circulation desk
3. Open stacks
4. Connector to existing library

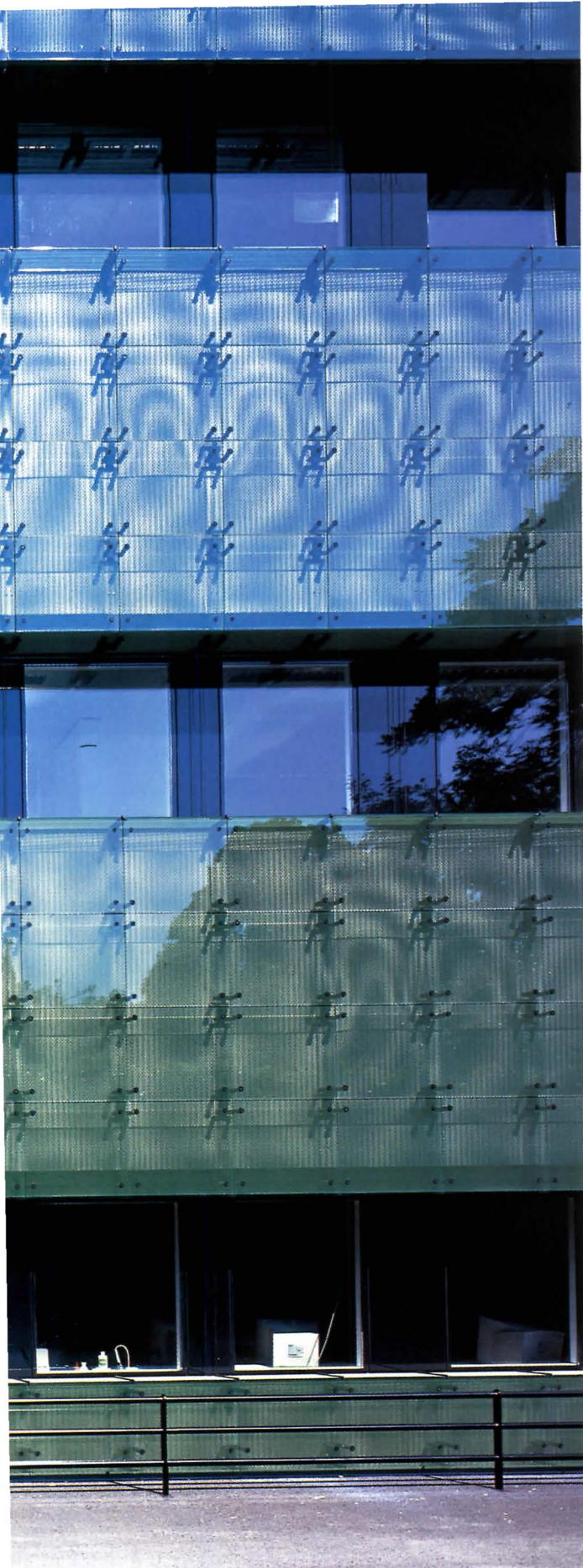




Overlapping silk-screened images appear in the glazed entry piece and the connector to an existing library building (above). Enhancing surface continuity, a sandy aggregate peppers the surface of the acrylic sealant between concrete panels (far left). Distinctions between the aggregate and photomechanical dots are blurred (left).



A shimmering moiré effect, resulting from green-dotted glass over perforated steel, is punctuated by the precise grid of struts that hold the glazing.



PHOTOGRAPHY: © MARGHERITA SPILLUTINI (ROSSETTI HOSPITAL PHARMACY)



IN BASEL, SWITZERLAND, HERZOG & DE MEURON'S ROSSETTI HOSPITAL PHARMACY CASTS A VIVID GREEN GLOW

If the Eberswalde library is like a Warhol painting, then the more abstract Rossetti Hospital Pharmacy of Basel's Kantonsspital Complex is the architectural soul mate of Minimalist sculpture. Flat-faced and geometrically clean, like many Herzog & de Meuron buildings, it transforms itself as it is approached. Its placid, glossy green, sometimes visually impenetrable skin becomes a spatially deep facade, its taut membrane virtually vibrating with optical activity.

As it turns out, the glass is not really green. Instead, the square panes, held several inches outside the supporting wall by four-pronged steel struts, are actually colorless glazing, silk-screened with grids of bottle-green dots. Behind these panes, thin stainless-steel plates, perforated with a similar dot grid, are layered over rigid insulation and concrete structure. The interference patterns of perforated and painted dots and, at the corners, painted dots over painted dots creates a shimmering moiré effect. With its walls perceptually dematerializing, this building appears smaller than its 101,000 square feet—an effect augmented by the extruded plan that outpockets into two- and three-sided courtyards. (With its footprint partially determined by preexisting foundations, the building extends four stories below grade and four above it.)

In intense sunlight, the precise geometry of the struts, posted in a large-scale grid, casts shadows beneath the green dot-veil, while the steel plates glow white. As in the SUVA Building, air space between transparent and opaque layers takes on a physical presence of its own. The slippery green gives it an almost fluid undersea quality. This water/air/glass ambiguity is further enhanced at the core of the building, where an algae-speckled reflecting pool, bound by glassy walls, fills a rectangular court.

The artificial and the natural are also allied on an unglazed exterior wall of the building, where real ivy grows from the ground up and the plastic variety sends its shoots from the roof down—while the surrounding lush trees and vines cast their reflections on the adjacent glazing. The facade's layered materials are literal (authentic and exposed), but they are simultaneously the perpetrators of illusion. ■

Project: Hospital Pharmacy Institute, Rossetti Grounds, of the Basel Kantonsspital Complex

Client: Canton Building Department, City of Basel

Architect: Herzog & de Meuron—Pierre de Meuron, partner-in-charge;

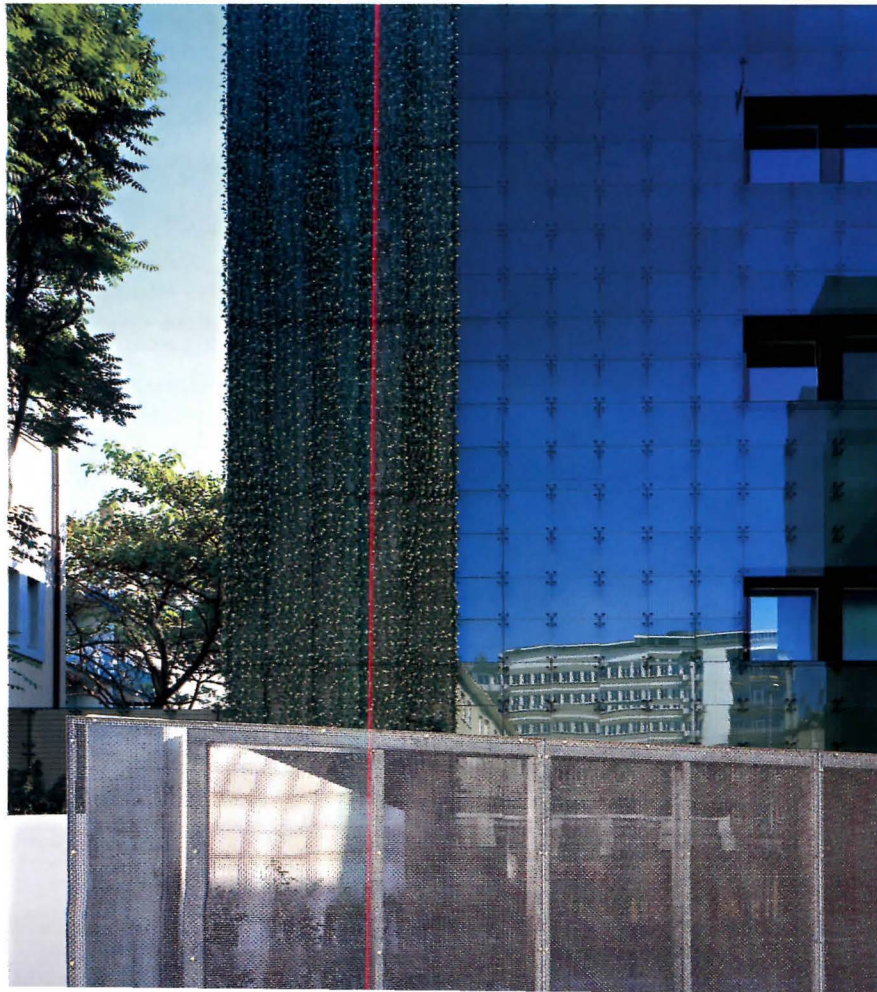
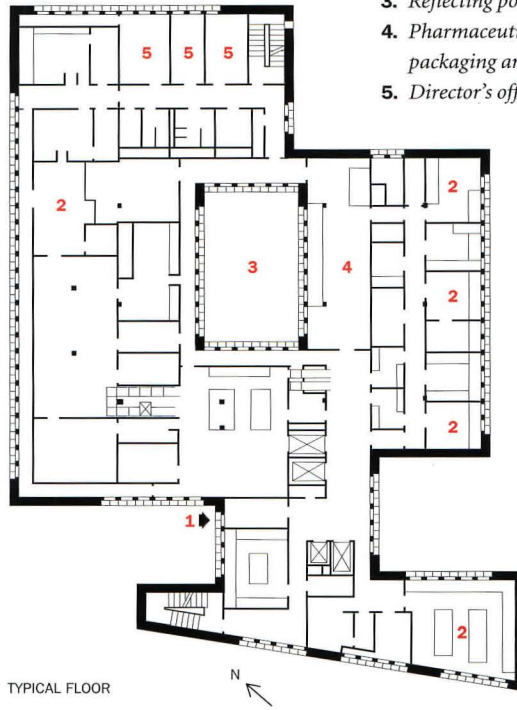
Mathis Tinner, project architect

Engineers: Walter, Mory, Meier (structural); Selmoni (electrical); Schmutz + Partner (plumbing); Müller + Partner, Robert Aerni (climate control)

Consultants: Emmer Pfenninger + Partner (facade)

Merging the natural with the artificial, the architects planted real ivy at the base of the wall and let plastic vines “grow” down from the top. As in the Eberswalde library, the Rossetti Pharmacy facade juxtaposes glass in two contrasting ways: In a taut, flush skin and in deep-set, more traditional windows. The double-layered metal-screen fence echoes the facade’s moiré effect (below).

1. Entry (below, at street level)
2. Laboratories
3. Reflecting pool
4. Pharmaceutical packaging area
5. Director’s offices





Chameleonlike and responsive to changing light, the skin can appear reflective and visually impenetrable

(left) or glimmering and ethereal, delicately revealing its inner layers, as in this entry-court view (above).



The 1927 concrete-and-steel-framed bank is faced in brownstone (left). The auditorium, placed in the second-floor banking hall, includes a mezzanine level behind a plastic-paneled wall for additional seating (above). In the ground-floor lobby (right), banking vault doors enclose the ticket booth.



CRITICISM Rem Koolhaas' and Richard Gluckman's bank renovation for **SECOND STAGE THEATER** grabs the spotlight with economy, efficiency, and a bit of flash.

by Suzanne Stephens

Two architectural headliners have taken to the stage, so to speak, for the conversion of a New York bank into a theater just off Broadway. The first is Rem Koolhaas of the Office of Metropolitan Architecture in Rotterdam. Cult figure extraordinaire in the international roadshow of avant-gardies, Koolhaas made his reputation with a surrealist take on 1950s Googie-meets-corporate design at the Netherlands Dance Theater in The Hague and the Congrexpo at Lille. The other is Richard Gluckman, FAIA, of Gluckman Mayner Architects in New York City. Slightly downtown, slightly boy-next-door, Gluckman created a local following designing assertively low-key elegant New York art galleries before going national with the Andy Warhol Museum in Pittsburgh and the Georgia O'Keeffe Museum in Santa Fe.

So it may seem odd that two such formidable and different talents would come together to transform a 1927 building into the Second Stage Theater on a low (\$3.8 million) construction budget. Sure, it's a good cause and a high-visibility location. But only in New York City do over-qualified architects get the small stuff.

From a cultural standpoint, the job is not so minor league: Second Stage Theater has been a vital presence in New York since it was formed 20 years ago to revive significant contemporary plays. The company had grown out of its 108-seat theater at Broadway and 76th Street and, after hunting for a column-free space, alighted on the well-located four-story classical moderne structure at Eighth Avenue and 43rd Street.

Enter the architects

Joshua Dachs, of Fisher/Dachs Associates, theater consultants, not only helped find the theater, but also brought in Koolhaas, with whom he had worked on the Miami Performing Arts Center competition (won by Cesar Pelli, FAIA) in 1995. "This company likes to take a fresh approach to plays that have been done before," says Dachs who found Koolhaas' thinking compatible with that philosophy. "I thought Rem would be intrigued by



On the set of *Gemini* are architects (from left) Elizabeth Rexrode, Elena Cannon, Richard Gluckman, and Rem Koolhaas and the executive director of Second Stage, Alexander Fraser.

the energy of the building's location near Times Square." Koolhaas agreed, with the proviso that Gluckman Mayner be involved.

Because of Gluckman's experience in designing exhibition space, Koolhaas had approached him in 1994 to team up on the Tate Gallery Bankside competition. The two found they got along (even though Herzog and de Meuron got the Tate job). For the New York project they figured the logistics would work reasonably well since Koolhaas was going to be in the States tending to the Illinois Institute of Technology Campus Center in Chicago, the Universal Studios headquarters in L.A., and most recent, the new central Seattle Public Library.

The collaborative process was fairly straightforward. "The lion's share of the design was Rem's," Gluckman says. "Our office has limited theater experience, but we do have some expertise dealing with building in this city." As Gluckman and Koolhaas tell it, Koolhaas would

sketch up a design, Elizabeth Rexrode of Gluckman Mayner would work up the model, and Gluckman would critique it. Then "Rem would manipulate it some more," says Gluckman, "and I would critique it some more. We both were testing ideas with each other. Once we had a unity, we began to test the ideas on our client."

The result is a simple 236-seat house, a model of low-budget planning with panache. It does not have the complexity of ideas seen in Koolhaas' *Maison à Bordeaux* in France, nor the startling minimalist detailing of Gluckman's Paula Cooper Gallery in New York. Yet it synthesizes several moves with ingenuity. One major maneuver was to do away

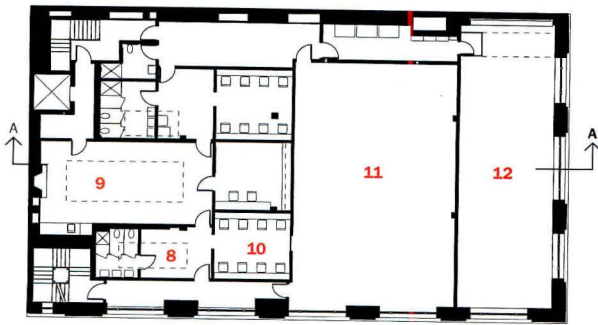
Project: *Second Stage Theatre*

Client: *Second Stage Theatre*—Carole Rothman, artistic director/cofounder

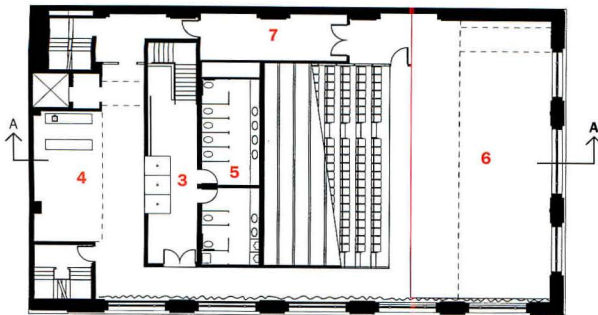
Architects: *Office of Metropolitan Architecture*—Rem Koolhaas, principal; *Gluckman Mayner Architects*—Richard Gluckman, FAIA, principal; Elizabeth

Rexrode, project architect; Elena Cannon; Michael Meredith, project team

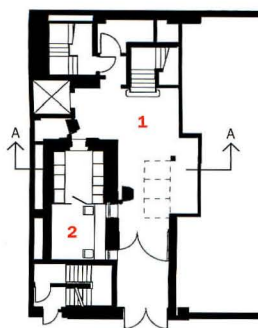
Consultants: *Fisher Dachs Associates* (theatrical); *Robert Silman Associates* (structural); *Jaffe Holden Scarbrough* (acoustical); *Petra Blaisse* (curtain designer)



THIRD FLOOR



ORCHESTRA FLOOR



GROUND FLOOR

1. Lobby
2. Ticket booth
3. Lobby vestibule
4. Lobby/Bar
5. Bathrooms
6. Stage
7. Backstage
8. Lounge
9. Greenroom
10. Dressing room
11. Rehearsal
12. Stage fly

0 10 FT.
3 M.

with impediments between the auditorium seating and the entrance doors: The theatergoer can walk from the narrow, unprepossessing ground-floor lobby up a flight of stairs to a lobby vestibule at the rear of the seating on the second floor, and then into the auditorium proper without passing through doors.

By putting a wedge of seating in the 24-foot-high, 6,000-square-foot former banking hall on the second floor, the architects could create a lobby vestibule, bathrooms, and seating in one design gesture. Leftover space permitted the bar to be installed at one end of the room, off the lobby, and the stage at the other. Just in case theatergoers need a sense of orientation, the architects painted the second-floor lobby vestibule and adjoining bathrooms a burn-your-eyeballs vermilion-orange. The entrance aisle to the auditorium proper continues along one side of the seating platform, which is edged by a galvanized steel grating used as a handrail. On the other side loom 12-foot-high windows.

Koolhaas and Gluckman convinced the client to veer away from the favored black-box notion for a theater and open up the three windows overlooking 43rd Street. These, in turn, are dramatically framed by old-gold velour curtains with grommet holes. The effect works especially well on a spring or summer evening, before the sun has set, when a soft light filters in through the windows on this south-facing wall. As the house lights dim, the curtain is drawn over the windows. Since the 27-by-55-foot stage, like many off-Broadway theaters, has no proscenium per se, the side wall of draperies act as surrogate stage curtains—albeit being pulled over the side windows when the show begins, rather than opened on the stage. “It’s a curtain on the city,” says Koolhaas, who intended to have them also arc across the auditorium between the stage and the seating. That idea was dropped, but the two still talk of its happening.

Without a proscenium, there is not much of a backstage either. Indeed, actors enter the stage via stairs from the third-floor dressing rooms and greenroom and thread their way to the stage behind a translucent paneled wall of polycarbonate glazing sheets on the north side of the auditorium. The original concrete-and-steel-framed theater was structurally sound, but money went into the HVAC and upper-level structural changes. Since the auditorium ceiling had been suspended from the bank’s roof, hanging rods were removed and beams inserted to free up room for a rehearsal hall and create the 43-foot-high fly space.

Second Stage’s second stage of completion

Even though the theater is now open and running, the architect-designed marquee and the actual bar and seating on the second floor are still to be installed. Like all productions, the architects want to see even more happen. For example, they envision the theater eventually unsealing five more windows (shown on the plan) and treating them with acoustically insulated glass. Since three of these windows are at the rear of the stage, Koolhaas’ and Gluckman’s concept relies on innovative set design that wouldn’t block those rear windows—or why have them? However, this idea, too, may have to wait. “We’re still raising money for loans on the first portion,” says Anthony Kiser, cochair of the Board of Trustees. In spite of the architects’ wishes, it looks as if they, the theater, and the public will have to be happy with they got—a smart renovation performed knowingly with clarity and bravura. ■

Sources

Acoustic windows/doors: IAC
Paints and stains: Benjamin Moore
Acoustic quilt: Proudfoot
Plastic wall: GE Thermoclear

Epoxy resin: Dur-A-Flex

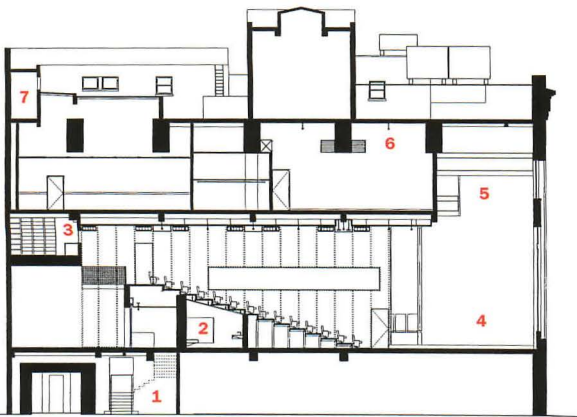
Theater seating: Country Roads

Seating/cushion: Royal Medica

Recessed cove and fluorescent

lighting: CJ Lighting





SECTION A-A

1. Lobby
2. Bathrooms
3. Control booth
4. Stage
5. Stage fly
6. Rehearsal
7. Fly gallery

Most theatergoers climb to their seats from the front via either a side aisle or the center aisle, actually off center (below), that swerves back to the rear northwest corner elevator and stairtower. The raked seating sits on a hybrid structure of concrete block, steel frame, and metal


decking, topped with poured concrete and surfaced in blue epoxy. The seats themselves are wood with cushions made of a translucent gel often used for bicycle seats. The section (left) shows how the lobby and bathrooms have been inserted underneath the incline of the wedge.





Even as new buildings are added to the campus, the atrium will remain the most important social space.





A network of secondary “streets” runs through open-office neighborhoods, connecting them to each other and to the main spine.

west side and a network of aisles connecting neighborhoods of workstations to each other and to the spine. Lining these smaller “streets” and injecting a sense of animation are tilting planes of painted drywall that echo the angled concrete panels of the building’s west facade.

Reflecting its nonhierarchical corporate structure, 3Com provides all employees with cubicles (no private offices)—an arrangement

THE ARCHITECTS THOUGHT OF THE PROJECT AS A CITY WITH A MAIN STREET AND NEIGHBORHOODS.

that also allows daylight to penetrate deep inside. Next to the original building’s mechanical core, the architects placed computer-networking laboratories where rows of computers hum along, happily distanced from perimeter windows. Overhead, Valerio and his colleagues relieved the relentless plane of the old 12-foot-6-inch-high concrete waffle ceilings by inserting 9-foot-high hung ceilings at various intervals, which also provide space for mechanical ducts and electrical conduits. Cabling and wiring for workstations come through the floor. Dotted the office land-

scape are conference rooms that also serve as identifying features for each neighborhood. Right now 1,300 people work at Rolling Meadows, which has a capacity of 1,700 employees.

“It’s our belief that facilities should add value,” says Jeff Berta, a project manager for 3Com. Although he doesn’t have figures, Berta says 3Com works on the assumption that an investment in architecture is an investment in its employees. “3Com was voted by *Fortune* magazine as one of the top 100 places to work,” reports Berta. “We think the quality of our facilities has something to do with that.” ■

Sources

Curtain wall: Kawneer (1600 System)

Metal-wall panel system: Centria (Formawall)

Standing-seam metal roof: Centria

Glazing: Coolidge

Acoustical ceilings: Armstrong (Cortega)

Paints: Sherwin-Williams

Plastic laminates: Pionite

Atrium resilient flooring: Forbo Marmoleum

Colored wood veneers: Ventec

Aluminum shingles: Ettel & Franz Roofing

Office system furniture: Teknion

Espresso bar chairs: Dakota Jackson

Espresso bar tables: Leland



Generous glazing in a conference room (left) helps connect it to the neighborhoods of workstations nearby. Usually paired with photocopying areas, conference rooms act

as landmarks in the sprawling officescape. Neighborhoods are also color-coded and named after real areas in Chicago and its suburbs to help people navigate the floors.



ANALYSIS

3Com is a leader among Silicon Valley companies that view facilities design as a key part of their business strategy. "We have to use good space to attract staff," explains Abe Darwish, vice president of real estate and site services for 3Com. While any number of companies have recognized the recruitment advantages of amenities such as espresso bars and fitness centers, the stakes in Silicon Valley are arguably higher than anywhere else simply because of the speed and volatility of businesses built around technologies in the throes of meteoric change.

Now 3Com is in the vanguard of companies rediscovering the virtues of urban proximity and density. The low-density, low-cost land-development model that once undergirded the unprecedented success of Silicon Valley is falling victim to increasingly scarce and costly land, freeways that regularly congeal, declining air quality, and

housing costs that are among the highest in the nation. While many companies are transferring some functions to less costly and congested locations, the appeal of the Valley's skilled workforce and its density of businesses created to serve the computer industry still outweigh its disadvantages.

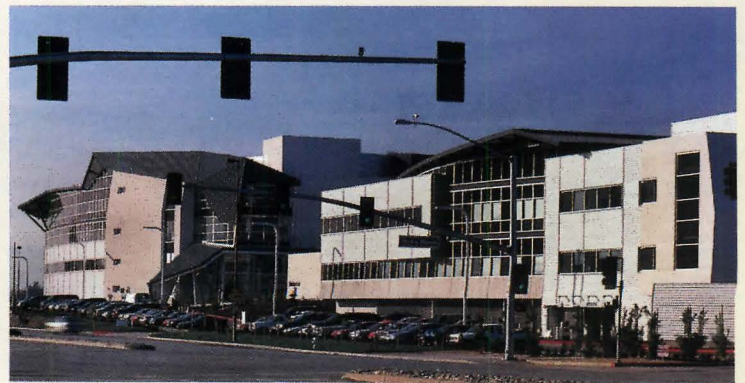
So companies are building up. To keep its rapidly expanding Santa Clara headquarters on one site [December 1996, page 34], 3Com built its latest expansion on an awkwardly shaped parcel. Building on the narrow site at the allowable one-to-one floor-area ratio, perhaps at double the density that would have prevailed as few as five years ago, required constructing a landscaped podium under the building for parking and pushing the massing of the building close to a busy parkway. STUDIOS, which has designed all three phases of the project, carved this elevation as a kinetic composition scaled to the traffic-

clogged arterial (photo below).

Though designers can create efficient and attractive environments within corporate precincts, the increasingly dysfunctional urban environment clouds the valley's future. Fearing the evaporation of the energy and commitment that has fueled the region's unprecedented creativity, many of its business leaders are now joining with its political leaders in a nascent effort to maintain the valley's

growth and prosperity and stem the decline in its quality of life.

Under consideration are strategies such as extending rail transit into the region, encouraging housing construction closer to employment hubs, tax-base sharing (which makes bypassed urban areas more appealing by underwriting their resurgence), and a system of "congestion credits" that would make those who drive at peak times pay more. *James S. Russell, AIA*





Although essentially windowless on its perimeter walls, the offices receive sunlight from dozens of skylights above the ficus

trees in Central Park, the tent structures, and other locations. The yellow gatehouse (opposite top) helps identify the building

from the street. The reception room inside the gatehouse (opposite bottom) leads to bridges that take visitors to the main space.

After trying the virtual, Clive Wilkinson gets real with new offices for **TBWA/CHIAT/DAY.**

by Clifford A. Pearson

For a project touted as a new workplace model, the offices of advertising agency TBWA/Chiat/Day in Los Angeles have quite a few ghosts hanging around. Set in a 120,000-square-foot former warehouse in the developing Playa Vista area (where Dreamworks will someday be a neighbor), the building no longer reverberates with the clamor of pallet-hauling teamsters. Today, it's the sound of cellphone-toting copywriters that fills the space. Also gone, but still felt, are the agency's charismatic founder, Jay Chiat, who left the company about three years ago, and the architect he hired to design the company's last two homes, Frank O. Gehry, FAIA.

Just a few years ago, Chiat/Day, as it was then called, grabbed the design limelight when it pioneered the virtual office, a freewheeling place where employees checked in each morning to get a workstation, then carried around laptops and cellphones, plugging in wherever it felt right. The concept quickly ran into major roadblocks: Most people, as it turned out, had an instinct for nesting in one place and wanted to know where to find their coworkers. It also didn't help that the three-story Gehry building in Venice, Calif., wasn't designed to handle the virtual office. (Remember, this was the building with an entry pavilion by Claes Oldenburg and Coosje van Bruggen in the shape of a giant pair of binoculars.) Even in its New York City offices, designed by Gaetano Pesce in 1994, [September 1994, page 92], Chiat/Day learned that the virtual office was better as an idea than a reality. "At first there was a lot of enthusiasm" for the freedom of the new workplace, recalls Stephanie Stephens, an account management supervisor who has been with Chiat/Day for seven years and worked in its last three facilities. "But after

Project: TBWA/Chiat/Day Offices
Los Angeles, Calif.

Architect: Clive Wilkinson Architects—
Clive Wilkinson, AIA, design director;
John Berry, AIA, Robert Kerr, project
architects; Jane Wu, Christian Bandi,

Tom Nohr, Mark Hudson, Andrea
Keller, Marni Nelco, Ho-Yu Fong,
design team

Engineers: John A. Martin & Assocs
(structural); Syska & Hennessy (m/e/p)

General contractor: Matt Construction

PHOTOGRAPHY: © BENNY CHAN





about six months,” she adds, “people rebelled” and began staking out particular spaces for themselves. Old habits die hard.

“Jay always believed in shaking things up,” says Stephens. Indeed, such creative chaos led to some of the agency’s best-known work, including the “Think Different” campaign for Apple Computers. But all the change eventually wore people down. “The virtual office was a brave experiment and Chiat/Day should be applauded for it,” states Clive Wilkinson, AIA, who designed the agency’s current home. He also worked on the binoculars building in 1991 as a Gehry employee, and fitted out the building’s top-floor offices after opening his own firm.

The new TBWA/Chiat/Day office provides all employees with workstations where they can hang pictures of the kids (or cats) and lock up their personal belongings, but it also carries on many of the ideas pioneered by Chiat (see interview next page). “It’s been an evolution from the virtual office, not a departure,” says Neal Grossman, the chief financial officer of the Los Angeles office. Employees still set up their laptops in lounge areas, work in impromptu groups, and bring their dogs to work. “What characterizes this company,” he explains, “is its willingness to take risks, to push people, to try new things.”

While moving forward, the agency’s new home also looks back to the warehouse-turned-office that Gehry designed for the company in Venice in 1988. This first warehouse “taught us how we really work,” says Carol Madonna, the agency’s director of office services, who has been

with the company for 15 years. A big open space on a single floor, this earlier facility created a sense of common purpose and identity that made everyone feel they were working as one team.

Renovating the Playa Vista warehouse 10 years later allowed the agency to recapture that old spirit, while accommodating new technologies and lessons from its previous experience. The project went forward quickly, with design starting in September 1997 and the agency moving into the space in December 1998. “We were in construction even as we were still designing,” reports Wilkinson.

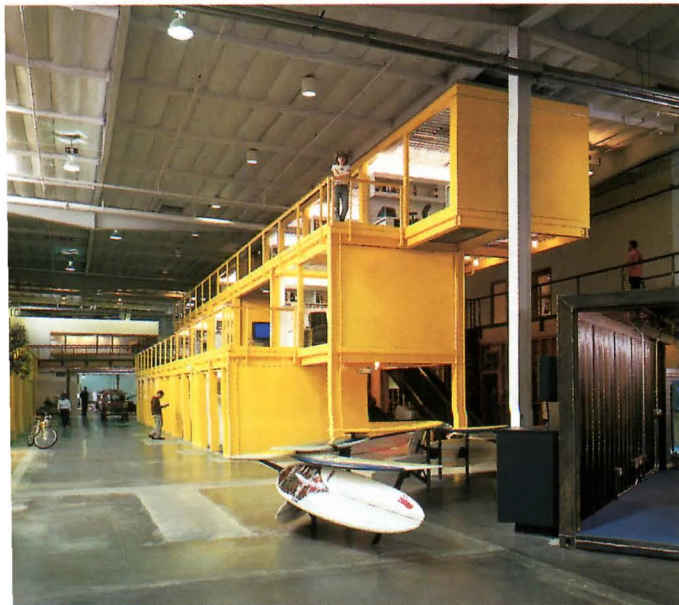
To retain the industrial feel of the building, Wilkinson changed very little on the outside—just cleaned up the concrete-panel shell and painted it gray. On the inside, though, the building was gutted, and the steel frame and secondary wood roof trusses exposed. The architects specified a new HVAC system with more than 50 air-handling units popping up from the roof. From the ceiling, rolls of reinforced fabric scrim hold new insulation in place.

On the building’s exterior, Wilkinson added one architectural flourish—a bright yellow, lozenge-shaped entry pavilion that serves as an easily identifiable icon from the street. Visitors take an outdoor stair or elevator to the pavilion’s second-floor reception room, then walk through one of two metal tubes into the 27-foot-high office interior. By entering at the second level and getting views of the entire space, they quickly get the lay of the land.



Reflecting the prime role of the agency's creative teams, pairs of art directors and copywriters share offices in the centrally located

cliff dwellings (above and below). Beyond the stacked offices are a basketball court and a wood-slatted conference tower.



I N T E R V I E W

Jay Chiat's attempts to create a new paradigm for work, through office design that eliminated conventional workstations in favor of a variety of communal and shared private areas, drew tremendous attention when they were pioneered in the early 1990s. Chiat/Day's so-called virtual offices in New York and Los Angeles invited staff to become nomads, checking in each morning as if at a hotel and choosing a place to work (equipped with a cordless phone and laptop computer) based on the tasks to be done and the individual's needs for co-worker involvement.

It didn't last long. The disintegration of Chiat's collegial nonterritorial vision is vividly documented in a story by Warren Berger in *Wired* magazine's February 1999 issue. Chiat, who has since sold the firm, spoke to RECORD's Jim Russell on what went wrong and what went right.

AR: Why did you do it—develop the virtual office?

JC: Space has just fascinated me ever since I've been in the business. The final offices were the end of a long evolutionary track. I still don't believe that conventional four-wall spaces have any validity—certainly not in service businesses where you have a lot of meetings and a lot of the work is off-site. You're in much better shape if facilities are designed for what you do, instead of allocating square feet according to rank.

AR: What did you learn from building these offices?

Jay Chiat, who has sold his shares of Chiat/Day, is now involved in new information-technology businesses.

JC: I think the general premise is valid, but what I didn't pay attention to is the nesting requirement. It's not so much having an office as having a place. Also, we failed significantly at getting rid of the paper. [All documents were supposed to have been scanned and placed on the firm's computer network.] You move from your security blanket as a child to carrying paper around as an adult.

AR: People quoted in the *Wired* story said the office was plunged into chaos because there was too little to anchor them. Were these criticisms valid?

JC: I was there and I didn't see it. I felt the way to measure whether we were on the right track was whether the work suffered. It was a radical change, but the work didn't suffer in my opinion. In some cases it was better. I felt vindicated.

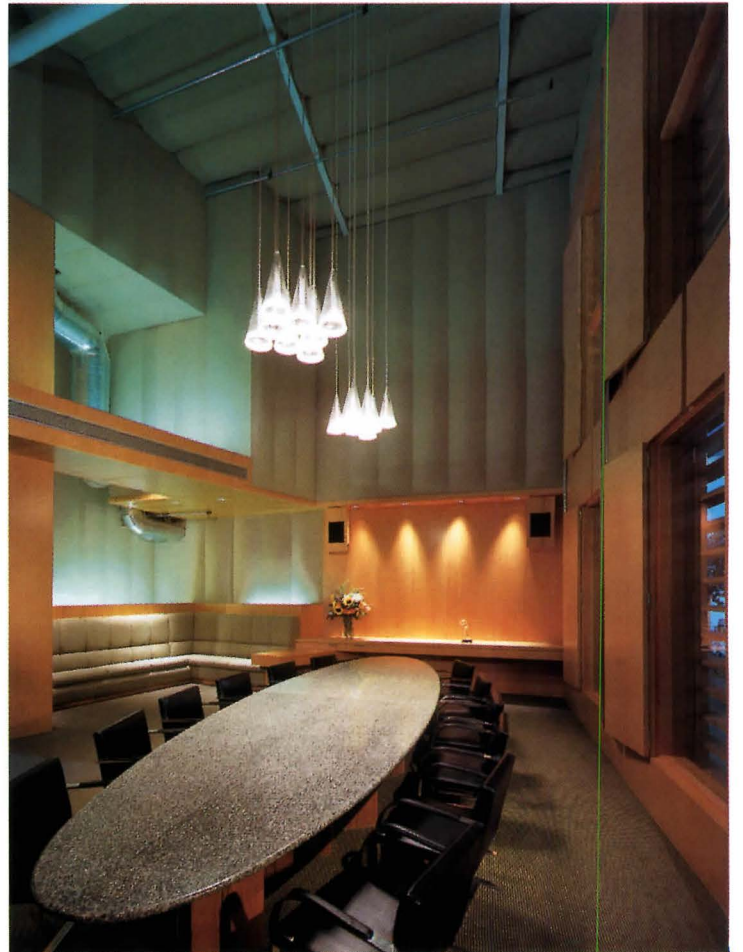
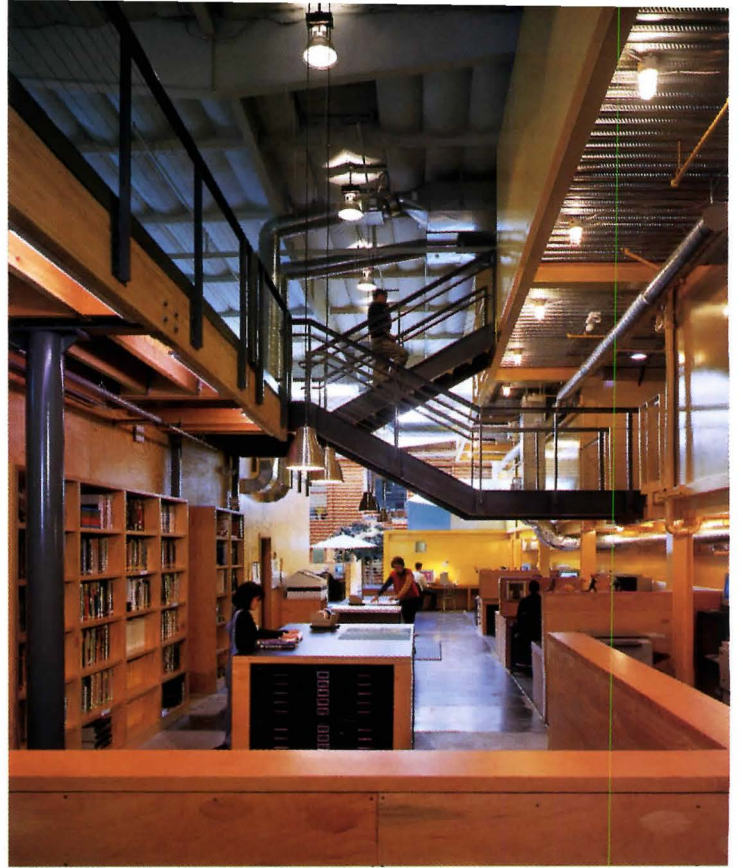
AR: Does architecture still have an important place in your business endeavors?

JC: I'm just beginning construction for new offices for an Internet company I'm working with, Screaming-Media [which customizes Web-based information and delivers it to customers]. The offices were designed by Tom Hut and Jane Sachs of the Hut Sachs Studio, [an emerging New York City design firm].

AR: Will it have offices or workstations?

JC: In the computer business pretty much everyone sits at a terminal. Vitra is building custom workstations to our specs. We are paying more attention to light and flow, so that people have an opportunity to go someplace pleasant and take a break. All the public spaces in the new office are by the windows. We're building a cafe area—a place where people catch up with each other. We thought such a place worked well at the agency.

James S. Russell, AIA



(Clockwise from opposite, top left): White translucent tents serve as meeting spaces for project teams; a stair tower offers overviews of the office; a two-story tower called Oz includes a state-of-the-art conference room; the project's workstations were designed by Clive Wilkinson.

Chiat/Day people refer to their new home as an "advertising city," and Wilkinson has used the urban analogy to help organize the huge space. A "main street" runs down the middle of the building, a "central park" with rows of ficus trees sits under skylights, and various "neighborhoods" of workstations ring the interior. At the center of it all, facing rows of offices look like taxicab-yellow shipping containers stacked three stories high. These "cliff dwellings" are where art directors and copywriters pair up and dream up ad campaigns they hope will capture the public's imagination. If the open-office neighborhoods are the suburbs, the cliff dwellings are downtown.

Offices for services, such as travel and computer support, line one side of the building, but most work areas are organized by the agency's key accounts, such as Apple, Taco Bell, and ABC. The aim is to emphasize teamwork among everyone working on a particular account. White tentlike structures hung from the ceiling act as team rooms that offer a sense of enclosure while allowing light to filter in.

Not happy with the standard workstations on the market, Wilkinson and the client developed their own design for a desk with a task light, a perforated-metal privacy screen, and a curved worksurface all attached to a single structural pole. A vertical file organizer, a file/storage cart, and a cable-management channel hook onto different parts of the assemblage. Called NEST (Nice Environment for Sitting and Thinking), the unit comes in three colors, chlorophyll green, California blue, and matte black, and is now manufactured and distributed commercially. "We wanted to create a workstation that provides the minimum in terms of privacy and function, but not make it so self-sufficient that people wouldn't get up and work in teams," explains Wilkinson.

Flexibility was another key design criterion, since winning or losing a big account could require major changes in the office layout. By running wires and cables throughout the floor and making workstations easily movable, the architects met this goal. The five-foot-three-inch-high partitions, says Grossman, act like fences between houses, providing privacy but allowing people to lean over and talk to their neighbors.

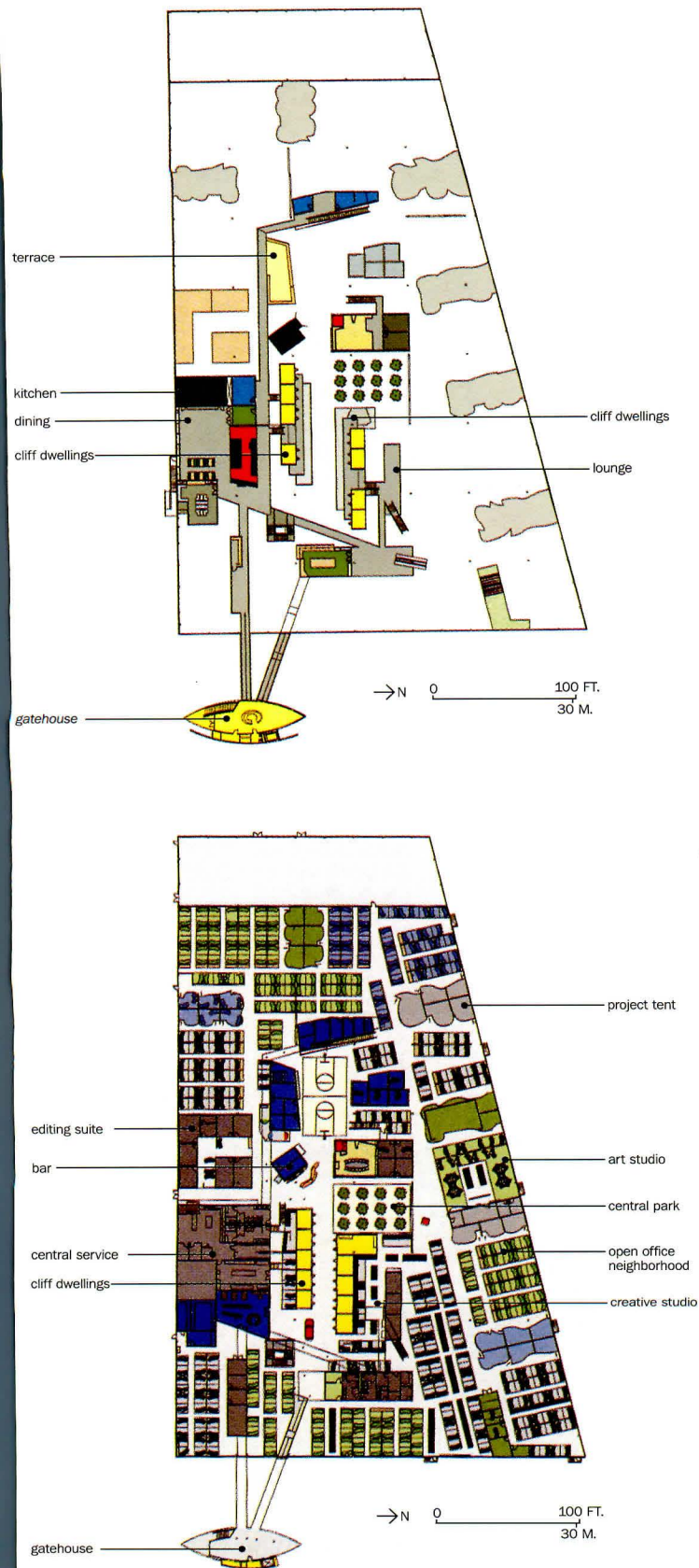
Except for a few cliff dwellers, all 500 employees in the building have their offices on one floor. Shared facilities, such as lounges, dining, and conference rooms, are on the second level with views over the work areas below. Offbeat amenities—a conference room made of three shipping containers, an espresso bar made of surfboards, and an indoor basketball court—enliven various parts of the main floor. As a result, people really do spend less time at their desks and more in project tents or meeting with colleagues over a cup of coffee or fruit shake.

"In the advertising business, turnover is traditionally very high and talent is expensive," says Wilkinson. So one of the goals of the project was to make a place interesting enough to keep people on the job longer. The early results are encouraging. According to Grossman, turnover has already dropped by "about 25 to 30 percent." ■

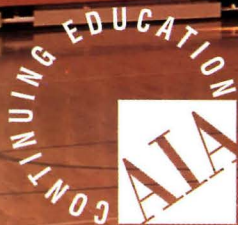
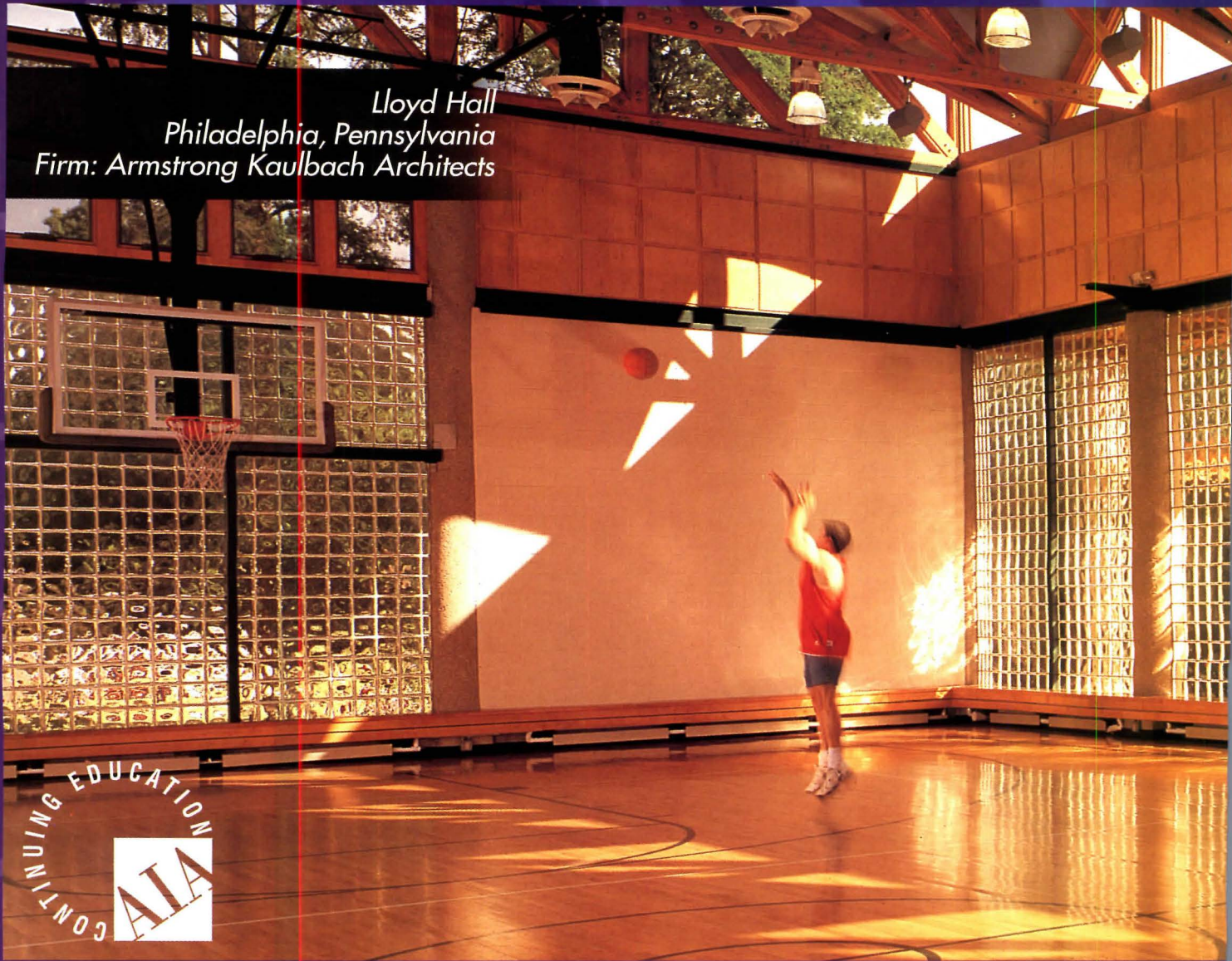
Sources

Gatehouse metal cladding: BHP
Slate flooring: American Olean
Conference room lights: Flos (*Fuscia* by A. Castiglioni)
Conference room carpet: Bentley

Canvas tents: J. Miller Canvas
Rubber flooring: Burke Roleau
Custom-dyed carpet: Shaw Industries
Park furniture: Smith & Hawken
Workstations: Steelcase/Turnstone
(NEST by Clive Wilkinson)



Lloyd Hall
Philadelphia, Pennsylvania
Firm: Armstrong Kaulbach Architects



ROCKING THE BOAT ON BOATHOUSE ROW WITH VISTABRIK® GLASS BLOCK

Big opportunities generally mean big challenges. So when Armstrong Kaulbach Architects designed the first new building on Philadelphia's Boathouse Row, they were looking at a once-a-century challenge. It had to be big without dwarfing its neighbors. A modern classic with 19th century charm and 21st century convenience. They achieved this with a skylit, peaked profile and a three-sided expanse of VISTABRIK® Glass Block, Pittsburgh Corning's solid, three-inch thick glass block.

"This building is going to be used for everything from black tie parties to basketball games. So every inch of this place has to endure years of hard wear – and look great doing it. VISTABRIK® Glass Block has the perfect balance of durability, security and sheer beauty to make this place special." — Lisa Armstrong, AIA, Architect



SPORTS AND RECREATION

The Sporting Life

“IF YOU BUILD IT THEY WILL COME” SEEMS TO BE THE MANTRA OF SPORTS CLIENTS WHO, INCREASINGLY, ARE USING GOOD DESIGN TO DRAW CROWDS.

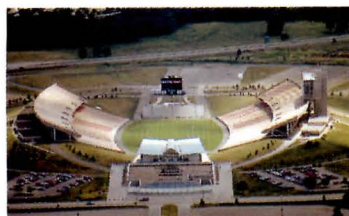
by John Pastier



1

Lisbon, Portugal

A multipurpose arena and pavilion by Skidmore, Owings & Merrill is the legacy of the World's Fair to the city of Lisbon.



2

Ames, Iowa

An athletic office and training facility by Herbert Lewis Kruse Blunck expresses athleticism in its materials and its forms.



3

Minden, Germany

Randall Stout's new swimming pool enclosure is both a practical solution to a reuse problem and an inspiration to those who use it.



4

Tempe, Arizona

This shade structure by Gould Evans Associates for the Arizona Sun Devils baseball team sets a new standard for an often overlooked building type.

Lavish, enormous, nostalgic—these words could describe many of the new stadiums being designed and built in the U.S. In the following essay, John Pastier examines some of the reasons for the explosion in the construction of this building type. The projects we chose to feature, however, do not fit into this category. Most of our choices are relatively modest examples of how remarkable sports buildings can be when architects exercise ingenuity.

—Elizabeth Harrison Kubany

Americans love sports. And in recent years, this national obsession has spurred a huge growth sector for architects. Major-league expansions and actual or threatened franchise relocations have spurred massive stadium and arena construction. Owners insist on having these new facilities for financial reasons. An awareness of new revenue sources, such as corporate suites, club seats, retail venues, bars, and restaurants, has led to construction and renovation at the professional level.

This trend has trickled down to affect many other sectors as well. Andrew Cohen, editor of the sports facilities trade journal *Athletic Business*, observes that “there is no segment of this industry that hasn’t seen impressive growth over the last decade. From the pros and colleges down to high school, health clubs, and municipal and military recreation, we are seeing a huge increase in the number of new facilities and major renovations.”

Despite the windfall these new venues represent for team owners, taxpayers frequently get stuck with the bill. The Cato Institute calculates that the public subsidy for major-league baseball, football, basketball, and hockey facilities has exceeded \$5.2 billion since 1989. It also predicts that projects over the next several years will total at least \$13.5 billion more.

Healthy competition

The most dramatic examples of this expansion have been at the professional level, where a single stadium can cost as much as a half billion dollars. With these imposing economic dimensions, we should be able to ask how well these buildings measure up with regard to urbanism and

John Pastier is a Seattle-based architecture critic who has consulted on the design of several stadiums and arenas.

architectural design. So far, the results have been mixed, but they seem to be improving. Outside the U.S., major stadiums have often been designed by the profession's big names, including Pier Luigi Nervi, Felix Candela, Kenzo Tange, Renzo Piano, and Frei Otto. In contrast, as recently as 10 years ago, the large professional and college facilities in the U.S. were the near-exclusive domain of three Kansas City sports specialists, HNTB, HOK Sport, and Ellerbe Becket. But this is changing; healthy competition has developed. Specialist firms have continued to splinter and multiply, new ones have established themselves, and design architects are winning some of the large commissions, usually in association with sports firms.



Phoenix's Bank One Ballpark by Ellerbe Becket was the first in the nation to use a retractable roof.

Varsity designers and offensive formations

Arquitectonica has designed the American Airlines Arena in Miami, Fla., and the Philips Arena in Atlanta. Rafael Viñoly, FAIA, was responsible for Princeton's new Palmer Stadium. Robert A.M. Stern, FAIA, was co-designer, with HOK Sport and the Disney organization, of the conversion of the huge, multipurpose Anaheim Stadium to the more intimate and whimsical baseball-only Edison International Field. Antoine Predock, FAIA, has teamed up with HOK to do a downtown ballpark for the San Diego Padres that will have terraced gardens behind the main stands and a villagelike precinct of commercial mixed uses beyond the outfield. Peter Eisenman, FAIA, a rabid sports fan, designed a dramatic stadium expansion for the University of Arkansas football team, but its boldness may have unnerved his client. Another daring Eisenman proposal for a \$1.2 billion convention center, football stadium, and hotel complex was voted down by Mesa, Ariz., voters this May.

Most recent design falls into patterns peculiar to each type of game. For decades, major postwar stadiums were usually straightforward

utilitarian examples of engineering, not architecture. (Frank Hope's and Gary Allen's neo-Corbusian San Diego Stadium was a notable exception.) But in 1988, HOK's Pilot Field (now renamed North American Park), a large minor-league baseball park in Buffalo, cloaked a modern seating layout in a pragmatically post-modern exterior that celebrated a historic downtown setting as well as baseball tradition. Baltimore's Camden Yards, also by HOK, became the defining example of this trend four years later. Its success

lay less in its arched brick exterior than in its asymmetrically angular field shape and seating arrangements and its reintroduction of expressed steel structure after decades of heavy concrete. These elements evoked the golden age of ballpark design and were an instant hit.

Other teams immediately wanted similar parks, just as Baseball Commissioner Bart Giamatti had predicted they would. The paradigm has been refined in Denver and Seattle, expanded upon in Cleveland, and exaggerated in Arlington, Tex. Many minor-league ballparks have also adopted the retro look. The concern with this trend is not so much one of quality—since it represents an advance over the previous status quo—as it is one of near ubiquity. A client's a priori insistence on this style can limit the architect's creativity.

A less formulaic approach to sports venues would be refreshing. It might be an abstractly expressive gesture à la Eisenman or an

RETRACTABLE ROOFS: THE CUTTING EDGE

Retractable roofs, sometimes called convertible roofs, are the latest must-have in new stadiums. Before 1998, there were only two in the world, but by the spring of 2000, there will be six in operation, including in major-league baseball stadiums in Phoenix, Seattle, Houston, and Milwaukee. Each of these roofs is large (about 6 to 8.5 acres), costly (about \$50 to \$100 million), and lofty (about 220 to 325 feet above the playing field); but they all serve different purposes, depending on location, and employ different configurations in opening, closing, and covering.

Ellerbe Becket's Bank One Ballpark in Phoenix, opened last year, had the first retractable stadium roof in the U.S. Being in the desert, its purpose was not to guard against rain. Rather, it was designed

to allow sunlight onto the grass field. Four of the six roof leaves part at the home-plate-to-center-field axis and travel to the foul-corner edges, moving with the solar path to keep the field in sun and the seating bowl shaded. A few hours before game time, the roof and vertical walls beyond the outfield close, and the air-conditioning is turned on.

Seattle's Safeco Field by NBBJ recently opened. Its roof has been compared to a carport; when closed, it is an overhead canopy with sizable openings below on the two leeward sides, the larger of which will allow a view of the downtown skyline. Three immense leaves (127,000 square feet each) move from their semistacked position behind right field to the third-base line to provide shelter, but usually, the roof will be open.

With all its equipment and infrastructure, the roof's cost approached \$100 million of the \$517 million total for the stadium.

Like its predecessor, the Astrodome, Houston's Enron Field will be air-conditioned to cope with the city's legendary heat and humidity. Designed by HOK, the stadium's roof will move in the same direction as the one at Safeco Field, but with a twist: The three rolling sections will have integral glass wall elements as large as 242 feet wide and 115 feet tall, giving views of the city while creating enough closure to make the air-conditioning work. In this sense, it is the most advanced of these examples. Its largest panel is 142,641 square feet, reaching a maximum height of 242 feet, and its attached glass wall is 27,830 square feet.

Miller Park in Milwaukee is a collaboration of NBBJ and HKS. Its

roof will move radially rather than linearly: Five operable leaves will pivot on individual supports clustered behind home plate and travel in an arc, like a folded paper fan, toward the foul lines, three on the third-base side and two toward first base. The top of the highest truss will be 325 feet above the playing field, making it the tallest retractable roof to date. The stands and the field subsurface can be heated when necessary to cope with the Wisconsin climate.

These roofs create challenges of scale and style, doubling the height of a typical baseball stadium and introducing a colossal mechanical apparatus atop a building type that has lately strived for intimacy and neotraditional design values. Phoenix sidestepped the latter issue by adopting an arena typology, but the others may provoke lively debate. —J.P.

essay in more humanly scaled forms and spaces in the manner of Predock; but, a successfully executed example of a progressive vision would open the eyes of the sports world to new possibilities in the way that Camden Yards did.

By definition, basketball and hockey arenas display a more contemporary mode of expression than ballparks, partly because they have a briefer and less nostalgic history. Here, the style of choice is that of a modernistic collage, often with curves overlaid on rectangles in both plan and elevation. Changes of material are more frequent, finishes are sometimes better, and the scale is more articulated, both because the structures are inherently smaller and because the practice has somehow taken hold and therefore needs no advocacy.

Football facilities represent the underachievers of stadium design, without the personality of baseball parks or the refinement of arenas. Scale is a major reason: These behemoths usually seat about 60 percent more people than ballparks do and about four times as many people as basketball and hockey venues do. Because they are used far less frequently than the other venues, comparable per-seat costs cannot be justified, and thus the quality of finishes and spaces usually suffers in comparison.

Urban comebacks

Many sports projects have become agents of urban revitalization. As long ago as 1966, Busch Stadium in St. Louis helped bring back a declining downtown, and now, after a period of suburban stadium siting, there has been a widespread return to the urban core. Recently, these projects have helped solidify their cities' downtowns economically, but with varying degrees of success in establishing a strong urban design relationship. Pilot Field began the downtown trend by



It takes a village: Antoine Predock and HOK designed the new San Diego Padres stadium.

drawing a million people a year—many of them via light rail—to Buffalo's core to see Triple-A baseball. HOK's Canal Park in Akron is a downtown minor-league stadium that has benefited from the limitations of a constrained site and brought life to its vicinity after working hours.

Similar benefits are expected from two other heart-of-town minor-league parks in Winnipeg and Memphis. The last is part of an ambitious private multiblock renovation of older buildings for office and retail use. One can posit that minor-league ballparks work better in downtown locations than their big-league siblings because their smaller size is more conducive to a pedestrian scale and less disruptive to historic street grids.



The next generation: Arquitectonica's American Airlines Arena in Miami.

The winners circle

Big-league venues can have a greater impact on their urban settings than minor-league ones, especially when they embrace other uses. Camden Yards fostered strong civic integration by providing skyline views, incorporating an old warehouse and train station in its urban design, creating a festive pedestrian street, and being served by three forms of rail transit as well as busses. The Gateway Project in Cleveland achieved year-round use by combining an HOK baseball park with an Ellerbe Becket arena.

Sited on the edge of downtown, it is one of several projects that have helped bolster the city's core. Drawing as many as 4 million spectators annually, Coors Field (HOK) stimulated retail use and some new development in Denver's LoDo (lower downtown) warehouse district. But in the process, art galleries have been driven out and replaced by sports bars and eateries. Ellerbe Becket's Rose Garden arena has helped create a bustling new district across the river from downtown Portland, Ore.

Ellerbe Becket's MCI Center arena may be the most centrally located of all these projects. It sits in the heart of Washington, D.C.'s old downtown, above a Metro station, and incorporates stores, restaurants, and a sports museum that are open during nonevent times. The scale of the arena is broken down to reflect its urban context, and each of the four facades is different. NBBJ's Safeco Field and a new Ellerbe Becket football stadium in Seattle will replace the Kingdome not far from Pioneer Square, the city's original downtown, and are expected to gentrify an adjoining industrial area. Detroit's Comerica Park (HOK once again) will supplant the classic and irreplaceable Tiger Stadium and shift activity to a thriving entertainment district on downtown's northern edge. PacBell Park, another HOK project opening next year in San Francisco, is sparking a center-city residential building boom that is bringing apartments and condos to its front doorstep.



Coors Field by HOK is Denver's answer to Camden Yards.

Sometimes, rather than sparking revitalization, a stadium or arena will supply what HOK Sport's Earl Santee, AIA, calls "a missing piece" of the downtown matrix. Houston's Enron Field, a ballpark opening next year, is one example; he says, "it's not so much a catalyst as a precedent-setter showing that the neighborhood is a good area to develop in." The Staples Center arena, an NBBJ project, constitutes another missing piece, occupying a site opposite the Los Angeles convention center that had sat vacant for 25 years, waiting for a hotel that never materialized.

Whether a sports project is a catalyst of urban renewal or simply a missing piece of an existing downtown, the challenge for architects is to take an immense building type with high peak-use loads and integrate it, functionally and visually, with the urban fabric. And whether it is sited in the city or in the suburbs, the designers should strive to establish that these are major public buildings as deserving of imaginative expression as performing arts venues, libraries, or museums. There has been some progress made on the last front, but we still fall short of the standards set elsewhere in the developed world. The task now facing the sports specialists and design architects, as well as their clients, is to continue to narrow that gap. ■

1

Atlântico Pavilion Lisbon, Portugal

AN ENERGY-EFFICIENT, MULTIUSE SPORTS BUILDING WITH AN UNUSUAL OVOID ROOF IS THE LEGACY OF THE WORLD'S FAIR TO THE CITY OF LISBON.

by David Cohn

Project: *Atlântico Pavilion*
Owner: *Parque Expo 98 and Atlântico-Pavilhão Multiusos de Lisboa, S.A.*
Design architect: *Skidmore, Owings & Merrill, Inc.—Nicholas Jacobs, design director; Peter Lill, senior designer; Peter Magill, partner-in-charge; Steve Neal, structural engineer*
Associate architect: *Regino Cruz, Arquitectos e Consultores, SA*
Consultants: *Skidmore, Owings & Merrill, Inc. (engineers); Skidmore Owings & Merrill, Inc. (landscape); Lighting Design Partnership (lighting); Acustica e Ambiente, SA (acoustical)*
General contractor: *Parque Expo 98*

Construction cost: \$59 million

Area: 442,590 square feet

Completion: May 1998

The Atlântico Pavilion, a competition-winning design by the London office of Skidmore, Owings and Merrill (SOM), is one of several important legacies left to Lisbon by last year's World's Fair. The 322,900-square-foot arena occupies one side of the Olivais Dock, the Expo's riverfront water plaza, near the Portuguese Pavilion by Alvaro Siza and the Oceanarium by Peter Chermayeff. Its facilities, suitable for Olympic indoor athletic events, track meets, professional sports contests, concerts, conventions, and the like, are complemented by the adjacent trade fair exhibition hall, designed by local architects António Barreiros and Alberto França.

A dominant, distinctive form

The pavilion is dominated by the ovoid roof of the main arena. With clear spans of 380 feet, it is one of the largest structures of its kind in Europe. Its swelling volume, finished in oxidized zinc, seems to float over the stepped podium and glass-walled entry vestibule that encircle the building. Inside, the roof is supported by an elaborate structure of laminated-wood trusses and an inner skin of curving wood boards, dramatically illuminated by indirect tungsten lighting. The grandstands,

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seating up to 12,500 spectators, form a freestanding bowl under the roof, with the arena floor situated one level below grade and the circular main vestibule raised to minimize distances between upper-level seating and exits.

Early in the design process, an auxiliary hall with a capacity of 500 to 2,000 users was added on the river side of the building. Employed as a warm-up area for the athletes and for independent events, it shares service facilities with the arena's adjacent stage. Its separate, wood-trussed roof arches over glass walls that afford river views.

Energy consciousness

Innovative energy-savings strategies won the pavilion a special funding grant from the European Community. In studying similar arenas, SOM found that skylights offered a major

opportunity to cut operating costs, because they lower the amount of light from fixtures required for daytime events, reports Nicholas Jacobs, SOM's design director in London. The roof is penetrated by operable central skylights that provide daylighting and natural ventilation. Smoke-exhaust fans and concrete grandstands, which act as a heat sink for large crowds, augment the natural ventilation system. Substituting for chillers, heat-exchange water coils under the Tagus River provide additional cooling capacity. Cooled air is piped through large low-velocity ducts to individual grilles under each seat, as in a concert hall. This cooling method uses 50 percent less energy than a conventional system.

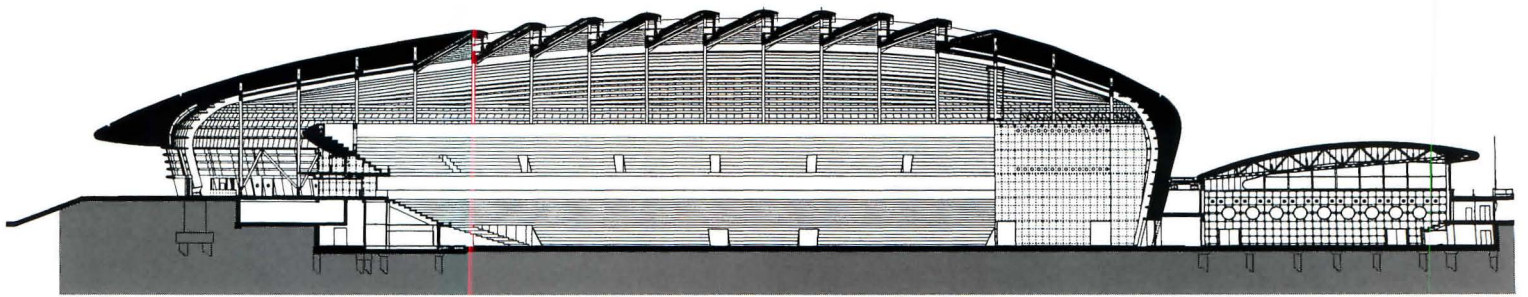
Mixed metaphors

The arena's roof offers a curious mix of formal metaphors. According



The swelling volume of the pavilion's ovoid roof dominates the landscape (left and above). It appears to float over the stepped podium and glass-walled entry vestibule

that encircle the building. The auxiliary hall (top) is a warm-up area for athletes. Its separate wood-trussed roof arches over glass walls that afford river views.

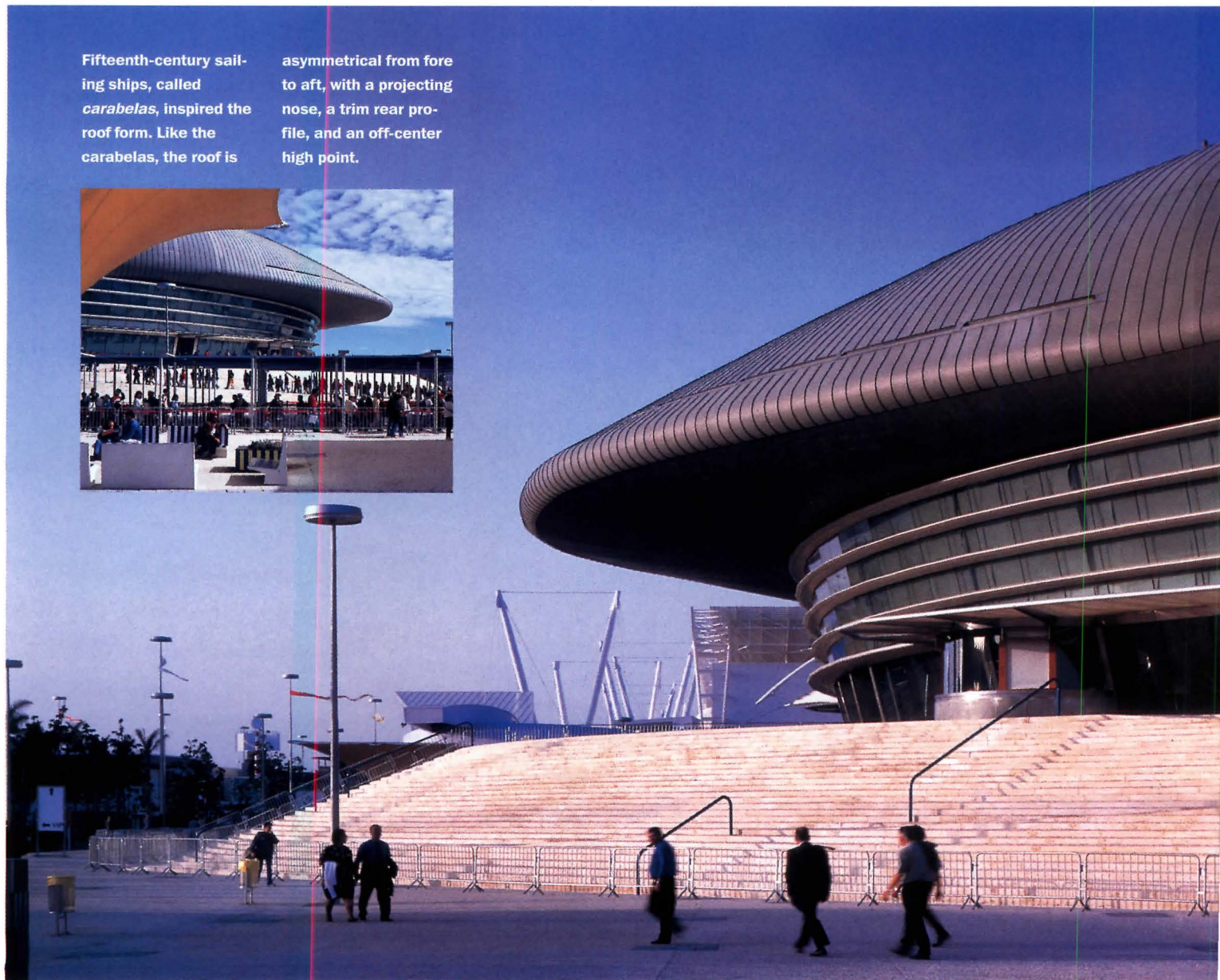
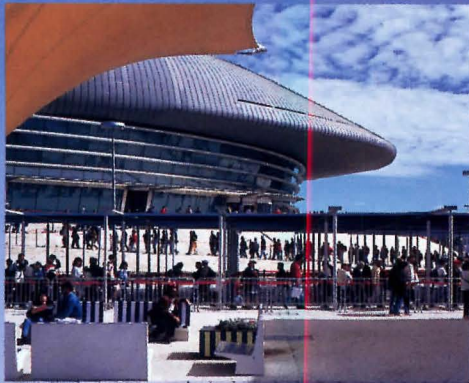


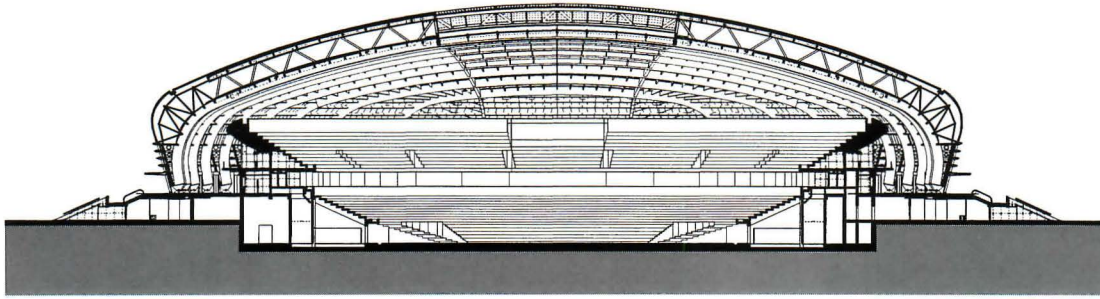
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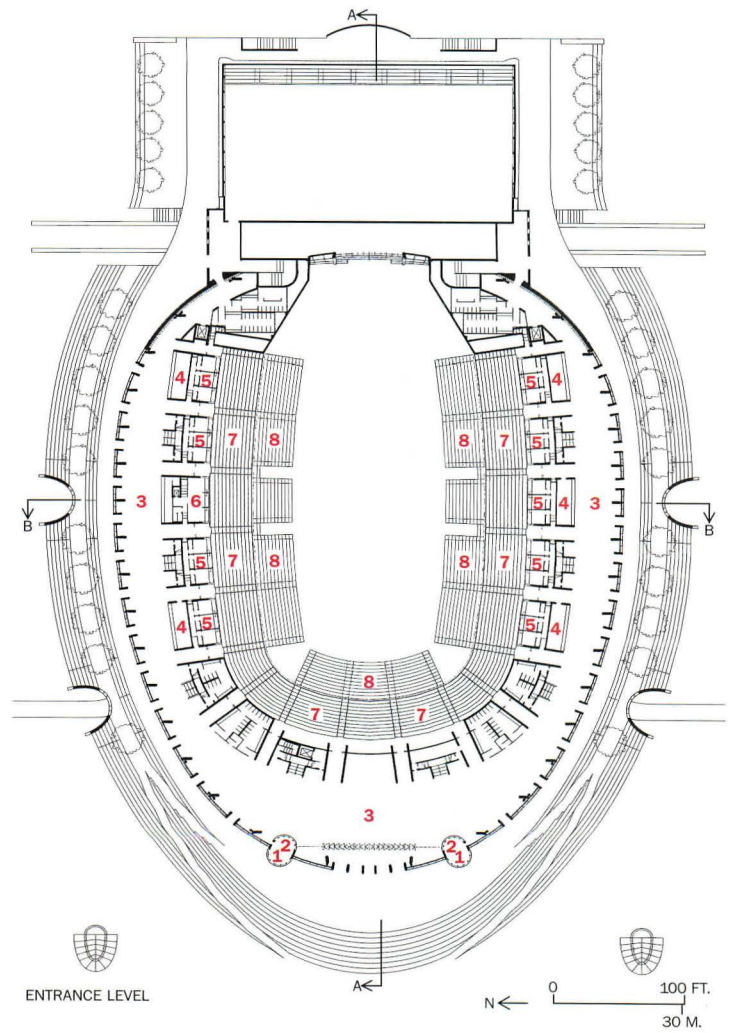
Fifteenth-century sailing ships, called *carabelas*, inspired the roof form. Like the *carabelas*, the roof is

asymmetrical from fore to aft, with a projecting nose, a trim rear profile, and an off-center high point.



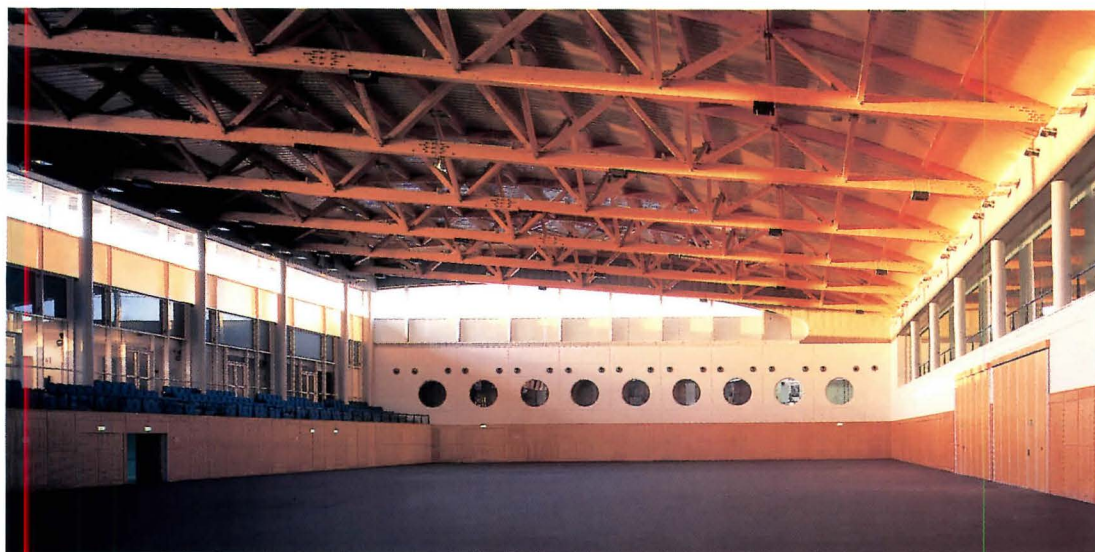


PHOTOGRAPHY © DENNIS GILBERT/VIEW; JOHN EDWARD LINDEN (INSET)



- | | |
|---------------------|---------------------------|
| 1. Ticket booth | 5. VIP box |
| 2. Information desk | 6. Presidential box |
| 3. Foyer | 7. Permanent seating tier |
| 4. Concession stand | 8. Temporary seating tier |

The arena relates, metaphorically, to the 500th anniversary of the Portuguese discovery of the route from Europe to India. The interior of the building recreates the image of a ship's hull with its timber ceiling and through the use of laminated wood beams that span 380 feet (right, below, and opposite).

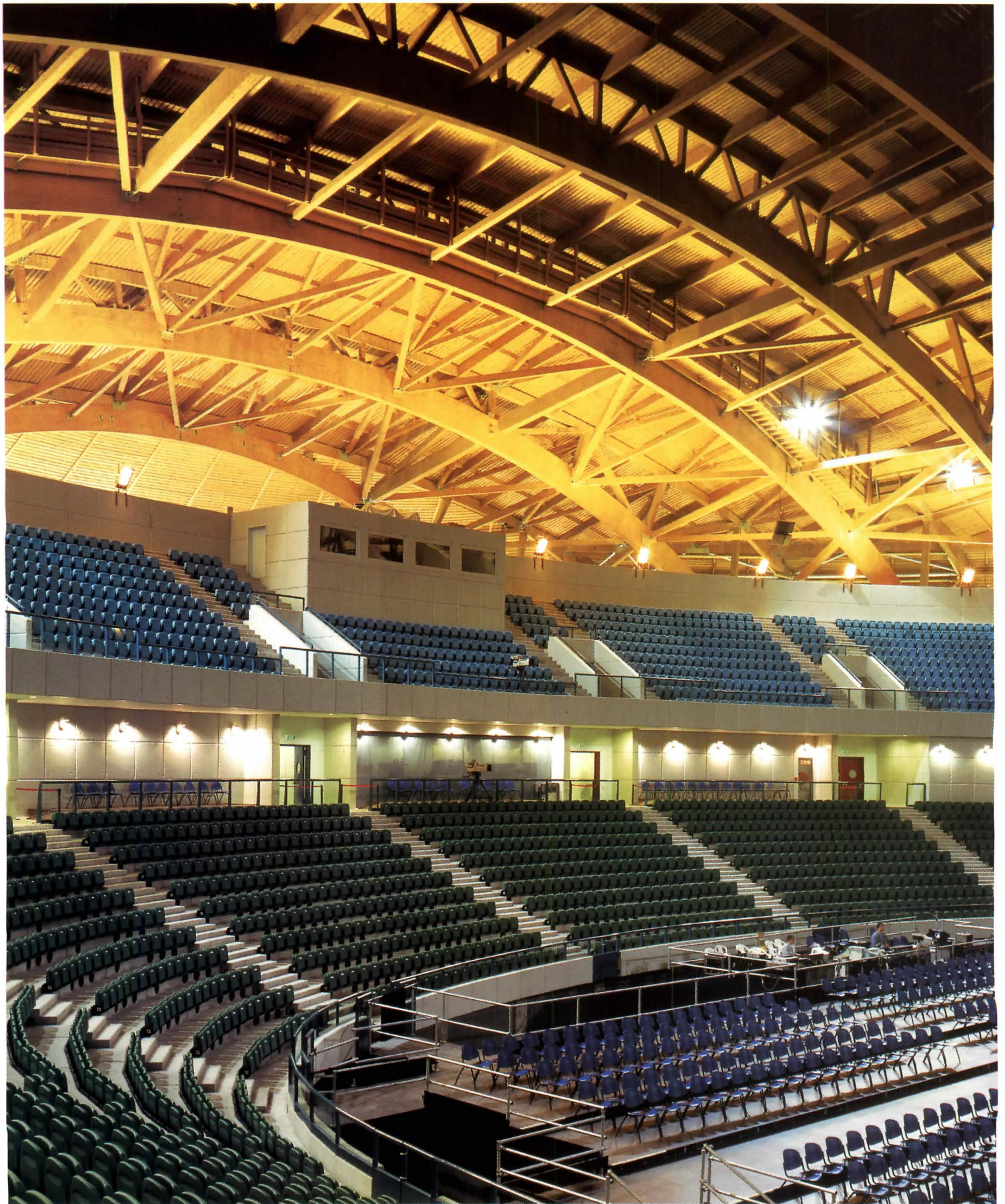


to Jacobs, its wood structure was inspired by the sailing ships, or *carabelas*, of Vasco da Gama, whose 15th-century voyage to India was one of the themes of the World's Fair. Like the *carabelas*, the roof is slightly asymmetrical from fore to aft, with a projecting nose, a trim rear profile, and an off-center high point. The unusual shape, which allows events to take place in the center of the space or at its narrow end, expresses the formal tension of the arena's flexible program. At the same time, its sleek exterior profile, which has something of the bulbous dynamism of the industrial designs of Raymond Loewy, aims to evoke the hydroplanes that regularly used the Olivais Dock in the 1930s.

The Atlântico Pavilion is thus another example of the ongoing evolution of large-span structures from regular geometric forms to more complex and intuitively shaped designs. ■

Sources

Concrete: *Mesquite/Prêgaia, S.A.*
Aluminum/Glass: *Mesquite/Sercop, Lda*
Zinc roofing: *Urion Technic du Batiment*
Lighting: *Siemens, S.A.*
Doors: *Sercop, Lda*
Glazing, skylights: *Covina, S.A.*
Elevators, escalators: *Alcodi, S.A.*



2 Jacobson Athletic Facility Iowa State University

AN ATHLETIC BUILDING STRIPPED TO ITS ESSENTIALS LIKE THE MUSCULATURE OF AN ATHLETE ENCOURAGES TEAMWORK THROUGH ITS FORMS.

by **Linda Hallem**

Project: Jacobson Athletic Office and Weight Training Facility, Iowa State University

Owner: Iowa State Board of Regents

Design architect: Herbert Lewis Kruse Blunck Architecture—Cal Lewis, FAIA, principal-in-charge; Rick Seely, AIA; Cameron Campbell; J. Mark Schmidt, AIA; Mitchell Squire; Randy Lore, AIA; Steve Low, AIA; Greg Easter

Consultants: Charles Saul Engineering (structural); Alvine and Associates (MEP)

General contractor: Taylor Ball

Construction cost: \$10.2 million

Area: 81,000 square feet

Completion: June 1997

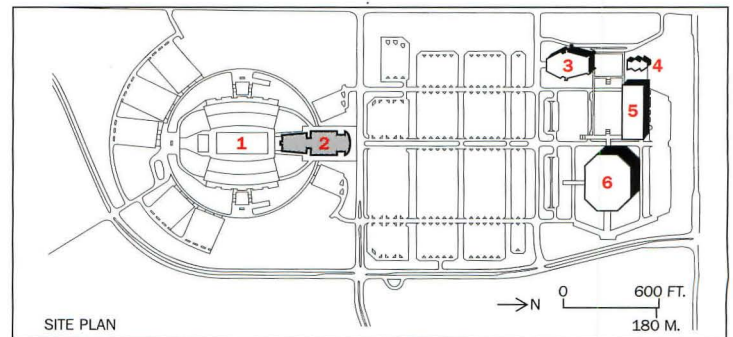
Architect Calvin F. Lewis, FAIA, of Herbert Lewis Kruse Blunck, brought the perspective of a college athlete to the design of the Jacobson Athletic Office and Weight Training Facility at Iowa State University. Lewis, a partner in the Des Moines firm, played varsity football for the university when he was a student there from 1964–1968.

“The concept was to create a sense of athleticism expressed through form and materials,” Lewis says. The limited \$10.2 million budget forced his firm to strip the building to its essentials. “It’s a very muscular building; there’s no applique of details.” Lewis likens the 81,000-square-foot building with its simple form and exposed materials—textured concrete, glass, steel, and aluminum—to the skeleton and musculature of the human body.

Out of the darkness

Because of the budgetary constraints, the existing 38,000-square-foot building—a rabbit warren of coaches’ offices, locker rooms, and weight-training facilities on the north side of Cyclone Stadium/Jack Trice Field—had to be incorporated into the new building instead of demolished. To create a

Linda Hallem is an author and editor of shelter books for Meredith Publishing in Des Moines.



unified aesthetic, Lewis wrapped the existing building in the same materials as those he used for the addition. He removed the existing north wall and replaced it with a curved glass-block wall, crowned by a skylight. Along this north side of the building, he gutted old offices to create an open, light-filled weight-training facility. A dichroic glass mobile, visible from the street side through the skylight, changes colors in the light. The natural light makes the room a better place to train, notes Lewis, while the wall glows in the afternoon light to create a kaleidoscopic backdrop for the stadium.

Into the light

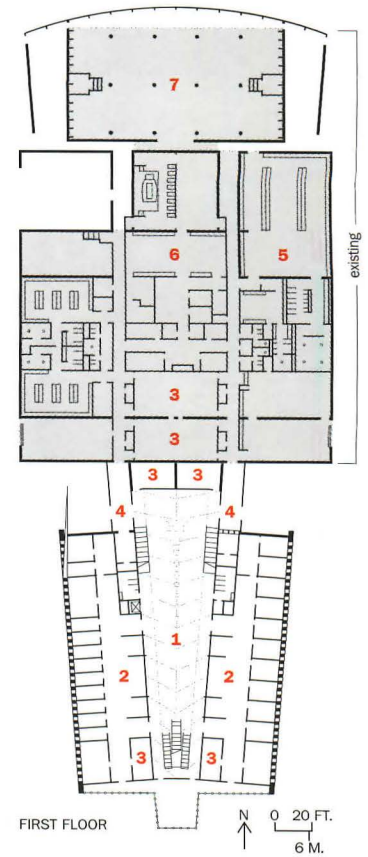
Light is likewise critical to the design of the two-story addition where the

1. Jack Trice Stadium
2. Jacobson Athletic Office and Training Facility
3. Stephens Auditorium
4. Fisher Theater
5. Sheman Continuing Education Building
6. James H. Hilton Coliseum





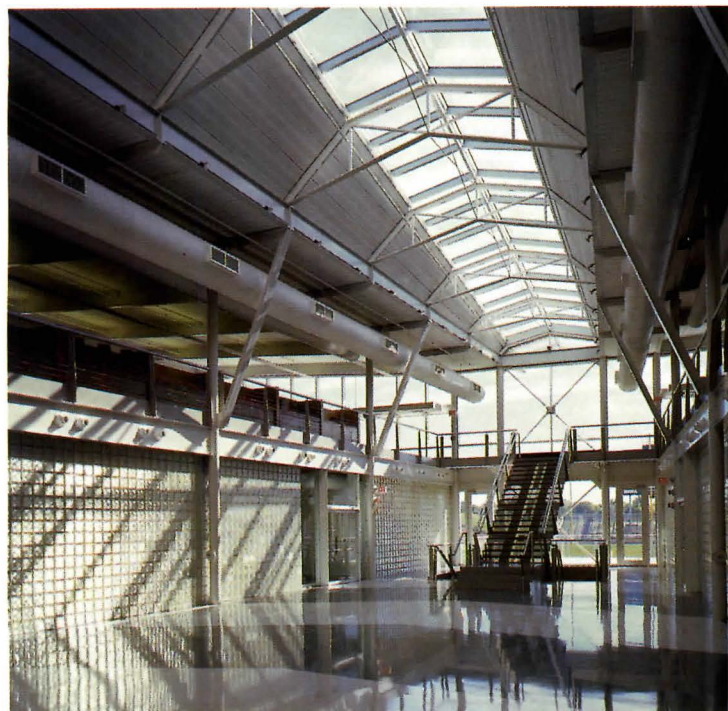
The building occupies a prominent location just to the north of Cyclone Stadium/Jack Trice Field (left and below). On game days, the glass-walled lounges and offices along the building's south side are used as skyboxes. The new entryway (opposite) joins the existing and new buildings.



1. Light court
2. Offices
3. Conference rooms
4. Entry
5. Locker room
6. Athletic training room
7. Weight training room



A central spine of skylights (bottom) bathes the interior in light. The curved, glass-block north wall (below) also allows light to enter the weight room (right). Like many spaces in the building, the auditorium (opposite) is a multipurpose room.



skylight bathes the interior in daylight. Linked to the existing building by a conference and entry area, the first floor of the addition is the most public space with a grand new lobby and a hall-of-fame gallery. Lewis' design uses the synergy of this shared space as a metaphor for the teamwork of coaches and athletic administrators, who are working together in a single campus building for the first time. The monumental two-and-a-half story space serves the other key function of providing a suitable venue for events for alumni supporters, donors, and potential recruits.

One building, many purposes

Upstairs, this same sense of flexibility and shared purpose in a grand setting is equally evident. Here, the auditorium gives context to the space with a gambrel-profile wall (oak in strips emulate siding) subtly recalling the Iowa landscape. For maximum versatility, the tiered floor is designed so that seating can be arranged for a variety of functions. (Light control, through a system of blinds, allows the auditorium to be darkened as needed.) Most dramatic in this space is the sense of theater achieved by the hangar door, which can be raised to reveal the light court and the field of Cyclone Stadium.

In the same theatrical vein, the glass-walled lounges and

offices along the south side of the building convert into covered sky-boxes on game day. Exposed steel tie-rods provide the stabilization needed for the often windy setting. On clement days, a cantilevered deck, which juts out from the second floor, acts as the prime viewing balcony.

The building, with its roof overhangs and razor-thin protective edging shading the building from afternoon glare, offers dramatic views from the stadium. And at dusk, the building takes on a sculptural quality with its glass walls glowing and its spine of skylights illuminated. ■

Sources

Glazed aluminum curtain wall:

Vistawall

Mineral panels: *E-flex by Eternit*

Metal roofing: *Berridge*

Aluminum windows: *Vistawall*

Glass: *Interpane*

Skylights: *Unicel, Inc.*

Interior glass doors: *Blumcraft*

Exterior glass doors: *Tubelite*

Exit devices: *Von Duprin*

Woodwork: *Graham Millwork and Woodcraft Architectural Millwork*

Rubber floor tiles: *Everroll by Dodge-Regupol, Inc.*

Ceramic tile: *Daltile*

Vinyl resilient flooring: *Allstate and Azrock*

Carpet: *Mannington*

Elevators: *Montgomery*

3 Melittabad Minden, Germany

FORMAL METAPHORS ABOUND IN THIS SWIMMING POOL WHERE PEOPLE ARE JUST SUPPOSED TO HAVE FUN.

by Elizabeth Harrison Kubany

Project: Melittabad

Owner: Mindiner Baeder GmbH

Design architect: Randall Stout Architects, Inc.—Randall Stout, AIA, design principal; Damien Bogert, Yukio Okeda, job captains; Tim Williams, B.J. Glidden, Brian Kutza, project team

Architect: UTEG/A—Hartwig Rullkötter, project principal; Stefan Hoffman, project manager; Jürgen Beinke, Corinna Hokamp, Ralf Janke, project team

Consultants: Ing. Büro Gunter Reimer (technical engineering consultant); AGN (MEP, structural); Oberbrehmer Garten und Landschaftsbau (landscape); Zumtobel Staff GmbH (lighting); Jürgen Kötter (energy advisor)

General contractor: AGN

Project cost: \$6.5 million

Area: 33,530 square feet

Completion: June 1998

A ship's hull, a seagull, a lighthouse, a wave, or a sailboat. Like cloud formations or the Rorschach test, the Melittabad (literally Baths of Melitta) inspires free associations. And that's just how American architect Randall Stout, AIA, wanted it. "My goal was to give the children of the community a sense of pleasure and escape, and I wanted to do it without being too literal or too kitsch," he explains. "The abstracted, lurching forms of the building encourage individual interpretation and imagination."

Formal invitation

The formal inventiveness of this all-season aquatic facility contrasts with the utilitarian built environment that surrounds it. The building is situated on a 4.9-acre site on the northern bank of Germany's Mittlelandkanal, which links Berlin to the Rhine River and the North Sea; across the canal are basic housing, educational, and sports facilities for Melitta (a community in the city of Minden), which borrows its name from the nearby factory famous for manufacturing coffee products. Banal residential blocks, primarily subsidized housing for the factory's workers, sit just to the north of the new building.

The existing outdoor swimming facility, consisting of three outdoor pools—a diving pool, competition lap pool, and wading pool—was of

limited use because it could only be open a few months of the year. For almost a decade, the client, Stadtwerke Minden (the city recreation department), had wanted to commission a new freestanding facility in the northwest corner of the site. Having worked with three different architects to develop possible schemes, the client realized that this was not financially feasible and asked Stout, who is based in Los Angeles but has developed a sizeable client base in Germany after having worked for Frank Gehry, FAIA, on his firm's projects there, to rethink the project.

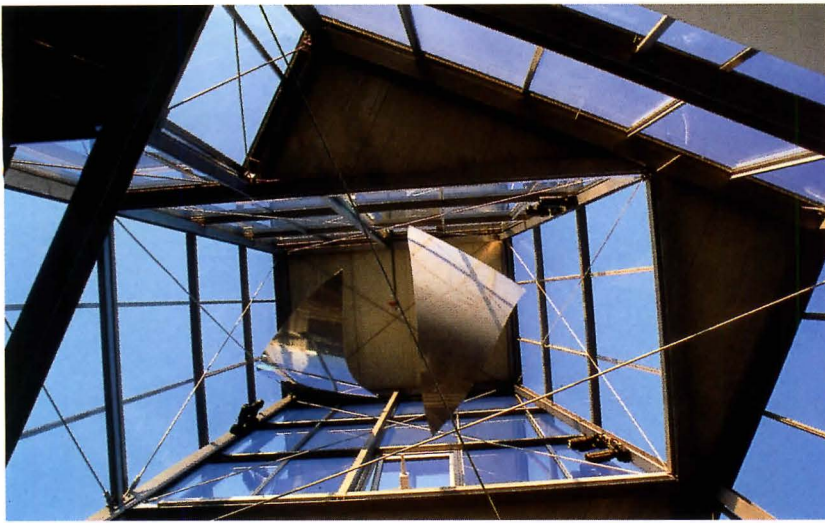
Stout proposed designing a partial enclosure of the existing pools which had numerous advantages over the previous ideas. First, Stout's scheme cost only

\$6.5 million for the architectural enclosure, equipment, and systems compared to the estimated \$12.9 million that a new building with new pools would have cost. Reusing the existing pools also left some green space on the site for recreational uses and retained the prime location of the pools adjacent to the canal.

It's all in the metaphor

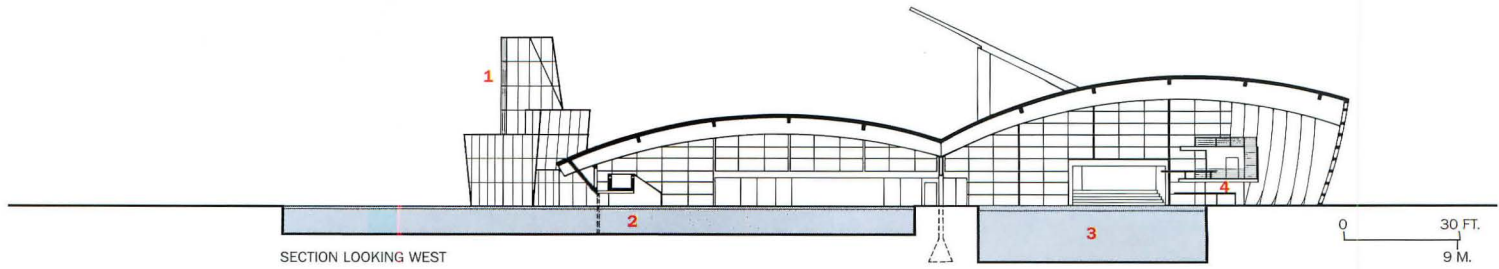
The entry tower, whose location at the northeast corner of the building was prescribed by the existing parking area, is a transparent glass beacon, which glows when illuminated at night. Kinetic metal triangles, which float within the tower like sails on a mast, reflect light. From the entry, the circulation path moves into an opaque-blue,



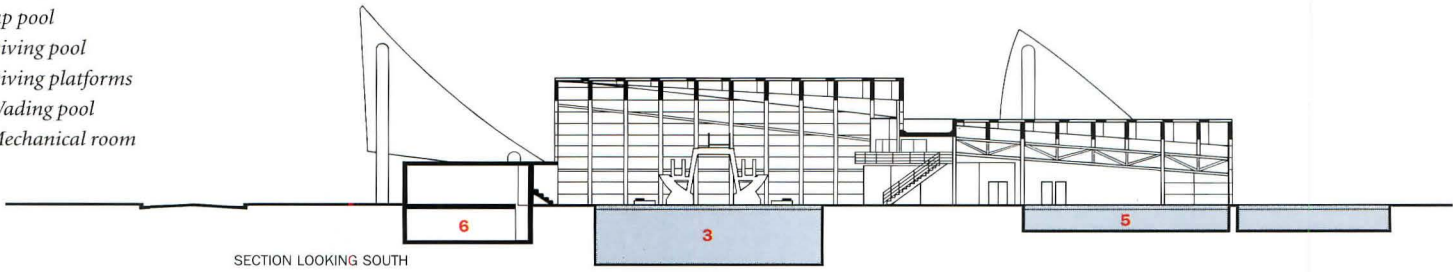


Melittabad is a building rich with metaphors. Loose formal allusions to sails (left), a lighthouse (below), a seagull, and a wave (opposite below) encourage imaginative interpretations.





- 1. Entry tower
- 2. Indoor/outdoor lap pool
- 3. Diving pool
- 4. Diving platforms
- 5. Wading pool
- 6. Mechanical room



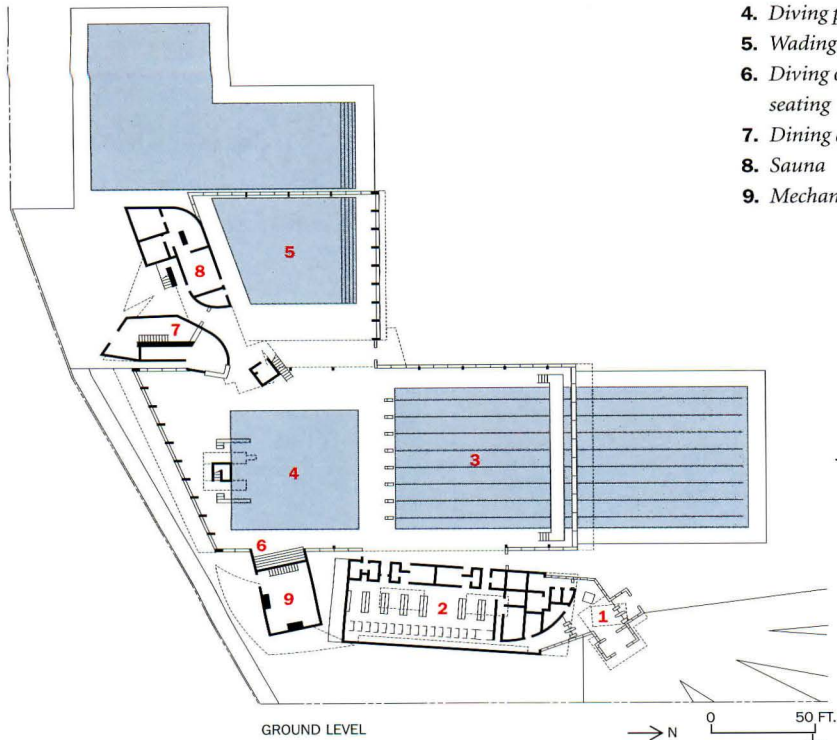
Photovoltaic panels on the sail-like forms (right) provide electricity and are part of the energy-conservation strategy. By locating the building over the existing swimming pools, the architects preserved much of the site's precious open space for recreational use (below).





The architects cite the dramatic interior space of the pool (above and left) as one of the project's foremost accomplishments. The north wall of the building can be lowered and raised (left, far right of photo) to make the facility usable in all seasons.

1. Entrance
2. Lockers
3. Lap pool
4. Diving pool
5. Wading pool
6. Diving observation seating
7. Dining area
8. Sauna
9. Mechanical room



wave-shaped structure that encloses ticketing, changing rooms, lockers, and showers.

A low glazed connector joins this wavelike structure to the pool area. The pools are enclosed by a glass and laminated-wood structure

whose roof—two adjoining asymmetrical arches—looks like the wings of a seagull. Glue-laminated beams, steel trusses, and a substantial amount of glazing create the feeling of being in a transparent filter, rather than an opaque container. “People want to feel connected with the outdoors when they are exercising,” says Stout.

To make this connection, Stout “made sure there was no separation between a glass wall and a solid roof.” The curtain wall runs up along the steel beams and turns into skylight strips on the roof. The north edge of the building extends about halfway over the main swimming pool. An insulated stainless-steel door, mounted on tracks on the steel truss that spans the pool, can be opened or closed depending on the weather. The interior of the swimhall is animated by interlocking forms, which create distinct spaces for viewing diving competitions, dining, and accessing the lifeguard observation room.

In keeping with the subtle seaside theme, photovoltaic sails seem to float toward the canal. The panels provide shade for the roof decks and a substantial amount of electricity for lighting. South-facing roofing systems on the blue building include solar collectors that heat the water for the pools and preheat air for the ventilation system.

Keeping up

“The architecture is so exciting that the city now has to develop an equally interesting program for the building,” according to Dr. Manfred Ragati, CEO of the local utility company that sponsored the energy-saving technologies in this building and one of the clients of the project. The users of the pool also seem to like the project. “The surrounding towns have their own pools, so we sized this one for the immediate community. But word has gotten out, and people are treating it as a regional thing,” explains Stout. It has been open only a year, and already the client has asked Stout to design an addition. ■

Sources

Metal roofing, acoustical ceilings:

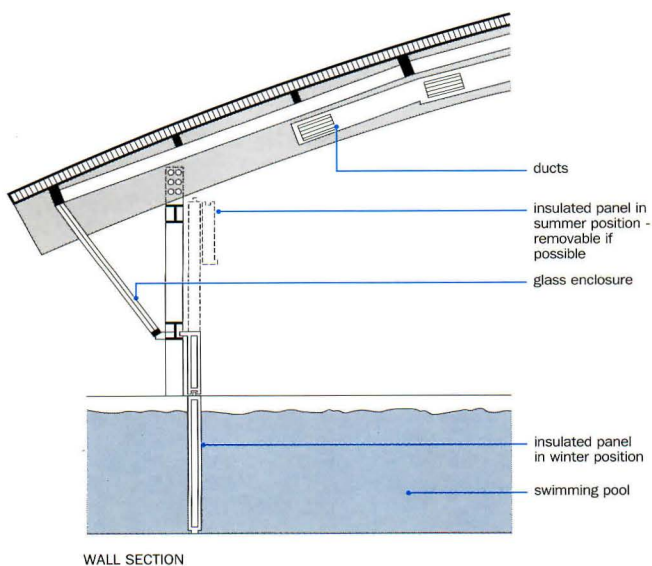
Kal-zip

Doors: *Shüco*

Glass partitions: *Clarid*

Lighting: *Zumtobel staff GmbH*

Entrance desk: *Borcherding*



4 Packard Stadium Batting Tunnel Arizona State University

A NEW BATTING TUNNEL FOR THE ARIZONA SUN DEVILS RAISES THE BAR FOR THIS BUILDING TYPE.

by Elizabeth Harrison Kubany

Project: Packard Stadium Batting Tunnel/ Training Facility

Owner: Arizona State University, Department of Intercollegiate Athletics

Design architect: Gould Evans Associates, L.C.—Dale Evans, AIA, principal; Trudi G. Hummel, AIA, vice president; Jay R. Silverberg, AIA, director of design; Henry Sipos, AIA, project architect; Steve M. Fucello, project designer; Shawn L. Crossiant, technical support

Consultants: Paul Koehler (structural); Logan Simpson Design (landscape); McGrew Engineering, Inc. (lighting); Hess-Roundtree, Inc. (civil); William X. Waldrom (technical production)

General contractor: AZMAC Construction Inc.

Project cost: \$319,000

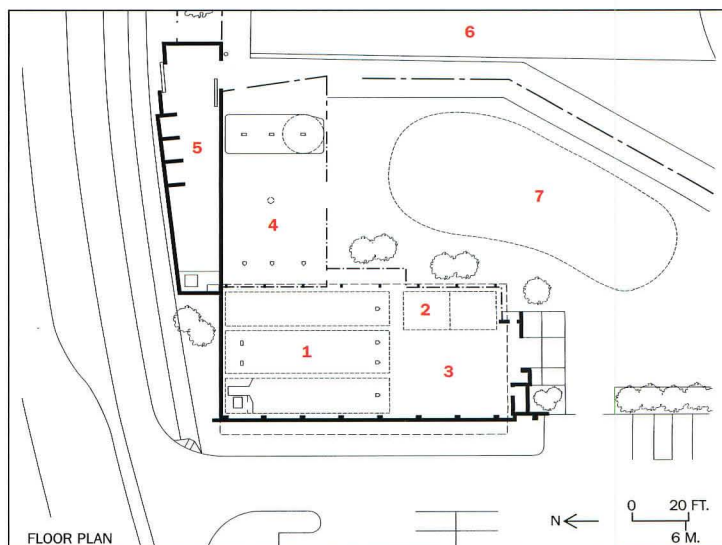
Area: 6,000 square feet

Completion: August 1998

Think *batting tunnel* and you probably don't think *architect*. The ordinary batting tunnel is usually nothing more than an improvised assortment of chain-link fence and steel poles. But, in an effort to change the perception of this project type and raise the standard of the architecture in its sports complex, Arizona State University (ASU) hired the Phoenix office of Gould Evans Associates to upgrade its facilities. Phase one of this capital improvement effort was to design a batting facility for ASU's championship baseball team.

At a prominent corner along the Rio Salado Parkway, the batting facility anchors the university's athletic complex along its northern edge. The building's site gives it a great public presence, as it can be viewed from both the Red Mountain Freeway and a future municipal recreation area to the north.

The 6,000-square-foot structure houses a weight room, hitting stations, and three batting tunnels.



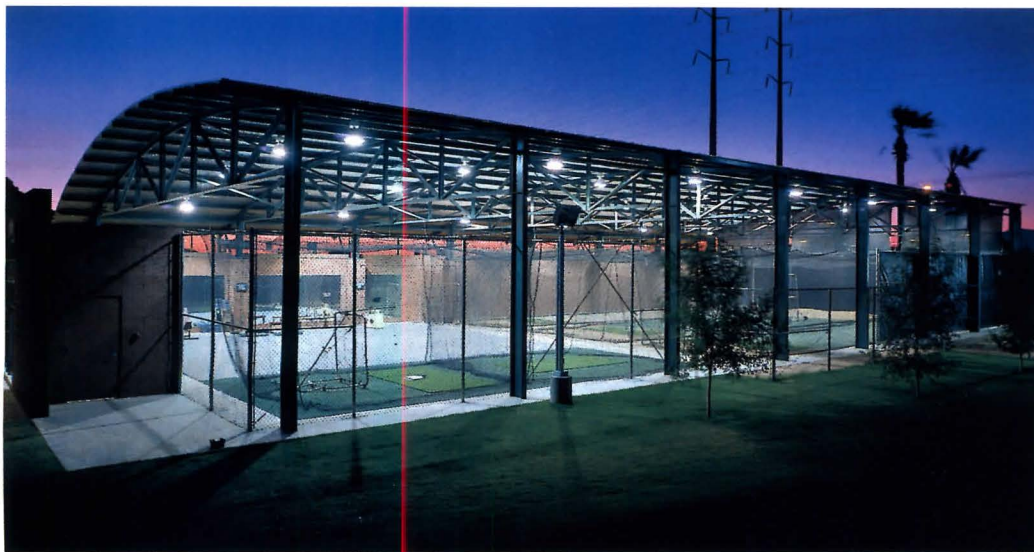
Integral-colored concrete masonry blocks wrap the steel armature on the west and north sides and turn the corners to form an entrance on the south side. A steel cable fence runs along the top of the masonry walls as a security measure, while the east elevation remains open to the playing field

1. Batting tunnel
2. Hitting station
3. Weight training area
4. Bullpen
5. Maintenance yard
6. Baseball field
7. Seating berm

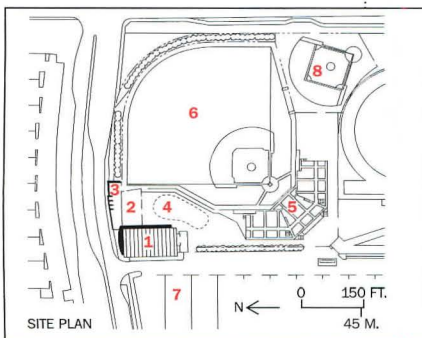


Curved steel trusses support a corrugated metal roof that is cantilevered to create an airy, light space while protecting players from the harsh desert sun.





The building (left) opens to the east to face the baseball stadium and welcome the team members. It is closed on its north and west sides (below) to protect it from the adjacent highway and to keep out the afternoon sun.



1. Batting tunnel
2. Bullpen
3. Maintenance yard
4. Seating berm
5. Packard Stadium
6. Baseball field
7. Parking
8. Practice infield

and baseball stadium. A bullpen and maintenance yard anchor the north side of the project.

Planning for a sunny day

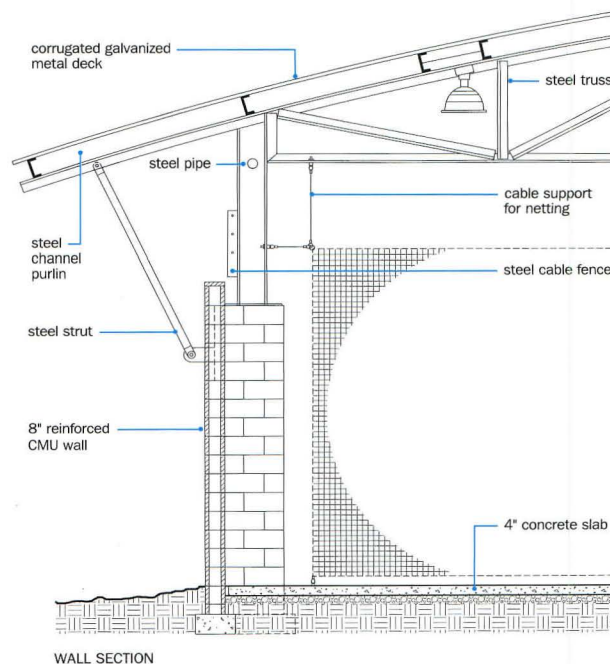
According to Jay Silverberg, AIA, Gould Evans' director of design, the most challenging aspect of this project was the need to respond to the harsh desert sun. Curved steel trusses support a galvanized, corrugated metal canopy that is cantilevered over the west elevation of the building to form a protective brim that shields players from the afternoon sun. The roof opens to the east and closes to the west to control the amount of light entering the building. The corrugated metal reflects the color of the sky, so the roof appears to change color throughout the day.

While ASU has long been known for its baseball program, the new facility has had a tangible effect on the quality of the team. In fact, an article that appeared in the April 16,

1999, issue of the *Arizona Republic* reported that the ASU team was leading the nation in batting average. The paper wrote of the batting cages, "They are rarely empty. Players have the combination to the lock on the facility and can go in anytime. 'I guarantee you, there's someone in there right now,' [ASU Coach Pat] Murphy said." Although the article attributed the team's success to the commitment of the players, it wouldn't have been wrong to acknowledge that an attractive practice facility may have encouraged extra hours in the batting cage. ■

Sources

Structural system: Skyline Steel
Masonry block: Superlite Block, Inc.
Roofing: Dunn DelRe Steel, Inc.
Doors: Acme Fence Co.
Paint: Devoe
Lighting: Lithonia Lighting
Fence: American Fence Co.
Netting: Chase Sports Specialists



WALL SECTION



NEW PROJECTS HIGHLIGHT SUSTAINABILITY

As proof that architects are actively incorporating sustainability into the buildings they design, the AIA selected 10 buildings that enhance the environment. The AIA Committee on the Environment picked these designs because of their responsible use of building materials, natural lighting, heating and cooling efficiency, and sensitivity to local environmental issues.

Solar Living Center (1)

A demonstration and retail facility for the Real Goods Trading Company, the grounds of the Hopland, Calif., building, designed by Van der Ryn Architects, include edible plantings and native trees. Power is supplied by a wind generator and photovoltaic panels.

CCI Center (2)

Designed by Robert Kobet, AIA, of Conservation Consultants Inc.; Tai + Lee Architects; and Clearview Project Services, CCI's renovated offices in Pittsburgh represent a study in reuse: The kitchen was salvaged from a trade-show display, carpets came from a job overrun, and the wood and brick was taken from a section of the building that had been demolished.

Missouri History Museum (3, 4)

The expansion and renovation of this St. Louis building, designed by Hellmuth, Obata + Kassabaum, will be completed this year. Materials were selected according to their life-cycle impact and recyclability.

New York Life Building (5, 6)

Located in Kansas City, Mo., the original design by McKim, Mead & White was renovated by Gasteringer Walker Harden Architects. The building offers natural ventilation and uses reflective light shelves and a light-colored interior to boost the effectiveness of the natural light.

REI Flagship Store

Materials used in this Seattle out-

door goods store, by Mithun Partners, incorporate a high recycled content whenever possible. The envelope is high-flyash-content concrete. The interior includes floor mats made of recycled tires. The retaining wall is made of rubble from sidewalks, and a courtyard waterfall flows with storm-water runoff.

Denver Dry Goods Company

Formerly a department store, the building was converted to a mixed-use space by a public/private consortium. Designed by Urban Design Group, the renovation includes several energy-saving techniques, but it is the building's preservation that is most valuable to the environment.

Duracell World Headquarters

Designed by Herbert S. Newman & Partners, the building has narrow wings that follow the topography of the site and allowed greater design flexibility. The Bethel, Conn., building site was minimally regraded.

Kansas City Zoo Deramus Education Pavilion

Designed by Berkebile Nelson Immenschuh McDowell Architects, the naturally ventilated building includes an IMAX theater, offices, and shops. The copper roof is 80 percent postconsumer copper and the floors are made of marble rejected for other purposes.

McKinney Sustainable Elementary School

Designed by SHW Group, the school, in McKinney, Tex., includes a rainwater collection system for toilet flushing and irrigation, a windmill and solar panels for power, and natural lighting. It opens in fall 2000.

Olympic Aquatic Center, Georgia Institute of Technology

Designed by Smallwood, Reynolds, Stewart, Stewart & Associates, the renovated center, in Atlanta, uses photovoltaics to generate 40 percent of its power.



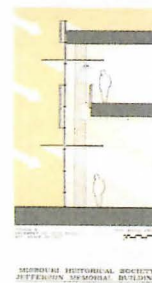
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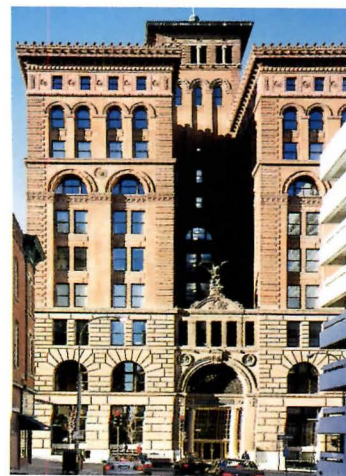
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5



6



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What It Means to Be Green

KNOWING A MATERIAL IS GREEN MEANS HAVING A FULL PICTURE OF ITS LIFE CYCLE, FROM THE RESOURCES USED TO MAKE IT TO HOW IT IS MANUFACTURED, USED, AND DISCARDED.

by Nadav Malin

About five years ago, Marsha Maytum, AIA, began a search for sustainable materials to use for the renovation of the Thoreau Center for Sustainability. Located in the National Historic Landmark District of the Presidio in San Francisco, the office space for the Thoreau Center was to become a model of sustainable design for the National Park Service. Maytum's firm, Tanner Leddy Maytum Stacy Architects, was interested in incorporating ecological design and materials in their projects. "All of the partners were trained in the 1970s," Maytum says. "Here was a chance to use that knowledge and ideology to create something we really believed in."

The Thoreau Center was to set the standards for the rest of the development at the Presidio, a former U.S. Army base with about 500 buildings to be redeveloped. Because the project fell under the scrutiny of the National Park Service and because the historic nature of the building required that the architects meet the secretary of the interior's Standards for Rehabilitation of Historic Structures, getting the right materials for the project was essential.

But sustainable, or "green," materials (the terms are used interchangeably) are not so easy to identify. Maytum discovered what environmentally conscious architects are realizing everywhere: Understanding a material's degree of sustainability is an elusive task. It's not simple and straightforward like comparing calories or grams of fat. While there are many books, magazines, Web sites, trade organizations, and journals that address the subject, sifting through all this

Throughout the World Resources Institute building, HOK incorporated recycled, low-energy, and non-toxic components.



information takes a tremendous amount of time.

Maytum ultimately hired an environmental consultant to help set up a process for selecting the materials for the center. The renovation, completed in 1998, meets the goals set for the space by the park service. The fully leased office spaces are, for the most part, naturally ventilated with operable windows. Recycled and environmentally sensitive products are used throughout, and 73 percent of the materials removed during the renovation were recycled.

Maytum says her firm's practices have changed as a result of the project. They found that designing a green building mandates a different approach than standard design work. "You don't do everything the same and then slip in green materials here and there," she says. "It's a holistic process."

Nadav Malin is editor of Environmental Building News and a regular speaker and consultant on environmentally responsible building materials.

CONTINUING EDUCATION



Use the following learning objectives to focus your study while reading this month's ARCHITECTURAL RECORD/AIA Continuing Education article. To receive credit, turn to page 144 and follow the instructions.

LEARNING OBJECTIVES

After reading this article, you should be able to:

1. Define the four-part life cycle of a building material.
2. List alternatives to high-VOC materials.
3. Explain how indoor air quality is improved by selecting sustainable materials.
4. Explain how to get green materials specified and into a building.
5. Understand what questions to ask in order to evaluate the sustainability of a material.

WWW On The Web: Learn more about sustainable design at www.archrecord.com.



The Presidio, a former U.S. Army base, consists of 500 buildings on 1,400 acres. The

Thoreau Center (top) occupies a former hospital complex built in the early 1900s.

Private offices hug the outer walls and cubicles are grouped in the interior (above).

Maytum's firm also has a better understanding of the cost implications of green building. "We've been able to incorporate the products used in the Thoreau Center in our other projects. In looking at the construction costs, we know that the choice of sustainable materials adds less than 1 percent to the overall hard costs of a building. That is a small slice of the pie that is easily compensated for in the quality of the space."

Shades of green

A sustainable building starts with the quality of its components, as measured by their environmental impact. There are many variables to take into account while evaluating the components, including the way they will be used, the amount that is specified, and aesthetics. In designing the World Resources Institute's new offices in Washington, D.C., for example, Sandy Mandler, AIA, of Hellmuth, Obata and Kassabaum, used wheat-straw MDF extensively for the casework and the doors. "With standard doors, the core typically contains formaldehyde and the surface may be wood from a nonsustainable source," she says. Mandler designed doors using straw particleboard as the surface over a hollow core made of recycled paperboard. While the exposed-straw look used there and in the casework might not look right in other buildings, it works here.

The language of sustainability is also imprecise: What do terms like *embodied energy* and *high recycled content* mean? To add to the confusion, many of the companies making green materials are young and unstable. They go in and out of business, merge, and change the names of their products. Many are regional and hard to find. *Green washing*, or issuing false claims about sustainability, is another problem. Dru Meadows, AIA, who consults on environmental issues and specifications, keeps a file of advertisements and brochures from companies guilty of green washing. "There's an ad for a \$179 Teddy bear that is marketed as green because it's made of recycled mink," she says.

The first thing architects must understand is that there are shades of green; "this is not a yes-or-no question," Meadows says. "The ideal sustainable material would have no adverse impact and might even play a restorative role in the planetary ecosystem. But this material does not exist, not on any sizeable scale anyway." Instead, a material must be evaluated according to its life cycle. This consists of four general stages: Raw material, manufacture and transportation, tenure in the building, and disposal or reuse. Understanding how each of these phases affects the environment is the key to understanding sustainability.

In the beginning

At the raw-material stage, concerns revolve around the impact of mining, harvesting, or extraction practices. These concerns evoke vivid images of destruction, such as the enormous tailings piles generated by large mining operations and the widespread clearcuts of industrial forestry. Using materials with recycled content proportionately reduces the amount of raw material taken from the land and, at the other end of the scale, the amount of waste that reaches landfills. While many materials have some recycled content, the type and amount varies. Industrial waste, such as the flyash from coal-burning power plants used in some cement mixes, differs from postconsumer recyclables, such as milk jugs and newspapers. Recycled content is high if it makes up 50 percent or more of a product. Plastic lumber contains more than 90 percent recycled content; cellulose insulation consists of about 80 percent recycled paper.

At the Thoreau Center, special efforts were taken to ensure that the new window frames contained 80 percent recycled aluminum. "The aluminum supplier was worried that the client wouldn't accept the imperfections from the recycled content. We had to convince him that this client wouldn't mind," Maytum recalls. Other materials with high recycled content used at the center included ceiling tiles, carpet, cotton insulation, and particleboard used for the casework.

Still, recycling isn't always a clear winner environmentally. It may take more energy to collect and process waste materials than it does to put them in a landfill. For example, data suggests that more energy is

embodied in cellulose insulation than in fiberglass because of the cost of recycling the newspapers. *Embodied* or *embedded energy* is the energy used to create a product. There are publications that provide this information, but it is often overemphasized at the expense of other, less quantifiable factors, such as habitat disruption or the amount of chemicals leaching from a tailings pile.

Forestry operations can be better or worse environmentally, and sustainability certifications are myriad and inconsistent. An architect in California, for example, thought he had selected a certified wood for a major public project, but had to change his specifications when an environmental group discovered that the wood was not sustainably harvested, despite the certification. The problem is that most certification programs are not overseen by environmental organizations. This is particularly true of governmental certifications of tropical wood.

A worldwide standards-setting initiative by the Forest Stewardship Council (FSC), based in Oaxaca, Mexico, has emerged as the program most acceptable to environmentalists. Its American counterpart, the Certified Forest Products Council in Beaverton, Ore., is a network of wood suppliers and distributors whose products are certified by FSC. The logo is stamped on the wood or printed on the product label.

Manufacturing materials

A product that doesn't harm the environment in its raw-material phase may cause ecological destruction during the manufacturing process. Petrochemicals used to make plastics, adhesives, and coatings are often toxic at various stages during their manufacture. The formaldehyde-free isocyanate binder used in wheat-straw particleboard, for example, while stable and safe once it is cured, is highly reactive and hazardous to workers at the factory. Nearly all petrochemical-based paints, adhesives, and resins used in construction materials are made from chemical building blocks, such as styrene and benzene, which are highly toxic and carcinogenic during manufacture.

Plastics are believed to be inert once installed, though heat breaks them down and releases petrochemicals. PVC, for example, present in furnishings, plumbing, and other products, releases hydrochloric acid when it is heated, says Kirsten Childs of Croxton Collaborative Architects. For that reason, she avoids specifying products that contain it.

Metal, glass, and cement are energy intensive to manufacture, resulting in significant emissions from the fuels used to generate that energy. In the case of cement, carbon dioxide (CO₂) is released not only

from the fuels but also from the limestone as it undergoes chemical transformations in the cement kiln. Industrial by-products, such as ground blast-furnace slag from steel mills, can replace much of the cement in concrete, reducing CO₂ emissions.

Transportation is a factor to consider with any material. Selecting local materials reduces the amount of fuel used in transport, keeps money within the community, and contributes to an awareness of the products, materials, and climate-specific construction features that make each region unique—an important component of ecological awareness. For example, Payette Associates used locally grown certified wood and slate taken from a nearby quarry when designing the 190,000-square-foot Bicentennial Hall, a laboratory and classroom building for the sciences at Middlebury College in Middlebury, Vt.

The Athena Institute, a Canadian organization that researches the environmental impacts of building materials, estimates that between 10 and 30 percent of the energy associated with the manufacture of wood, concrete, and steel in Canada is related to transportation of the raw and finished materials. Further studies show that trains are eight times more efficient than trucks for moving materials, and ships are twice as efficient as trains.

The great indoors

Green materials contribute to the quality of the indoor environment, as affected by air, lighting, water consumption, durability of the building, and overall comfort, factors that are not as easily quantified as savings on utility bills, but that have a positive impact on the building and its occupants. Studies by the Rocky Mountain Institute and the U.S. Department of Energy have documented increases in occupant productivity in some buildings that dwarf the dollar value of the energy savings.

This was true at VeriFone, Inc., a 76,000-square-foot manufacturing and warehousing facility



At the World Resources Institute, medium-density fiberboard made of wheat straw, an agricultural by-product, was used for the casework (above). The flooring in the lobby is bamboo (right) and cork (far right). Carpet tile was used in other areas. This can be replaced in sections. Salvage and character-grade wood is used throughout the building.





Croxton Collaborative's renovation of the VeriFone facility in Costa Mesa, Calif., was intended to boost productivity among employees. Introducing full-spectrum light in offices (left) and the atrium (right) makes it possible to work without artificial light.

in Costa Mesa, Calif. The manufacturers of electronic equipment have documented significant improvements in productivity, fewer errors, and less absenteeism. Designed by Croxton Collaborative Architects and completed in 1993, the building has been studied over the past few years to evaluate the effects of including green materials, such as solution-dyed carpeting, which features dye that is integral to the fibers—an efficient way of applying dye that introduces few chemicals to the environment.

“A manufacturing facility was not considered the ideal setting for green design,” says Randolph Croxton, FAIA. It was normally reserved for showcase buildings that proved something about the ideology of the

company. “The owners wanted a project that would change the culture of the company and inform subsequent buildings. I was convinced that a drastic improvement in productivity would result and lead to financial benefits.” Research has borne this out.

Indoor air quality (IAQ) directly relates to the construction materials and furnishings used. Choosing the greenest materials is one way to address the problem. Any finish products that are applied in wet form, such as paints or adhesives, usually contain volatile organic compounds (VOCs). But there are versions of most of these that have no VOCs. This is especially important if a coating needs to be reapplied when the building is occupied, Childs says. “These VOC-free paints and adhesives are hard to find. They are often manufactured regionally and have a shorter shelf life than those that are loaded with chemicals,” she says. “But they are worth the search.”

Carpets have also been associated with IAQ problems, primarily from the styrene butadiene (SB) latex backing. The Carpet and Rug Institute has created a monitoring system, and the amount of off-gassing has been greatly reduced as a result. In spite of these improvements, some architects still strive to minimize their clients' exposure to SB latex.

Whether it's an individual product or a whole building, if it lasts longer, its environmental impact is amortized over a longer period of time. All other things being equal, a more durable material is a better environmental choice. Smart design is important here, too, however. If a durable material is intricately bound up in an assembly with short-lived products, it may be replaced before its time. Also, some interior finishes are replaced frequently owing to the demands of fashion, so they may not be the appropriate place to invest in durability.

To the landfill

How a material is handled once it is removed from the building should be determined when it is specified, Meadows says. Materials that are easily

HOW SUSTAINABLE IS IT?

1. Will the material minimize energy use?
2. Will the material adversely affect the health of building occupants?
3. Is the material likely to need frequent replacement, special treatments, or repairs?
4. Are there significant impacts from the process of mining or harvesting the raw materials?
5. Are significant toxic or hazardous by-products created during the manufacture of the materials, and do these by-products pose a risk of exposure to workers or the environment?
6. How much nonrenewable energy is consumed in the manufacturing process?
7. How much solid waste is generated during the manufacturing process?
8. Are any of the raw materials from rare or endangered resources?
9. Are the raw materials and/or manufacturing locations far from the building site?
10. Can the material be reused or recycled?

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Section 01110

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CIRCLE 51 ON INQUIRY CARD

“The most sustainable thing to do is to not build at all, to renovate instead,” says Andrew St. John, a Boston-based environmental consultant. But since that’s not always possible, architects should strive “to use as little as possible to do the most.” What is used must be as environmentally benign as possible. The following list includes commercial building products that fit this category. They consist of nearly 100 percent recycled material.

—Rita F. Catinella, *Products Editor*

Duro-Last Roofing, Inc.

Roof Track II is a recycled PVC walkway pad for low-slope roofs made from the trimmings of PVC roofing. 800/248-0280.

Majestic Skylines

Majestic Slate Tile is rubber slate-look tile for steep-slope roofs made of industrial rubber and plastic. 800/572-7672. www.majesticskylines.com

CanFibre Group Ltd.

ALLGREEN MDF is 100 percent waste wood and binders. Panels exceeding ANSI standards for industrial MDF and have no incremental formaldehyde emissions. 416/681-9990. www.canfibre.com

Homasote, Inc.

Homasote 440 Sound Barrier is a high-density fiberboard panel made from 100 percent recycled waste paper and formaldehyde-free binders. It is designed for use as a carpet underlayment and as a



sound-control panel. Related products include 4-Way Floor Decking and Firestall Roof Decking, all structural high-density fiberboard panels made of 100 percent waste paper, paraffin binders, and additives for pest and fire resistance. 800/257-9491. www.homasote.com

Isobord Enterprises, Inc.

Isobord (above, below right) is a countertop, cabinet, or furniture panel made of chopped wheat straw and nontoxic resins. It exceeds ANSI standards. 503/242-7345.

Milliken Carpet

Milliken’s award-winning Earth Square process is an improvement over traditional recycling methods, because old carpet is actually renewed and reused through a closed-loop recovery program. 706/880-5511.

Collins & Aikman Floorcoverings

Powerbond ER3 is a dense, low-pile nylon commercial carpet with a 100 percent postconsumer backing made from used carpet. 800/248-2878. www.powerbond.com

Dodge-Regupol, Inc.

Ecosurfaces is 100 percent recycled rubber flooring. The black component is postconsumer waste from tires. 800/322-1923. www.regupol.com

Marley-Flexco Co.

Flex-Tuft flooring is 95 percent recycled truck and bus tires. 800/633-3151. www.marleyflexco.com

DesignTex, Inc.

Play It Again Sam (below left) is a polyester-panel fabric that is 100 percent recycled PET fiber. 800/797-4949. www.dtex.com

Safe Solutions, LLC

Safe Solutions designs and manufactures furniture from waste wood, recycled pallets, and building materials. 970/247-3333.

Phenix Biocomposites

The Veg Table, designed by Horst, Inc., features tabletops made from Environ, a soy-based product free of petrochemical binders. Tables are offered with wheat-straw tops and other agricultural by-products. 800/324-8187.

Fire & Water Lighting/David Bergman Architects

The Frankie Goes Fluorescent series of lighting fixtures use dimmable ballast-in-base compact fluorescent lamps and are made of Environ, a composite of soy flour and recycled paper, and recycled glass. 212/475-3106.

Guilford of Maine

Terratex fabric is 100 percent recycled plastics and is designed for recyclability at the end of its useful life. 800/544-0200. www.terratex.com

Decorative Architectural Tiles

Peak Creations is floor, counter, and wall tile made of 100 percent post-consumer glass. 808/885-7812.

Summitville Tiles

Summitville porcelain and quarry-tile products use feldspar tailings, a postindustrial waste product, as the primary raw material in a nearly solid-waste-free manufacturing process. 330/223-1511. www.summitville.com

SierraPine Limited

The Ampine, SierraPine MDF, and Medite divisions of Sierra Pine Limited offer particleboard and medium-density fiberboard that Scientific Certification Systems has certified to contain recycled and recovered wood fiber and to be formaldehyde-free. Applications include interior trim and moldings, window and door components, paneling, casework, flooring, and furniture. 888/633-7477. www.sierrapine.com

The Mat Factory, Inc.

Ergo Mats are interlocking roll-up tiles for use in pool areas, locker rooms, and showers. They are made of 100 percent postconsumer tire rubber and PVC plastic derived from electric cable covers. 949/645-3122.



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recycled, minimally processed, or biodegradable are best. Making it easy for materials to be isolated for reprocessing will improve the odds of future recycling. Wood treated with preservatives, such as chromated copper arsenate, works well during its life in the building but poses problems in the waste stream. It is almost impossible to recycle and is not safe to incinerate or deposit in landfills. A better choice would be to use recycled plastic lumber.

Green team

Specifying green materials accounts for just one step in the environmental design process. And even if a product is listed in the specs, it won't necessarily end up in the building. Environmental criteria must appear prominently in the specs, especially if substitutions will be allowed. Meadows recommends adding an "environmental requirements" article to each technical section in which green products are specified. Otherwise, these requirements might not be noticed. She also suggests listing contact names for any nonstandard products. The architect might even call the manufacturers and alert them to the fact that a project is going out to bid with their products listed.

Architects who use unconventional materials must be prepared to document their performance. At the World Resources Institute, "absolutely everything was challenged by the contractor and subcontractors," Mendler says. Having other members of the team involved from the onset of the project helps. "This is all so much simpler as long as everyone starts out making the environment a priority," she adds. "Incorporating sustainable materials is, more than anything, a matter of habit. When you're used to a material, it is hard to change to something new. But when everyone is working together, that effort is minimized. And it becomes worthwhile." ■

MORE ABOUT SUSTAINABILITY

The *Environmental Building News Product Catalog*, organized by CSI number, includes a green-products directory, descriptions of more than 1,300 green products, and a binder of product literature.

Environmental Building News also publishes a monthly newsletter with reviews of green-building products and analyses of design strategies. 800-861-0954. www.ebuild.com

The REDI Guide is a free, online database of green-building products searchable by product name or CSI number. www.oikos.com

The AIA's *Environmental Resource Guide* consists of material reports with detailed life-cycle analyses of most major building materials. Reports compare the environmental profile of various materials for a particular assembly or function. Case studies are also included. Available as a three-ring

binder or CD-ROM. John Wiley & Sons. 800/225-5945.

The *West Coast Architectural Resource Guide and Database* by the Northern California chapter of Architects/Designers/Planners for Social Responsibility (ADPSR) is a comprehensive listing of green products for the region. It's available either in paperback or on CD-ROM. 510/841-1039. www.adpsr-nocal.org

The *Guide to Resource Efficient Building Elements* is an annotated paperback directory of materials for residential and small commercial construction from the Center for Resourceful Building Technology. 406/549-7678. www.montana.com/crbt/

The *Harris Directory* is a reference for recycled-content building materials. Online subscription available. www.harrisdirectory.com



AIA / ARCHITECTURAL RECORD CONTINUING EDUCATION

INSTRUCTIONS

- ◆ Read the article "What It Means to Be Green" using the learning objectives provided.
- ◆ Complete the questions below, then check your answers (page 202).
- ◆ Fill out and submit the AIA/CES education reporting form (page 202) or file the form on ARCHITECTURAL RECORD's Web site at www.archrecord.com to receive two AIA learning units and one hour of health, safety, and welfare credit.

QUESTIONS

1. What constitutes the life cycle of a sustainable material?

2. What are the advantages of using local materials for construction?

3. How can products and materials be selected to reduce indoor-air-quality issues?

4. How are the specified materials integrated into the building without difficulties?

LIGHTING...



Last month the National Electrical Manufacturers Association (NEMA) announced the release of LE 5A-1999, "A Procedure for Determining Efficacy Ratings for Commercial, Non-residential Lighting Fixtures." You're probably thinking, "You expect me to give up Jackie Collins for this?" No. I don't expect you'll be peeling rubber to get to your local library for a copy, either—it is really intended for the manufacturers of lighting products, anyway. But I do think it is worth knowing how LE 5A will simplify your life as a specifier.

It used to be pretty easy to figure out how efficient a light fixture was. We used luminous efficiency values. Those, simply stated, are the ratio of the lumens produced by a fixture with a lamp installed in it (output lumens) to the lumens produced by the bare lamp alone (input lumens), expressed as a percentage. For example, a 60-watt incandescent lamp that produces 750 lumens is installed in a downlight that puts out 375 lumens. The downlight has a luminous efficiency value of 50 percent. If you used a downlight with the same lamp in it whose reflector bounced out 450 lumens, the luminous efficiency would be 60 percent.

Now, suppose you have a 26-watt compact fluorescent (CFL) downlight that puts out 600 lumens. To the uninitiated, it would appear that the luminous efficiency of the CFL downlight must be higher than either of the incandescent downlights in the examples above. But that ain't so. The bare CFL actually produces 1,800 lumens, two-thirds of which are being absorbed in a fixture with a luminous efficiency of only 33 percent. For simplicity's sake, I'm using approximate numbers here and not adding in ballast factors or the myriad other things that would go into a comprehensive evaluation of the efficacy of this simple CFL fixture.

The point is that we can no longer think of a light fixture as a lamp, socket, and cord. Individual light fixtures are complicated enough that we have to think of them as lighting systems. So, how do we rapidly make decisions about the many things that affect the performance of a lighting system? LE 5A will allow a manufacturer to assign a fixture a single number that represents the numerous factors that determine its efficacy, similar to the energy ratings consumers find on refrigerators and air conditioners. Designers will be able to compare different lighting systems on an apples-to-apples basis. The numbers will incorporate the whole range of factors that influence the efficacy of the system. Manufacturers will use uniform guide-

lines to establish their lighting-system performance values, and designers will be able to spend more time deciding which fixtures to specify based on aesthetics and photometric performance.

LE 5A was mandated by the Department of Energy. DOE has also set goals for minimum recommended performance values to guide in the specification of lighting systems. The rating procedures will be subject to review every five years so that new technologies can be added and minimum performance values can be raised, according to Ted Yahrus of Indy Lighting, who chaired the NEMA task group that formulated the guidelines. This will have the effect of removing less efficient lighting technologies from the marketplace. And, as our understanding of how the visual-comfort properties of lighting can be quantified, additional rating numbers may be added to include them. Who knows? There may even come a time when the research on pupil lumens [May 1998, pages 295–298], which has discovered that the eyes function much better under light sources that contain more blue light than red-orange light, will become incorporated as a factor that adds to the efficacy of lighting systems that contain light sources rich in the blue end of the spectrum.

I'm sure that LE 5A-1999 won't make it on everybody's summer book list, but it is important. And, if, after all this, you absolutely must have a copy for the beach, you can get one for \$35 by calling Global Engineering Documents at 303/397-7956. Oh, and happy reading.

—Charles Linn, AIA

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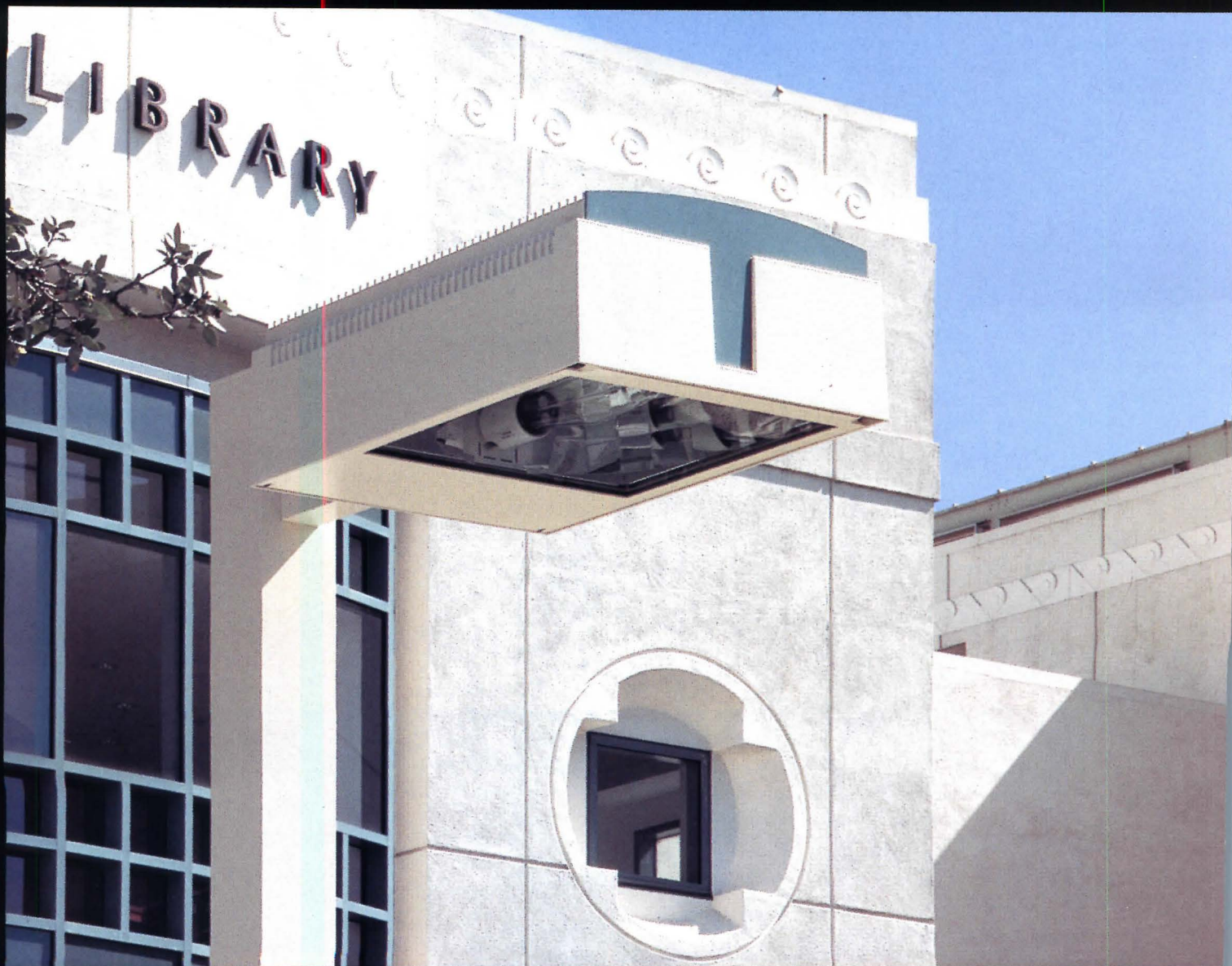
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QUARTERBACK'S STEAKHOUSE STEEPED IN LOW-IMPACT LIGHTING

Capitalizing on the fame of one of its owners, Green Bay Packer quarterback Brett Favre, the Brett Favre Steak House in Milwaukee displays a constantly changing collection of football memorabilia. Located on the first two floors of the landmark 19th-century Button Block building in downtown Milwaukee, the new 15,000-square-foot restaurant, designed by Eppstein Uhen Architects, juxtaposes rich fabrics, leather, and cherry wood against the existing brick and stone surfaces to conjure an upscale, clublike atmosphere.

Diners entering the steak house encounter five large display cases flanking the hostess table and gift shop; they represent the five linemen who protect Favre during his offensive maneuvers. A new, monumental staircase, which culmi-

nates in a dramatic vaulted ceiling, leads to the dining area on the second floor.

"Overall, the lighting design for the restaurant defines the space by emphasizing the existing stone and brick," says Steve Klein, of the Milwaukee firm of Klein Howard Lighting Design. In the bar, for example, 60-watt PAR 38 lamps graze black-and-white cameos of Favre placed against sandstone. The lampholders are positioned on a simple length of track lighting, placed almost directly overhead, so that their elliptical projections highlight the scarred surface of the stone. The same raked-light technique illuminates the brick columns, except that, here, light climbs from MR16 uplights recessed into the floor, so the columns appear as if they are vertical torchieres. Quartz

floodlights concealed on top of the three television cabinets offer potentially high levels of ambient illumination when required, while silhouetting the cabinet profiles against the exposed structural ceiling when dimmed. The bar counter, lit by continuous lengths of 12-volt light strips, creates an intimate environment.

In the upstairs dining room, dropped planes of acoustical ceiling tile are outlined by two continuous, dual-switched, two-lamp fluorescent strips containing 3,500K T8 lamps. In the daytime, a single row suffices. At night, the second row, whose lamps are sleeved with deep-purple-colored gels, adds a touch of drama to the ceiling. Low-voltage light strips were also used to outline the windows, creating an unexpected glow along the wall and drawing attention to the room's large arched windows.

Pinhole-aperture adjustable accent lights with narrow-flood MR16 lamps, fitted with hex-cell louvers to conceal them in the ceiling plane, provide sparkle to linens, glassware, and china. They accompany amber-beaded pendants to cast a romantic circle of light at each table.

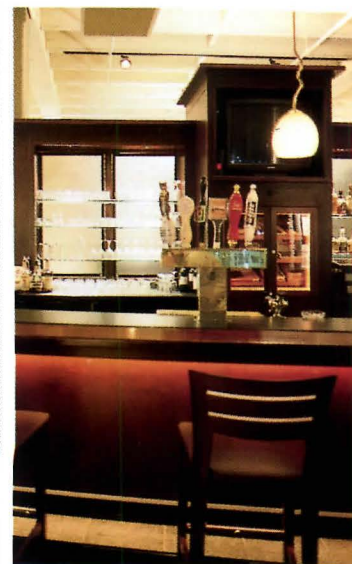
All of the lights for the artwork and memorabilia on the second-floor walls have been individually tailored with louvers, beam elongators, or spread lenses. "My partner Lynn Howard and I aimed and focused all the MR16 lights, and also taught the owners to do the same," says Klein, "so that the lighting on these would maintain the proper look."

All the lighting is controlled by a simple multilevel dimming system. Individual lighting circuits are directly wired to a wall-box-style dimmer and tied together using a single signal wire. When a new lighting scene is chosen, the light levels change in 15 seconds. The owners selected the signal-wire system

instead of more complicated micro-processor-based master-dimming controls because of their simplicity and low cost. Three remote stations are conveniently located so staff can manually change scenes at predetermined times during the day. *Nyana Currimbhoy*



Light was used to define the space by emphasizing the existing brick and stone. The bar is lit with a combination of strip lights, pendants, and uplights concealed in the tops of television cabinets.



LIGHTING DISAPPEARS, SO CLIENTS CAN ENJOY THEIR VIEWS, INSIDE AND OUT

A 3,000-square-foot apartment that was to be renovated on New York City's Upper East Side came complete with low ceilings, stunning views of Central Park, and clients with a superb art collection who wanted to make the most of their setting.

Architects Peter Schubert, AIA, and Paul Pichardo of Kohn Pederson Fox and Associates worked with Charles Starner and George Merich of SM Lighting Design to create a complex new ceiling that would allow appropriate lighting for the apartment and art without impinging on the vista.

"The space created its own design parameters," says Starner. "Our aim was to keep the lighting simple and crisp." Low ceilings meant no hanging or recessed fix-

tures, and banks of windows called for a lighting plan that would draw the eye to the windows without distracting from the spectacular views. "The owners wanted lighting that would disappear," explains Merich.

Under normal circumstances, a lighting designer might recess fixtures into an existing plenum to keep them concealed. But there was not enough room above the eight-foot ceilings to exercise this option. The architects and lighting designers overcame the problem by creating a series of dropped coves in different areas of the ceiling. The coves, when uplit with low-voltage xenon strip lights, create floating, layered planes, and the illusion of height.

Surface-mounted 50-watt AR70 floodlights illuminate the cou-



ple's extensive art collection. Art walls in the hallway, bedrooms, and living and dining rooms are bathed in an even glow of light. Merich prefers lighting with the even wash of floodlights, as opposed to using spotlights, because he has observed that people often neglect to keep spots aimed properly and that, over time, the lighting begins to look rather sloppy.

The bathrooms each have three light sources. Halogen downlights are the main source and are supplemented by 20-watt krypton lamps around medicine cabinets and a custom-designed wall sconce with a 75-watt T10 incandescent inside.

On the south and west walls of the apartment, 13-watt 3000K compact fluorescent uplights housed in niches placed near the windows

The clients' art collection is displayed throughout the apartment (left). The lighting designers opted to use low-voltage flood lamps rather than spots to light the art, because it is often difficult for owners to keep spotlamps properly aimed and focused.

draw the eyes toward the view.

The designers limited their palette to only a few lamp types and gave their client a diagram illustrating which type should be installed in each luminaire. This will ease the purchase and installation of replacements. Simple lighting controls were set up so that lighting could be switched by zones, rather than programmed for multiple preset light-level settings.
Nyana Currimbhoy



EPCOT'S HOME-THEATER EXHIBIT PROMOTES INTEGRATED TECHNOLOGIES

For consumers pining for their own private movie palace, a trip to Disney World might make a good next stop. The "Ultimate Home Theater Experience," which made its debut at Epcot Center last June, guides visitors on a bells-and-whistles tour of new integrated technologies supporting the design of residential multimedia centers.

Presented by Lutron Electronics Co., a designer and manufacturer of lighting controls, the 2,700-square-foot venue acquaints attendees with the latest audio, video, and lighting technology and home-entertainment components. For lighting consultants and home-theater designers, it's a chance to review products from more than 20 manu-

facturers and tour several home-theater mock-ups.

Why is a lighting-controls company sponsoring the new attraction



at Epcot's Innoventions pavilion? Current estimates peg the home-theater market at \$10.6 billion a year. "Lighting is the 'sizzle' that drives the design of home theaters," says Lutron's vice president for business development Rick Schuett. "With today's lighting controls, anyone can easily transform a

living room into an elegant entertainment retreat," adds Theo Kalamirakis, Ultimate Home Theater's designer.

The tour's finale takes place in one of two twin 15-seat Ultimate Home Theaters. Designed by Kalamirakis and project designer Russ Herschelmann, the Art Deco-

The "Ultimate Home Theater Experience" showcases the latest in dimming equipment for residential use (left). A preshow venue (below) takes visitors through product applications in a family/media-room setting.

inspired venues take classic American movie palaces and shrink them down to suburban-house size. Outfitted with Lutron handheld wireless dimming controls and an array of luminaires from Cooper Lighting—including fiber-optic-starred ceilings—each theater presents a five-minute compilation of Hollywood blockbusters on DVD.

For more information on the integrated technologies and the "Ultimate Home Theater Experience," check out the official Web site at www.ultimatehometheater.com. *William Weathersby, Jr.*



Showers of praise

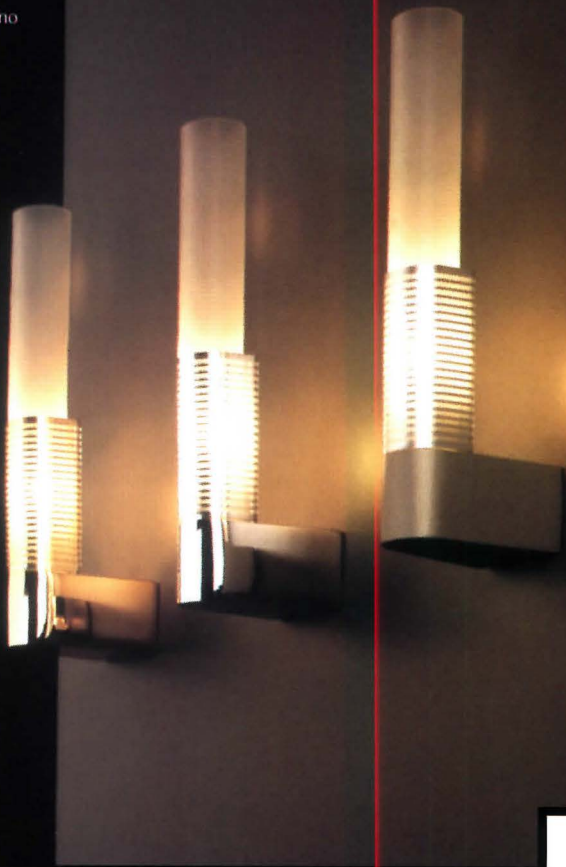
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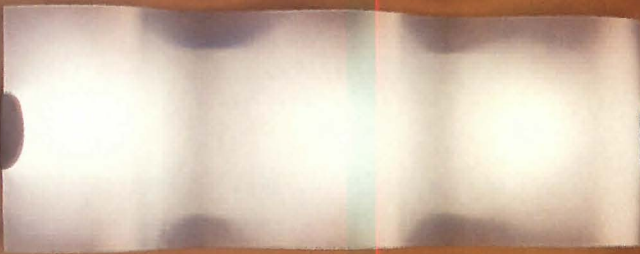


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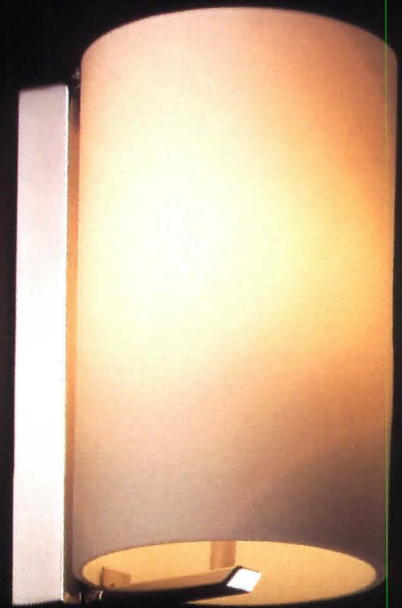


TANGO lighting

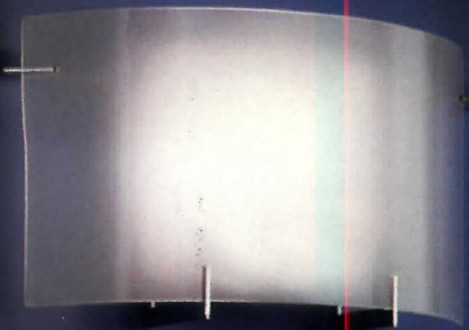
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Gelled fluorescent brings twilight to a photography studio

by Charles Linn, AIA

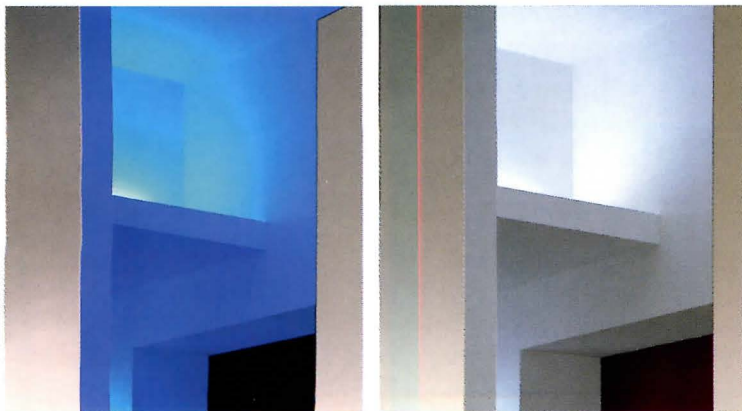
Photographer Matt McFarland's 1940 Art Deco building in the heart of Kansas City, Mo.'s burgeoning Crossroads Arts District had been a garage, a grocery store, a soda fountain, and most recently an office equipment store. With each change in identity, more partitions crowded the interior until it was a warren of cubicle-sized rooms. While stripping down the space, David Dowell and Jamie Darnell of El Dorado, a Kansas City architecture firm, saw that the concrete-framed building, with its 15-foot-high ceilings and tall storefront windows, would offer light-filled space ripe for commercial development. El Dorado divided the building into halves, reserving the east half—whose glazed elevations face two streets—for a future tenant. McFarland's photo studio was placed in the west half of the building.

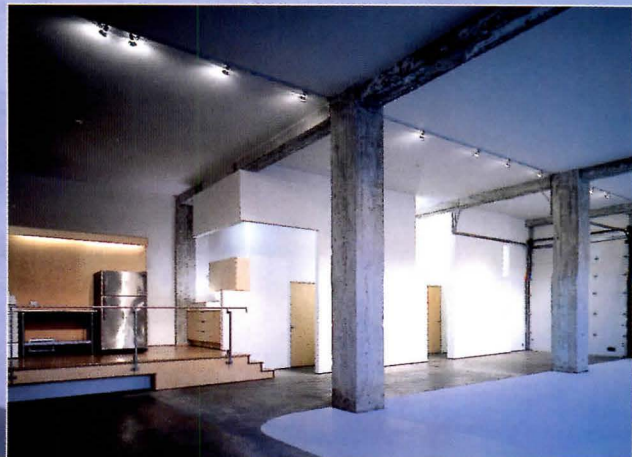
"Our primary task in designing the photo studio was to keep the space as open as we could," says Dowell. "There was great daylight coming in from the north and Matt wanted to use it to light objects he was photographing." The architects built a cyclorama, a permanent backdrop McFarland uses for his photography. Made of plastered plywood, the cyclorama curves from the west wall down to the floor plane and sits adjacent to north-facing floor-to-ceiling windows to take advantage of sidelighting. "We tucked the rooms and built-in casework required by the program into a zone on the south side of the building, away from the windows," says Dowell.

El Dorado collaborated with lighting designer Derek Porter, who is also a photographer. Porter is particularly interested in "the color of twilight"—the deep-blue light that occurs outdoors at sunset when electric lights are coming on outdoors—and is known in Kansas City art



Lighting designer Derek Porter used daylight, incandescent light, and gelled and ungelled fluorescent light to simulate the feel of twilight at M Studio.

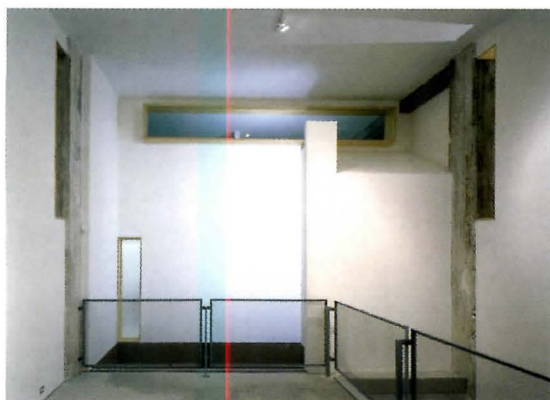






Porter didn't light the north half of the studio, where the cyclorama is located (left), because photographer Matt McFarland usually uses strobes or daylight in his work. The

color of light in the office (below left) and kitchen and work areas (below) can be switched so it is reminiscent of daylight (shown) or bluer twilight (previous page).



circles for capturing this blue light in his landscape photographs. His intent in lighting the project was to reinforce the zones established by the architects and define the architectural volumes by hiding light sources that mimic twilight within them.

Porter added no lighting over the cyclorama in the north zone of the studio, because McFarland uses daylight, strobe lights, or portable tungsten lamps for his photographic work. A row of inexpensive line-voltage incandescent track lights divides the ceiling in the open studio area from the rooms to the south—the kitchen, darkroom, dressing rooms, and the mezzanine. In this zone, Porter used two-lamp fluorescent strips hidden by light shelves. Some of the strips are oriented vertically and others horizontally, depending on the configuration of the shelves.

“We have daylight in one half of the space and electric light in the other half,” says Porter. “The concept on the south half was to capture twilight—a transitional time of day—and suspend this moment in the architecture.”

But the color of twilight also changes with the seasons. “So,” continues Porter, “we also rewired the strips so each row of lamps was switched independently. Half the lamps are 3000K lamps with an 85 color-rendering index, and the rest were wrapped with theatrical gel material—in fact, the color is called daylight blue. White light or blue light can be turned on, or

they can be switched on together to create mixed color.”

“What is really nice about this kind of lighting is that it brings out the crispness of the detailing, makes you aware of the relationship of the surfaces of the planes and the geometries they create together.” This was particularly appropriate at M Studio, considering all of the attention given to details there.

Porter declines to give any rules of thumb about where to place strips within light shelves. “Where one puts the lamps is kind of intuitive. We will pull it about a foot away from the back wall so that the light is even and diffuse.” But he also points out that while the lamps should be placed as far away possible from adjacent surfaces to allow evenness, it is possible to locate them too far away. “At some point the light will become so diffuse that a person’s spatial understanding of the lighted space can become compromised, and the sharpness of the surface detailing will be lost.” ■

Project: M Studio, Kansas City, Mo.

Owner: Matt McFarland

Architect: El Dorado—David Dowell, Jamie Darnell, principals-in-charge

Lighting designer: Derek Porter Studio—Derek Porter, principal

Sources

Track lighting: Ruud Lighting

Step lights: Seagull

Fluorescent strips: Lithonia

Fluorescent gels: Roscolux

Lighting controls: Lutron

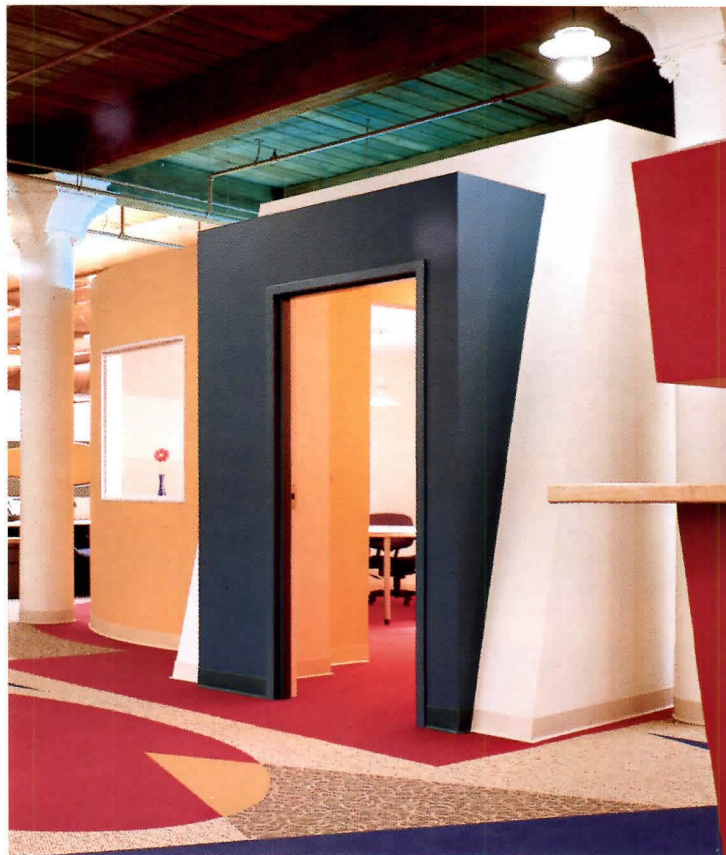
Colorful lighting converts a warehouse's history into a technofirm's future.

by William Weathersby, Jr.

The Poindexter Building, built in 1901 in Kansas City, Mo., as a dry-goods emporium, has been transformed from an outlet for shirts and shoes to one of bits and bytes. It is now the outpost of an information-processing and software-services company. Although the Renaissance Revival building was listed on the National Register of Historic Places, it sat vacant for three decades until recently, when its new owner and tenant, DST Systems, adapted the seven-floor facility for its computer-based operations. Attracted by huge open floor plates, each measuring 30,000 square feet, as well as by the structure's sturdy timber construction featuring wood floors, ceilings, and columns, the company commissioned CDFM² Architecture, of Kansas City, Mo., and lighting consultant Yarnell Associates of Shawnee, Kans., to design an efficient, contemporary office landscape without altering the existing historic envelope.

To provide an offbeat foil for the handsome historic surfaces, the design team employed sculptural forms and bright accent colors to articulate the new interior architectural elements. Curved and canted dry-wall partitions are painted in primary accent colors with geometric-patterned carpet to match, and contemporary luminaires were specified. "We took a layering approach to the lighting, playing off the exposed wood beams and ceiling planks," says principal lighting designer Bruce Yarnell. A base of general direct/indirect fluorescent lighting was provided for computer-task-oriented areas, while the facility's many conference rooms required versatile arrays of indirect and direct fixtures to

William Weathersby, Jr., is a freelance writer based in Westport, Conn. He has written about lighting, interior design, and architecture for many publications.



Project: The Poindexter Building, Kansas City, Mo.

Client: DST Systems

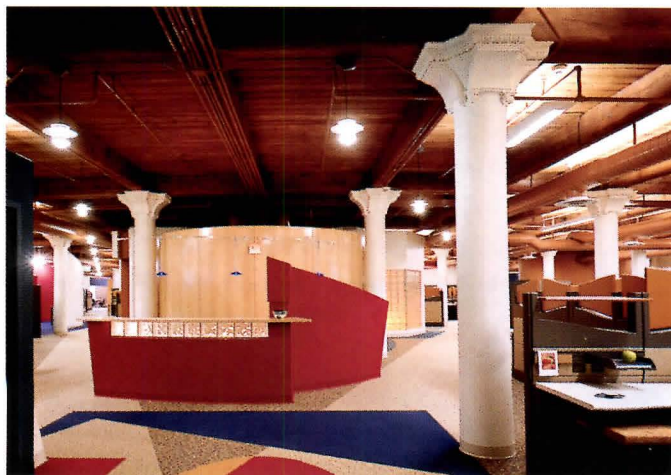
Architect: CDFM² Architecture—Jim Calcara, AIA, principal-in-charge; Marvin Manlove, AIA, principal; Steven Roark, AIA, project manager; Lora Leonard, project designer; Kathleen Fullerton, Brenda Conner, Scott Heidmann, project team

Lighting designer: Yarnell Associates—

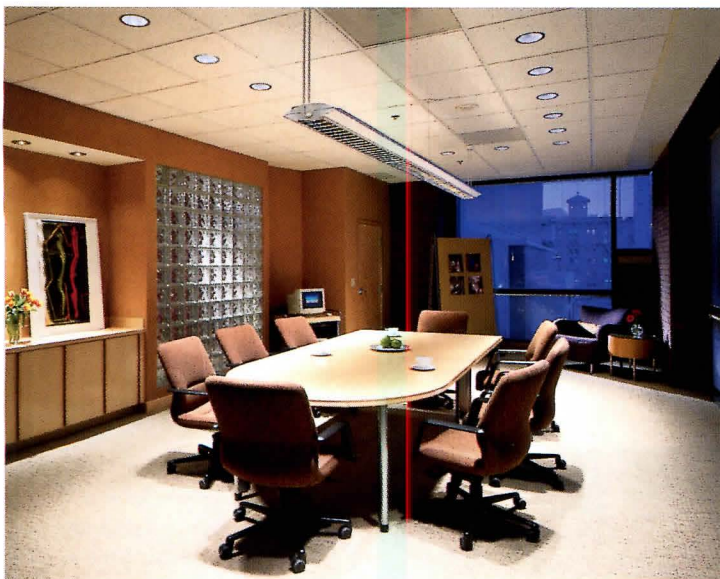
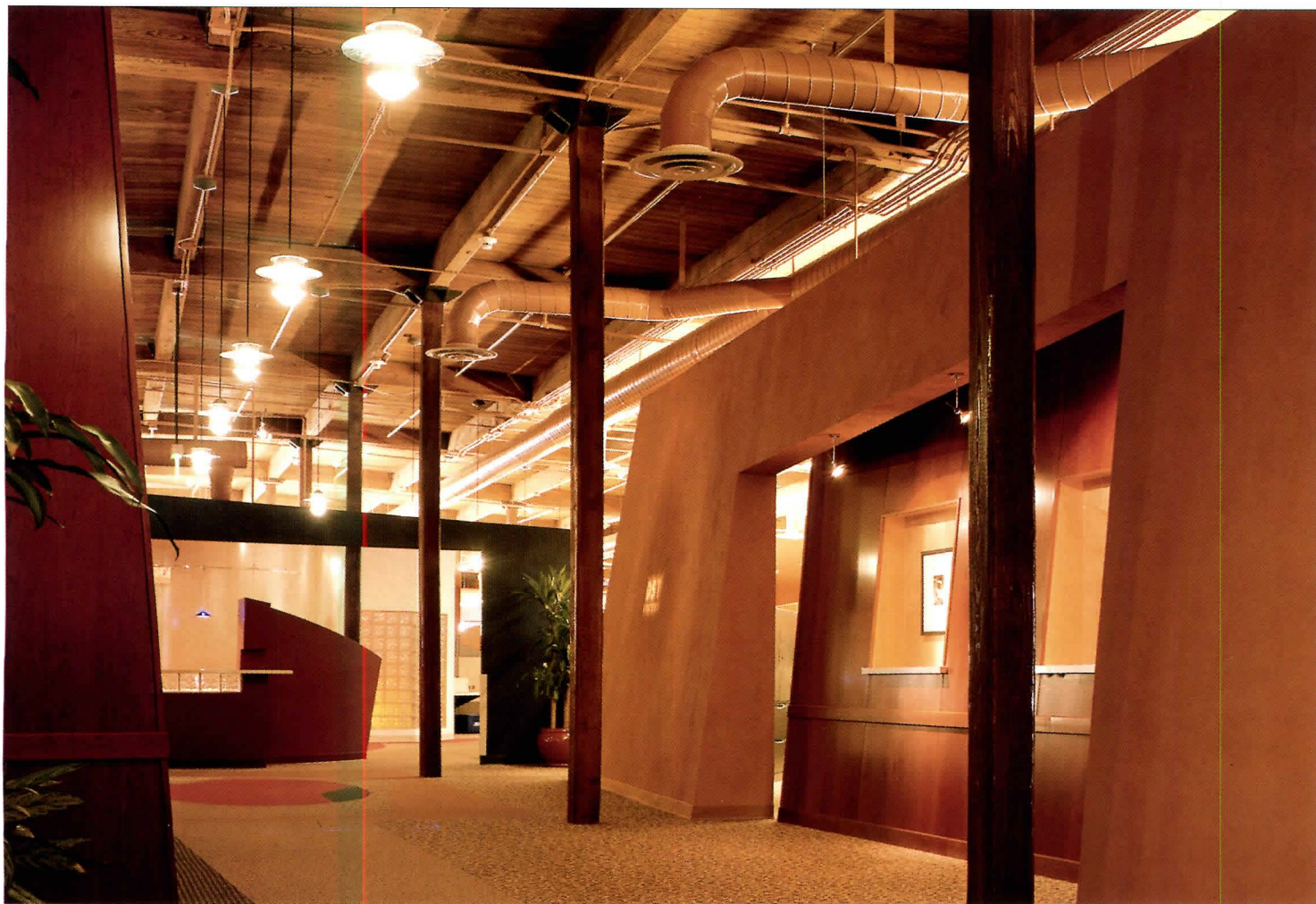
Bruce Yarnell, principal; Mark Hershman, project manager/designer

Electrical contractor: Capital Electric

Contractor: Dasta Construction Management



Pendant-mounted direct/indirect fluorescents team with PAR30 lanterns to illuminate the second-floor reception area (left). Gelled fluorescents mounted above a conference pod's floating ceiling are cued to the door-frame color for orientation (above).



Display niches in the elevator lobby (top) are lighted with MR16s. PAR30 pendants evoke street lanterns along

circulation routes. An direct/indirect fluorescent pendant lights the table in a formal conference room (above).

accommodate different types of users.

In the second-floor reception area, the 12-foot, 5-inch ceiling height and 15-inch-deep beams provided a natural suspension line for pendant-mounted fluorescent fixtures. "Emphasizing the existing wood ceiling was quite a challenge," Yarnell says. "Some form of uplighting was needed, yet because the dark wood ceilings would render it less effective, a downlight component was needed. We did some calculations and

NEON AND GELLED FLUORESCENTS ADD PRESENCE TO MEETING PODS

mock-ups and figured out that a 30-to-70 up-to-down light ratio would be enough to emphasize the ceiling, but give the required light at the desktop." On the seventh floor, where the wood ceiling was vaulted, the same pendant-mounted direct/indirect fixtures were used but suspended at a lower level than on the second floor, and a 1.27 ballast factor was used to maintain required light levels.

To evoke the feeling of an illuminated outdoor path for the office's corridor lighting, the lighting team initially considered locating bollards, ground-mounted poles, or column-mounted fixtures throughout each floor. After a series of mock-ups, however, they selected pendant-mounted fixtures with a lanternlike profile to delineate circulation routes. The luminous quality of the PAR30 fixtures and their galvanized finish further demarcated the pathways and provided visual



contrast to the flatter lighting of the direct/indirect fixtures in the offices. “The subtle design change from 13-watt 3000K pendant fixtures to 3500K fluorescent strengthened the concept,” says Yarnell.

Lighting supports conference rooms

Four freestanding conference pods, lighted with a combination of sources, are interspersed within a field of workstations and general office areas on the second floor. White neon accent light circles each enclosure’s floating, dropped ceiling. “The continuous neon above the ceiling washes the perimeter of the interior curved wall through the ceiling slot and visually expands the size of these small conference rooms,” explains Yarnell. Complementing the neon effect, colored lighting was added “to introduce a bit of whimsy not often associated with offices.” Fluorescent strips fitted with gels, matched to the individual color of each pod’s paint and carpet accents, serve as way-finding beacons atop each meeting space. “If guests arrive for a morning meeting in the Blue Pod,” says Yarnell, “they can be directed to look up and sent on their way.”

For the seventh-floor conference rooms, audiovisual presentations for clients required a refined corporate ambience. Recessed, small-aperture PAR30 downlights set over the conference tables are teamed with recessed MR16s accenting art. Programmed, preset lighting levels present a controlled corporate image.

“Our primary consideration throughout the design process was to work harmoniously with the new graphic and architectural elements,” says project lighting designer Mark Hershman. “Knowing when to control lighting in some areas and allow playfulness in others was the key.” ■

Sources

Pendant-mounted direct/indirect fluorescents: Metalumen

Low-voltage pendants: Tech Lighting

MR16, PAR38, and compact fluorescent downlights: Edison Price

Conference room track-mounted pendants: Zumtobel/Staff Lighting

Conference room and corridor pendants: Louis Poulsen

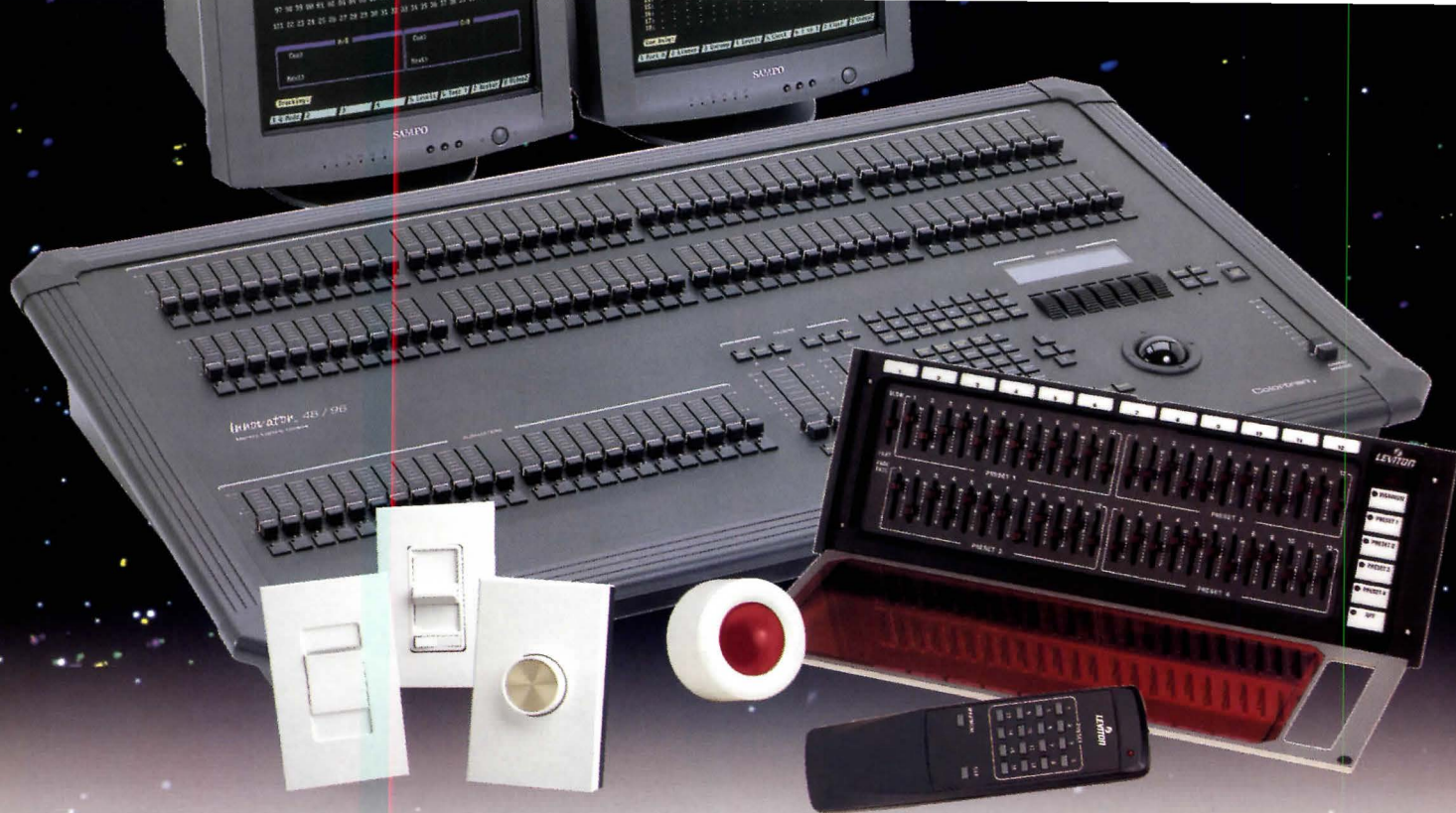
Torchieres: Artemide

Lighting controls: Lutron



Dimmable lighting that supports audiovisual presentations in a conference room (top left and right) includes PAR38s, compact fluorescents, and MR16s.

Track-mounted pendants light the table surface while a color-changing torchiere adds ambience in a formal conference room (above).



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 CIRCLE 70 ON INQUIRY CARD

Versatile Lighting Helps a Stock Exchange Adapt to a Virtual Trading World

by William Weathersby, Jr.

Toronto recently joined the ranks of international cities whose stock markets have moved from traditional trading-floor transactions to deals sealed in cyberspace. The Toronto Stock Exchange's (TSE) decision to convert entirely to electronic trading rendered obsolete its existing trading pavilion, which featured a 30,000-square-foot bullpen where frenzied traders parried for the next buy or sell. Turning to a Toronto design team comprising architect Shore Tilbe Irwin & Partners, interior designer Marshall Cummings, and lighting designer Suzanne Powadiuk Design, the TSE decided to overhaul its headquarters and tailor workspaces to the new way of doing business.

"Our intent was to create a physical setting that supports the TSE's business goal of an increasingly service-oriented organization," says Shore Tilbe Irwin project architect Werner Sommer. "Part law office, accounting firm, technology lab, and corporate marketing firm, the TSE is a hybrid business environment that required an updated image to reflect that evolution."

A central design challenge was to adapt the cavernous, double-height trading floor core into a viable, vibrant TSE office environment that might attract future rental tenants. In addition to creating workspaces for 21st-century traders and stock-exchange officials, the design team carved out a new conference center that would support the TSE's stepped-up media requirements, while drawing an additional revenue as a rentable meeting venue. Throughout the headquarters, revamped lighting was a premium asset in the image makeover.

Once a closed inner sanctum, the interior of the trading room was gutted and opened up to serve as a light-filled town plaza. A new floor with a central two-story atrium was inserted into the volume. Removal walls separating the trading pavilion from the adjacent

DISCREET INDIRECT LIGHTING CUES PUBLIC AND PRIVATE ZONES

Exchange Tower office building created two interconnected TSE floor plates of 55,000 square feet each. The TSE staff, once organized into departments housed on various floors of the tower, was consolidated on the two reconfigured floors. An interconnecting stair links the two new floors and encourages circulation through the atrium. Further enhancing this public zone, a new skylight pierces the existing roof structure. Wider at the top than at the bottom, the trapezoidal skylight funnels light into the office and "plays a large role in inverting the function of the former trading floor," says Marshall Cummings project designer Barry Nathan. "Now that workers here are linked to the financial community via desk-top computer, the central space serves as a new kind of public space encouraging social interaction."



The new entrance to the conference center of the Toronto Stock Exchange provides a formal welcome to visitors arriving through an adjacent retail mall. A canopy wrapped in beech veneer is fitted with MR16s that add a bit of sparkle.

Along with daylight streaming into the atrium, 300-watt halogen sconces, supplied by remote transformers, uplight the perimeter of the skylight. Ceiling-recessed compact fluorescents illuminate circulation routes along the atrium's edges. Halogen sconces provide additional ambient uplight at each bulkhead on the mezzanine level. On the lower floor, the central oasis contains a library, Internet terminals, a stock ticker, and a custom pavilion designed by Marshall Cummings to recall the original stock-market trading posts. Cable lights fitted with 50-watt MR16 lamps are strung beneath the trading post's metal-mesh canopy to provide ambient and task lighting.

Project: *The Toronto Stock Exchange, Toronto*

Architect: *Shore Tilbe Irwin & Partners—Terry Fitsialos, Brian Aitken, project principals; Werner Sommer, project architect; Frank Park, Benny Domingos, project team*

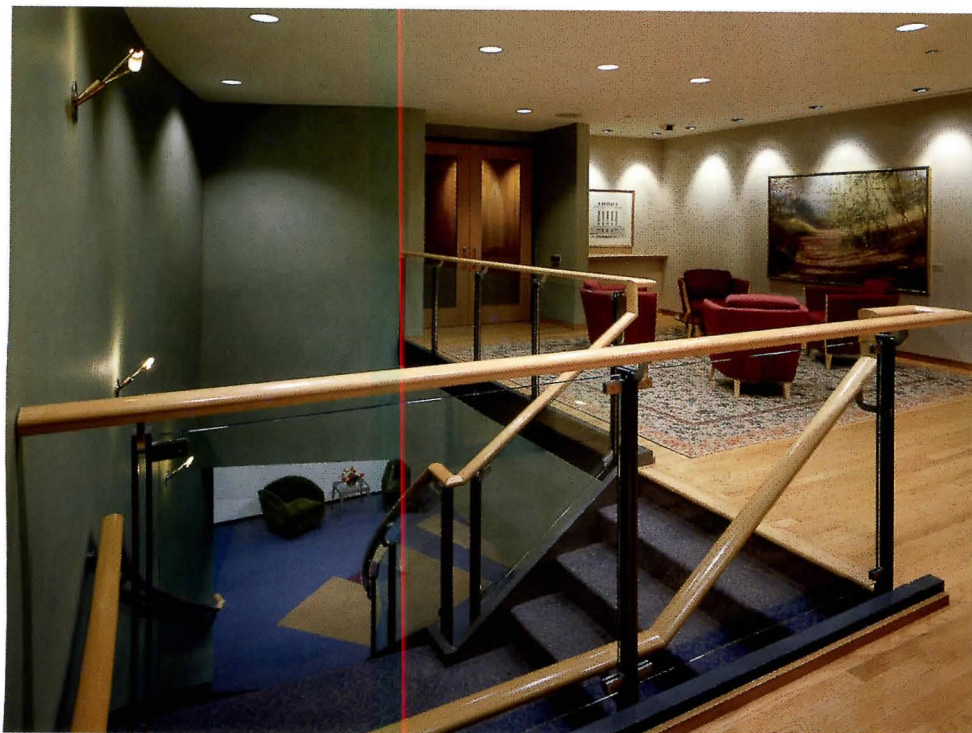
Interior designer: *Marshall Cummings—Barry Nathan, project*

designer; Steve McKee, Susan Tienhaara, project team

Lighting designer: *Suzanne Powadiuk Design*

Consultants: *Yolles Partnership (structural); TMP Consulting (mechanical); E.A. Rae Associates (electrical); Ken Lewis Group (audio/visual)*

Project management: *Gordian Group*



Artwork and beech-veneer wall panels within the TSE office complex are grazed with halogen wallwashers (above and right).

Recessed compact fluorescents provide ample pathlighting. Illumination throughout is primarily indirect to highlight planes.



In task-oriented areas beyond the atrium, the reallocation of space favors shared amenities, such as open team areas and meeting rooms. Private offices have been created for employees requiring confidentiality in their work processes and are not assigned by hierarchy. Individual office now have smaller, more efficient footprints moved away from perimeter windows. Open workstations are clustered to foster collaboration. Throughout, dimmable compact fluorescents and MR16s help to delineate public and private zones. Along connecting corridors, artwork and beech-veneer paneling are grazed with halogen wallwashers recessed into the ceiling as well as the floor in strategic spots.

DIMMABLE FLUORESCENTS AND MR16S ON PRESETS SUPPORT VARIED TASKS.

The reorganization of the main TSE office space severed the previous link between the trading-floor pavilion and the ground-floor entrance accessed via the retail mall of the Exchange Tower. Formerly the main entrance to the trading floor for both stock-exchange members and the public, the 7,500-square-foot space has been reconfigured as the TSE Conference Center. "The TSE wanted to put a new public face forward toward the Exchange Tower mall, with the conference center acting as a link between the TSE and the public," says lighting designer Suzanne Powadiuk, who was brought in to create a polished image for this sector of the project. (Marshall Cummings directed lighting specifications for the office areas and central atrium and collaborated on the conference center.) Serving TSE-member companies and the financial community at large, the facility

contains an auditorium, boardroom, and prefunction area.

The redesigned entrance to the conference center features a new canopy that welcomes guests, like the porte-cochere of a hotel. The beech veneer-clad canopy houses MR16 downlights that enhance the refined new image. An interplay of clear and sandblasted glass walls and a closed-circuit plasma screen offer passersby glimpses of TSE activities within. In the reception area, self-flanged PAR-lamps fitted with HIR lamps are recessed into aluminum-lined ceiling slots. Dimmable fluorescent uplights set above the floating ceiling section provide adjustable ambient light for varied events. Here, in the adjacent auditorium and boardroom, "the lighting is discreet and plays a supporting role, emphasizing the architecture's linear geometry," Powadiuk says. Dimmable recessed fluorescents and MR16 downlights in the boardroom support teleconferencing. In the auditorium, MR16 downlights and fluorescents set in stepped coves are on multiple presets to accommodate varied events. Taking stock of its role in the financial marketplace, the TSE has banked on design to ease its transition into the new century. ■

Sources

Entry recessed downlights: *Lucitalia*

Track-mounted PAR lamps: *Halo*

Reception downlights: *Cooper Lighting*

Cove fluorescents: *Metalux*

Steplights: *Bega*

Atrium wall sconces, cable lighting, table lamps, cove MR16s: *Eurolite*

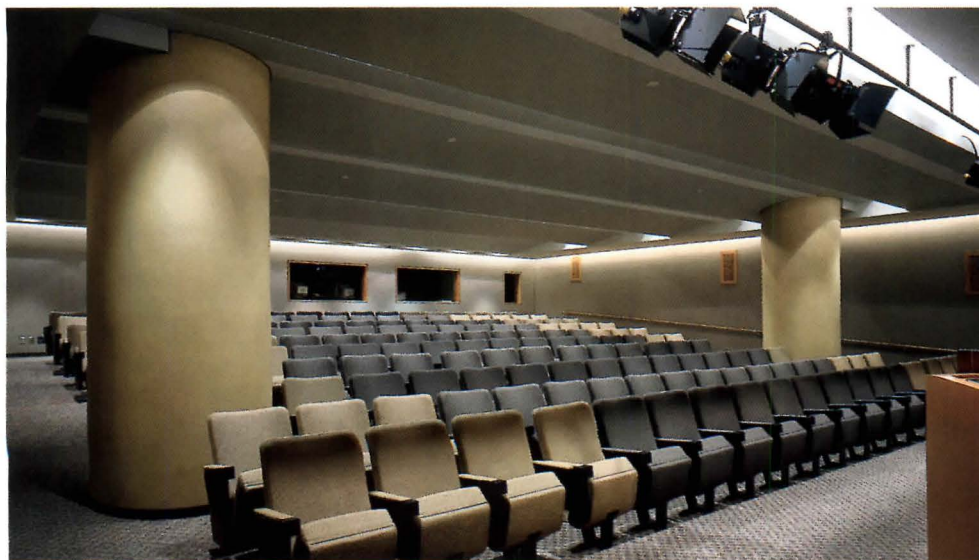
Atrium uplights: *Iguzzini*


Floor-recessed uplights: *Light Energy*

Mezzanine downlights: *Lightolier*

Dimming ballasts, controls: *Lutron*

Illuminated by a new skylight, the atrium was carved from a space that originally housed the trading floor (right). Halogen sconces wash the perimeter of the skylight, while 50-watt MR16 cable lights enhance the central multi-use "trading post." MR16 wallwashers and dimmable fluorescents set into ceiling coves outfit the boardroom (below). Dimmable fluorescents and MR16 downlights in the auditorium (bottom below) are teamed with a light pipe that supports broadcast-quality luminaires.

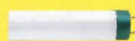




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CIRCLE 71 ON INQUIRY CARD

Prismatic daylighting systems, once commonly used, reemerge as a promising technology for the future.

by Todd Willmert

Sooner or later any study of the history of Western architecture encompasses a discussion of how fenestration has changed. Over the centuries architects have succeeded in making walls lighter and windows larger. But, however large windows may be, daylight generally does not penetrate into a room more than two to two-and-one-half times the height of the window opening. Even then, there is invariably too much light and glare near the window, and not enough light further back. Some architectural elements, such as light shelves and *brises-soleil*, can be used as effective, expressive means of tempering the light.

A brief history of prismatic glazing

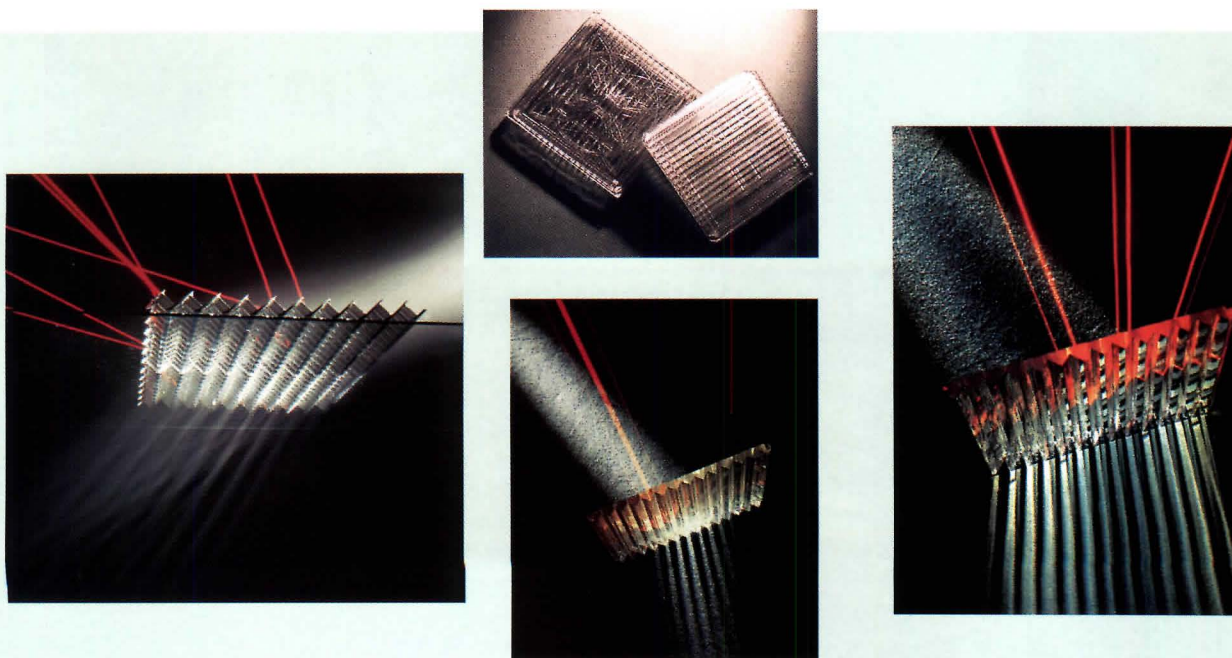
A lesser-used cousin of these architectural elements is prismatic glazing, an alternative daylighting approach first used in the 1890s. When it was introduced, *Inland Architect* heralded it as the “century’s triumph in lighting.” The early prismatic glazing is surprisingly simple. Horizontal prismatic ribs pressed into glass tiles in the shape of prisms redirect light from the window plane, shunting it upwards more deeply into a room.

Todd Willmert is an architect with Meyer, Scherer & Rockcastle in Minneapolis and a contributing editor for Architecture Minnesota.

Originally, the primary application was to light office buildings. By installing prisms in canopies that hung over office windows, light would hit the windows and refract into the interior. With the use of prismatic glazing, shafts, courts, light wells, and other architectural elements normally used to facilitate daylighting could be made smaller, and deeper floor plates were possible. Laid in sidewalks, prismatic elements cast light in basements. Prismatic glazing also found its way into storefront transoms—above display windows—where it reduced glare and drew light farther back into the store.

The demand for prismatic glazing spawned a half dozen manufacturers. The most prominent company, Luxfer Prism of Chicago, even hired young Frank Lloyd Wright to produce designs. The aesthetic and economic benefits of prismatic glazing were extolled in testimonials and explored in design competitions. Significant Chicago buildings, like the Rookery Building and the Carson Pirie Scott department store originally had Luxfer elements. In fact, Luxfer had over 1,500 installations across the country before 1900 and eventually had offices in 10 cities. Farther afield, Adolf Loos’ American Bar in Vienna employed prismatic glazing to great effect, as did buildings designed by Bruno Taut.

By the 1920s a number of factors—including increasingly available cheap electric light, new trends in storefront design, and the difficulty



Luxfer Prism manufactured prismatic lighting at the turn of the century (middle, top). Even Frank Lloyd Wright got into the act, creating the design for the prism on the left side of the photo. Modern prisms are much more sophisticated. Pictured are examples of a sunshade grid (left); an adjustable prism (bottom middle), and a nonmoving prism (right).

of cleaning and maintaining the prismatic glass—caused the concept to fall from favor.

Contemporary prismatic glazing technologies

The same factors that inspired the original interest in prismatic systems—energy conservation and a popular desire for naturally lit spaces—are fostering a resurgence of interest in this lighting concept. Bartenbach LichtLabor, an Austrian lighting design firm, has used prismatic lighting on a variety of buildings in different climates. In the U.S., prismatic films developed by 3M Corporation appear in several noteworthy toplighting

prismatic components effectively extend the daylighting zone 52 feet into the depth of the space. Other benefits associated with the improved distribution of the daylight are the subsequent reduction of energy use and the introduction of full-spectrum light into the space.

Turn-of-the-century prism applications centered on sidelighting, making their use as roof elements an important development. Bartenbach's prismatic glazing was also employed in the toplighting of the former German Parliament in Bonn, where adjustable prism banks redirected light into the main hall. The daylight factor range was 12 to 15 percent to enable television

PRISMATIC APPLICATIONS IN THE U.S. HAVE CENTERED ON THE USE OF PRISMATIC FILMS RATHER THAN BARTENBACH'S LARGE, 3-D ELEMENTS.

applications. The projects shown here use prismatic components as expressive elements, as well as to address economic and energy conservation concerns.

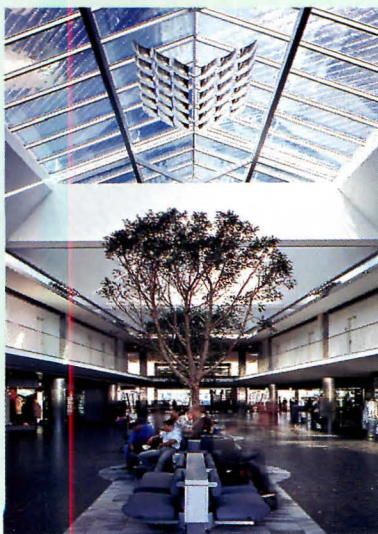
Bartenbach's work involves all types of lighting applications, but the 3-D, architectonic nature of prismatic glazing allows the lighting design firm to be particularly influential in affecting a building's fenestration. One example is SBV Biel in Switzerland, where prismatic elements placed high in the window bays make a striking visual addition to the building's facade. These also serve to substantially reduce glare and veiling reflections while preserving views through the lower, clear glazing. Even though the window height is only 10 feet, 6 inches,

broadcasting without the use of electric light. Light is uniformly distributed to ensure that all the representatives get the same attention. The color temperature of the starlike electric lighting is adjusted to match the daylighting conditions—high during full daylight and lower as night falls. Other long-span spaces where daylighting is critical, such as the Zurich Airport, employ tiny louvers that regulate the amount of light admitted.

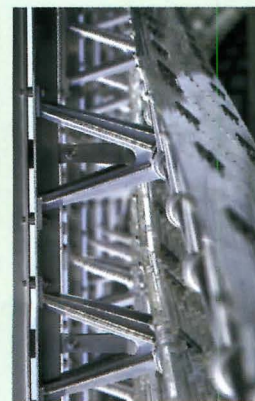
Bartenbach also developed a luminous roof for the German History Museum, another building in Bonn. A glass sandwich approximately seven centimeters thick, with two prism layers, yields a daylight factor of between 5 to 7 percent in the main exhibit hall. A prismatic layer



The prismatic ribs of early 1900s-vintage Luxfer tiles were only about one-quarter inch wide. Today, it is quite possible to manufacture extremely large prisms (above). Microlouvers are used to control the daylight in the Zurich Airport (right).



SBV Biel in Switzerland (above) uses prismatic elements placed high in the window bays. They are a striking visual addition to the building's facade and reduce glare and veiling reflections on the interior, while leaving views through the lower, clear glazing undisturbed. A detail (right) shows how the prisms are attached to the curtain wall.



is mirrored on one side to reflect solar radiation away from the building, while admitting only light that has been spectrally optimized to eliminate damage to the museum's contents. The inner layer is non-reflective, serving to limit horizontal glare. The prismatic elements, along with other components, create a compact panel system for sun protection, as well as reduce air-conditioning loads.

Most prismatic glazing has been used in the cloudy, colder climate of northern Europe, where there is a much greater need for daylight in buildings due to the low angle of the sun during the winter months. However, the Siemens Pavilion, built for Sevilla, Spain's 1992 exposition, shows how the technology firm's prismatic products can also be used to guard against the scorching southern sun. A sunscreen composed of seasonally adjustable prismatic louvers shields the building's cantilevered walkways and stairs. During the expo, visitors would progress up these exterior walks as they waited to enter exhibitions on the pavilion's upper floors. After the fair ended, Siemens planned to enclose the walkways and convert them to office space. In the new and as yet unexecuted configuration, the prismatic elements would facilitate the penetration of light into the offices while still offering sun protection

Prismatic applications in the U.S. have centered on the use of prismatic films rather than Bartenbach's use of large, 3-D elements. 3M Corporation's Austin Center effectively uses their own prismatic films in the atrium. Though only 28 percent of the roof area is open to the skylight and prismatic film assembly, the openings provide even light 76 feet deep throughout the 5,000-square-foot space. This passive system uses far

less glazed area than a conventional skylight system, while simultaneously giving better light distribution and producing less glare, which is critical in the mostly clear skies of Texas. 3M is currently testing similar systems in big-box retail establishments like Wal-Mart and Target to provide even, filtered daylight suitable for product display.

The future of prismatic glazing technology

The cost of adding prismatic elements to fenestration limits their use to prestigious, emblematic buildings. Still, the cost is potentially offset by reduced lighting and air-conditioning energy loads and life-cycle costs, as well as a lowered first cost that results from eliminating luminaires and decreasing HVAC capacity. It is also difficult to justify wide use of prismatic glazing while energy prices are low. And daylighting's less tangible benefits, such as its positive impact on productivity, are still hard to quantify. If history is any indicator, energy prices will one day soar again. Then, perhaps the incentives needed to spur the further development and application of prismatic lighting will appear again as well. ■

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D. Neumann, "The Century's Triumph in Lighting: The Luxfer Companies and their Contribution to Early Modern Architecture," *Journal of the Society of Architectural Historians*, (March 1995).

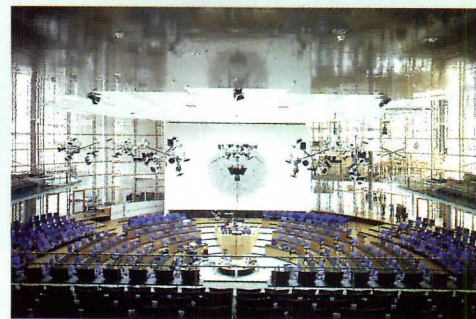
N. Baker, A. Fanchiotti, and K. Steemers, editors, *Daylighting in Architecture: A European Reference Book*, (1993).



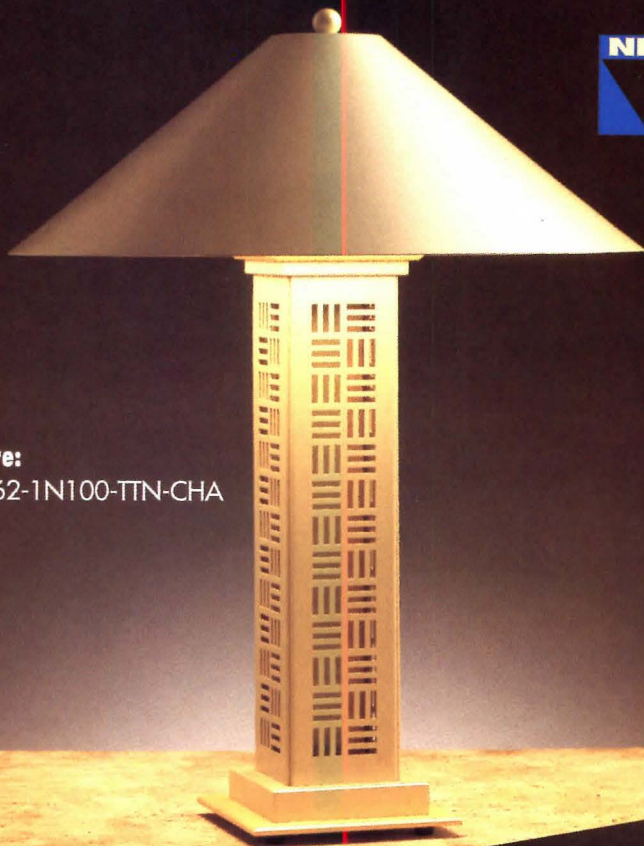
The Siemens Pavilion (above), built for Sevilla, Spain's 1992 exposition, uses a seasonally adjusted prismatic sunscreen to protect the building from the sun. The 3M Corporation's Austin Center uses a mirror system (right, top, and middle) and the company's prismatic film to light the building's atrium (bottom right).



The roof of the German Parliament building in Bonn has adjustable prisms on top that redirect light into the main hall (below), allowing television broadcasts to be shot without the use of electric lights.



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CIRCLE 72 ON INQUIRY CARD

A New Study Reexamines the Venerable Luminaire Dirt Depreciation Factor

by Lindsay Audin

In the late 1950s and early 1960s, the Illuminating Engineering Society (IES) added a luminaire dirt depreciation (LDD) factor to its lighting calculations. The intent was to introduce a multiplier that would allow the designer to compensate for the amount of light that is absorbed by a light fixture as it accumulates dirt over time. The Society's LDDs compelled the overdesign of light levels by 25 to 35 percent, which made a great deal of sense at the time, when there were many sources of pollution: Commercial buildings had operable or poorly sealed windows that admitted dust from the outside. Tobacco smoke and volatile organic compounds from items such as carpeting, mastics, and spirit duplicators, in use before electrostatic copiers, were released into the air and collected on the surfaces of lamps and luminaires.

Many changes have occurred in our workspaces since LDDs were developed and put to use. Work environments are much cleaner because buildings are better sealed. There are fewer open windows due to the widespread use of filtered air-conditioning. Most buildings are free from tobacco smoke, and the number of air changes per hour has increased in commercial buildings. The process used to develop the original LDDs may also have lacked the scientific rigor needed to support the practice of overlighting. According to Dr. Robert Levin, a scientist with Osram Sylvania Lighting, much of the information used to calculate the LDD factors was based on measurements made using hand-held light meters that were not terribly accurate by today's standards. Also, the methods used to make measurements varied from location to location.

New study counters current practice

For the past three years, a study sponsored by both the Environmental Protection Agency (EPA) and the lighting industry has scientifically examined the impact of dirt on the light output of standard fluorescent fixtures. Through a federal grant and the voluntary efforts of members of the International Association of Lighting Maintenance Companies, this just-concluded analysis has found that the Illuminating Engineering Society's old LDD factors may exaggerate assumed light losses in today's cleaner environments. Managed by Colorado Lighting, Inc., and supervised by Dr. Levin, the study looked at nearly 2,000 fixtures at 220 sites across the U.S. (Most were in commercial offices, schools, and retail facilities, but not industrial or outdoor locations; their environments could be characterized under present IES guidelines as "clean" or "medium.")

The two-by-two-foot and two-by-four-foot fixtures studied had standard wattage fluorescent lamps and white-painted metal reflectors and were protected from dirt accumulation by metal housings and a dif-

Lindsay Audin is the president of Energywiz, Inc., and lighting research consultant to E-Source, a Colorado-based energy consulting firm. Prior to founding Energywiz, he was Columbia University's energy manager for eight years.



In a new luminaire dirt depreciation study, light output was measured before and after fixtures were cleaned.

fusing panel. No intentional changes were made to any HVAC systems during the study, though routine alterations were made by owners at some locations during the three-year study.

The Electric Power Research Institute and the Lighting Research Institute developed a special fluxometer to take careful measurements of light output both before and after cleaning. Six similar fixtures were identified at each site, and each was tested to determine initial light output. After 6 months, the first was retested, cleaned, and retested again to isolate the impact of dirt from lamp lumen depreciation. The second fixture was allowed to

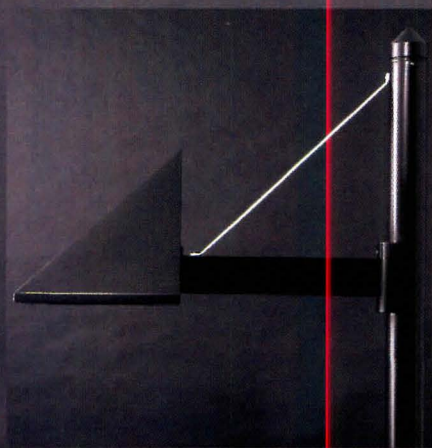
accumulate dirt for 12 months and subjected to the same routine, and so on, to produce six data points for each site over the 36-month study.

Early results strongly indicate that changes in conditions over the last 30 to 40 years since the IES's LDD factors were developed have reduced the need to compensate for depreciation due to fixture dirt. Using Maintenance Category V factors in Chapter 9 of the *IES Lighting Handbook*, one would need to add approximately 20 to 25 percent more fixtures to compensate for 36 months of fixture dirt depreciation. The new study found depreciation of only about half that amount.

Ultimately, these new studies may have a significant influence on lighting design: New or renovated facilities may be able to cut their costs for installation, relamping, and energy by 10 percent or more while still ensuring sufficient illumination over time. After the data has been fully analyzed, several research papers will likely be offered, and the IES may revise its recommended design procedures. The EPA will use the results to encourage more careful lighting design, and some state energy codes that stipulate light levels or limit watts per square foot may be adjusted. Certainly building operators will better understand the value of cleaning fixtures regularly. ■

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▼ Techy track lighting

The Metallics track-lighting line combines new finishes with advanced metal-halide lamp technology and OmniSpot low-voltage technology. Metallics is a modular system of adapters and shades and is available in a variety of fixtures. 800/215-1068. Lightolier, Fall River, Mass. **CIRCLE 203**



▲ Setting the mood

LiteTouch lighting and integrated control systems help create various moods at the touch of a single button. For example, in the morning the homeowner can bring the bedroom lights up to 40 percent, start the shower, and warm the bath towels, all with one button. 888/LITETCH. LiteTouch, Salt Lake City. **CIRCLE 204**



◀ Lighting and HVAC control

The Super Dual Tech sensor for lighting and HVAC control was designed to overcome common problems such as false activation due to heavy airflow and unintended black outs caused by coverage gaps. 310/568-9600. Novitas, Inc., Culver City, Calif. **CIRCLE 201**

▼ Vertical integration

The Verticals Series specification area luminaire offers a total of four vertically lamped optics and a selection of horizontally lamped optics. The series consists of round and square housing shapes with design features, such as accent reveals with optional cast striping. 770/922-9000. Lithonia Lighting, Atlanta. **CIRCLE 202**

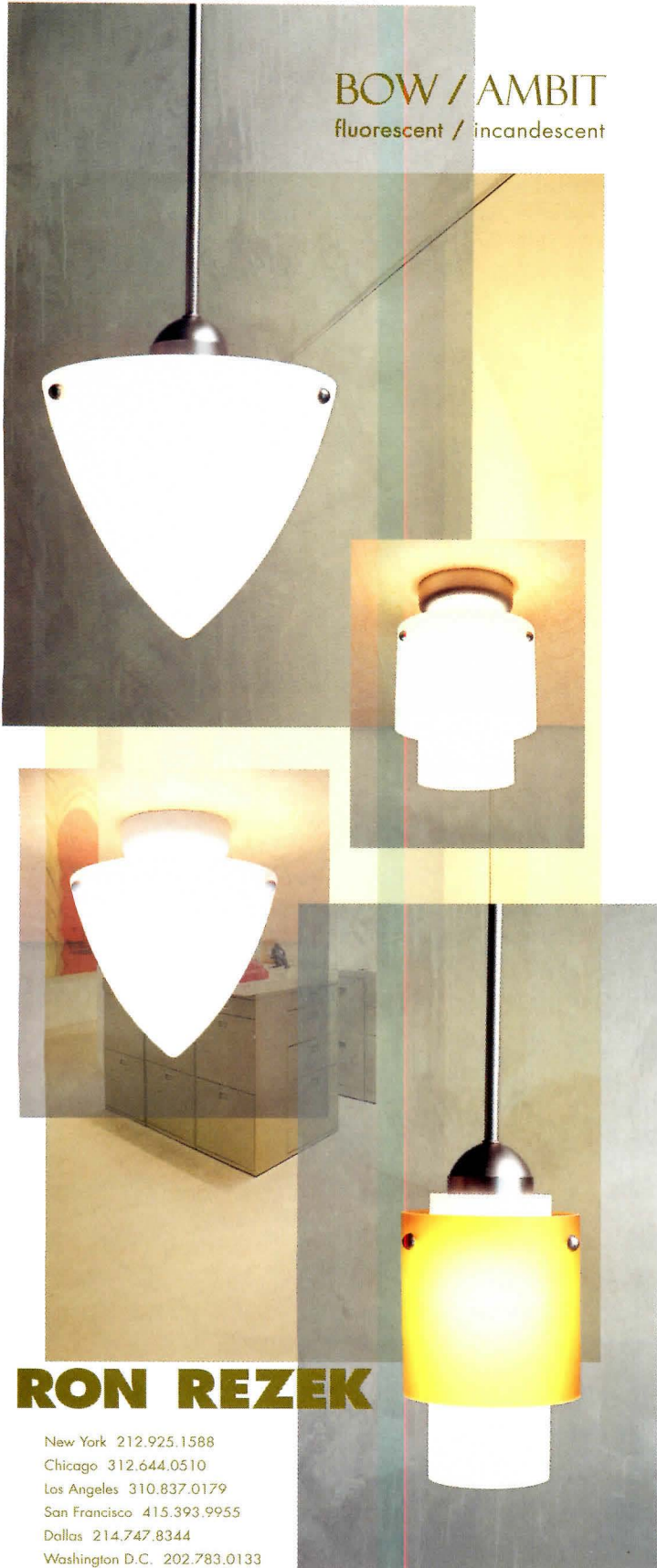


◀ Ceramic pendants

Light Project International has introduced three new additions to its porcelain pendant series. These miniature halogen fixtures are hand-made from unglazed porcelain. Five different finishes are available, including smooth, vertical stripes, and horizontal stripes. The 78-inch coaxial cable can be cut to length in the field. All fixtures attach to the patented Steng low-voltage jack. 703/471-6411. Light Project International, Inc., Sterling, Va. **CIRCLE 205**

LIGHTFAIR BRIEFS

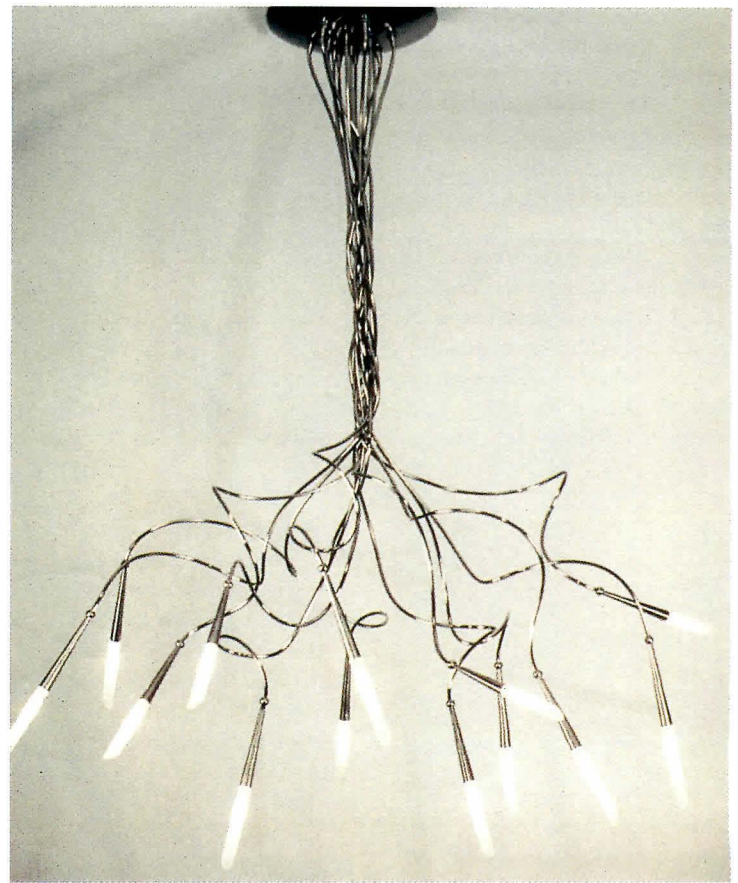
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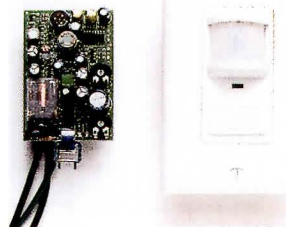
▲ Creating your own symphony

Tech Lighting received the Design Excellence Award at Lightfair for its handcrafted Symphony chandelier. The chandelier features an intertwined stem with 13 hand-bendable rods tipped with illuminated frost-

glass cylinders. Each rod may be hand-bent or arranged as desired. In addition, Symphony earned distinction as a Category Innovator in the Decorative Interior category. 773/883-6110. Tech Lighting, Chicago. **CIRCLE 206**

▼ Sensitive wall switch

The Dual Tech wall switch features a patented combination of passive infrared and sound detection and a photocell for daylight override. 800/PASSIVE. Sensor Switch, Inc., Wallingford, Conn. **CIRCLE 207**



▲ Glare-free downlights

Voted Best New Lighting Product of 1999 at Lightfair, Phos/VSL is a new category of downlights that mount on the surfaces of ceilings, rather than recess into them. It provides glare-free area lighting with genuine recessed downlight optics. 510/562-3500. Prescolite Mold-cast, San Leandro, Calif. **CIRCLE 208**

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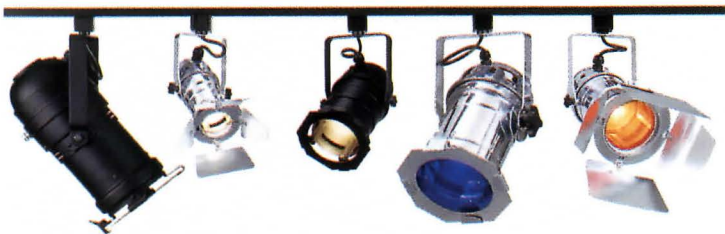
CIRCLE 74 ON INQUIRY CARD

▼ **Setting the stage**

The Halo Lighting brand of Cooper Lighting has introduced a line of track fixtures reminiscent of theatrical stage lighting for both residential and commercial spaces. Scaled for

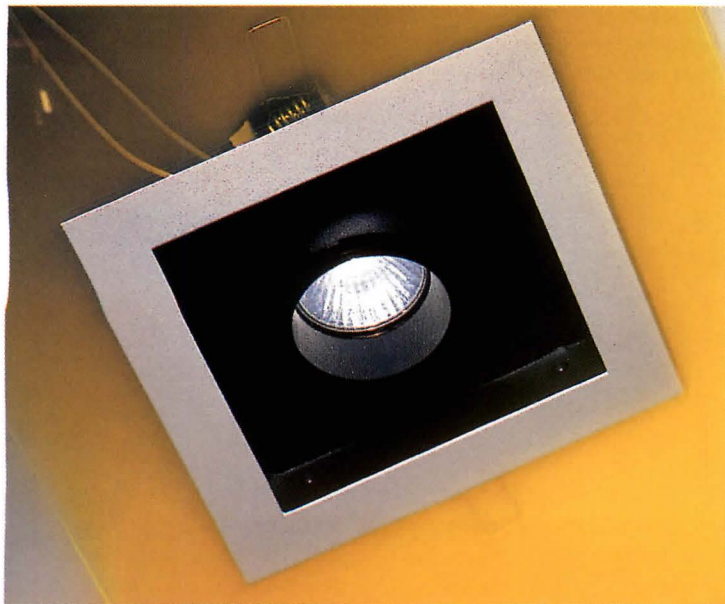
use with several halogen and metal-halide sources, Studio Classics are available in polished aluminum or matte-black lamp holders.

912/924-8000. Cooper Lighting, Americus, Ga. **CIRCLE 209**



◀ **New compact fluorescents**

The new Quicktronic electronic one- and two-lamp ballasts join Osram Sylvania's family of compact fluorescent lamps. Improvements include a new low-profile, high-temperature plastic ballast enclosure. 978/777-1900. Osram Sylvania, Danvers, Mass. **CIRCLE 210**



▲ **Hip to be square**

The Java square recessed downlight is fully rotatable, tilting 45 degrees in all directions. The downlight trim combines a square appearance with a round spherical eyeball and black regressed baffle. Java can be re-lamped from below without removing the trim from the housing.

The fixture is for use with MR-16 quartz halogen lamps, with a 75-watt maximum.

Available finishes of the cased frame are white, black, and satin silver. The eyeball and regressed baffle are black only. 210/227-7329. Lucifer Lighting Company, San Antonio, Tex. **CIRCLE 211**

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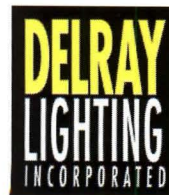


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CIRCLE 75 ON INQUIRY CARD

Design:
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CONSTELLATION Light Power

Constellation is an extensive collection of wall/ceiling fixtures, varying in dimensions, light sources, and finishes. Can be used indoor or outdoor. Features a die-cast aluminum alloy body and molded glass diffuser. Perfect for commercial or residential applications. UL approved.

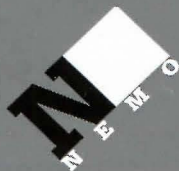


Constellation 17 = 7" \varnothing ADA
Constellation 27 = 10 1/2" \varnothing ADA
Constellation 37 = 14 1/2" \varnothing

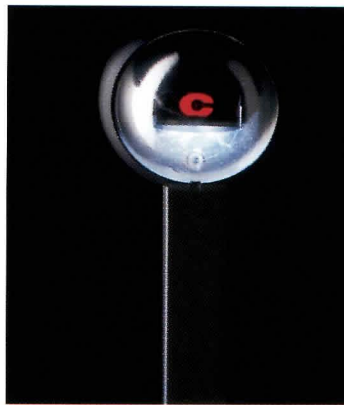
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LIGHTING BRIEFS



▲ Beacon in the dark

The Beacon seat light provides glare-free aisle illumination for a range of theater specifications. The compact, rounded design mounts on either the seat side or arm. 800/854-3288. Tivoli Industries, Santa Ana, Calif. **CIRCLE 212**

▼ Taking the high road

The Copa downlight is a lighting option for high-bay fixtures in commercial spaces. A translucent polycarbonate reflector reveals the glowing lamp within. Copa is available as a pendant or cable-mounted, with compact fluorescent triple-tube, metal-halide, or the new long-life QL lamps.

914/691-6262.
Zumtobel Staff
Lighting, Inc.,
Highland, N.Y.

CIRCLE 213

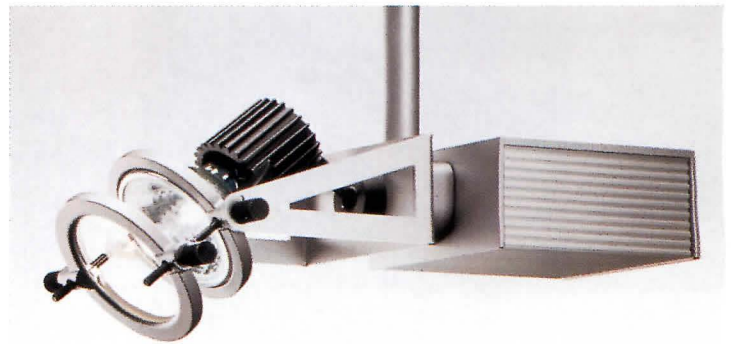


▼ Spiritual lighting

The Spirit family of track fixtures is appropriate for accenting displays or merchandise. The family offers freedom of choice in form, finish, and lamps: Spirit is available in sev-

eral finishes, and lamping options include MR-16, PAR-30, and 42-watt triple-tube CFL lamps. 914/691-6262. Zumtobel Staff Lighting, Inc., Highland, N.Y.

CIRCLE 214



▼ Perforated illumination

The Cylindric Pendant features five perforated aluminum cylinders,

topped with a two-inch band of solid brushed aluminum. When clear tubular showcase bulbs are

used, the fixture provides general lighting with patterns thrown by the perforations. When small PAR bulbs are used, the fixture becomes a downlight. 718/625-7661. Fabulux, Inc. Brooklyn, N.Y.

CIRCLE 215



For more information, circle item numbers on Reader Service Card

CIRCLE 76 ON INQUIRY CARD

▼ **Lighting for wood lovers**

The latest series by Cherry Tree Design includes the Bridger Collection. Crafted from solid cherry with black accent lines, the lamps feature a depth of color and smooth finish. The wood shades are joined together by lap joints with a fibrous frost insert. Other shade material options are available. 800/634-3268. Cherry Tree Design, Bozeman, Mont. **CIRCLE 216**



▲ **Chain reaction**

Neidhardt's new Daisy Chain pendant series features a six-inch-by-five-inch spun metal shade in satin white, satin silver, or satin copper finish. Daisy Chain is suspended on a white cord and steel cable from a petal-patterned flat canopy. 800/978-8828. Neidhardt Inc., San Francisco.

CIRCLE 217



▲ **Three-in-one skylight**

A new model for the 10-inch Solatube skylight incorporates a ventilation system and an electric light. The three-in-one unit integrates the benefits of natural daylight with ventilation and is ideally suited for use in high-humidity

environments such as bathrooms and laundry areas. The rooftop dome is guaranteed to withstand impact, extreme temperatures, and the sun's ultraviolet rays without cracking. 800/773-7652. Solatube International, Inc., Carlsbad, Calif. **CIRCLE 218**

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L'Arte che illumina

The **Lamp International** Collection ■ Designer **Enzo Ciampalini**

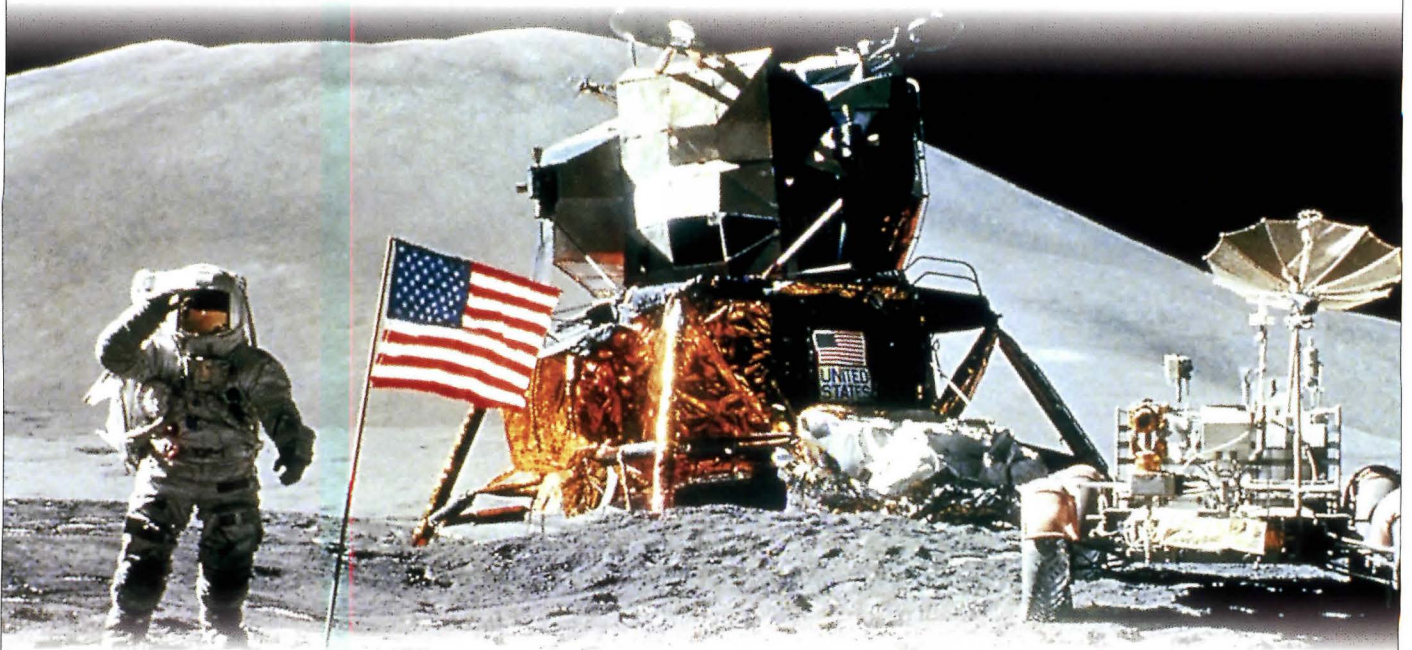
The Sibilla series includes floor, table, chandelier, suspension, wall and ceiling designs with 12 metal finishes and 6 glass finishes

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NEW PRODUCTS



RESOLVING OFFICE-DESIGN PROBLEMS WITH A NEW DESK SYSTEM

Advanced research into the challenges facing office workers and their organizations informed Herman Miller's new work system, Resolve, which took home both the "Best of Competition" and "Most Excellent" awards at this year's NeoCon.

Designed by Ayse Birsel, advance customer installations of Resolve are currently under way

while unrestricted production is expected in the spring of 2000. Offering a vocabulary that includes rolling screens that can be customized, canopies, toolrails, wings, porch lights, hybrids, and mobile bins, Resolve intends to change the way people interact with their coworkers and undertake the work at hand. 616/654-3000. Herman Miller Inc., Zeeland, Mich. **CIRCLE 219**

2000 TRADE SHOWS

The Builder's Show Dallas, January 14-17. 800/368-5242.

National Roofing Contractors Association Atlanta, February 27-March 1. 847/299-9070.

Kitchen/Bath Industry Show Chicago, April 7-9. 800/950-1314 x2745.

COVERINGS Orlando, May 2-5. 800/881-9400.

AIA Philadelphia, May 4-7. 617/859-4493.

Lightfair New York City, May 9-11. 404/220-2221.

Construction Specifications Institute Atlanta, June 22-25. 800/689-2900.

TRADE SHOW HIGHLIGHTS

Airport delays, monotonous exhibit halls, tired feet. Traveling to and attending trade shows is not without its setbacks. So in case you opted out of the trade-show circuit this year, the next five pages offer a brief overview of products featured at several leading events. While the first two pages focus on cutting-edge designs and products introduced at Chicago's NeoCon, this month's issue also covers lighting products exhibited at Lightfair in San Francisco [page 183], and a report from B.J. Novitski on A/E/C Systems in Los Angeles [page 39].

—Rita F. Catinella, Products Editor

NATURALLY INSPIRED BY SCHUMACHER'S 1999 FRANK LLOYD WRIGHT COLLECTION

Inspired by Frank Lloyd Wright's vast private collections of botanical representations, especially those in Japanese art, Schumacher's 1999 Frank Lloyd Wright Collection features 30 patterns, including a two-tone maple-leaf rug from Patterson, Flynn & Martin (below).

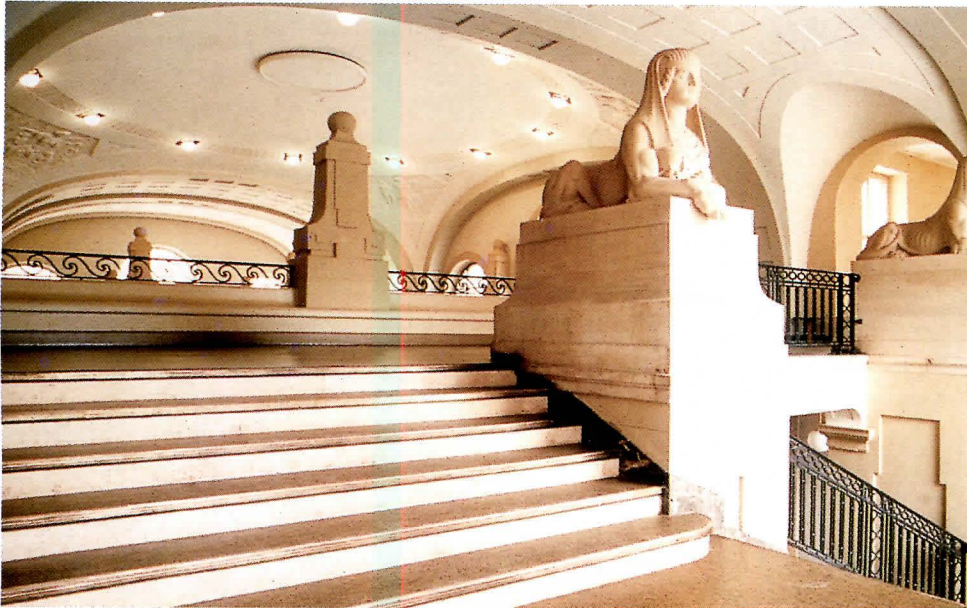
Introduced at NeoCon, the grouping also includes upholstery, wallcoverings, and window treatments in abstract representations of

grasses, vines, ferns, wisteria, pine bark, and waterfalls. The patterns' eight earth-tone colors are intended to preserve the hues of Wright's winter home in Arizona.

Wallcovering patterns Fern Stencil, Bougainvillea, and Incense (below, left) are inspired by paper stencils, a mosaic mural, and a Japanese board game, respectively. 212/213-7900. Schumacher, New York City. **CIRCLE 220**



ARMSTRONG ACQUIRES TWO COMPANIES AND THREE NEW PRODUCT CATEGORIES



At NeoCon '99 Armstrong Commercial Floors launched three new product categories: Commercial hardwood (above, right), luxury solid-vinyl flooring, and linoleum (above, left). This marks the biggest commercial-floors launch in the company's history.

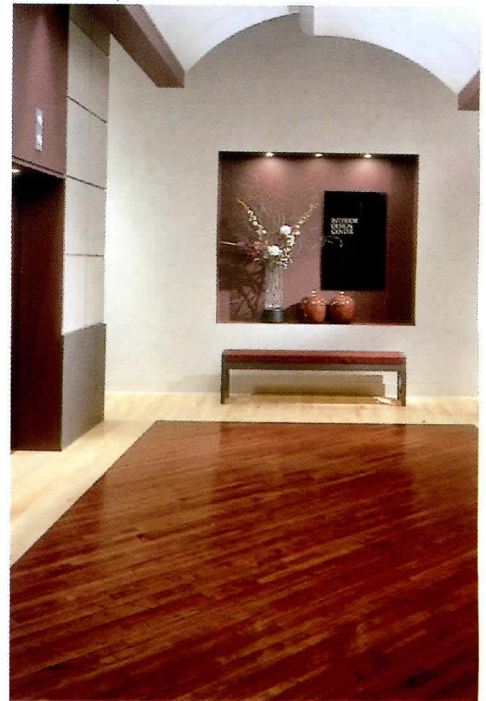
The addition of the new product categories results partly from Armstrong's 1998 acquisitions of DLW Aktiengesellschaft, the leading flooring manufacturer in Germany, and Triangle Pacific Corp., the world's largest manufacturer of hardwood flooring and a major pro-

ducer of hardwood cabinets.

"We are the only manufacturer who can now offer a complete portfolio of commercial hard-surface flooring options, which together adds up to an endless array of creative design possibilities," says Randy L. Gablehouse, vice presi-

dent, commercial-floors marketing, Americas and Asia.

In 1998, Armstrong, Triangle Pacific, and DLW had combined sales of approximately \$2.7 billion and a workforce totaling 19,000. 717/397-0611. Armstrong World Industries, Lancaster, Pa. **CIRCLE 221**



INTERFACE OFFERS NEW FLOORING CATEGORY

It's not really carpet, yet it's not hard surface. What is it? Try Solenium, a new flooring product and category from Interface Flooring Systems.

Described as a resilient textile flooring, Solenium is the first flooring application of polytrimethylene terephthalate (PTT), a new polymer from Shell Chemical. Combined with Solenium's breakthrough R&D and manufacturing process, Solenium is a commercial flooring that is soft, resilient, and fully recyclable.

Interface subjected Solenium to aesthetic control testing (ACT), to simulate 10 years of day-in, day-out abuse, the results of which earned Solenium a rating in the same class as hard-surface flooring. Solenium is engineered to withstand the pun-



ishment of heavy traffic and a variety of spills and cleans up with just warm water extraction; no chemicals or detergents are necessary.

The resilient textile offers greater slip resistance than resilient hard surface, and the product's performance in sound-absorption tests equals that of carpet. As an added bonus, when Solenium reaches the

end of its life, it can be quickly removed from the facility and recycled into new Solenium products. 706/812-6155. Interface Flooring Systems, Inc., LaGrange, Ga. **CIRCLE 222**

PRODUCT BRIEFS

► Variations in teak

Smith & Hawken's Dune Chaise features 22 rugged teak slats, which are not fixed in place, but rather suspended from the frame via synthetic rope, providing a hammocklike float. Designed in France by Claude Robin, Dune's two sets of angled legs tuck away to alter the angle of repose.

The Bilbao table, also made of teak, works equally well indoors as a conference table and outdoors as a dining table. Raked slats in the gallery beneath



the tabletop present a distinctive profile. 415/389-8300. Smith & Hawken, Mill Valley, Calif. **CIRCLE 223**

▼ Heavy-metal decor

Rigid-Text metals have a broad range of applications, including for elevators, column covers, wainscoting, exterior and interior wall panels, doors, laminated panels, and architectural crowns. A variety of patterns, metals, finishes, and gauges are available. 800/836-2580. Rigidized Metals Corporation, Buffalo, N.Y. **CIRCLE 224**



◀ Here and now

Dauphin won a Gold award in the hospitality furniture category of the "Best of NeoCon 1999" competition for its stacking chair and table line, Ecco! A durable, yet lightweight, multipurpose product line, Ecco! is suited for corporate, institutional, or hospitality use, inside or out. The chair's fiberglass-reinforced, polypropylene shell is 100 percent injection molded and comes in an array of hues. 973/263-1100. Dauphin, Boonton, N.J. **CIRCLE 225**



▲ Resin-free hard flooring

A new Canadian company, Quartzitec Inc., has launched a line of agglomerate quartz tile and paving stones. Quartzstone looks

like natural stone, takes a variety of finishes, and is bound with white Portland cement, not resin. 506/433-9600. Quartzitec, Sussex, New Brunswick. **CIRCLE 226**



◀ ▼ A warm bath

PS Craftsmanship offers the exclusive Image line of wooden sinks and bathtubs that are fabricated according to a patented process using epoxy resin to stabilize the wood permanently. The finishing consists of seven to eight phases of hand-polishing and varnishing. The products are offered in both American maple and rot-resistant Iroko wood, which is traditionally used in ship building. 718/729-3686. PS Craftsmanship, Long Island City, N.Y. **CIRCLE 227**



Sources

- 223. Smith & Hawken/AIA**
224. Rigidized Metals Corp./AIA
225. Dauphin/NeoCon

- 226. Quartzitec/AIA, NeoCon, CSI**
227. PS Craftsmanship/Kitchen/Bath Industry Show

PRODUCT BRIEFS



▲ Not a polka band in sight

Gordon International has recently introduced several new product groups, including the Accordion folding table designed by Bolognese designer Giancarlo Piretti. When fully opened, the table extends from 36 to 87 inches in length. A well-thought-out piston built into the system

prevents fingers from getting caught while closing the table. Accordion features a melamine surface, a cherry or maple finish, and tubular steel legs with an aluminum-colored powder-coat finish. Accordion can be opened with one hand from a standing position. Gordon International, New York City. **CIRCLE 228**



◀ Coloring within the lines

Shaw Contract's new carpet product system enables the specifier to create unique color variations without specifying a custom product. Book Ends is Shaw Contract's largest group of products featuring 21 large-scale patterns, four coordinated textures, and 25 products. The product system includes four collections, including the Land Marks collection shown here. 800/342-7429. Shaw Contract, Dalton, Ga. **CIRCLE 230**

▶ Squashing unwanted noise

QUASH dB1 sound management foam is a polyolefin foam designed for portable room dividers, office doors, cubicle dividers, appliances, and automotive interiors. It is unaffected by moisture and most chemicals and solvents. 800/441-4369. The Dow Chemical Company, Midland, Mich.

CIRCLE 229



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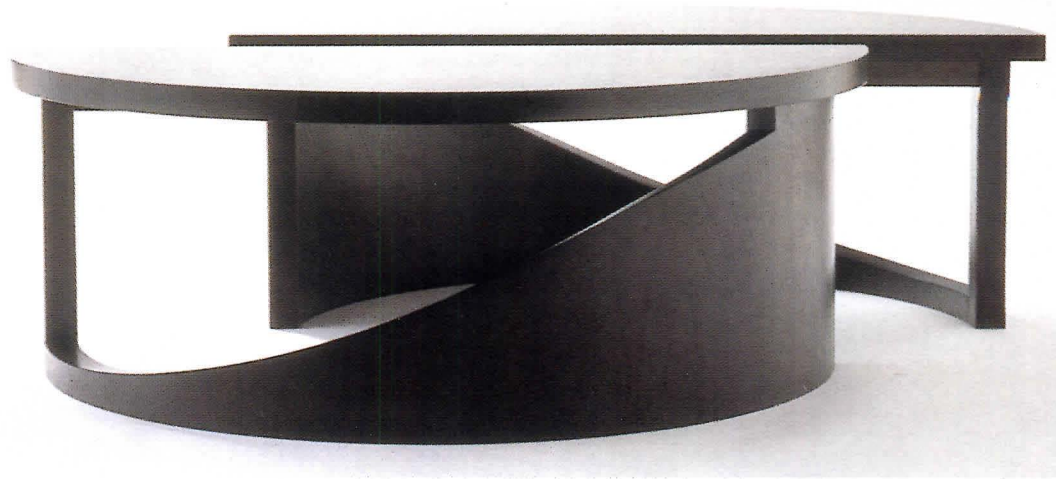
▼ A departure from tradition

The Sabina collection represents a departure from Grahl's normal line of products. Developed in tandem with Grahl's European design group and Nick Balderi, Sabina features stackable and nonstackable guest, pull-up, and caster-based seating. All models are made from white maple molded plywood. Custom laser-cut perforations are available. 888/289-4724. Grahl Industries, Coldwater, Mich. **CIRCLE 231**



▲ The new wave of contract

New products from Bernhardt Contract, such as the Wave table collection (shown) by Scottish-born designer Gerard Taylor, reflect the company's desire to change the perception of contract furnishings. A series of handcrafted anigre wood cocktail and side tables, available in 12 finishes, the Wave's base begins



as a solid plane, and, as the base curves, a linear wave shape is revealed. Bernhardt will also unveil the Etro Chair by Icelandic designer Erla Solveig Oskarsdottir (pronounced oscar-s-dough-ter), as well as the One Chair by renowned British designer Ross Lovegrove. 828/758-9811. Bernhardt Furniture Company, Lenoir, N.C. **CIRCLE 232**

Sources

- 228. Gordon International/NeoCon**
- 229. Dow Chemical Company/CSI**
- 230. Shaw Contract/NeoCon**
- 231. Grahl Industries/NeoCon**
- 232. Bernhardt Furniture/NeoCon**

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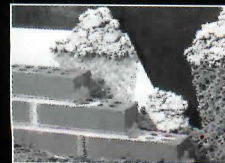
Mortar Net prevents the cavity from becoming clogged with mortar droppings. Due to its patented dovetail shape and 90% open mesh, Mortar Net breaks up mortar and allows water to exit to the weeps, preventing water damage caused by mortar damming and blocked weep holes.

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*ASTM Test Method E-514. Laboratory test data available upon request.



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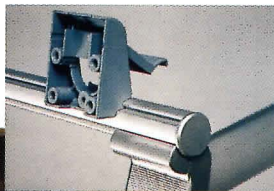
PRODUCT BRIEFS

▼ P.O.S. itioning freedom

The acquisition of several European furniture companies, including d•yes, has helped Haworth expand its European product line. d•yes produces the P.O.S. (process-oriented system) desk system, which offers both horizontal and vertical planning freedom, with great scope for

extension and reduction. P.O.S. features aluminum parts that can be combined or separated with a few movements, including traverse profiles and leg options. 616/393-3000. Haworth, Inc. Holland, Mich.

CIRCLE 237



▲ Mixing it up

Mixage porcelain stoneware was developed through a new technology that fuses color and vitreous materials. Dry mixing vitreous materials and clay bodies in the

pressing phase integrates the components prior to firing. 212/980-1500. Italian Trade Commission of New York, New York City. **CIRCLE 233**

Sources

- 233. Italian Trade Comm./Coverings
- 234. Dow Corning Corporation/CSI

235. Clopay Building Products/CSI

- 236. Amtico International/NeoCon
- 237. Haworth, Inc./NeoCon



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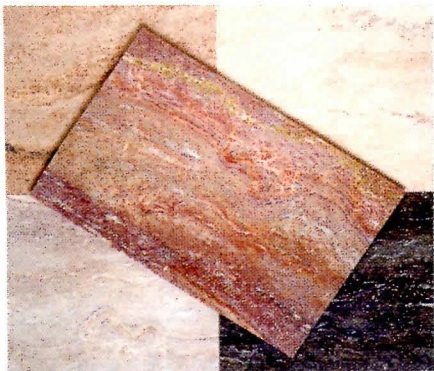
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► **New flooring category**

Stratica non-PVC resilient flooring is ideal for commercial locations and large public areas. Made of Surlyn, the same coating used to protect golf balls, Stratica is recyclable and offers natural-look finishes. 800/369-3557. Amtico Intl. Inc., Atlanta. **CIRCLE 236**



◀ **Passing the test**

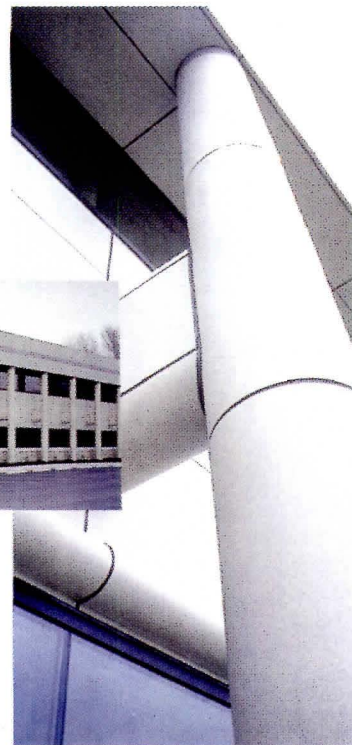
Drop testing of chain-operated fire doors is a one-person task with Fireset 3 from Atlas Doors. To test the door, the user moves the lever to the test position, and the door will safely drop, controlled by a governing device. After the test is complete, the user moves the lever to the run position and chain hoists the door open. This advance allows for more frequent, less costly testing. 800/959-9559. Clopay Building Products Company, Inc., Cincinnati. **CIRCLE 235**



► **Sealing the deal**

Dow Corning 795 silicone building sealant was chosen by Aristech Acrylics LLC to seal the joints between Aristech's Acrystone panels on the exterior cladding of the company's corporate headquarters in Florence, Ky. The product was used to adhere the Acrystone solid-surface acrylic sheet panels to aluminum channels that clip to the aluminum framework of the Aristech building. Chosen for its high elongation, the sealant offers a 20-year warranty. 517/496-4000. Dow Corning Corporation, Midland, Mich.

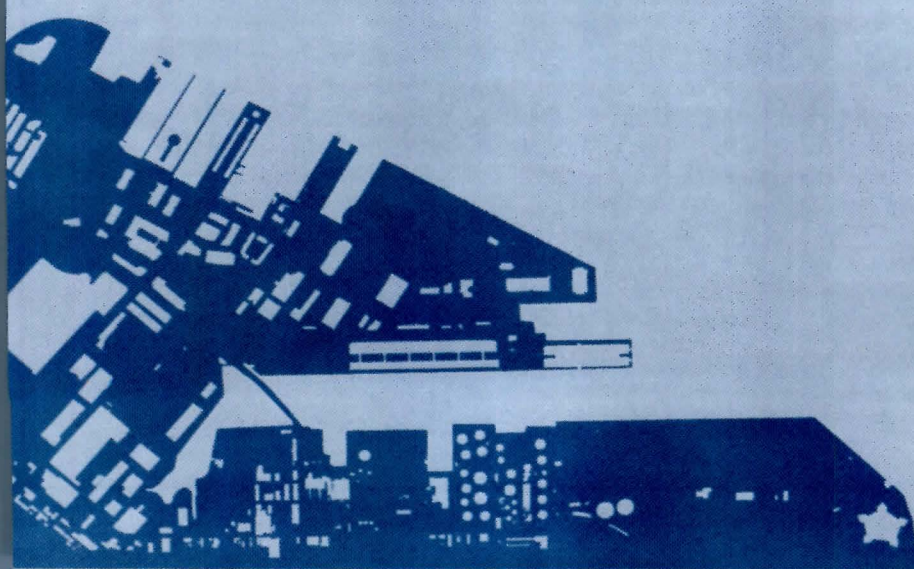
CIRCLE 234



Waterfronts in Post-Industrial Cities

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PRODUCT LITERATURE

Green directory

The new *EBN Product Directory* features information on more than 1,200 green-building products selected by the editors of *Environmental Building News*. 800/861-0954. E Build Inc., Brattleboro, Vt.

CIRCLE 238

Fire-rated glass guide

Technical Glass Products (TGP) introduces the *SpeciFIRE* CD-ROM, an electronic guide for selecting fire-rated glass. 800/426-0279.

Technical Glass Products, Kirkland, Wash. CIRCLE 239

Window and panel binders

A Pallas Panels binder and Pallas Windows box are new resources available for the specifier's library. 800/4-PALLAS. Pallas Textiles, Green Bay, Wis. CIRCLE 240

Wall-solution software

InPro Corp. has created an interactive CD-ROM for designers and

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architects to view door and wall protection systems. 800/222-5556. InPro Corp., Muskego, Wis. CIRCLE 241

Concrete technology issues

All 67 back issues of *Concrete Technology Today*, a quarterly newsletter published by the Portland Cement Association, are now available on one CD-ROM. 800/868-6733. Portland Cement Association, Skokie, Ill. CIRCLE 242



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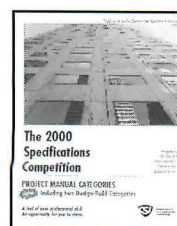
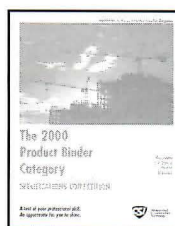
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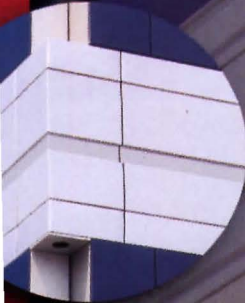
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AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION

ANSWERS

Questions appear on page 144. To receive CES credits, fill in the education reporting form below or on our Web site (www.archrecord.com).

1. Materials must be evaluated for sustainability in light of their overall life cycle or entire history—from raw materials to manufacturing, transportation, assembly, and use to the ultimate disposal or reuse of the materials. The performance of a material in a building is just one stage in that cycle, albeit an important one. At the raw materials stage, concerns revolve around the impact of mining, harvesting, or extraction practices. The manufacturing stage involves the input of energy and the output of emissions or by-products. During the material's tenure in the building, it must be evaluated according to its durability, maintainability, contributions to air quality, and its effect on the cost or function of the structure. How the material is handled once it is removed from the building is something that should be determined when it is specified. It should be easily disassembled and either recyclable, salvageable, or biodegradable.
2. Using local materials reduces transportation costs, keeps money within the community, and contributes to a general awareness of the architectural qualities that make each region unique, which is an

important component of ecological awareness. Also, local materials often jibe with the climate.

3. Choosing the least toxic construction materials and furnishings is a way to address indoor-air-quality problems. Products that are applied wet have historically consisted largely of organic solvents that are released as volatile organic compounds (VOCs) as the products dry. As a result, many manufacturers have switched to water-based formulations, though these usually contain some VOCs. Most major paint companies now have products without any VOCs. Other less toxic solutions include alternatives to particleboard and MDF, which are almost always made with formaldehyde. Latex backing on carpets, a source of off-gassing, has been improved. Whether it's an individual product or a whole building, if it lasts longer, its environmental impact is amortized over a longer period of time.
4. Architects need to do extra work to make sure they get the sustainable materials they specify into the building. The environmental criteria must be prominent in the specs. Adding an "environmental requirements" article to each technical section makes these criteria more noticeable. Listing a contact name for any nonstandard products also helps, as does calling the supplier and informing them that their product is being specified. Be prepared to document the performance of unconventional materials. Having the other members of the team involved from the onset of the project creates a more holistic approach and means architects are less likely to have to defend their choices.



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- "What It Means to Be Green" [page 137]
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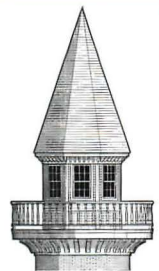
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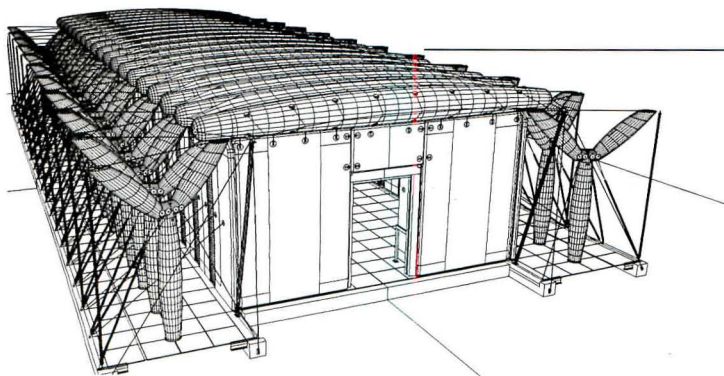
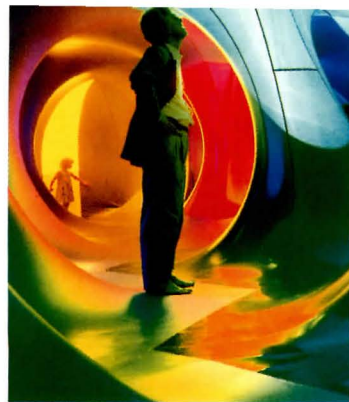
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THE FUTURE The new pneumatics: Recent technological developments give weight to these lofty buildings.

BY NANCY HERRMANN



The requests seem modest enough: Sleeping and working quarters for 6, a large conference table that seats 12, a window by the treadmill, private bedrooms, and a zero-gravity clothes washer. Not if you're designing the Mars TransHab (short for Transit Habitat) for NASA's International Space Station, scheduled to be livable in 2004.

The solution was foreseeable: An inflatable spacecraft light enough to transport in a single shuttle mission but roomy enough to allow six astronauts to coexist for more than two years. Now being rigorously tested at the Johnson Space Center in Houston, TransHab is made of a one-foot-thick shell of reflective Mylar, bulletproof Kevlar webbing, and alternating layers of Nextel ceramic fiber and polyurethane foam. At \$200 million, this three-story house is more than the average homeowner could finance, but the concepts and materials employed in its design are well within reach.

Back on earth, New York-based FTL Happold is one of the few American firms aggressively developing pneumatic or inflatable

structures. For the past five years, FTL has been designing transportable maintenance and storage facilities for the U.S. Army Natick Research, Development and Engineering Center in Natick, Mass. With the advancement of high-tech materials and computer-based technologies, architect and FTL partner Nicholas Goldsmith, FAIA, scoffs at the idea that these buildings should be relegated to the traveling sideshow. New air-tight fabrics and plastics that eliminate the need for compressors and industrial fans to keep them pumped up mark major improvements in these constructions.

Not just science fiction

For commercial applications of inflatable technology, one needs only to look to FTL's use of ETFE (ethylene-tetrafluorethylene) foil pillows in zoos, tennis facilities, and swimming pools across Europe. Spanning 12 feet by 100 feet per panel, these sturdy, clear Teflon pillows are mounted in frames and constructed as traditional cladding systems, providing a cost-effective alternative to thermal glass.

"It's only logical that inflatable structures come into their own," notes Goldsmith. "They use the

least amount of material for the longest spans." And, because they are compact and made of lighter materials, they carry lower transportation costs than traditional steel and concrete structures.

Inflatable history

Inflatable structures are nothing new, of course; air-filled balloons date from the late 1700s. The first, made out of a canvas envelope lined with paper, was raised by brothers Joseph Michel and Jacques Etienne Montgolfier. In the 1960s and 1970s, utopian-minded architects and military engineers experimented with land-based inflatables. Reaching their peak in 1970 at the Osaka Exposition, pneumatic pavilions received widespread attention, until leaking membranes left the industry deflated.

Air-supported or pneumatic buildings are shaped and held up by a slight positive pressure. Unfortunately, they are highly sensitive to wind and snow loads. Today's structures have closed air-inflated chambers and environmental controls—all derived from computer programs that allow architects to study how air behaves when subjected to different conditions. At Material Connexion, a resource center for new materials, founder George Beylerian has supported the use of inflatables through exhibitions and research. "Many architects see inflatables only as street-vending constructions or temporary exhibition spaces," says Beylerian. "The truth is now they are used in a much more serious way, complete with revolving doors and temperature control."

Festo KG, headquartered in Esslingen, Germany, is reinventing pneumatics as "Airtecture." "Previously, we were restricted to a particular shape associated with a particular function," says Axel Thallemer, head of corporate design for Festo. "Now, we are able to develop a new building language with exoskeletons, beams, doors, and windows."

The company's exhibition hall is the first building to be constructed with a cubic interior that comprises load-bearing air-inflated chambers (rendering, left). Rather than having a structural frame on the inside, the Festo exhibition hall depends on an exterior lineup of 40 inflated Y-shaped columns resembling flying buttresses and 36 wall components for its load-bearing support. Due to its unusual exterior and computer-controlled elastic tension members or "fluidic muscles," the building withstands the worst weather.

The new pneumatics also offer enormous possibilities for experimentation with shape and color. The Luminarium (top right), designed by the Nottingham-based Architects of Air, was commissioned by London's South Bank Center. While it resembles a Russian Orthodox Church from the outside, the translucent PVC from which it is built turns the interior into a 3-D stained-glass window. Alan Parkinson, the artist behind Architects of Air, created complex geometric patterns derived from Islamic design and cathedral architecture. Surprisingly, its flexible configuration requires only two and a half hours to zip all the components together and inflate. ■

Nancy Herrmann is a freelance writer based in Los Angeles.

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