Tadao Ando builds an oasis for Art

MODERN ART MUSEUM OF FORT WORTH

Essay: WHERE ARE WE NOW?
Architecture in American Culture
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A woman walks into a bar. Seated at the barstool, wide-eyed, poised and expectant, she is about to raise a drink to her lips when the bartender, a grizzled New York type, leans across the counter and says, "So, whaddya think about Daniel Libeskind?"

As funny as it sounds, it's a true story—one that exquisitely sums a moment, encapsulates it within a specific milieu, and the words would be the pitch-perfect line for a New Yorker cartoon. When she described actual experiences in the saloon, the woman in question, an architectural historian, had been making a larger point that architecture had decisively altered the popular consciousness. She recounted her encounter with a kind of bemused awe, but it also made a hoo-ha tale, a slap-your-leg line right out of Letterman. If the fragile world finds itself longing for good news, here, at least, was one happy provocation we are pleased to report: Architecture finally gone mainstream.

While the story exaggerates the depth of range, isn't the news astounding? For decades, architects have been ruefully, poignantly describing a heightened state of European cultural consciousness, an idealized realm in which taxi drivers quote opinions on the latest works by heroic designers and racks brimming with consumer magazines present architecture like many plums or pears. Pick a design; they're perfectly ripe this month and deadly for tasting.

In architecture as in plums, however, reality includes the pits. While Libeskind and Viñoly, Schwartz and Ban may make the front page of A Today, the depth of our national dialogue on architectural matters remains pitifully thin, limited to the superficial image or the emotional, e-jerk reaction—a battle to the finish of the cool eyeglasses. How can we translate this hype or the heightened public interest to good effect?

Sometimes, words fail us. It seems clear that architecture needs a new language, new words and symbols to explain its character and richness, if we hope to engage our audiences any deeper than the dazzling first impression or the star turn. Up to now, when trying to explain architecture's three-dimensional potential, we have had to rely on a jargon-laced vocabulary that reduces us to babbling pseudo-intellectuals, waving our arms about and speaking in an incomprehensible tongue. Naively, we decoy how the public just doesn't get it.

Here, finally, is our chance. The spotlight is focused on architecture with a capital A. By paying attention to our audience, then clearly stating our arguments and contributions, architecture can rise from the arcane to the universal. We need a simplified message. Every person needs shelter. We can provide habitation with a difference, altering and improving consciousness, the sense of potential, even productivity. Our work can reduce wasteful consumption of resources, harness the winds, channel the sunshine and the rain. Given a confluence of the client and the times, and employing our personal gifts, we can translate the inanimate into poetry, capturing aspirations or even grief in concrete and glass, stone and water and steel.

If bartenders are interested, and they know our names, we architects would be fools not to care. The time is right for clarity and for forceful, engaged presence, with our clients and the communities we serve. It's time to step out of the shadows, into the limelight. Now, whaddya think of Daniel Libeskind? Got a meaningful, ready answer? It's no joke.

By Robert Ivy, FAIA
For 80 years, we've built a tradition of service, innovation and leadership. An evolution of people, concepts and materials. On March 1, 2003, our next chapter begins, as Skilling Word Magnusson Berkshire becomes...
Letters

ality or Renaissance?

A much of the debate around posals for the site of the former World Trade Center has consisted of ideological noise, added blather, and expressions of personal taste without which proposal is spectacular enough to match the enormity of the destruction of September 11. However, the spectacular may be the enemy of the good, especially as we are seeking an effective memorial that will not only honor the dead and their survivors but also reinscribe the memory of the real catastrophe for generations to come.

Yet the more stunning, fabulous, and dazzling the design, the further it departs from the familiar, the more it is likely to receive press and public attention. Most of the projects but those of Eisenberg/Littenberg's scheme are his sense spectacular. In T:HINK's framework twin towers, the idea of a usable area would make it the world's most spectacular and expensive cultural institution; it was an exhibition of a dull, three-part sequence of buildings that would compete Times Square's. And United Nihilists and SOM's "cities in the air" are retro-spectacular—They could actualize visions of "New York the year 2000" originally published by King's Views in 1908.

What does this mean for the text of the memorial, which will be the subject of an international competition this year? Unlike Maya Lin's Vietnam Veterans Memorial, the commemorative space at Ground Zero will not be a symbolic tomb but actual one, where more than 200 people lost their lives. Nor will it be to create a muted, central ground for national reconciliation. Rather, it will need to provide a place for the families of the deceased to grieve alone and with others who shared this unbearable experience, and a place for visitors to reflect upon the tragedy, perhaps unanswerable questions regarding the meaning of the event. For such purposes, spectacular-ness is an unwanted distraction.

Two of the most enduring purposes of memorials—described in Oklahoma—are to provide a place for grieving and for public recognition of the event that caused the suffering, helping survivors transform their present trauma into a more tolerable memory. For these purposes, Norman Foster's proposal of a descent to the depths of the site and into a silent space from which only sky is visible suggests a powerful experience, more conducive to reflection than climbing to a viewing platform many stories above ground, to survey the scene and the place on the ground where the towers once stood. The proposal by the team of Moller, Eisenman, Gwathmey, and Holl represents the opposite, a memorial that is a kind of mapping of the fallen bodies, freezing the moment of horror into a perpetual present, and thus casting a permanent shroud over the place.

The means of access to the memorial site is also central to the experience. Several of the proposals favor mediating access through a museum. In Libeskind's proposal, a hovering overhead museum is the access to the memorial site, which would be the vast underground area defined by the "bathtub walls" and shared by the PATH train rails. Other proposals would have visitors trudge through the showering overhead concourses before reaching spaces circumscribed by the footprints, presumably (although not yet explicitly) lined with shops and other commercial amenities. United Architects version of this scenario turns the footprints' memory into a kind of monumental lobby for the transportation hub, cultural facilities, and shops.

If we neglect these issues, we risk letting the spectacular quality of the design overwhelm the memorial, either by dispersing its location or by subsuming it within the concourses for the cultural facilities, or commercial and transportation spaces. Saving the memorial site from future oblivion is the most important decision facing the LMDC at this time.

—Susan Orner 
New York City

Thoughts about Lower Manhattan

On September 12, 2001, I began receiving phone calls from magazine and newspaper reporters asking what should be built on the World Trade Center site—replicate the towers, build taller, build smaller? My emotional response made it very difficult to imagine that the first question on reporters' minds had to do with the built form. I replied then and remain steadfast in believing that this is the least relevant question to be posed in the wake of this tragedy and yet, even today, the dominant coverage in the press focuses on alternative schemes for building form.

In those days following 9/11, I thought a great deal about the opportunity to create a forward-looking model for the planning of dense urban environments presented by this site being so closely watched by the entire world. Great districts within cities, truly sustainable because people want to live, learn, work, and play there generation after generation, have little to do with skyline imagery. They're founded on the way the mix and blend of uses has evolved to become a community at the pedestrian level. Where is the urgency to find, not skyline sculpture, but a methodology for planning urban settings that we're proud to display to the world?

Planning must start with commerce, the industries that generate a community's reason for being. If we assess the core nature of Lower Manhattan, we find the densest, richest assemblage of financial services and trading entities in the world, offering an unparalleled opportunity to bring the finest school of economics and finance together with the institutions that provide students, research, and ideas. This symbiotic relationship has developed around major universities where commerce and academia form an intense partnership resulting in the rich innovation that has made America the envy of the world. What incentive would attract such an institution? Because in its wake would come the diversity of people and uses that bring urban vitality and around-the-clock activity.

In today and tomorrow's livable communities, residential, retail, work, education, along with civic and spiritual uses will meet the ground, not the sky, offering spaces and places that foster rich human interaction, meaningful emotional experience, and the memorable settings in which we live out our lives. Let's focus for a time on the ground, developing the planning and economic environment that will attract a mix of uses to make a true community. Let the skyline emerge from that strategy.

—Ed Friedrich, FAIA
Gensler Architecture Design & Planning Worldwide
San Francisco

Corrections

In the February 2003 Issue, a credit for Oldcastle Glass, Cleveland, was misspelled (page 166). In the January 2003 Issue, on pages 181, 182, photo credit should have been given to Benjamin Segal.

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REBUILDING LOWER MANHATTAN

beskind and Think move forward in process to design WTC site

As we go to press, the vision of the site of Ground Zero has come to what more into focus as a selection of a winning team for the land-use plan for the site is imminent. At this time, a vision by the Lower Manhattan Development Corporation (LMDC) is rejected by early March. The LMDC and the Authority of New York and New Jersey selected two plans in February as finalists of the nine that were presented by architecture firms in December, 2002. By March 31, The scheme by beskind and the World Cultural Center plan by the Think Group led by Rafael Viñoly, FAIA, and Frederic Schwartz, AIA, were selected as finalists.

In February, beskind and the Think team were touting their designs based on the LMDC and the Port Authority. Roland Betts, the chair of the LMDC planning committee and a member of the LMDC board, said, “We are not saying that these plans are set in stone. The core idea of each plan will be preserved. Our goal is not to compromise but to make them better.”

Libeskind’s scheme calls for a 1,776-foot-tall tower with the “Gardens of the World” at the top. The latticework Think towers (above) have cultural components embedded within, while Libeskind’s tallest tower (left) has a garden at the top.

The governor weighs in

The New York Times reported on February 20 that New York Governor George Pataki had expressed support for the Libeskind design. Mayor Michael Bloomberg also expressed support for the Libeskind plan. Governor Pataki’s support would carry a lot of weight in the decision process because he jointly controls the Port Authority of New York and New Jersey with Governor James McGreevey of New Jersey.

In February, developer Larry Silverstein, who holds the lease for the WTC office space, did not seem too keen on either of the two finalists. He told the New York Post, “I don’t understand these latticework towers [by Think], how they would be utilized. The evacuation requirements would be massive.”

The Post also reported that family members of victims of the 9/11 attack were outraged at news that the Port Authority plans to construct a bus terminal in the “bathtub” near Liberty Street, with a garage entrance “under one of the tower footprints.”

The finalist teams have been modifying their designs to accommodate a number of underground uses, such as retail, parking, and a transit hub, while at the same time leaving the footprints of the WTC towers untouched and saving a space for a memorial.

In terms of overall square footage, the finalists both have accommodated more than two times the retail space in their plans than before 9/11 (see plans, next page). Think has proposed about 8.6 million square feet of office space in eight buildings, and Libeskind included 7.6 million square feet of offices in five buildings.

The transportation mix

In February, New York’s Governor Pataki described plans for a total of...
REBUILDING LOWER MANHATTAN

OFF THE RECORD

New York City’s Columbia University has hired Renzo Piano Building Workshop and Skidmore, Owings & Merrill to develop a master plan, considering whether the school should expand on its existing campus or develop satellite campuses.

Submissions for the AIA’s Young Architects Forum Leadership Awards are due March 19. Visit www.aia.org/institute/yaf for more information.

A competition has been announced for design reuse for the High Line elevated rail structure in New York City. Registration is due April 25 and entries are due May 16. Visit www.thehighline.org for information.


The Art Institute of Chicago has announced that it is scaling back its planned addition by Renzo Piano. Originally proposed as a 290,000-square-foot structure with 75,000 square feet of gallery space, the addition is now planned for 220,000 total square feet and 60,000 square feet of galleries.

The Aakland Museum of Art at the University of North Carolina at Chapel Hill has named New York-based Polshek Partnership to design an expansion that will double its current size with galleries and teaching space.

The San Francisco Museum of Modern Art will present an exhibition entitled ROI / design series 1, featuring the work of New York architect Lindy Roy (Record, December 2002, page 73), April 19 through August 24.

(continued from previous page) $5 billion for Lower Manhattan transportation improvements that could take at least a decade to construct. This would include $1.7 to $2 billion for a transportation portal hub itself for PATH commuter trains, $750 million for a multilevel transit center at Fulton Street that would serve nine subway lines and be connected to the proposed PATH terminal, and $400 million for a new South Ferry subway station.

Other preliminary proposals include rail links to the airports, bus facilities, and a series of new ferry terminals.

Other downtown work

The LMDC has retained firms to develop a plan to enhance Fulton Street, a major east-west street from the WTC site to the East River. Gensler will provide retail and arts/entertainment-planning consulting services for the Fulton Street plan, and Robert A.M. Stern Architects, retained in November 2002 as in-house urban design consultants to the LMDC, will develop an urban design concept plan for Fulton Street. The New York firm Smith-Miller + Hawkinson, also retained in November 2002 by the LMDC, will provide an urban design and planning study of the Wall Street area. On the team with Smith-Miller + Hawkinson are Re Lerner, D.I.R.T. Studio, and Sam Schwartz Company for traffic and transportation design.

John E. Czarnecki, Assoc. AIA

R.Dot recommends new retail corridors in Lower Manhattan

Rebuild Downtown Our Town (R.Dot), a community advocacy group for Lower Manhattan, has issued a position paper entitled “Retail: Strategies for Revitalizing Lower Manhattan.” The paper recommends several specific strategies for attracting retail to the neighborhoods of Lower Manhattan as a stimulus to future growth.

“Normally, retail is market-driven,” says Beverly Willis, FAIA, cochair of R.Dot. “And September 11 created catastrophic nonmarket in the area. But even before that, there was insufficient retail to support the community and then 750 stores were destroyed.”

R.Dot undertook a study of current downtown neighborhoods in order to identify shopping districts, retail destinations, and retail corridors. In addition to these, the report suggests recommended new retail corridors along streets in underserved neighborhoods. The paper’s specific recommendations include offering incentives to major retailers that would serve as destinations, increasing foot traffic in the neighborhood, and allowing smaller stores to grow organically. The report also advocates limiting retail in any new development on the site of the World Trade Center, in order to avoid siphoning retail traffic away from surrounding neighborhoods. The group suggests creating pedestrian-only shopping zones in the historic district, creating another catalyst for the return of retail to the damaged neighborhood. R.Dot presented its findings to the Lower Manhattan Development Corporation, the Port Authority of New York and New Jersey, as well as to the state and city of New York. Kevin Lerner
SLENDER SIGHTLINES

Architect: McAlpine Tankersley Architecture  
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Viñoly wins Kennedy Center project

The Kennedy Center for the Performing Arts has chosen Rafael Viñoly to design its expansion, which will be located on an 8-acre corridor immediately east of the Washington, D.C., complex. The project requires building a deck over the Rock Creek Parkway and Potomac Freeway. Currently, these roads isolate the Edward Durrell Stone–designed building from the rest of the city.

The announcement follows a September authorization by Congress to build this plaza. Terminating at 23rd Street NW, the $400 million deck will improve pedestrian and local traffic connections to the performing arts institution. The Kennedy Center selected Viñoly from a list of international architects.

Viñoly’s design for the plaza promotes further integration into the urban fabric. A drive and walkway surround a wedge-shaped, cascading fountain. The water element ends in a circular pool that references the Reflecting Pool in front of the Lincoln Memorial. Viñoly says that the footpath will wrap around the Kennedy Center in an oval, to echo the city’s other memorial sites.

Also proposed is a westward extension of the plaza to create a viewing platform over the Potomac River. Viñoly calls the strategy “a way of going onto the water without touching the water, which is quite moving.” Moreover, it will allow direct pedestrian connections to the waterfront and Lincoln Memorial.

Cleveland Museum unveiled by Viñoly

New York architect Rafael Viñoly is busy with a number of notable commissions, including a $225 million addition to the Cleveland Museum of Art. In mid-February, Viñoly showed his design for the project, which has a targeted ground breaking in 2004, with completion in 2009.

The project, Viñoly’s largest museum commission to date and the largest cultural project in Cleveland’s history, will include demolition of nearly half of the museum’s five-building complex for the new construction. Two new curving wings will be built to the east and west of a 1916 building. Additions built in 1958 and 1983 will be removed for better circulation through the complex.

A cantilevered glass canopy will lead to a 38,000-square-foot courtyard that will have large-scale sculpture. The addition provides close to 40,000 square feet of new gallery space—a 42 percent increase from the existing museum.

A 1971 addition by Marcel Breuer will be renovated as a new Life-Long Learning Center, providing a hands-on educational experience for families.

Viñoly’s design awaits museum board approval. The project was initiated with a 1999 facilities master plan by New York firm Cooper, Robertson & Partners. J.E.C.
Most people don’t see the forest for the trees when it comes to new construction. Indeed, everyone is so focused on finishing their own part that responsibility for the performance of the whole system gets lost. That’s exactly why we developed knowledge-based integration. It’s an approach designed to add value and reduce costs throughout the life of a building. And it places all that responsibility squarely on the only shoulders strong enough to handle it. Our own.
RTKL wins competition for Chinese Museum of Film in Beijing

RTKL has won an international competition to design the Chinese Museum of Film in Beijing. The project is part of the city’s cultural improvements program that coincides with the 2008 Summer Olympics in Beijing. Ground breaking was held in November 2002 for the museum, which is the first to be dedicated to the history of Chinese filmmakers.

The competition, organized by the Beijing Radio, Film and Television Bureau, had a jury process that involved more than 40 people working in the Chinese film industry. RTKL’s design was selected among seven finalists from China, France, Germany, Australia, and the United States.

The $40.2 million museum, expected to open in 2005 to coincide with the official centennial of Chinese cinema, will include four floors of exhibition halls for film history, film technology, and exhibitions. A theater component will include an IMAX theater, a 400-seat theater, three review halls, and a multifunctional hall. The 371,220-square-foot building will also have collection space and research offices. Projected images and built-in lights will illuminate and animate glass walls. A thin membrane of perforated black metal mesh with plants growing behind it will clad the building’s exterior.

“The site-specific design takes its cues from a cinema icon, the production clapboard,” said Richard Yuen, AIA, a vice president with RTKL and principal in charge on this project. “The ‘acting’ part of the clapboard is represented by giant translucent glass walls angled toward to main public access, while the museum itself is a simple black box.” J.E.C.

Koolhaas designs 80-story skyscraper for Beijing

Construction will soon begin in Beijing on the first skyscraper designed by The Office for Metropolitan Architecture (OMA), led by Rem Koolhaas. The building, a 5.5-million-square-foot headquarters for China Central Television (CCTV), will be among the first of approximately 300 new towers to be built in Beijing’s new central business district.

Koolhaas won the commission in August 2002 through a competition with 10 other firms, among them Kohn Pedersen Fox, Skidmore, Owings & Merrill, and Dominique Perrault. Koolhaas was one of three finalists, including Toyo Ito in collaboration with FOJ of Beijing, and the East China Architecture & Design Institute. A contract was signed in December.

The 750-foot tower will be taller than any extant building in Beijing, though several other buildings currently in planning stages would far exceed its height. A statement by OMA describes the building as “not a traditional tower, but a continuous loop of horizontal and vertical sections that establish an urban site rather than point to the sky. The irregular grid on the building’s face is an expression of the forces traveling throughout the structure.” A second, shorter building will house a hotel and a theater.

The $600 million project is expected to be completed by 2008, when Beijing hosts the Summer Olympics. K.L. and J.E.C.
CHA accused of steering poor people to poor neighborhoods

While the face of public housing in Chicago is taking a dramatic turn, with demolished towers being replaced by low-rise neighborhoods, the displaced residents are not necessarily moving to better or more equitable situations. In late January, a lawsuit was filed against the Chicago Housing Authority (CHA) charging the agency with steering public housing residents to poor, high-crime neighborhoods that are predominantly black.

The National Center on Poverty Law, with the Chicago Lawyers’ Committee for Civil Rights Under Law and Business, and Professional People for the Public Interest, filed the lawsuit on behalf of thousands of public housing residents. The CHA is accused of not providing adequate relocation service to those displaced by demolition, which would be in violation of the 1964 Civil Rights Act and the Fair Housing Act.

A study by the National Center on Poverty Law tracked more than 3,200 families relocated from public housing from 1995 to 2002 with certificates or Section 8 vouchers. The study found that at least half of the families moved to areas with high concentrations of poverty, and 83 percent of the families relocated to neighborhoods that were at least 90 percent black.

The groups that filed the lawsuit are recommending the CHA begin a program of counseling and relocation advice.

In a statement, the CHA said, “We concur that improvements should continue to the system and elements of our relocation process. However, we feel that the best way to make these changes is not through a lawsuit.”

In 2003 alone, 600 families will be involuntarily relocated with Section 8 vouchers. J.E.C.

Task force recommends stringent codes for N.Y.C. buildings

The World Trade Center Building Code Task Force of the New York City Buildings Department released a report of findings and recommendations in mid-February as a result of the 9/11 World Trade Center disaster. Patricia J. Lancaster, commissioner of the buildings department, released a total of 21 recommendations, 15 of which would have to be enacted as law, either in the zoning resolution, fire code, or building code. Visit www.nyc.gov/html/doh/pdf/wtcbctf.pdf for the full report.

The 21 recommendations include a call for the end of the use of open-web bar trusses in buildings over 75 feet in height, pending the development of an appropriate standard by the National Institute of Standards and Technology. One of the recommendations that will have the largest impact on owners of existing buildings is a call for full sprinkler systems to be installed in all existing commercial buildings more than 100 feet tall within 15 years.

The study recommends building stairwells to be larger and more numerous, with enclosures composed of more impact-resistant materials than drywall alone, such as adding a layer of sheet-metal ceramic to drywall.

The city hopes to require air intakes in all new buildings to be located at least 20 feet above ground and away from exhaust discharges and off-street loading areas. The study encourages the use of available impact-resistant materials in the construction of stair and elevator-shaft enclosures.

Building owners would be asked to develop plans for fully evacuating office buildings that go above and beyond the floor-by-floor evacuation plans required for fire safety. One recommendation calls for a uniform information card listing a structure’s vital features to be available for firefighters and safety personnel. J.E.C.
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Record News

25-year award honors Design Research building

The Design Research headquarters building, completed in 1969 in Cambridge, Massachusetts, has won the American Institute of Architects (AIA) 25 Year Award. This award recognizes architecture of enduring significance completed 25 to 35 years ago. The firm that designed the building, BTA (formerly Benjamin Thompson & Associates), will be honored at the American Architectural Foundation’s Accent on Architecture gala on March 8 at the National Building Museum in Washington, D.C.

Situated on Harvard Square, the building stands out from its redbrick neighbors with its tempered glass walls and stepped concrete floor plates. Benjamin Thompson started Design Research as a showcase for well-designed interior fittings and furnishings. BTA abandoned the concept in the 1970s, and the building has served as the East Coast flagship store for furniture retailer Crate & Barrel since 1975. K.L.

Five receive AIA’s Young Architects Award

Five young practitioners are being honored by the American Institute of Architects (AIA) with the 2003 Young Architects Award. The award is given to those in the early stages of their careers who have demonstrated leadership in the profession.

The winners include Paul Woolford, AIA, a senior vice president with HOK Architecture, based in Atlanta, who was the 2001 chair of the AIA Young Architects Forum; Lisa M. Chronister, AIA, a project manager with LWPG Architects, Oklahoma City, who led a coalition of advocates to help save the Gold Dome Bank in that city; Paul Neuhaus, AIA, a design/project manager with The Leonard Parker Associates, Minneapolis, who has contributed community building with his design work for a number of public structures; Paul D. Mankins, AIA, an associate principal with Herbert Lewis Kruse Blunck Architecture, Des Moines, who has served as the president of AIA Iowa; and Ronald Todd Ray, AIA, principal of Studio2 Architecture in Washington, D.C., who volunteers with the Washington Architectural Foundation Communal Design Services. J.E.C.

The winners are (from left) Paul Woolford, AIA, Lisa M. Chronister, AIA, Paul Neuhaus, AIA, Paul D. Mankins, AIA, and Ronald Todd Ray, AIA.
Record News

A CyraX 2500 scanner scans the Statue of Liberty prior to 9/11.

National Park Services' Historic American Buildings Survey to map the Statue of Liberty (scanning at Liberty Island pictured, left). That project is ongoing. Park Service engineers have also scanned the surface of Gutzon Borglum's original 1:12 scale model of Mount Rushmore.

According to Hill, laser scanners can “reverse engineer” buildings like the Capitol, creating as-built drawings accurate within one-quarter of an inch. Reflections from a pulsing laser are mapped to create a three-dimensional point cloud, which is then translated into two-dimensional drawings. The method is more accurate than reverse-engineering strategies such as photogrammetry, especially for nonorthogonal structures like statuary.

Although replicas are only as deep and potentially inauthentic, cultural importance of a landmark like the Capitol would probably ensure its recreation. “I think the would be some value in just having some symbol there, even if it were a replica,” says Dwight Young, a spokesperson for the National Trust for Historic Preservation. D.S.

Key U.S. structures scanned, documented

Just days after the attacks of September 11, Architect of the Capitol Alan Hartman, FAIA, commissioned crew to laser-scan the U.S. Capitol building in Washington, D.C. Scanning produces a three-dimensional map of the Capitol so that, in case of destruction, the building can be restored or rebuilt.

The Capitol project, recently completed, represents only the third time in which a national icon has been subject to three-dimensional mapping, says Glenn Hill, an associate professor of architecture and director of visualization at Texas Tech University, in Lubbock. Hill, with professors Elizabeth Louden and John White, is collaborating with the

New York City pushing plans for rail yards

While international focus is on the future of Ground Zero, New York City officials unveiled a plan in February for ambitious redevelopment on the west side of the city between Eighth Avenue and the Hudson River, from 28th to 42nd Street.

Named the Hudson Yards Master Plan, the proposal has elements that will be key in New York’s bid for the 2012 Summer Olympics. The plan includes a $1.5 billion extension of the number 7 subway from Times Square to 34th Street, as well as a $1.2 billion football stadium for the New York Jets built over a dock on top of the West Side rail yards. A commercial corridor between 30th and 34th Streets, from Madison Square Garden to the river, is planned, in addition to office towers along 11th Avenue, a mix of residential buildings and hotels along 10th Avenue, and ferry terminals at 34th and 38th Streets. A call for $1 billion in public funds to expand the convention center to approximately 1.5 million square feet is in the plan. The conversion of the Farley Post Office into a new Penn Station will link the area to the rest of the city and region. J.E.C.
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Ann Beha designs renovation of 75-year-old Masonic Temple for the Portland Art Museum

In mid-February, the Portland Art Museum, in Portland, Oregon, presented the city’s Landmarks Commission with its plans to renovate the historic North Wing. Boston-based Ann Beha Architects designed the adaptive reuse for the building, a former Masonic Temple. The museum is currently raising funds for the $25 million project; ground breaking is scheduled for this summer, with completion due in August 2004.

In addition to restoring the Masonic Temple’s eclectically styled ballrooms, Beha’s design for the North Wing (right) includes three major interventions that, Beha says, pursue a vocabulary of transparency and public accessibility.

Alterations include replacing the facade behind the main entrance’s upper-story colonnade with glass to bring daylight into the foyer.

Two translucent glass monitors will house both the building’s rooftop mechanical systems and an overlook. The so-called “penthouses” give the appearance of skylights during the day, and they will glow at night. Moreover, a folded curtain wall of translucent and transparent glass will replace a vertical slice of the building’s south elevation. This “pleat” will mark the southern entrance and visually connect the North Wing and the museum’s main three-wing complex, designed by Pietro Belluschi.

Built in 1927 and purchased by the Portland Art Museum in 1969, the Masonic Temple is currently used as an exhibition gallery and for office and conference spaces. The pending redesign will add 27,000 square feet of new gallery space on six levels and will include a new location for the museum’s library. It will also connect the North Wing to the main building via an underground gallery corridor.

Bacha was responsible for two previous redesigns of the museum’s Belluschi building, in 1995 and 2000. D.S.
honorary AIA members The AIA will bestow honorary membership on eight people: 2003 AIA National Convention keynote speaker "Boston by Foot" founder and historian "Polly" Flansburgh; structural engineer Jon Magnusson; National Trust for Historic Preservation president Richard Moe; Terrance Flynn, ABNA America Bank; AIA Arizona executive director Tina Gobbel; photographer Marvin Rand; Crystal Cathedral founder Dr. Robert H. Schuller; and Dr. Tallman Trask III, university administrator active in major academic building and development projects.

SOM to design new NATO headquarters The London office of SOM (Skidmore, Owings & Merril) has designed a new NATO headquarters for the North Atlantic Treaty Organization (NATO). From an initial pool of 64 firms, 21 competed for the project. Swanke Hayden Connell and Koetter Kim & Associates placed second and third, respectively.

SOM’s design for the 172,000-square-foot headquarters is a series of four interconnected low-rise blocks, each with an undulating roof. The building will rise on a 99-acre site opposite the existing headquarters. Although construction costs are not yet determined, NATO officials expect the design to be finalized in 2005, with construction to be completed in 2010.

Maya Lin withdraws sculpture When constructed next year, Portland’s new North Park Square will be missing a Playground. Designer Maya Lin recently rescinded her sculpture of that name from the $2 million park project due to disagreements with park designer Herbert Dreiseitl. Playground, a field of rubber hollies, would have measured 40 feet by 60 feet.

Dreiseitl claimed the sculpture was too large for the park, a one-square-block site in Portland’s Pearl District.

Channel glass cladding on the Shaw.

Construction begins on Baton Rouge arts center Construction is under way on the Shaw Center for the Arts, a $50 million multiuse facility designed by Schwartz/Silver Architects of Boston, with New Orleans–based Eskew + Dumez + Ripple and the Baton Rouge firm of Jerry M. Campbell & Associates. The 125,500-square-foot building will incorporate the Louisiana State University Museum of Art, a performance arts theater, and rehearsal and studio facilities, which will open in February 2005.

Schwartz/Silver’s design adaptively reuses the 1930s-era Auto Hotel parking garage and other buildings on the site. News Briefs by David Sokol

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New & Upcoming Exhibitions

Art of Structural Design: A Swiss Legacy
Princeton, N.J.
March 8–June 15, 2003
In New York’s George Washington Bridge to Princeton’s new Bunker Hill Bridge, some of this country’s most acclaimed structures are the products of Swiss design. This exhibition celebrates the contributions of a group of highly influential Swiss engineers widely recognized as the most innovative structural designers of the 20th century. At the Princeton University Museum. Call 609/258-3788 or visit www.princetonartmuseum.org for information.

Fantastic
March 8, 2003–Spring 2004
Fantastic, MASS MoCA showcases five contemporary artists—Miguel Calderón, Gregory Johnson, Alicia Framis, Nils Norman, and artist collective Temporary Services—who embrace a world of hallucinatory, visionary, utopian, and otherwise “fantastic” ideas. At the Massachusetts Museum of Contemporary Art. Call 413/662-1111 or visit www.massmoca.org.

McMakin:
More Meant as Adornment
Los Angeles
March 23–June 29, 2003
McMakin became a strong presence in the design scene in 1987, when he founded the Domestic furniture company in Los Angeles. The exhibition is a mid-career survey of the Seattle-based artist, tracing the development of his career in art and design and his unique manipulations of the traditional definitions of furniture and sculpture. At The Museum of Contemporary Art. Call 213/621-2766 or visit www.MOCA-LA.org.

Our Time: 2002 GSA Design Awards
Washington, D.C.
March 27–August 10, 2003
Our Time features models, drawings, and photos of a striking series of federal courthouses, engineering achievements, graphic design, and public artwork representing the winning entries in last year’s General Services Administration (GSA) Design Awards. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

Picture This:
Windows on the American Home
Washington, D.C.
March 29–August 11, 2003
Picture This presents windows through multiple perspectives and offers an entertaining two-century history of a building element that opens a view into the changing nature of American domestic life. At the National Building Museum. Call 202/272-2448 or visit www.nbm.org.

ROY/design series 1
San Francisco
April 19–August 24, 2003
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Dates & Events

by South African–born architect Lindy Roy will
launch the first of an ongoing series devoted to
showcasing the work of contemporary designers
in architecture, graphic design, and industrial
design. At the San Francisco Museum of
Modern Art. Call 415/357-4000 or visit

Architecture and Design Permanent
Collection
San Francisco
April 19, 2003–ongoing

This exhibition will inaugurate a newly installed,
ongoing presentation of the museum’s architec-
ture and design collection. Featuring some 100
works of architecture, graphic design, and indus-
trial design from a permanent collection of more
than 4,000 objects, the survey will include well-
known classics by up-and-coming designers
and will highlight special strengths of the col-
collection, including experimental architecture and
digital design. At the San Francisco Museum of
Modern Art. Call 415/357-4000 or visit

Harlem Lost and Found
New York City
This exhibition traces the history of Harlem from
pre-Revolutionary times to World War I. Working
with consulting curator Michael Henry Adams,
author of the book Harlem Lost and Found: A
Architectural and Social History, 1765–1915,
the museum has drawn from its rich collection
to add a unique dimension to the story of the
neighborhood’s architectural richness. At the
Museum of the City of New York. Call 212/534-
1672 or visit www.mcny.org.

Garofalo Architects:
Between the Museum and the City
Chicago
May–October 2003
An architecturally distinctive, pavilionlike struc-
ture designed by architect Doug Garofalo will be the
first in a series of MCA commissions for emerging
and mid-career architects. At the Museum of
Contemporary Art. Call 312/280-2660 or visit
www.mcachicago.org.

Ongoing Exhibitions

Big & Green: Toward Sustainable
Architecture in the 21st Century
Washington, D.C.
January 17–June 22, 2003
Through in-depth profiles of approximately
50 contemporary green projects worldwide, along
with a broad examination of global ecological and
economic forces, this exhibition demonstrates
the transformative powers of sustainable design.
A joint exhibition with the National Building Museum. For more informa-
tion, call 202/272-2448 or visit www.nbm.org.

Intricacy
Philadelphia
January 18–April 6, 2003
Guest curated by the architect and theorist Ger-
Lynn, this exhibition includes works by archi-
designers, and artists that reflect an emerging
sensibility that Lynn has labeled “intricacy.” At
the Institute of Contemporary Art at the University
of Pennsylvania. Call 215/898-5911 or visit

Trespassing:
Houses x Artists
Los Angeles
January 29–April 13, 2003;
May 7–July 27, 2003
The two-part exhibition, co-organized by the
MAK Center for Art and Architecture and Belle
Art Museum, highlights nine new architecture
projects developed in a joint effort between
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Center for Art and Architecture. Call 323/651-
1510 or visit www.makcenter.org.

Do It Yourself: Home Improvement
in 20th-Century America
Washington, D.C.
October 19, 2002–August 10, 2003
This show is an examination of modern American
housing and its products, with cultural implications
regarding gender roles and leisure time in the
domestic sphere. At the National Building Museum.
Call 202/272-2448 or visit www.nbm.org.

David Adler, Architect:
The Elements of Style
Chicago
December 6, 2002–May 18, 2003
This will be the first major retrospective of the
architect David Adler’s work, featuring approxi-
mately 100 pieces, including plans, drawings,
photos, models, and decorative arts. At the Art
Institute of Chicago. Call 312/443-3600 or visit
www.artic.edu.

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GlobalShop 2003
Chicago
March 16–18, 2003
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keters seek out resources and concepts to
define store and brand identity. At the
McCormick Place Convention Center. Call
866/933-1001 or visit www.vnuespo.com.

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March 24–27, 2003
This event will feature the International Tile and
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Exposition, and the Vision Conference Program.
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May 22–24, 2003
The Montreal International Interior Design Show
(SIDIM) will celebrate its fifteenth anniversary. Over
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designers will present their furniture and designs
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applications. At Place Bonaventure. For informat-
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Competitions and Awards
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Lauren Crahan, one of the four members of the Brooklyn firm Freecell, doesn’t like to assign a date to the group’s founding. As she detailed the connections between various members, her partner Troy Ostrander (second from right) put marker to paper and diagrammed a sort of timeline with tributaries representing himself, Lauren, and third founding partner, John Hartmann (left), swooping in to join the privately channel and then branching off again. The diagram takes in the various souls they attended (Hartmann alone went to three), and the various work arrangements they’ve found themselves in since then. The latest includes the addition of a fourth partner, Corey Yurkovitch (right).

Freecell’s present form defies easy description as much as its history. The firm’s product design was featured in RECORD last month, but all four members were trained as architects and continue to pursue projects like those featured on these pages.

“It’s not that we don’t want to do architecture,” Crahan says. “It’s that we want to put ourselves in a position that allows us to do what we want to do. Maybe we’ll do a traditional architectural project, and the next day cut out a prototype for a piece of furniture or design a website. Our drive...
(continued from previous page) is to not feel trapped within a role that we've already defined for ourselves.

Ostrander adds: "We're trying to avoid the typical office: the day-to-day administration, the endless CAD, the 10-hour day."

The four share a studio in a converted warehouse in Brooklyn's Dumbo neighborhood, near the waterfront. Their space reflects their do-it-yourself attitude: They are constantly tinkering with the office (the recent addition of the studio next door has doubled their work space and given rise to projects such as new bookshelves and a convenient pull-out tray for the coffee machine), and half of the office is given over to the workshop where they build most of their products, their gallery installations, and components of their architectural projects. The workshop has served variously as a room for painting, a greenhouse, and a wood shop.

All of this variety keeps the quartet from getting bored and constantly pushes their work in new directions. They are currently courting a client for what would be their first freestanding building, but aside from designing actual buildings, Freecell's destination as a design firm remains an enigma.

"Our working process is just to try to figure out what next step will lead to whatever the big picture is," Grahan says. "What is the big picture? I don't know."

Ostrander suggests one answer: "It's fame, isn't it?" Kevin Lerner

Go to architecturalrecord.com/archrecord2 to see more of Freecell's work, including their past projects and their furniture and product designs.

Horodniceanu Residence,
New York, 2003
To make the most of limited space, Freecell designed a Murphy bed that disappears behind a pivoting section of an attached couch. Curved shelving smooths out an angular entry hall, opening up to provide access to storage behind.

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Young architects in the community

Working for a private firm at the production of high-end hotels, Jamie Blosser found herself “discouraged by the overall profit motive” and fulfilled by her profession. So, when a friend mentioned an ad she’d seen for the Frederick P. Rose Architectural Fellowship, Blosser, 33, decided to investigate. Begun in 1999 by Enterprise Foundation, housing and community development organization, the fellowship offers three-year partnerships between young architects and nonprofit organizations in order to encourage good design in low-income communities.

Blosser scrambled to complete the application. Three years later, she is working with the Ohkay Owingeh Housing Authority on tribal lands in San Juan Pueblo, New Mexico, constructing mixed-use housing that blends contemporary architecture with the traditional settlement planning of the Pueblo people.

“The fellowship has given me the tools I need to realize how the creative side of what I do can positively impact the civic side,” says Blosser.

This sort of realization, according to fellowship director Stephen Goldsmith, is exactly what the program hopes to facilitate.

“Frederick Rose remembered young architects slaving away in back rooms of big firms, with no voice to express their values,” Goldsmith says. “He wanted to bring in young architects who care about community development for underserved communities—and, in the process, create leaders.”

Some would-be leaders, of course, require a bit of incentive—particularly those staggering under the weight of student loans. With this in mind, the fellowship, which issued a new call for applicants in January, offers a $40,000 annual stipend and a network of mentors, including an assigned IDP supervisor to help fellows who have yet to meet their licensure requirements. Enterprise also provides a list of potential partners. The program currently selects four fellows each year.

“We want to make it attractive for highly qualified graduates who may be nervous about an alternative approach to their apprenticeship years,” says Enterprise Foundation C.E.O. F. Barton Harvey.

Community development necessitates a passion not everyone possesses. But for those who are fascinated by architecture’s connection to broader ideas of city planning and policy, the fellowship offers an opportunity for immersion in community-based design projects years earlier than you would likely get such a chance at a firm. But be warned: It’s easy to get hooked.

“I’m not interested in working in a traditional private practice anytime soon,” Blosser says. “It’s too exciting to be able to get the ball rolling and make decisions myself.”

Claudia La Rocco

Go to architecturalrecord.com/archrecord2 for more on the fellowship, including stories from other participants and a link to the application form.

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Where tax and labor laws are concerned, handle your independent contractors with care

By Alan Joch

practice matters

The accompanying ranges in work load present a constant challenge to anyone who is responsible for staffing a firm. Overfill your full-time workforce during boom times, and when work slows you may find yourself burdened with salaries, overtime, and eventually severance payments, which gobble up profits. You run too lean, you risk burning your talent with too much overhead and deadline pressure when the times return.

For a growing number of architectural firms, the balm for economic uncertainty is a hiring strategy that relies on a manageable core of full-time employees with an easily regulated team of freelancers, more formally known as independent contractors. Their hired-gun status means they hang around only as long as they need them, which makes it easier for firms to achieve optimal fee levels. "The architectural industry lends itself to this strategy, because it's either feast or famine," says David C. McFadden, C.E.O. of consulting for Architects, a placement service for independent architects headquartered in New York City. "For the architects, who is an independent is attractive because it gives them exposure to a variety of projects."

Unfortunately, relying on ICs comes with its own bundle of risks. IRS presents a labyrinth of rules, some open to interpretation.

Alan Joch is a business writer who lives in Francetown, N.H.

"The IRS crack down

Some observers have another explanation besides the economy for why the use of ICs declined in the last decade: fear of the IRS. "The IRS was cracking down on companies that used independent contractors throughout the 1990s," says Lawrence Lorber, partner and labor employment lawyer in the Washington, D.C., office of Proskauer Rose. "Because with independent contractors there is no withholding of taxes, and that has serious tax implications for the IRS." McFadden, of Consulting for Architects, has an even more blunt view: "The IRS gave state, city, and federal agencies marching orders to go out and claim a lot of money."
Practice Matters

The crackdown culminated when software giant Microsoft battled the government and a group of former ICs over its hiring practices. Microsoft relied on a cadre of freelance programmers and marketing professionals who received wages for their work but were left out of the company's benefits pool.

THE MICROSOFT CASE STRUCK FEAR IN THE HR DEPARTMENTS OF COMPANIES WHO CONSIDERED BENDING THE RULES.

Freelancers paid their own quarterly income taxes, and Microsoft paid no Social Security taxes for these workers. Freelancers even signed contracts that spelled out their independent status.

But in practice, these "freelancers" looked and acted like full-time Microsoft employees, with assigned offices and equipment on the Microsoft campus, and schedules that had them working side by side with the regulars. In 1989 the IRS went after Microsoft, which eventually paid taxes to the government and back pay for overtime work to some of the "misclassified" employees. The company then made some of these workers permanent employers. Others could continue only if they joined an employment agency that placed temps and would pay the required taxes.

Later, part of the original band of freelancers sued the company for retroactive benefits, including participation in its retirement and stock plans. Microsoft was eventually forced to compensate the workers. If the government's goal in going after Microsoft was to strike fear in the HR departments of smaller companies who considered bending the rules, it worked. Lorber says the Vizzaino ruling hovers over companies across all industries that hire ICs.

The Miller Hull Partnership, Seattle, is one design firm that finds freelancers useful to supplement its permanent staff of 46 people. "We now have one guy who's helping build a model who has been here a couple of months," says Stacy Rowland, accounts manager. "We also have a former employee who left to start a firm, and we hired that firm as a consultant." She says the use of ICs is constantly in flux at Miller Hull. "We can go for a year without having one, then if a big project on a fast schedule comes in, we may hire several."

But in good times or bad, Rowland's company doesn't hire ICs cavalierly. The laws surrounding independent contractors "can be pretty tight," she says. "The best arrangement is to contract with a guy who owns his own firm and works from that address. He submits invoices and gets a 1099 [a year-end tax statement for independents], doesn't fill out a time sheet, and works fewer than 30 hours a week."

That's an attractive profile because it addresses the key criteria the IRS uses to differentiate ICs from full-timers. Two basic types of nonpermanent employees pertain to the architecture industry. First, there are independent contractors who provide a service based on information the client presents as to what work will be performed. The service provider determines how the work gets done (the method) and provides the means (the tools and resources) to completing the task. These workers are responsible for paying their own quarterly estimated income taxes and typically receive 1099-MISC income summaries, rather than W-2 wage forms, at the end of the year to file with their annual tax return. Common-law employees are workers who may or may not be labeled
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as full-time employees, but the methods and means for performing their services are governed by the client. This includes directives on when and where to do the work, the tools and equipment the worker will use, who will provide supplies and ancillary services, and in what sequence work leading up to the final product must flow. The government also considers whether the workers perform their service on site and in concert with regular employees, as in the Microsoft case. Employers of these types of workers are responsible for withholding and paying income, Social Security, and Medicare taxes.

McFadden believes employers sometimes get into tax trouble because some of these rules are open-ended. “The standards may be interpreted in different ways at the state, city, and federal level,” he says.

To clarify employment relationships, Rowland routinely requires ICs to sign a contract that spells out their independent status, including the fact that her company won’t withhold or pay income taxes. Some companies require ICs to provide a trove of additional paperwork. This documentation includes business cards, invoice forms, copies of professional licenses, and 1099-MISC forms from previous years, all of which can bolster an employer’s case if it is charged with misclassifying employees. However, no amount of contracts and paperwork is enough in itself to protect a company if its freelancers don’t meet the methods and means criteria. “With independent contractors, the rule of thumb is whether how they produce [the final work] is up to them, as long as the result is consistent with the employer’s standards,” he says. “If part of the deal is that they have to work between 9 and 5 and the employer is providing the computers to do the work, then I’d say the independent status may simply be a sham.”

He adds that employers can lawfully create a category of temporary full-time employees who are hired for a particular length of time but for whom the employer withholds taxes. The advantage: Since there’s no expectation of long-term employment, these workers may be painlessly let go if business declines, but their tax status remains clear while they’re on the job. “We have had a policy for years here where even temps working freelance are put through the payroll system,” says Carl J. Nolan, comptroller for Fox & Fowl Architects, New York City. “They may not have insurance and benefits, but we pay payroll taxes.”

Lorber says another increasingly popular option is to hire professionals through a temp agency rather than entering into direct agreements with the employee. The employer chooses services from the agency’s stable of providers, who in turn are direct employees of the agency. In return for a service fee the employer pays the agency, the latter takes responsibility for withholding and paying federal and local taxes and may offer additional employment benefits, such as health insurance.

As work slacks off in some markets, firms are becoming more cost-conscious. Project managers who are fortunate enough to need help in a hurry need to involve HR accounting, and legal advisers when making hires so that ICs are evaluated for more than just their design talents. Karen M. Johnston, AIA, principal of J.M. Calliff AIA & Partners, a 4-person design firm in Irvine, California, gives this sage advice: “We don’t contract with consultants unless they actually have their own businesses, can provide proof of a current city business license, provide contract services to other clients, and they do not physically work in our office. Anything less is too risky.”

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Do recent collaborations of design architects for the WTC site show that Gropius had it right?

Commentary

By Suzanne Stephens

The Meier, Eisenman, Gwathmey, and Holl team discusses its WTC-site scheme.

Reviewing the World Cultural Center: THINK's Shigeru Ban, Frederic Schwartz, Ken Smith, and Rafael Viñoly.

Four gorillas on a grid
The New York Times bringing together of well-known architects to work on a special issue of the Sunday magazine (September 8, 2002) devoted to the design of Lower Manhattan proved to be a dry run for collaborations for the LMDC competition. Richard Meier found that he, Eisenman, Gwathmey, and Holl could really communicate with each other (the first three also had known each other for about four decades). Even though Holl, the relative newcomer, describes his encounter with Eisenman at the first meeting as "really heated," he claims the process worked well.
Commentary

Gwathmey says both Holl and Eisenman showed they “could move past particular design predispositions to a healthy dialogue. Holl would come back and push the scheme, and improve it. Peter also took on the project as an abstract exercise. He was a great critic.”

For his part, Eisenman felt that “working with four gorillas involved negotiating and making trade-offs. Ultimately, it didn’t look like any of our projects.” Holl says that was the point—not to create a “signature” of any one architect, which he thought would be empty.

The group also decided that this scheme should be a piece of urbanism more than architecture, and designed the scheme to feature a large Memorial Plaza from which fingers of space extended to the water. The building forms resulted from lifting the grid up off the ground. The domination of the grid proved to be a signature piece, which is easy to understand:

Three’s a crowd

On the day of the presentation, it seemed like the THINK team must have been the most fructuous group—after all, they were presenting three schemes, as if they couldn’t agree on which one was best. Nevertheless, principals Frederic Schwartz, AIA, Rafael Viñoly, FAIA, Shigeru Ban, and landscape architect Ken Smith stick by their explanation that each proposal reflected different levels of public financial investment, from the least expensive “Sky Park” to the “Great Room” and, ultimately, the “World Cultural Center.” And now they have the last laugh, because the third scheme, with its two open lattice-work towers, is the one that caught the LMDC’s and the Port Authority’s fancy. The first two schemes were quickly sloughed off.

The collaboration of these architects was prompted by The New York Times’ effort, where Schwartz and Viñoly designed separate projects. Schwartz enlisted Shigeru Ban, who had worked on Westway right after he got out of Cooper Union. And Ban also had his own ad hoc partner in New York, Dean Maltz, join the team. Schwartz brought in Ken Smith, whom he knew from another competition collaboration.

William Morrish, an urban planner on the THINK team, argued for developing several schemes as a way to explore public space as a central theme. The LMDC encouraged THINK to proceed with three, even though it caused a kerfuffle among other teams discouraged from doing so. According to Ken Smith, he and Schwartz worked the most on the “Sky Park” scheme, while Ban came up with the “Great Room” proposal and a concept sketch for the “World Cultural Center,” which Viñoly then developed. Ban insists, “Everyone presented his own design or designs in the beginning. But the three schemes did not result from three architects’ different views.”

The troika of schemes almost caused THINK to sink on December 18. The audience, made up mostly of the media, was totally confused. Were these three parts of one scheme or three different schemes? Viñoly contends he didn’t have sufficient time to explain the difference at the presentation, but the Times continues to get it wrong: Herbert Muschamp’s February 8 essay on the two finalists illustrated THINK’s chosen scheme, the “World Cultural Center,” with a rendering of the Great Hall from the now-jettisoned second submission.

THINK says it had even more proposals. Schwartz (who Ban describes as acting in the role of the “mother to the two kids—Viñoly and me”) felt that ultimately the THINK team pulled off the ambitious effort because, he says, “We shared the same work ethic, even if we don’t have the same ideology.” And they shared a willingness to spend money. Viñoly estimates the cost was at least $500,000, nonreimbursable.

New kids on the block

The most overwhelmingly unusual proposal was the Brodbinding of architecture produced by United Architects, whose members came from London, Amsterdam, Los Angeles, and New York. A clear testament to the success of the competitive process is that the team is actually forming a permanent New York office, while keeping separate home offices.

Greg Lynn, of Greg Lynn FAIA, explains that all knew each other well. Indeed, in 2000, Lynn in Los Angeles, UN Studio (lead by Ben Verker and Caroline Bos) in Amsterdam, plus Reiser + Umemoto in New York had teamed up for the Downview Park competition in Toronto. Although the WTC-site team of Foreign Office, in London (Alejandro Zaera Polo and Farshid Moussavi), couldn’t do it then, they were available this time around.

Meanwhile, Kevin Kennon, who used to be with Kohn Pedersen Fox, had worked with Jesse Reis AIA, and Nanako Umemoto on a scheme for New York’s Eyebeam arts center competition in 2001 and contacted them.

United Architects also decided against “signature” buildings—both certainly came up with a thundering, signature statement. To do so, the group divided up areas in the first four weeks, with particular principals focusing on components such as the surface plaza (Umemoto); the at grade level (van Berkel and Foreign Office); the towers (Foreign Office and Kevin Kennon); the world...
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space (Greg Lynn and van Berkel); and the memorial space (Lynn, Reiser, and Peter Frankfurt, from the graphic design firm Imaginary Forces). In this effort, Caroline Bos and Kenyon often became the “glue” for the rest. But, says Reiser, “No one had to establish ground rules, and there were no different agendas.” Lynn adds, “The compressed time frame meant any pettiness got washed out.”

At one point the group wondered if it should come up with a plan that would conform more to what the LMDC and the development community might want, with freestanding towers placed east of Greenwich Street. The architects took a vote, “which was close,” reports Lynn. And that was that.

Gropius beyond the grave
Of all the teams, the SOM group proved to be the most perplexing in terms of the design and the final outcome. SOM’s presence both enabled the team formation and posed the problems, the first being that SOM had been hired by the developer, Larry Silverstein, who has the lease to the original World Trade Center. To be part of the competition, the firm had to suspend work for artists. “Artists bring an intangible aspect,” he says. “They observe things in a way that architects do not.” So he contacted Ilfigo Manglando-Ovaille, Rita McBride, Elyn Zimmerman (who knew David Childs), and Jessica Stockholder.

The architects involved were more familiar to SOM, for it has worked with architect Stan Allen, AIA, and landscape architect James Corner, of Field Operations, on a Fresh Kills, Staten Island, land-use plan, and with Michael Maltzan, AIA, of Los Angeles, during his previous association with Frank Gehry, AIA. The others, such as SANAA (whose principals are Kazuhiro Sejima and Ryue Nishizawa), in Tokyo, and Willems Neutelings and Michael Rieder, of Rotterdam, were known to Duffy, but not through working relationships.

It took time for such a large group of architects and artists, many of whom were strangers to each other, to become familiar with the others’ ideas and the issues. “It was chaotic, not smooth,” Zimmerman notes. “SOM kept it focused. But it was brave and crazy to get so many involved.”

An official at the LMDC told the New York Post that the team fought like “cats in a sack.” Duffy shrugs it off, saying, “A few too many architects hadn’t worked together.” Manglando-Ovaille has a more philosophical take: “At the beginning, when you are conceptualizing a direction and negotiating terms, there is an equal playing field. But when you start giving form to the idea, territories of expertise appear and the common language erupts into different ones. They collide, but conversely, this collision promotes a more complex understanding of what’s at stake.”

Complex understanding or not, the number of team members did diminish by the end when Neutelings Rieder quit the group.

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Commentary

objecting to the final arrangement of urban forms, a series of 940-foot-high bent towers densely covering the site. Another participant felt, “The ideas were deeply watered down between the second and the final review—inevitably so.”

Even with the diluted final version, the scheme was a loner. Duffy argues the buildings, erected on nine parcels, were bent so that light and air could penetrate between them. Skylights in the towers became the primary form of public space, to “challenge concepts of private and public,” says Duffy.

The final version did look strangely undeveloped and lacked appeal for the press and the public. SOM decided it needed to pick up the ball with Silverstein, and so withdrew right after Christmas (advising the other team members by e-mail). SOM says it expected the LMDC would allow the team to continue through the next phase (cost and traffic analyses), but the LMDC said if SOM was out, the whole team was out. “Some of the meetings with the LMDC and the Port Authority had been contentious,” says Allen. “They expected us to keep the footprints, but we felt these boundaries were artificial.”

Clearly the footprints are part of the competition’s realpolitik. Both finalists are keeping commercial development on the east part of the site, away from the footprints, with a land-use plan strikingly in accord with Beyer Blinder Belle’s. Some could say that as radical as SOM seemed, it was proposing a concept that too snugly fit in with Larry Silverstein’s original desire to have 60-story office towers totaling 11 million square feet on the site.

Another time, another place?

Certain lessons can be drawn for architects who want to collaborate. It helps if the architects know each other well from the outset, and better yet if they have worked together. Then they have to put aside individual differences, and allow debate to occur freely. And it is important, Holl remarks, “to articulate right away what you are trying to achieve.”

Many collaborators were not happy with the LMDC’s changing goals and agendas. But Ken Smith of THINK points out, “While this is a messy process, you have to commend LMDC for taking the risks and going into uncharted territory. They didn’t know where we or they were going with it.”

And they aren’t the only ones. But one question we might consider is whether the collaborations produced better, or more interesting, architecture than those by individual offices. Theoretically, the sum should be greater than the parts. These schemes were definitely not cobbled together. However, the end results were very strong polemical statements, rather than something that might be conceived built in the next few decades. With the collaborations the design architects seemed like chefs involved in a master bake-off. In several cases, the final dish had so many ingredients, the public and the media couldn’t digest it, or in the case of the Meier team, the design was of such an unremitting consistency that it quickly led to satiety.

The individual offices had the advantage of combining and expanding certain tried-and-true ideas, or—in the case of THINK—pouring its energies into three dishes, and throwing two away. However, the intensity and power of the schemes should not be ignored. And certain parts and pieces can be salvaged and developed further in the future. As Morrish points out, “Collaborations provide the energy and ideas in a tough situation like this.” Nevertheless, there will always be the dilemma of too many chefs stirring the pot—even when they work well together.
Can architects and planners use security concerns to create more humane cities?

Critique

By Michael Sorkin

The force of interrogators asking us whether someone has given us something to carry on the plane, the large numbers of armed personnel, the endless thresholds at which we are scanned, and our progress through space mapped step-by-step have all become part of the background of our lives. Making this process convenient by making it invisible is not one in which we should participate uncritically. We may want to glide from the concourse to the gate, but I, for one, want to know when I am being electronically patted down and to whom this information is being conveyed.

Given the genuine risks that we do face, however, the question becomes whether there is any meeting ground between the need for precautions and the ongoing project.

Coast Guard officers keep watch over Lower Manhattan, where tightened security has changed transportation and pedestrian patterns.
of urban amelioration—the construction of cities that are humane, democratic, and sustainable. I think there are several potential points of convergence between these concerns, places where energy might be focused to make our cities both more comfortably secure and more comfortably free, a kind of “peace dividend” from a number of the measures we are likely to take based strictly on questions of security.

We can begin by extracting questions of safety and security from a narrow focus on terror. So many more of us die falling down stairs or in automobile accidents than in wars or terror attacks that a little perspective is necessary, a realistic sense of proportion about the sites and organization of investment. The risk of being struck down crossing the street by an S.U.V. is far higher than the worst bin Laden can do. I don’t mean to be glib, but it is important to understand that the fear-mongering of the moment is based on a set of fundamentally political agendas. How then to depoliticoze the idea of safety, or rather, how to democratize it?

To begin with the most obvious, the project of making cities and buildings safer must encompass needed improvements for security from other risks. Clearly, reinforcing buildings against seismic hazards also brings greater safety from other sorts of externally induced structural traumas. Perhaps even more important is the dramatic improvement of fire safety. Many of the lives lost in the World Trade Center disaster might have been saved with better fire-abatement systems, with increased means of egress, with better internal communication, with careful attention to the presence of toxic and flammable materials. These are steps that need to be taken on an urgent basis, especially in tall buildings.

If September 11 can serve as a good for us to address the threats mounted to buildings, this is to the good. However, even here we hazard a kind of parochialization of risk. Building safety must also encompass the effects of architecture on climate, the health-related effects of “sick building syndrome,” the damage to resources in remote locations, the flat-out toxicity of many of the materials with which we build, the dangers of the building process, and the insecurities engendered by the massive consumption of energy by buildings (itself one of the reasons for the current rush to war). A national policy based on securing the means for continuin the cycle of hyperconsumption has enormous and unfaced planetary and political consequences. Build security goes way beyond metal detectors and security guards.

Rethinking the city after 9/11

One of the striking scenes in New York City following September 11 was a dramatic rearrangement in the movement of traffic, when access via bridges and tunnels was limited. Emergency vehicles were able to flow without impediment. Streets were preternaturally quiet. Pedestrians were predominant. Carpooling was enforced.

In the process of rethinking the city after 9/11, the management systems of movement is perhaps the central opportunity for synergies between security and urbanity. In New York, we have the opportunity for a dramatic pedestrianization of downtown, using Ground Zero as point of dissemination for the net...
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work. This local greening might be accompanied by a large-scale reduction in private vehicles in the city as a whole and the replacement of no-longer-required road space with parks, bikeways, and other public amenities. The moment is also ripe for a more rational system of goods distribution and delivery. Both security and urbanity would benefit from more rigorous management of city traffic: greater efficiency in delivering milk might have an ancillary benefit in greater inefficiency in delivering bombs.

A general increase in architectural and urban "inefficiency" could, indeed, have many positive effects. A multiplication of routes and a mix of scales would humanize cities that are too straightforward and homogeneous. Structural overdesign and redundancy could increase both safety and complexity. An architecture more integrated with the earth around it would enhance thermal performance, environmental continuity, and variety of use. The sort of bottom-line inefficiency represented by European-style regulations that limit the dimensions of office floor plates to guarantee workers access to light and air would create buildings that are psychically and physically both safer and friendlier.

As Jane Jacobs has observed, strong neighborhoods are safe neighborhoods. Her theory suggested local spatial supervision based not on centralized means of surveillance but on the extension of the idea of neighborliness. Although anonymity is a prized value in city life, it is one among many, and there are styles of violation of our privacy that are more and less civic. The grandmother leaning out of the window keeping an eye on the street is a radically different phenomenon than those M-16-toting guardsmen manning checkpoints downtown after September 11. It is not liberal sentimentality to suggest that building strong neighborhoods, neighborhoods with complex nets of relationship and interdependency, is an intrinsically superior style of security than CCTV on every corner. Our personal participation in the security of our cities and neighborhoods should grow from a sense of decorum, not fear.

The good urban life
By extension, we are now presented with an opportunity to rethink the nature of business and commercial concentrations within individual cities. The same technologies that allow corporate headquarters and call centers to grow on green-field sites far from the pleasures and conveniences of town can also allow us to adopt a policy of local decentralization based not simply on security from terror but on the convenience of building sustainable communities. Places in which living, working, education, culture, recreation—all the components of the good urban life—can be planned comprehensively: metropolitization rather than globalization. In terms of the real economic development of New York City, for example, it would seem far more productive to apply the massive capital that is about to be squandered on unneeded office downtown to the reconstruction of the Bronx Hub or 125th Street.

The key to our security is neither the construction of new fortifications nor a willingness to progressively surrender our shrinking rights of privacy to the tender mercies of the national security state. Our best defense against terror lies in the strength of our democratic institutions and of our human character: Armament is not a substitute for a culture of compassion and generosity. The horrible events of 9/11 are not a call to arms, but to justice, to increase the peace. Good cities, the manufactories of our civilization, are a bulwark.
Tackling tough questions: From the divided city of Jerusalem to the amorphous realm of theory

Books


July 1999, at an idyllic estate in Tuscany, Italy, architect and critic Michael Sorkin orchestrated a conference on the future of Jerusalem. Invited Israelis and Palestinians from a few people from other places. Of the 25 participants—architects, urbanists, economists, political scientists, and academicians—offered an array of proposals for the physical and spiritual future of a city that has been built, destroyed, rebuilt, conquered, rested, coveted, and divided for thousands of years.

Few places in the world raise seemingly intractable issues of sovereignty, religious belief, and social organization as does Jerusalem, yet despite their differences, the participants at the 1999 conference espoused a surprising “convergence of views,” says Sorkin, on issues ranging from the legitimacy of Palestinian sovereignty and the need for an open system of infrastructure in the Jerusalem metropolitan area. The Next Jerusalem is the outgrowth of that conference, a sharply argued book that brings together essays illustrated with a mix of haptic, impressionistic sketches, documentary photographs, and color charts and maps.

As Sorkin explains in his preface, “It may have been my own taken faith in the religion of architecture, but I felt that there were issues that could be discussed outside the territory of politics. No matter the ultimate disposition of sovereignty, it seemed to me that questions of ecology, preservation, neighborhood development, open space, and so on would need many of the same answers.”

The book’s essays present a diverse set of concerns and ideas. For example, Giora Aharoni, an architect now working in New York City, proposes displacing key monuments such as the Dome of the Rock and the Western Wall to places outside of Jerusalem and accomplishes the task in photo montages that force readers to consider the emotional attachments of place and object. Romi Khosla, an Indian architect currently working with the Palestine Authority, envisions a high-tech train running from Gaza to Haifa and connecting communities as different as Hebron, Jerusalem, and Ramallah. Several of the book’s contributors offer dramatically different readings of Jerusalem—from Dag Tvilde and Ali Ziadali’s use of demographic maps to Amir Sarna’s architecture of queer Jerusalem and its gay landmarks. Other contributors include Thom Mayne (who makes some wry connections between theme parks and the Old City), Lebbeus Woods (who contributes some remarkable drawings entitled Meditations on a New Jerusalem), and Moshe Safdie (who has been building and designing neighborhoods in the city over the past three decades).

Reading this book now—when negotiations and trust between Israelis and Palestinians have broken down—one can’t help but wonder if it is a remnant of a brief moment of hope in the history of Jerusalem. But precisely because the outlook seems so bleak right now, I think this book is more important than ever. As I write, political violence is an everyday event and Israel is busy constructing a giant fence to separate itself from its Palestinian neighbors. The concept of Aaron Betsky, the director of the Netherlands Institute for Architecture and the former architectural curator for the San Francisco Museum of Modern Art, presents a collection of high-gloss projects with an abundant, even excessive, rationale.

Betsky begins with the idea that architects use land in a multitude of ways, manipulating materials, construction, structure, and function to form and inform their designs. “Landscrapers” (a cute linguistic play co-opted from architect Antoine Predock) are the result of this practice. Not landscape architecture, landscrapers address the concept of land.

With this conceptual frame established, Betsky continuously redefines the term land in the book’s five essays and 43 projects. This strategy addresses the differences among projects that range in program, site, and materials. Land provides structure for an underground facility in Steven Holl’s Nelson-Atkins Museum expansion, in Kansas City, Missouri. It dictates formal shape in Massimiliano
Books

Fukas's Niaux Caves Entrance Pavilion, in France. And it is construction material in Herzog and de Meuron's Dominus Winery, in California. Betsky establishes relationships by juxtaposing projects that would seem unrelated except for their conceptual use of land. By connecting a variety of projects under this lens, Betsky's curatorial skills are at their best.

Yet the liberal use of the word land as a concept can be confusing and ineffective. Betsky repeats it ad nauseum and in place of ground, site, and the more specific dirt, pavement, gravel, grass, and so on. In the process, it loses meaning. The book is full of sentences like: "[Landscapers] take many forms, but in all cases they unfold the land, promising to lay a new ground on which we can erect an architecture of the land." And "Architecture is no more a mark on a land that has been shaped to create a void." Betsky also forces some projects into his conceptual framework. For example, he reads the Minnaert Building, in Utrecht, by Neutelings Riedijk as "carving land" since its red-pigmented concrete exterior is "[the architect's] own version of the land." Okay, but a stretch.

Still, as a slide show of projects that use land in different ways, the book is an interesting, if not an in-depth, resource. The two-page-per-project organization is as effective as a museum exposition on the topic informative, but brief. Of course, delving too deeply into any given project might bring up issues other than land, complicating Betsky's narrow focus. Megan Feehan


Mention the word surface, and most people think "superficial" or "shallow." But surface is fundamental in architecture. Exterior surface, along with form, conveys a building's function and triggers the more subjective determinations of whether it is pleasing or ugly, conventional or edgy, stodgy or spirited. Surface is also the aspect of architecture that has changed the most in recent decades. Early in the last century, new construction methods made possible the "free facade" and started architects thinking about the relationships between skin and structure and between modernity and tradition. New technologies have produced more food for thought, prompting the authors of Surface Architecture to ask how design can profit from them while remaining "neither independent nor subjugated to the domination of technology." Not a bad question.

In pondering it, Leatherbarrow and Mostafavi wander through recent history. Unfortunately, like Hansel and Gretel and the bread crumbs, they leave a trail of nearly useless sentences that don't prevent you from getting lost. Here's one: "The window as an element of separation forms a distance across which connections are assumed recollection, or joining presumed memory, so constituting a horizon of yearning." Is there any good reason why theorists can't write simply and directly?

Compounding the vagueness and convolutions, the authors' organization of the text often seems governed by free association. They start with the early Modernists' infatuation with volume, modern production methods, and new materials and the movement's disdain for eclecticism and representation. Th
Louis Kahn's attempt to elevate monumentalism within the modernist movement, then look at Minimalism, Le Corbusier's emphasis on horizontal windows as expressions of sculpture, Aalto's use of banked windows on curved walls, and more generally, the role of different window systems. They examine approaches to coloring, starting with that of the Austrian Secessionists, then segue to J. M. Loos's contempt for ornament, and a discussion on surface appliqué buildings. They explore Mies's utilitarian buildings as well as those by Wright, Kahn, George Howe, Richard Neutra, Jean Prouvé, the Smithsons. How do Leatherborow and Stavka suggest resolving the conflict between production methodology and surface treatment? They take as an example the work of the Danish architect Alejandro de la Sota, who uses found objects and a host of materials to design buildings that express "something of the everyday but also the anonymous world of industrial products." They explain, "In a world so eager for representation, this architecture seems justly poised between reticence and invention." In their final chapter, the authors return to architecture's relationship to technology, but they fail to satisfactorily answer the question they posed: how is design technology while remaining "neither independent nor subjugated" to it? Or did I miss something in the fog of words? Andrea Oppenheimer Dean


In Architectures of Time, Sanford Kwinter tells us in his preface that he had completed most of his thinking and writing about the relation of architecture and the dimension of time in the 1980s and early '90s. The manuscript was then lost in the mail, and Kwinter had to reconstruct it—at a point in his career when its importance to him was on the wane. Long stretches of the book are discourses on physics, time, relativity, and Kafka. In all of these, Kwinter is interested in relating Einstein's theory of relativity to notions of space and time, and how it is reflected in each.

Ultimately, Kwinter's goal is to show how Modern architecture reflected new concepts of space and time in ways similar to how they were reflected in science and art (particularly literature). Kwinter graciously suggests that readers interested primarily in design skip over the chapter on Kafka. Most engaging in this volume is the discussion of the work of the Italian Futurists—specifically Antonio Sant'Elia—and how they captured the essence of a new architecture, one tied to movement and the modern age. Kwinter presents an engaging analysis of Futurist projects, as represented in their sweeping perspectives.

But if you are looking for ideas that might easily be transferred to the design studio in this book, you're in for disappointment. Some nearly impenetrable writing only makes more frustrating how Kwinter's observations and ideas might be incorporated into everyday design. Perhaps it wasn't the writer's intent to make his theoretical speculations readily useful to architecture as it is practiced today. But that brings us to a question that many people ask about this discipline. What is "good" architectural theory? And perhaps even more important is to ask of a theoretical inquiry that only tenuously makes connections to the world of architecture: What good is it? Michael J. Crosbie

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s gently but powerfully fill the air. Hundreds of blankets form a patch-
quilt on the green around you, where the entire town has come out to
ly live classical music and the company of fellow townspeople.

This vision inspired architect William Rawn, who created The Pavilion at
Symphony Lake for the town of Cary, North Carolina—one of the summer
homes for the North Carolina Symphony. Commissioned by then-mayor Koka
Booth, the 34,000-square-foot group of buildings comprises a performance
shell and a structure containing VIP dining, concession stands, rest rooms, and
services. The $12 million project was conceived to give this suburban town a
civic icon to encourage community interaction and pride.
Unlike traditional outdoor venues, The Pavilion at Symphony Lake has a VIP dining area (above) situated behind the open-seating area on the grass, giving everyone a great view of the stage (right).

Rawn had teamed with acoustician R. Lawrence Kirkegaard in 1994 to design the much-heralded Seiji Ozawa Hall at Tanglewood, in the Massachusetts Berkshires. Having heard about the success of that project, Mayor Booth asked Rawn to design the amphitheater on the shore of the man-made Symphony Lake, in Regency Park. Kirkegaard once again collaborated.

With site in mind, Rawn created latticelike structural steel poles, 80 feet tall, which mimic the tall pines in the park. The pavilion was placed at a 45-degree angle to the lake so that the audience always has a view of both stage and lake. A hanging glass roof shelters performers and bathes the stage in natural light during the day. The roof houses lighting equipment and contains computer-controlled flickering bulbs—like a basket of fireflies suspended above the performers.

"It's a decidedly contemporary structure," says Rawn, who admits he expected the town officials to request him to recreate a 19th-century-style design. "They had the guts to go for something modern. And everyone in Cary loves it."
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only 18 months ago, the megabuck glitterati clinked glasses at the unveiling of the Rem Koolhaas–designed Guggenheim Las Vegas [record, January 2002, page 101]. It had promised to be one of those moments that history measures as characteristic of its era, just as the emergence of the spire of the Chrysler Building, only months before the stock market crashed, signaled the dizzy peak of Jazz Age optimism. Conjured as a moneymaker, the Las Vegas outpost finally—inevitably, it so recently seemed—merged art, architecture, brand culture, and commerce. It celebrated the values of the “bourgeois bohemians” who, according to author David Brooks (in his Bobos in Paradise, Touchstone, 2000), “have one foot in the bohemian world of creativity and another foot in the bourgeois realm of ambition and worldly success.”

The Guggenheim Las Vegas is shuttered (temporarily, say officials), as is its sister institution, the Hermitage Guggenheim. The entrepreneurial vision of executive director Thomas Krens, which made possible the architectural event of the decade, Frank Gehry’s Guggenheim Bilbao, has ended. That era of endless possibility began deflating along with the dot-com bubble, and evaporated with the broader, corruption-hastened collapse of the American stock market—source of so much Bobo wealth and hubris.

Then the terrorist attacks of September 11 shattered the nation’s sense of its own inviolability. In that brutal spectacle, we found that we could not consider ourselves safe from large-scale terrorist acts, executed using the portable, inexpensive, and efficient technologies that were among the great industrial accomplishments of recent years. The terrorist attacks engaged the nation in a war of ideals, one that may have to be fought over an extended period using wartime’s uncompromising measures.

In his book, Brooks argued that the Bobo elite had little use for politics and blurred what had once seemed the defining values of culture (Krens, for example, seeming to equate motorcycles with Mondrian). But a reassessment of national values is clearly under way, even if it is still only shimmering. Can an anti-ideological nation that defines itself primarily by what it buys and projects no values beyond those embodied in commercial media fully engage a foe driven by moral and religious fervor?

Under such circumstances, enormously ambitious projects like the now-canceled $650-million Guggenheim branch that would have stretched for a block or more along Manhattan’s East River and loomed spectacularly over the East River Drive, appear to be very indulgent baubles (not to mention possible targets). The uncertainty of the times has stalled a number of other prominent projects, including the Magnes Museum in San Francisco (Daniel Libeskind) and the Whitney Museum expansion in New York (Rem Koolhaas/OMA). The Los Angeles County Museum of Art has shelved its massive OMA plan, announced only about a year ago.

Big, splashy urban trophies are but a tiny fraction of American architectural output, but there is a sense that such projects represent the profession and the limits of its possibilities. If architecture lives by the champagne fund-raiser, does it die by it?

This question emerged in a commentary written in the Los Angeles Times by its architecture critic, Nicolai Ouroussoff, which seems to echo a gathering unease in the profession. “Today, architects working in America are confined to serving a relatively small and entrenched elite—the corporate kingpins and aging philanthropists who typically make up the boards of the country’s major cultural institutions,” he
WHERE ARE WE NOW?

Architecture’s place in an era of evolving values
Does the simplistic real estate "product" that accumulates across urban America truly express its identity, values, and aspirations? Near O'Hare International Airport, Chicago, 1991 (top); Schaumberg, Ill., 1995 (left and opposite).
Is architecture a plaything of a value-free elite? If it isn’t, why can’t it more deeply express ideals in the day-to-day landscape?

In the 1920s. Skyscrapers, to be sure, have been the best advertisement for the commercial city ever since. In the past 20 years, however, private development has pretty much lost interest in using architecture to make a handsome skyline or advertise a company’s place in the community.

In the 1980s, the rise of corporate raiders and “maximizing shareholder value” definitively ended an era in which corporations (motivated by genuine community commitment or paternalistic noblesse oblige—take your pick) considered buildings something more than warehouses for workers. Facilities since then have been regarded as profit-making assets in their own right, and any commitment to express a connection to a local community, to present corporate values in steel and glass, or to reflect by design the needs of business process have been all but banished. Business leaders have permitted themselves to be driven by a speculative norm of real estate (demanding only the generic and the identical; obsessed with the “exit strategy”) because they could not find a way to value architectural nicety or invention.

The colossal commercial overbuilding of the 1980s, which created an inventory excess that hung over the industry for 10 years, might have taught everyone a lesson, but instead it led to a nationalized and concentrated development-finance process that is even more rigid and values the contributions of architects less than ever. It’s nearly impossible to build innovatively, to recognize unique circumstances, or to choose technologies (to save energy, for example) that take longer than a few years to pay back. This is why the tremendous technological advancement one sees in commercial buildings outside the U.S. (especially in workplace design that is both low-energy and high amenity) cannot find a market here. And it is why the architect’s role has been relegated to curtain-wall specifier and lobby decorator.

The nation has tolerated this temporary, disposable urbanism simply by moving farther out into the semirural fringes, vastly expanding the edges of metropolitan regions. The search for a place that is, as sub-
urban historian Robert Fishman has written, “freed from the corruption of the city, restored to harmony with nature, endowed with wealth and independence, yet protected by a close-knit, stable community” seems today to be unending. As a nation, we are still largely unwilling to consider that the very mobility that allows us to build our dream at the bucolic urban edge embodies the means by which the oak woods next door becomes Oak Woods Estates.

**Is it a style thing?**

Part of what makes our era confusing is that it offers an enormous aesthetic diversity. You can see a debt to 20th-century Modernism in much of what is built today, but most is not tethered to a single theoretical or social movement. Architecture does not deserve a central place in culture, many observers argue, because people don’t like what architects design. “Architecture should be understandable to everyone,” wrote Francis Morrone recently in *The New Criterion*, in a story critical of today’s aesthetic innovation. “The urban architect simply does not possess the right to impose his aesthetic vision on the public.” This echoes the plaints of many political conservatives, who increasingly see today’s sculpturally spectacular and assertive designs as emanating from a leftist political agenda.

Aside from how authoritarian Morrone sounds, those who, like him, argue for a vision of architectural civility through historic style seem blind to the conservative vision of unfettered capitalism and individualism which is precisely the agent of the chaos they abhor in urban cityscapes. If today’s buildings seem unneighborly, or inconsistent, or ignorant of history, that reflects America and its priorities today, an America made largely to conservative individualistic and antigovernment values.

The boxy stores and slableike apartments that dominate the landscape may look vaguely Modernistic, but they reflect not a stylistic orthodoxy but cheapness of construction. It’s the euphemistic “cost effectiveness” applauded by conservatives and enforced by Wall Street analysts, who do not regard public spiritedness in architecture as prudently contributing to the bottom line.

Aesthetic individualism has been the source of dynamism within the American architectural scene, the reason it is intellectually healthy in spite of the inability of so many talented people to build beyond the lowest-common-denominator commercial norm. Impressionist painting made compelling art of the dark hulk of the locomotive thundering through the flower-bedded countryside. The fractured topography of buildings we see these days reflects an awe of the empty freewayscapes of today’s emblematic urban form. Frank Gehry infuriated contextualists on the Pacific Northwest by making a sensuous collision of electric-gutted colored forms for a rock ‘n’ roll museum [record, August 2000, page 12]. He didn’t build a “regionalist” pavilion of fir beams; the museum’s “context” was a sea of surface parking.

In time we’ll know whether today’s explorations into the iron contradictions, and bizarre juxtapositions innate to culture now have made an art of lasting value. But attempting to refract the world through public-nation inhabits is a serious endeavor that deserves respect, even if it does not always work. The dynamism and possibility of America is what appeals to Europeans like Rem Koolhaas, who come out of cultures more comfortable with architecture and much more willing to spend public and private money on it.

**The deal architects and society make**

Much of today’s most adventurous work does not meet Morrone’s criterion of “understandable to everyone,” and he is certainly not alone in finding much contemporary work aesthetically objectionable. But it is Daniel Libeskind, presumably not a favorite of aesthetic conservatives, who made a stirring defense of architecture’s place in public culture at Columbia panel last fall.

He argued for architecture as an expression of even such emotional abstractions as memory and loss. “Buildings are transformed by matter and not by material—stone, concrete, glass—into something living. And in that sense, they really speak a language, both communicative and silent,” Libeskind said. “Space,” he added “is actually something like a person, a physiognomy, a soul, a spiritual entity given to a particular place. And that’s the genius loci that we feel when we are in a place.” The material urban world is not only inescapable, he argued, it shapes our values and culture as much as any form of art, literature, or debate does. “We’re not at home in language. We’re at home at home.”

The architectural community, whatever its aesthetic peculiarities, largely rallies around the idea that cities should be civil places that civility should be expressed by what people build. But what people build cannot be separated from their values.

European cities, even new ones, tend to look more orderly than their streets more architecturally collegial than do American cities. History is recognized and the nature of the city is, as Daniel Libeskind noted, “of concern to everyone.”

These values, it must be added, are bolstered by the commitment of a great deal of public money for the creation of architecture and the nurturing of a vital architectural culture. The enormous expressive bravura and witness in much international work does not operate in an aesthetic vacuum but is tethered in social, technological, or ecological ideal. The
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Consequently, society authorizes architects to build much more than museums that enhance board-member egos or glitzy restaurants for celebrity chefs. They build housing, day-care centers, social centers, schools. They design roads and bridges.

Dare architecture represent ideals?
Since De Toqueville, America has been described as a nation of joiners. Community feeling and participation have eroded in recent years, according to Robert D. Putnam, whose book Bowling Alone (Touchstone, 2000) asserted that the spatially and socially segregated urban places we make contribute to a loss of community engagement. Whether in the desolate neighborhoods of abandoned industrial centers or in the gated communities of the disconnected pods of sidewalkless suburbia, there's not much about the built environment today that expresses a sense of connectedness or common values.

If we don't have a sense of community, we don't have any reason to build to any but our own individual values or tastes. If we fail to support architecture that speaks to common values, it is not surprising that we use our best architects only when a certain level of spectacle is called for or as a toy for the wealthy. Nor should it be surprising that these projects alone fail to bring vitality to urban places or fundamentally transform them. (For all the attention the Bilbao Guggenheim has garnered, it did not on its own transform the city. A program of public investment in airports, a subway, and other cultural facilities reinforced the job the museum did of putting the city on the map.)

Architects have long defined themselves as people who will make lives better. Is this necessary to retain legitimacy as a profession? Or does such a definition marginalize practitioners in a culture that prizes construction that costs little and that is supposed to deliver the maximum dollar turnover per square foot?

Pragmatically, AIA's agenda in Washington succeeds, pitted as it often is against much larger, better funded special interests, in large part because people do see architects as the kind of people who want to put the community's larger welfare first. That is a very precious reputation that we will pay dearly to squander.

Leon Wiesel was not the only observer to see architects as "too avid" in the spirit with which they began to organize ad hoc rebuilding coalitions, like New York New Visions, after September 11 disaster. But the effort proved to have enormous influence over the rebuilding, and the volunteers have reaped enormous public appreciation. The consortium was there to fill the planning void that yawned because local officials were so unused to planning and could not put together their own efforts for months afterward.

Such important efforts notwithstanding, the rewards for acting to advance the ideals of a larger society are, for architects, slim. There are those who say our most adventurous designers are not socially responsible but there is not now a substantial milieu for architects to be socially responsible in. As a nation, in our roles as public and private clients, we don't make it easy to build ecologically. We expect architects to accept below-cost fees for doing bureaucratically ensnared "affordable" housing. To the extent that they are built at all, senior centers, hospitals, clinics, and day-care centers hew to the same painted-drywall, dropped-ceiling, fluorescent-light norm as everything else. Architects are shut out of big design (as well as most other forms of infrastructure building) for fear they will make public works cost more.

One can argue that this is the profession's own fault, that it does not work hard enough to demonstrate the very good things it can do, but such criticisms no doubt have some basis. At some point, however, it's people—individually, in government, in business—who must commit societal values architecture is capable of expressing.

Government has been turned into such an evil word that direct investment in transportation, in schools and colleges, and in other kinds of public facilities is suspect today, whatever its value to the economy as well as to our health as a society. (Ask the average business group what their greatest priorities are and you usually hear "improve the quality of the workforce"—that is, invest in education—and "improve transportation"—another direct government investment.) Instead, we manipulate the code, hoping to spur greater consumer purchases or get businesses to buy equipment they would otherwise not order.

Our fear of making investments in a more workable, amenable public realm run deeper than the political sensibilities of the moment. We think it's too hard to find political consensus. We're afraid as the nation reconsiders its values, should the places we build express what we share rather than aggrandize who we are?

As the nation reconsiders its values, should the places we build express what we share rather than aggrandize who we are?

we'll spend too much—be seen as public spendthrifts. We fear government making mistakes. And if we try to make communities in new ways or innovate in whatever way, we will make mistakes.

Perhaps this is the moment to be gutsier; to put our money and our best thinking (and some of our cash) into schools, transportation, housing for those who need it, public places—places that exemplify our ability to work together and help each other; places that express what we share rather than aggrandizing who we are. We can propose architecture that's not just about "adding the aesthetics," but about using building fabric to meet the ample real needs out there. If America wants to stay for something—not just in the world, but within their own communities—and wants to pass those values on, architecture remains the permanent barometer of a civic culture.
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The 153,000-square-foot Forth Worth Modern is the largest museum of postwar art in the U.S. after New York’s Museum of Modern Art. The building sits on an 11-acre site (opposite) at the edge of town.
Tadao Ando brings his concrete-and-glass poetry to the Texas plains at his new MODERN ART MUSEUM OF FORT WORTH

Tadao Ando once described his basic architectural intention as "creating spiritual worlds, with spaces so strong and deep that [they] will penetrate to the people who contact them." The luminous chapels in Japan that launched his career (the Church of the Light, 1989, and the Water Temple, 1991) fulfilled that ambition, as is the new Modern Art Museum of Fort Worth. Monumental without being overpowering, the building uses contemporary materials and details to create serene spaces where visitors can commune with art, nature, and themselves. In an era of billowing titanium walls and fluttering brises, the Modern speaks in a calm, assured voice about the importance of silence, solitude, and craftsmanship.

"I think of this museum as the heart and center of the community," Ando said at the dedication in December 2002, "a place where people come together, like a church." Yet spirituality is not the first thing that comes to mind as you approach the Modern. The main facade, along Bell Street, is a collage of aluminum and glass, coolly corporate and somewhat generic, like a brochure photo for a Fortune 500 company. But what a surprise it is! You wonder.

Fortunately not. The minute you enter the lobby, space explodes outward and outward toward a sculpture garden with a reflecting pool that bounces light off walls and into corners. For a moment, the building dematerializes and all you see is earth, water, and sky—nature and architecture in rare harmonious balance. This play between inside and outside continues through the building, from the café to a transition space, modeled on the traditional Japanese engawa, that edges the first-floor galleries to a narrow glassy staircase on the north side, which appears like a surprise gift.

Then the details coalesce and you see that the Modern is really a building within a building, an aluminum-and-glass shell wrapping a dense concrete core. Although the basic plan—five parallel pavilions framing a reflecting pool—suggests repetition and uniformity, the structure has nei-

Project: Modern Art Museum of Fort Worth, Fort Worth, Texas
Design architect: Tadao Ando
Architect & Associates—Tadao Ando, FAIA, principal; Masatake Yano, Kulapat Yantrasast
Architect of record: Kendall/Heaton Associates—William Kendall, FAIA, managing principal; Laurence Burns, AIA, executive principal; Rollie Childers, AIA, principal in charge; Jory Alexander, AIA, interior designer; Nobuhiko Shaga, team coordinator
Consulting architect: Richard Fitzgerald & Associates
Engineers: Thornton-Tomasetti (structural); CHP and Associates (me/p); Huitt-Zollars (civil)
Consultants: SWA Group (landscape); George Sexton (lighting); Cerami and Associates (acoustical); Peter M. Muller (curtain wall)
General contractor: Linbeck Construction

Contributing editor David Dillon is the architecture critic of The Dallas Morning News.
As with many other Ando buildings, the museum's entry facade (left and above) is understated and offers few clues to what lies inside. Richard Serra's 67-foot-tall, 230-ton Cor-ten steel sculpture Vortex (left in photo above), stands at the corner of the building and provides a vertical counterpoint to the horizontal thrust of the roof.
It is full of wonderment created by Ando's play of one element against another: solid and void, heavy and light, open and closed, East and West.

Ando got the commission in a 1997 design competition, beating Arata Isozaki, Ricardo Legorreta, and three other architects for the $65 million job. The Modern had long been the poor museum in a rich museum town and desperately wanted a building that would put it on the map and also stand up to Louis Kahn's sublime Kimbell Art Museum across the street. Ando gave them both.

His original plan called for a total of 230,000 square feet, 75,000 of it galleries. That was more than the museum needed or could afford, so gradually cut it back to 153,000 square feet, a third of it for art. The six and a half pavilions, an unambiguous reference to the Kimbell's six vaults, are reduced to five, and some of the support space was eliminated. Even so, the new building is four times the size of the old one, which is being restored to a community arts center.

Despite the editing, the essence of Ando's original design remains intact. Unlike Frank Gehry or Santiago Calatrava, Ando is a builder rather than a sculptor. What happens outside is never as important to him as what happens inside, which may explain why the Modern has four walls but only one real facade, the others being concealed by loading docks, parking lots, and landscaped berms.

Although there is no right way to walk through the building, most visitors turn left, past the information desk and a remarkably discreet museum shop, and follow a curving concrete wall into the first gallery. This ellipse—a calculated counterpoint to the linearity of the rest of the structure—forms a kind of side chapel devoted to a single work, Anselm Kiefer's sculpture Book with Wings. A large Kiefer painting dominates an end wall, a small Francis Bacon self-portrait off to one side. That's it. Out of 2,750 works in the museum's permanent collection, curator Michael Auping chose to exhibit only 154, as if the only proper response to a windfall of space were to waste some of it. In his shrewd installation, less becomes more, subtraction more revealing than addition.

The main exhibition galleries are large white rectangles suited to the scale of a Robert Motherwell or a Jackson Pollock. Yet, as elsewhere, what seems familiar turns out to be otherwise. Some galleries are neatly self-contained, while others burst open with views of the garden and reflecting pool or the downtown skyline. One minute you are looking down from the second floor at a Morris Louis or Richard Diebenkorn, the next you are glancing up a staircase at a self-portrait of a fright-wigged Andy Warhol. One of the most remarkable spaces is a two-story concrete gallery containing Martin Puryear's Ladder for Booker T. Washington. Whether viewed from

E MODERN BEEFS UP A CULTURAL DISTRICT AT'S STILL A WORK IN PROGRESS

Worth's Cultural District is quintessentially American, with car-freeped Cézanne connoisseurs occupying the same block, sometimes same building. Within its 950 or so are three exceptional art museums designed by a triumvirate of Pritzker Prize and AIA Gold Medal winners: the Amon Carter (now in 1961 and designed Philip Johnson), the Kimbell (now in 1972 and designed Louis Kahn), and now the new Modern, the latter two directly across the street from one another. There is a theater, coliseum, botanical garden, science museum, and a girl Hall of Fame and esquire center that draws a million visitors each year, and you have a uniquely cultural bouillabaisse.

From a planning perspective, the District is still an assemblage of discrete attractions with tentative connections to another and to the surrounding neighborhood. Parking lots and ramshackle buildings line its approaches; there aren't enough signs, sidewalks, and other pedestrian amenities. Although major exhibitions attract overflow crowds, visitors don't hang around afterward because of the dearth of shops, restaurants, and gathering places.

While its new building has propelled the Modern into the top tier of contemporary art museums, it has also highlighted the need for more balanced development within and around the District—more boulevards, plazas, and other connective tissue, along with better links to adjacent neighborhoods.

An urban village of shops and apartments has been proposed for the District's eastern edge, and there's talk of a hotel and a light-rail link to the stockyards and Fort Worth's bustling downtown. If one or two of these projects pans out, the Cultural District could finally become the coherent environment that its name implies. D.D.
In the evening, the museum's glass pavilions shine like Japanese lanterns set on a 1.5-acre pond. Ando was asked by the client to provide spaces and vistas that serve as breaks from viewing art.
Ando designed the pavilions as long glass boxes with concrete cores (above). A long stair overlooking the pond helps animate the northernmost pavilion (right).
Ando turns concrete and structural elements into works of art

Tadao Ando is the Leonardo of architectural concrete, and in the Modern Art Museum of Fort Worth produced a masterpiece. Every inch in the building was scraped by hand until it was smooth as silk. Corners are sharp enough to cut hair, and switch plates and smoke arms have surgically precise inch reveals.

"He never quit designing," says Paul Spies, project manager for Linbeck Construction Corporation "He was always striving for perfection. The fact that nobody ever achieve it didn't stop him."

The toughest job was casting dramatic Y columns that support the museum's cantilevered roofs. Ando wanted them poured in place as a single piece, but the contractor and structural engineer concluded that a vibrator working at such a steep angle would destroy expensive wood forms. So they decided to cast the arms and stem separately in Weesa board forms, then place the diagonal pieces in a steel cradle, connected by a bar, to form a Y. The entire unit was then hoisted into place atop the arm, the various connecting rods and bolts concealed by a special sheve that makes the completed Y look like one piece.

Ando wrapped the individual pavilions in 12-by-5-foot panels of glass, each one three layers thick, insulation and ultraviolet protection. (An early conceptual design called for nearly millionion panels measuring 36 feet high and 18 feet wide, but nobody could manufacture them.) The panels are hung on slender steel columns painted the same color as the mullions so that they appear, at night, the pavilions look like gigantic Japanese lanterns.

Daylight is the soul of Ando's design. To introduce it into the galleries without damaging the art, he worked with consultant George Sexton and developed a sophisticated system of filters, louvers, and skylights. The vaulted ceiling above the grand staircase, for example, consists of a layer of stretched translucent fabric with a filter above to distribute light evenly around the vault. In the exhibition galleries, they installed a series of fixed louvers, which direct light onto the curved concrete haunches that support the roof and down into the galleries.

For Ando, the Kimbell is a benchmark of Modernist craftsmanship. One of his goals for his building, he said, was to "achieve the same level of construction" as Kahn did. He succeeded. D.D.
While some new museums have been criticized for not being sympathetic to art, Ando created remarkable spaces in the gallery pavilions (above, left, and opposite) that are kind to art as well as visitor.
The entry lobby (this spread and opposite, top) and grand stair (opposite, bottom) provide opportunities for people watching. Since opening in December, the museum has been a hit, drawing more people in a two-day period after Christmas than in any similar time period the year before.
The new, $65 million building, four times the size of the museum's old building, has 53,000 square feet of gallery space. A staircase (opposite) offers views to the water and also the chance to touch and appreciate the building's remarkable concrete work.

1. Entrance hall
2. Information
3. Museum shop
4. Café/restaurant
5. Terrace
6. Auditorium
7. Gallery
8. Art workshop
9. Loading dock
10. Storage
11. Offices
12. Art classrooms
13. Sculpture terrace
1. Gallery
2. Office
3. Entrance hall
4. Auditorium
The museum’s galleries were designed to accommodate large works of art and offer a range of settings, from self-contained spaces to ones that open onto big views of the garden and reflecting pool. Ando and consultant George Sexton designed a system of filters, louvers, and skylights that bring daylight into the galleries without damaging the art. Chief curator Michael Archer chose to exhibit only 154 of the museum’s 2,750 works of art, so there’s room to appreciate them all. A scene from Anselm Kiefer’s Book with Wings (opposite), for example, gets an optical space on the floor all to itself.
or above, it is Minimalist restraint raised to the power of 10.

A central stair rises from the first floor to galleries and classrooms. Ando is a poet of vertical movement, and this impeccably crafted element evokes even grander versions at the Hyogo Children’s Museum and Chikatsu Asuka Historical Museum, in Osaka. We are meant to walk with purposefully, noting the silky concrete walls and the wash of light from a vaulted ceiling reminiscent of those in the Kimbell. Ando’s work, like Kahn’s, has body and dimension; You could cut it with a knife.

Much has been written about Ando’s admiration for Kahn, and the challenges he faced in building directly across the street from his hero’s masterpiece. For Ando, the Kimbell is a summa of Modernist craftsmanship, after which architecture devolved into historical pastiche and empty gesture. He makes a few obvious bows to Kahn—in the play of pavilions, the integration of building and landscape—but his best tribute resides in the quality of the Modern’s construction. Ando said repeatedly at the opening that he hoped to rise to “the Kahn level” as Kahn and “to create a link with a great work that is already present.” The Modern is a combination of structural tours de force—the glistening elliptical roof of the café, the dramatic Y-columns supporting the lion cantilevers—and exquisite small refinements, such as the surgically precise reveals around signs and switch plates. Every square inch of concrete was hand-scraped and gently buffed; yet, unlike the unfinished concrete at Ando’s 2002 Pulitzer Foundation for the Arts in St. Louis, it retains the qualities of a natural material, including subtle shifts in color, tone, and texture.

Ando’s one serious gaffe was turning the Modern’s loading dock toward the Kimbell. The latter’s dock is in a similar position but is smaller and lower and hidden by a wall and a planted berm. Most visitors don’t even know it’s there. What they see from the Kimbell, on the other hand, is the Modern’s shipping, receiving, and trash collection. It makes for a chunky composition and, whatever the explanation, a surprisingly rude gesture.

In every other way, though, the Modern is a worthy neighbor and companion for the Kimbell, a blend of structural inventiveness and refined detailing that manages to honor its neighbor without mimicking it.

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Sources
Anodized aluminum and glass curtain wall: Masonry Arts
Anodized aluminum wall panels: A. Zahner Company
Low-e laminated glass: Interpane
Skylights: Supersky
Acoustical ceiling: Armstrong
White oak lobby desks: Techniques
Black granite pavers: Lucia
White oak flooring: Flooring Assocs.

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At the end of the Strekdam in Amsterdam, beside a former-silos-turned-housing-complex, Silodam overlooks the River IJ, with views that extend into the harbor (this page and opposite).
MVRDV created **SILODAM**, colorful waterfront housing built at the end of a wharf near the former silos for which it is named

or a city famed for the tall, thin patrician houses along its canals, Amsterdam has been surprisingly slow to discover the charms of waterfront living along the sea arm of the IJ that forms the city's northern edge. Admittedly, this is a more rugged, industrial environment than the ultraprotected, 17th-century city center, but every urbanite can sense its potential.

The first building to realize that potential is Silodam, a large sing complex of 157 apartments on the water in the former harbor to the west of town. Moreover, this building, fruit of a 1994 competition, marks the first large housing complex designed by the Rotterdam-based firm of MVRDV.

The building gets its name from its neighbors, a 19th-century kiln and a 20th-century-concrete silo (now also converted into living), constructed along a dam projecting obliquely into the water of the IJ and serving as a breakwater for the residential area landside. The RDV building differs from the neighboring silos in that it is not only on the dam, but stands 20 feet to one side; that is, it is not just on the waterfront, but actually in the water.

On the outside, Silodam's robust proportions stand out dramatically—about 400 feet long, 65 feet deep, and 10 stories high. The facades of the facade, rough-and-tumble to the point of looking slapped, call to mind stacked shipping containers. These variations in the facade are also functional, dividing the building's large mass into distinct neighborhoods comprising four to eight apartments of the same type. These groupings can be recognized on the inside by the color of the hallways, where the blank hotel-like doors, floor mats, and ceilings are included in the color scheme, varying from powder blue to red to yellow-green and cobalt blue.

The largest neighborhood within the complex is a section of 10 apartments for a group of adults over 50. While the individual apartments are no different from others, the architect was asked to take this arrangement into consideration in the design of the section, and one of the units is used communally and as a guest house. The hallway on the eighth floor is the only one to run without height differences the full length of the building, like an artery.

Monolithic though the building may look on the outside, inside it is intricate and ingenious, with floor plans that fit together like the pieces of a jigsaw puzzle. Much effort has been made to exploit the views on both sides, and the daylight is bountiful. The four sections of this big box contain an extraordinary variety of housing types, sizes, and prices, while at the same time managing to accommodate the government-prescribed 30 percent low- and middle-income housing. No wonder project architect Nathalie de Vries calls the building an upright village.

The apartments vary in all three dimensions: in width, from 20 to

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Project: Silodam, Amsterdam, the Netherlands
Client: Rabo Vastgoed; De Principaal
Architect: MVRDV—Winy Maas, Jacob van Rijs, Nathalie de Vries, principals
Engineer: Pieters Bouwtechniek
Consultants: Cauweberg Huygen (acoustical)
General contractor: Bouwcombinatie Graansiels vof, Amsterdam

50 feet; in depth, from the full 65 feet, affording views both of the water and of the city, to half that; and in height, from standard to double-height atria, with floor-to-ceiling picture windows, to triple-height lofts. There are even so-called X apartments that are staggered diagonally through the building, with, for example, living rooms and kitchens on one floor facing the water of the IJ, and the bed, bath, and study on the floor above, facing the city. All apartments have a glazed loggia; in one neighborhood the loggia has grown to a two-story glass facade, creating an interior street as a communal space.

In an apartment for a household of two people, one of whom has a design practice at home, the front door, kitchen, and dining area, as well as a living room, are on the seventh-floor mezzanine level, with a view out over the water. A staircase leads to the eighth floor, where the bedroom and office have a view over the city.

On the top floor, one of the penthouses (with views in all directions) contains a glazed roof terrace—situated like a regular room but open to the sky, with a wooden deck—between the living room and the
Silodam’s colorful, variegated facade stands out dramatically over the River IJ. The rough-and-tumble exterior materials of the large complex call to mind stacked shipping containers.

A corner apartment offers a combined living room and kitchen, an enclosed balcony that also functions as a hallway facing the water leading to the bedroom.

In the glazed loggias, the architects were unable to solve the problem of making the windows fully operable without their getting in the way as you walk by, and it is apparent from the various kinds of furniture that people put there—varying from upright dinner-table chairs to plastic garden chairs—that most people aren’t quite sure whether these spaces qualify as inside or outside spaces.

Another couple, a designer and an architect, grouped the lounge, kitchen, bedroom, and bath on one floor, and in the double-height space beneath, ranged around two very large slanting structural timbers, positioned the living space, an office and, hidden behind mobile boards, a guest bed. If you leave by the door on this lower floor (the tenants prefer to use the hallway for storage space), you find yourself on a wooden deck looking between the slats to the sloshing water of the covered marina below the building.

Silodam marks an interesting transition from the traditionally mass-oriented Dutch approach to housing toward more freedom for owners. All parties involved—the architects, the municipality, the commissioning housing corporation, and not least the new inhabitants—wanted the building to function as a large envelope offering the greatest possible diversity in floor plans and therefore in lifestyles.

Given the strict housing regulations in Holland, this was no easy task. Each detail had to be completely worked out beforehand. Thereafter, the new owners could change their space in consultation with the contractor, who was more amenable than most to buyers’ wishes. The
Sイルドム is not square on the dam, but still 20 feet to one side; not just on the water front, but actually in the water (opposite right). The building is divided into distinct neighborhoods, which are reflected in the irregular facade. Boardwalk-like raised wooden sidewalks set the structure apart from the street (opposite, bottom), and a small marina with two landing piers under the building provides seafaring opportunities to the residents (opposite top left).

1. Harbor
2. Corridor
3. Entrance hall
4. Bedroom
5. Bathroom
6. Kitchen
7. Living room
8. Balconies
9. Patio
10. Garden
11. Vertical transport

N  0  20 FT.
6 M.
building represents a transitional moment in Holland's approach to housing; it is an ode to the broadest possible social and architectural variety, representing a shift toward the interests of the home buyer.

The social composition of Siëdsdam was also influenced by another trend: Between the competition and completion, a period of almost eight years, the housing prices in Amsterdam shot up, making the building more of a "yuppie bunker," as the Amsterdammers call it, than it was intended to be. Next time, says Nathalie de Vries, she will push the envelope even further and offer buyers an "intelligent casco," or shell, in which much less is predetermined.

Along with the variation in housing types, De Vries's agenda incorporated public space into what otherwise remains a relatively mono-

ONE OCCUPANT APPLAUDS THE COMINGS AND GOINGS OF THE BIG CRUISE SHIPS AS THEY SAIL SLOWLY AND MAJESTICALLY BY.

functional apartment building. "This is inevitable, in a time when there is less and less space to build but more and more people want to live spaciously," she says.

Boardwalk-like raised wooden sidewalks set the structure slightly apart from the street. An open entrance hall with wooden stairs over the full breadth of one of the four sections provides access to the dwellings, and in nice weather the stairs function as a podium where people sit on the steps, chat with the neighbors, and enjoy the view.

Not only inhabitants but also passersby can walk right through the building onto a large, unfurnished wooden deck to enjoy the view over the water. (To the relief of the inhabitants and the architect, it is apparently too cold and windy here for junkies and homeless people). A
The apartments vary in all three dimensions, affording views both of the water and of the city, and many feature floor-to-ceiling picture windows. The color of the hallways ranges from powder blue to red to yellow-green and cobalt blue.
perfil space intended for a restaurant or a gym rests under this so-called balcony, but there are no takers so far. A small marina with two floating piers under the wooden stairs provides seafaring opportunities for the residents.

De Vries would have liked to take this concept much further and offer the inhabitants of Silodam more communal facilities: a guest room, perhaps, or medical help for the elderly, or a pool, or even simple things like the laundry room. Originally the design included a large rectangular opening for the top of the building that could be used as a communal space or a day-care center.

In front of the building, sunk into the dam, is a vertical parking structure designed specially for tight spaces, which can also be found along Amsterdam’s 17th-century canals. At street level, all you see is a simple shed; you drive your car in and onto a platform, then use your resident’s code to activate the hydraulic mechanism that lowers your car into a subterranean multilevel stack of cars on platforms at very close quarters. To retrieve your car, you punch in your code, the platforms revolve underground, and your car rises into the shed.

For financial reasons—and also, perhaps, for fear that in a building that is an ode to modern-day individualistic urban life there would not be sufficient communal spirit to use and maintain the space—the complex was largely filled with apartments. A remnant of the original plan survived in the form of what occupants call the “crow’s nest,” a double-height opening at the outer western edge on the tenth floor. One of the occupants keeps tabs via Internet on the comings and goings of the big cruise ships on their way to and from the passenger terminal farther east, and brings friends and a bottle of wine to the crow’s nest to applaud as the boats sail slowly and majestically by.

WWW For more information on the people involved in this project, go to Projects at architecturalrecord.com.
A radical facelift of glass-and-stainless steel curtain-walled Lever House on 53rd Street and Park Avenue, designed by SOM in 1952, is now complete, and its lobby and outdoor plaza areas (opposite bottom) spiffed up and replanted.
AUTHENTICITY has come to be the operative term for describing all sorts of preservation efforts. Yet its meaning remains elusive, largely due to changes in the technology of restoration and adaptive reuse. With the recent renovation of New York's Lever House, which involved a radical facelift for its famous glass and stainless-steel curtain wall, the issue surfaced once again. Is the wholesale restitution of the original skin with a new and improved version legitimate, no matter how close the final result comes to the original appearance? The glass is green-tinted and single-paned, as in the original, now it is heat-strengthened instead of annealed. And while parts of the lathing curtain-wall structure of carbon steel have been kept—just primed and recoated—a new aluminum receiver system supplants the old. Nevertheless, Wayne Curtis, in Preservation magazine (October 2002), wondered if it were not like replacing a deteriorating stucco wall of a Baroque church with Dryvit.

The debate turns on whether or not we should judge the authenticity of the methods to restore Modern buildings by the same criteria we use for restoring, say, age-old churches crafted by stonemasons. The issue vexing, since it is only recently that Modern buildings began to be considered qualified for landmark designation. Indeed, Lever House, designed by Skidmore, Owings & Merrill's (SOM) Gordon Bunshaft and completed in 1952, was one of the first of the crop of Modernist buildings to be so designated. New York's Landmark Preservation Commission (LPC) designated the 31-year-old building as a historic landmark in 1983 after it had been threatened by the Fisher Brothers, developers who bought the lease and then produced plans to demolish the 24-story structure. Jackie Oassis and Philip Johnson managed to rally the troops to fight for landmarking, drawing architects to their cause who had previously dismissed preservationists as a bunch of blue-haired ladies in tennis shoes.

Lever House history

Though short by skyscraper standards, Lever House was the first corporate office building in the International Style idiom to go up in New York. The building was a collaborative project that brought together a star client, Skidmore, Owings & Merrill; a high-profile developer, RFR; and a design team that included SOM's Gordon Bunshaft, along with T.J. Gottesdiener, AIA, managing partner; and Carl Galioto, AIA, technical partner. The building's lobby renovation was a collaborative effort led by William T. Georgis, Architect—William T. Georgis, AIA, principal landscape architect: Ken Smith

Structural/Mechanical/Marine consultant: pod: Gordon H. Smith, P.E.

Interior design consultant: Loewy, Inc.

Construction management: T.J. Gottesdiener, AIA, managing partner; Carl Galioto, AIA, technical partner

INTERIOR ARCHITECT: T.J. Gottesdiener, AIA, principal

LANDSCAPE ARCHITECT: Ken Smith

ARCHITECT: Lever House curtain-wall facade and restoration

PROJECT: Lever House, New York City

ARCHITECT: SOM

CONSTRUCTION MANAGER: RFR Holding

INTERIOR DESIGN CONSULTANT: Loewy, Inc.

CONSTRUCTION MANAGEMENT: T.J. Gottesdiener, AIA, managing partner; Carl Galioto, AIA, technical partner

INTERIOR ARCHITECT: T.J. Gottesdiener, AIA, principal

LANDSCAPE ARCHITECT: Ken Smith
York City. Granted, Philip Goodwin and Edward Durell Stone's Museum of Modern Art preceded it in 1939, and Wallace Harrison and his team for the United Nations Secretariat went up in 1950, but here was a true wrapped-in-glass office building, erected by a soap company as a symbol of hygienic modernity. The client, Charles Luckman, was perfect: He had been trained as an architect before becoming head of Lever Brothers.

By incorporating a plaza at the ground level, partially covered with a one-story-high horizontal slab resting on columns, and by taking advantage of a little-used zoning provision that allowed the office tower to be straight up to any height as long as it only occupied 25 percent of the site, Lever House was a distinctly different urban form. It thrust forward an alternative to Manhattan's conventional wedding-cake silhouette resulting from the 1916 zoning code. With its skinny (8,700-square-foot) floor plates at mid-rise height, the building provided a density only eight times the size of the site. But Lever Brothers didn't care about added rent from the upper floor space or ground-level shops.

The let-there-be-light-and-air credo of Lever House was famously embodied in 1958 by Mies van der Rohe's Seagram Building, at the corner of 42nd Street and Park Avenue. By 1961, zoning would be changed to encourage more such tower-with-plaza options—and soon the rest of the city followed, although not so successfully.
A new player arrives on the scene

Regardless of its historic significance, Lever House showed the wear and tear of its years. It became clear that the curtain-wall technology of 1952 was not holding up (see sidebar). After Lever Brothers, now Unilever, left Manhattan for Greenwich, Connecticut, in 1998, RFR Holding appeared as the new owner of a 99-year-lease on the building and its air rights. Although the LPC had already approved SOM’s drawings for a renovation submitted by Unilever in 1996, RFR promised a sensitive restoration. RFR hired engineer Gordon H. Smith to do the actual curtain wall, with Mies as design consultants. (The HVAC system did not need overhauling, though RFR undertook specific modifications where needed.)

RFR then put a young architect, William T. Georgis, in charge of restoration and redesign of the lobby and elevator cabs and had him coordinate the design efforts for the outdoor and indoor public areas. Georgis, who has worked with RFR and two of its principals, Aby Rosen and Michael Fuchs, on a number of interior commissions, such as building lobbies and private residences, wanted to retain the 1950s aura of the original spaces without resorting to “slavish reconstruction.” The lobby furnishings designed by Raymond Loewy were long gone, and there were only photographs, but no drawings, available. (Loewy’s sumptuous modern offices for the top brass still exist on the 21st floor, a perfect time capsule.)
A MIDDLE-AGED MODERNIST ICON IS REJUVENATED WITH A NEW SKIN

When Lever House was designed 50 years ago by Gordon Bunshaft, of Skidmore, Owings & Merrill (SOM), curtain-wall technology was in its infancy. The glass envelope remains exquisitely detailed, even in light of several decades of advancements, but its performance was eventually undermined by 1950s' technology.

If a soap manufacturer wants to project an image of cleanliness, then architectural transparency is one way to express it. In an otherwise bland review, Engineering News Record (May 1, 1952) quoted the architects as making cost-saving claims, as well, for the hermetically sealed envelope. They argued that operable windows were more expensive to install, and that fixed glazing reduces the frequency of interior cleaning by keeping out dirt and grime, of which there was a lot more in the air in 1950.

Fixed glazing also reduces the costs of heating and air-conditioning. Although certainly not up to today's standards, the light green tint of the glass did indeed reduce by half the heat gain (solar heat gain coefficient of 0.60) allowed by typical clear glass. Developed by the Pittsburgh Plate Glass Company (now called PPG Industries) in 1934, the innovative Solex glass also reduced interior brightness (visible light transmission of 77 percent) and, as a result, made it practical to design buildings with huge expanses of glass. Because tinted glass was produced in limited quantities until after World War II, reportedly not until Lever House was completed in 1952 was such glass used as both a design element and for environmental control.

The architects knew that mullions made of carbon steel corrode, and when they corrode, they expand, and when they expand, they crack the glass. So the designers capped the mullions with 16-gauge stainless steel and sealed the joints. Over the decades, however, moisture infiltrated the system and the glazing began to fail. By the time SOM was hired to restore the envelope, almost none of the original glazing remained.

The spandrels, which were also glass, were reinforced with wire. Originally, the spandrel was limited by available glass size to two pieces. Now, however, glass can be manufactured in bigger units as float glass. SOM's spandrel detail for the restoration in 1996 duplicated the original with two pieces of glass joined by a mullion. When the new owner hired curtain-wall consultant Gordon Smith, he revised SOM's drawings so that the spandrel was a single piece of monolithic glass, but a nonfunctioning mullion was applied to keep the proportions the same. "To recreate the 1952 spandrel detail would have doubled the labor costs and required twice as many joints," says Smith. And besides, as both SOM and Smith agree, no one would know the difference.

Although the process of restoring and replacing the facade was extremely tedious, it wasn't more complicated than constructing a new envelope, because the original was well conceived. Wherever possible, Smith insists, the original carbon steel was scraped, coated with high-performance paint, and reused. A new aluminum subsystem was added to help prevent moisture penetration into the carbon steel. All the stainless-steel caps were replaced because Smith determined that it would have been too costly to remove, catalog, and store them during the renovation. The result is precedent-setting for the future care of Modern architecture. Sara Hart

Whereas the wired-glass spandrel panels were originally divided into two parts with a full mullion, now a nonfunctioning mullion (above and left) is applied to the panels. The environmental codes for energy use were waived so that the same single-pane glass could be installed.
Georgis restored floors, ceilings, and wall surfaces, including the yellow mosaic wall at the rear of the elevator bank. Art curator Richard Marshall has mounted an exhibition of Isamu Noguchi’s sculptures, seen in the lobby (above) and the north entrance plaza (opposite). This spring, a bar by London-based designer Marc Newson is scheduled to open at the south end of the complex.

capsule, where Unilever maintains an outpost of four floors).

Georgis designed the lobby’s taut, planar furniture to be simple and svelte: The concierge desk is Claro walnut and brushed stainless steel with enameled steel panels, while the seating is white leather and steel, the coffee table, glass and steel. As Georgis points out, the chairs are shaped, as is the table base in plan. “We got a little logo-happy,” he says, “but we tried to keep it subtle.” Working with lighting designer John Schwinghammer, Georgis also created new custom lighting within the existing openings in the ceiling, plus flexible fixtures for the artworks.

The $60 million renovation on top of the undisclosed price of the lease meant that RFR needed to get fairly high rents for the floors (up to $80 per square foot), with partial occupancy occurring during the restoration. In order to attract tenants, RFR thought the plaza as well as the lobby could be enlivened. Even if Lever House’s public areas had been radical concept, truth to tell, the plaza was usually empty—and critics for not adding much to street life. In the early days, Bunshaft had worked with sculptor Isamu Noguchi on an open space plan for the ground level. However, it was never realized, and ultimately SOM provided the plant design for the ground level and the third-floor terrace.
Now, with landscape architect Ken Smith, graphic designer Michael Bierut, of Pentagram, and art curator Richard Marshall, this situation would change. Ken Smith’s impulse was to finally realize the Noguchi dream, including fabricating sculptures that had been designed for the old Seagram Building. But the Noguchi Foundation was not in favor of their being recreated posthumously. Instead, working with Marshall, the foundation decided to lend sculptures on a temporary basis as part of an exhibition. On top of that, it went along with recreating Noguchi’s plans for outdoor seating, composed of black and white squares and circles. The upper-level terrace has been replanted just as it was. For his part, Bierut developed signage, including a typeface, “Lever Sans,” generated from the letters in the name emblazoned on the building.

By staying within the spirit of the realized and unrealized intentions, RFR and its team brought back the gleam of the original and enhanced the richness of the ground-floor spaces.

So is it authentic? After musing with this question in his article preservation magazine, Wayne Curtis concluded that one has to think differently about authenticity in preserving a Modern machine-made building versus the handcrafted sort. The point is well taken. But most important is the conventional wisdom that it is not what you do, but how you do it that matters. Here, the level of quality and attention to the materials, details, and proportions of the new elements appear comparable to the old. “The level of detail Aby Rosen was willing to bring to this project is extraordinary,” says Georgis. The company seems to have been taken with its new image: Shortly after buying Lever House, RFR acquired the Seagram Building, further burnishing the company’s reputation for collecting high-caliber Modernist landmarks. And now as Lever House approaches its 51st anniversary, it attests to the merits of “authentic” restoration in the most modern (i.e., newest) manner.

Sources
Glass vision and spandrel panels: PPG
Stainless-steel and aluminum curtain wall: Flour City Architectural Metals (defunct)
Concierge desk: VCA-Volz-Clark
Chairs (lobby): La Chaise de France

Raredon Resources
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K-12 SCHOOLS

As Good As It Gets

WHILE WELL-DESIGNED SCHOOLS FOR THE YOUNGER GENERATION SIGNIFICANTLY IMPACT THE QUALITY OF EDUCATION AND LIFE, PROGRESS IS SLOW.

By Jane F. Kelleeney

There are the K-12 school building that is thrilling to look at. True, we see less of those painfully familiar, '60s-style boxy egg-carton structures with rows of classrooms and long dark hallways that resemble prisons. Even so, school boards, tight regulatory processes, and strict programming requirements all too often tie the hands of architects and curb imagination.

We are told schools are evolving toward a new architectural vocabulary to express our culture's changing values. Classrooms are wired for the Internet and flexible to accommodate cluster teaching. Schools double as community centers, providing a gathering place for after-hours events long after the kids go home. Instead of libraries that house only books, media centers with state-of-the-art technology are the status quo. Even as the nation suffers through a recession, the education construction market remains strong, at least for now. Yet, while there are financial resources and innovative ideas for new schools, overall the aesthetics are moving at a turtle's pace. In the words of Judy Marks, Hon. AIA, the associate director of the National Clearing House for Education Facilities (NCEF), which tracks education trends, "Change is slow, resembling small victories rather than broad reforms."

NCEF produced a document in November 2002 called Do School Facilities Affect Academic Outcomes, by Mark Schneider (www.edfacilities.org), which clearly showed that design excellence counts. Good indoor air quality, ventilation, temperature, lighting, and acoustics produce a notable positive outcome. Building quality, age, spatial configuration, and aesthetics also have a significant effect. Schneider cites research concluding that "student achievement lags in shabby buildings," and many studies have found fewer disciplinary incidents as building quality improves. The post--World War II baby-boom era saw an explosion in large schools, but that trend has shifted. An impressive body of research shows that small schools (300 to 400 students for K-6; 1,000 for 6-12) affect performance, especially for students in low-income areas.

The evidence that positive environments count puts into sharp focus the conundrum of why good design in schools is so slow to make progress. The environments provided for children have a huge impact on their attitudes and the quality of their education. With 20 percent of the U.S. population, nearly 55 million people, spending their days in elementary and secondary schools, shouldn't we be concerned? In the post-Columbine era, we really should. The four schools featured here demonstrate both innovation and good design. School boards, citizens, educators, planners, and architects should take note.
Primary School De Vogels
Oegstgeest, the Netherlands

HERMAN HERTZBERGER, A DUTCH LEGEND IN SOCIAL DESIGN, PLAYS HIS HAND AT OUTFITTING A SMALL SCHOOL AND RESIDENTIAL COMMUNITY.

By David Cohn

A disciple of Aldo van Eyck and pioneer of the Dutch Structuralist movement in the 1960s, Herman Hertzberger is back. In projects such as the 1968 Montessori School in Amsterdam, Hertzberger championed the use of design as a catalyst for social interaction. Although overshadowed in recent years by new generations of Dutch architects, Hertzberger, now 71, continues to direct a busy practice, updating his formal language while maintaining his experimental outlook. In an eight-classroom primary school for a small residential development in Oegstgeest, a town outside Leiden, in South Holland, he demonstrates that his techniques of social design are as pertinent as ever.

Program
Hertzberger won the competition for the school and 32 adjacent row houses with his daring solution for a triangular site too small for the required program. In contrast to the dispersed developments of its surroundings, Hertzberger arranged the houses in a bowlike curve that defines a strong public space, like an English crescent. He placed the school at the spring point of the curve with views to all sides. But, as he observes, "no amount of juggling could prevent the housing and school from crowding each other out."

Solution
Defying conventional wisdom, Hertzberger raised the classrooms into the air "so that the houses have views uninterrupted by the school, and the school looks out over the houses." The strategy also created needed outdoor play areas. The classrooms are raised 16 feet to span the gymnasium occupying part of the site, "high enough so that the space under it isn't creepy." School manager Letty Vreeken likes the height for the extra daylight that it brings into the classrooms, but she misses "shade, grass, and trees" on the upper terrace. "It's lovely, but in the summer it's quite hot, though I wouldn't let anyone take it away," Hertzberger notes, "We had to overcome the traditional idea that children should be on the ground, that they need its protection." He counters that approach in saying, "There is more to see higher up; greater distances, clouds, a view of the neighborhood."

The building is accessed by a staircase that begins as a wide podium under the classrooms and zigzags out to rise along the eastern facade. Hertzberger explains, "Like everything else in the project, it was designed to become a social space. The beginning of the stair is like a stage, where children can wait or perform in connection to the playground. The stair isn't too steep, and the kids like to go up and down it quite fast. It is a barrier for the par-
Defying conventional wisdom, the classrooms are raised 16 feet to span the gymnasium occupying part of the site. Manager Letty Vreeken likes the height for the extra daylight that it brings into the classrooms, but she misses "shade, grass, and trees" in outdoor areas.
Raising the classrooms into the air created needed outdoor play areas (below). The building is accessed by a staircase that begins as a wide podium under the classrooms and zigzags out to rise along the eastern facade (bottom).

1. Row houses
2. Multiuse rooms
3. Art studio
4. Classrooms
5. Terrace
6. Main square, amphitheater
7. Gym

ents, perhaps, but the teachers are happier if the parents don’t come so often. And there is an elevator. But Vreken cautions that the children sometimes use the stairs to “throw things down on other children. There are many accidents.”

Hertzberger organized the interiors to break down the rigidity of a conventional school plan. “I tried to make the interior like a micro city,” he says. The classrooms open via wide sliding doors to alcoves that draw small group activities into the corridor “streets.” A “main square” in the form of an amphitheater steps down to a multipurpose room. Hertzberger notes that the variety and flexibility of spaces is particularly important for the different learning needs of the many foreign-born children in the school. Vreken finds particularly useful the theaterlike main square and the open areas at each end of the corridor, dedicated to craft activities and the kindergarten, respectively. “They are fantastic spaces to work in,” she maintains.
Heizer attributes the evolution of formal language since the 1970s in part to changes in available materials—he finds steel and aluminum cheaper these days than concrete and concrete block he formerly used. But more importantly, he says, he has become more flexible in his approach to design. “I try to anticipate possible uses for the building. To make a form that has potential to be functional, to have different things happen underneath.”

“From outside, the form of the school is very precise, but the form opens to change and adjustment; for example, the terrace could be built into classrooms, and a new open terrace could be added, or perhaps a courtyard. It’s not a monumental, finished building but the gesture of a roof from which there is more liberty and openness.”

Indeed, the De Vogels school seems to be the work of a much younger architect, packed with imaginative ideas.
Ann Richards Middle School
La Joya, Texas

HONORING LA JOYA’S MEXICAN CULTURE, KELL MUÑOZ ARCHITECTS CREATES AN OASIS OF COLOR IN A HOT BLEACHED LANDSCAPE.
By David Dillon

La Joya sits on a flat, featureless stretch of the Rio Grande Valley between Laredo and McAllen, Texas. Its name, “the jewel,” refers to a small natural lake west of town that early settlers claimed sparkled like a gem. But daily life is seldom so alluring. La Joya is a poor community of migrant workers and day laborers, who pick fruit, pour concrete, and look after the small ranches in the area. The dot-com boom of the 1990s was only a rumor here and in the rest of the valley.

Program
The Ann Richards Middle School, designed by Kell Muñoz Architects, of San Antonio, and named for the state’s tart-tongued former governor, captures both the reality and the resilience of the town. Its architecture is direct and pragmatic, yet also playful and visually exuberant. Stucco walls glow red, blue, green, mustard, and magenta, the colors of Mexico and the desert. Several are covered with cracked Italian tiles that seem to vibrate in the South Texas sun.

School principal Judith Solis says it took time for the students to get used to the color. “Most schools are so bland that at first they were bewildered,” she recalls. “Students from other schools teased them about being in a theme park. We had to teach them that the color exists in the rocks and plants of this place, that it is part of who they are.”

Solution
The heart of the school is a large open plaza, similar to those in the small Mexican towns from which many La Joya residents come. It is paved in concrete bricks, with a grid of live oak trees and a small pavilion or kiosko, for festivals and performances. The plaza is the social and cultural center of the school, where students mingle between classes and return in the evenings and on weekends for special events. Former governor Richards, known to teachers and students as comadre, or godmother, bought the furniture for

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**Architect:** Kell Muñoz Architects—John H. Kell, Jr., FAIA, Henry R. Muñoz III, principals; Steven Land Tilloison, AIA, Henry Ortega, AIA, Benito Polendo, AIA, Manuel Hinojosa, AIA, Hector Gamboa, Carlos Rios, Baldemar Bernal, Carlos Mejia, team

**Client:** La Joya Independent School District

**Consultants:** Hinojosa Engineering (civil/structural); HMG & Associates (me/p); Alexander Boedy Associates (landscape)

**General contracting:** Wilson Construction

**Size:** 130,000 square feet

**Cost:** $8.4 million

**Sources**
- **Wood doors:** Baur Flooring
- **Glazing and metal doors:** Polvado Glass
- **Metal/glass curtain wall:** Polvado Glass and Vistawell
- **Hardware, aluminum storefronts, glass:** MacLaird Glass
- **Tile:** Mion Terrazzo Tile and Marble
- **Steel:** Tri-City Steel Fabricators
- **Brick:** Valley Block and Brick
- **Roofing:** Sechrest-Hall Company
- **Paint:** Guerra’s Paint Company

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www For more information about the people and projects involved in this project, go to Building Types Study at architecturalrecord.com.
The heart of the school is an open plaza. Here, stucco walls covered with cracked Italian tiles glow red, blue, green, mustard, and magenta. "You won't find any graffiti here," notes Principal Judith Solis, "because the kids have a real sense of ownership."
The plaza and often donates the honoraria from speaking engagements in the valley for books and programs.

Kell Muñoz designed the school for 1,000 students, a number that has now grown to 1,250. All of them are Title I, and most are economically and linguistically disadvantaged, meaning that for them school is more than a place to learn English and math; it is a refuge and a sanctuary. "You won’t find any graffiti here," notes Ms. Solis, "because the kids have a real sense of ownership in the school. It connects them to their own culture and encourages them to feel good about themselves." Each grade (six, seven, and eight) has its own classroom wing, long one-story rectangles with bright walls and black and white linoleum floors. Theater, dance, art, and music classes are held in adjacent buildings, which are linked by simple metal awnings that provide protection from the sun and rain. (La Joya is a center for mariachi music, and on many days visitors to the school are greeted by the sound of guitars and trumpets.) The gymnasium occupies a large, prefabricated metal building that fits the low-budget, ad hoc aesthetic of the school and the region.

The architectural showpiece is the library, with its cracked tile walls and 20-foot hyperbolic paraboloid roof that rests on a single Mayan-style column in the center of the room. These bold forms were developed by Mexican architect Felix Candela and adapted by John Kell’s mentor, O’Neil Ford, for schools and factories around Texas. They make the library a special place, where books and reading open the door to the wider world.

**Commentary**
The school cost $9 million ($67 per square foot), and inevitably the economies show in some of the detailing. The paraboloid shells and the butt-glazed windows clearly stretched the contractors. But the architects’ overall design is exact right. La Joya needed a place that was intimate, lively, and welcoming and the Ann Richards Middle School is all of those things—a source of pride and pleasure along a shifting cultural fault line.
A large open plaza, peppered with oak trees and a kiosks used for performances and festivals, functions as the social and cultural centerpiece of the school (opposite, left and right; below left two). Inside, the hallways feature bright walls and black and white linoleum floors (top right), and the library houses a single Mayan-style column that holds up the 20-foot roof (bottom right).
P.S. 156, I.S. 293
Brooklyn, New York

WITH A JEWEL-LIKE PRESENCE, MITCHELL/GIURGOLA ARCHITECTS’ SCHOOLHOUSE STANDS TALL.
By Jane F. Kolleeny

Architect of record: John Ciardullo Associates
Client: New York City School Construction Authority
Consultants: DVL Consulting Engineers (m/e/p); Ysrael A. Seinuk (structural); Langan Engineering (landscape, site, civil); Branston Partnership (lighting); Cini-Little (kitchen)
General contractor: The DeMatteis Organization

Size: 157,000 square feet
Cost: $52 million

Sources
Roofing: Johns Manville
Hardware: Atlantic Hardware
Ceilings: Armstrong
Custom woodwork and paneling: Eli NY Design
Ceramic tile: Daltile
Interior ambient lighting: Lumax; MagniFloor; Lithonia
Exterior lighting: Holophane
Flooring: Azrock; Polysafe (auditorium)
Plastic laminate: Formica
Paint: Sherwin Williams

In the mid-1800s, tract homes and high-density tenements changed a once-rural Brownsville into a dreary urban neighborhood in southwestern Brooklyn. Effectively a slum, with unpaved streets and no sewers, it was home to struggling first-generation Jewish immigrants who worked in Manhattan’s garment district. After World War II, it was abandoned by the industry’s more successful entrepreneurs, who were replaced predominantly by African-Americans. Although efforts were made in the 1970s and ’80s to upgrade the area, it remains neglected today.

Brownsville needed a hero, and it appeared in the form of this school, which encompasses almost a full city block and plays a vital civic role in the rough and tumble neighborhood. Doubling as a community resource center, the building is utilized by most of the local families for performances, sports, and social and educational events. It replaces a 1908 school building on the same site that had been vandalized and was subsequently demolished, in 1993, because it contained asbestos and lead.

Program
The new school accommodates 200 gifted seventh and eighth graders and 900 K-6 students. One long wing of the four-story building is composed mostly of classrooms, with the gym, cafeteria, library, and other public areas clustered in the other wing so that classrooms can be secured when the school is closed.

An Annenberg grant for art made it possible to offer the kids an enriched arts program. These funds helped create two arts classrooms, a dance studio, music room, recording studio, and a 416-seat, stadium-style auditorium. Principal Martha Torres, a cheerful, assertive woman who displays a combination of sternness and gentleness befitting a school principal, finds art to be a most effective teaching tool: “We present art in a multidisciplinary way—we discuss cultures, and the students explore them in every conceivable way—through dance, art, music, history, and literature. Art saves these students.”

Solution
As the central theme of the curriculum, art is also reflected in the school’s design. The most visibly compelling part of the building, a story wall of glass tiles designed t
The tan-brick, white-trimmed mass of the school takes up almost a whole city block (left). At the main entrance, the facade is composed of a handsome aluminum panel system and yellow curtain wall (below and opposite).
The design of the school supports the theme of learning through art. A wall composed of glass tiles (this page), glazed hallway display areas (opposite, left), and a 416-seat, stadium-style auditorium (opposite, right) all pay tribute to creativity.

Noted sculptor Ned Smyth overlooks the prominent grand stairway marking the main entrance. Illuminated night and prominently visible to the community through a glazed wall, it fronts Sutter Avenue, one of the major arteries in Brownsville. The playground and public areas of the school open onto this street, bringing in more life. Paul Broches, FAIA, of Mitchell/Giurgola Architects, remarks that "the school is the main civic building in the area and serves a critical community purpose in addition to its role as schoolhouse."

The client's design standards required security screening over the windows at the first-floor level. "Frequently other schools use expanded wire mesh, which has a somewhat prisonlike association. We have found a perforated metal panel that provides an equivalent measure of protection, if not more, and is much more attractive both looking from the inside and outside," says Broches.

Standard features include durable, high-quality, low-maintenance materials: terrazzo floors, steel doors, painted concrete block walls in classrooms, and attractively finished glazed concrete block in corridors and all public spaces to assure a utilitarian, tanklike resiliency that is still user-friendly. Designed for future wireless use, classrooms are flexible and can be converted from standard format to the popular small cluster.

Commentary
School principal Torres copes with the chaos that hordes of students inflict. "We like the age range of students. While they don't interact that much, the intermediate students become mentors and do internships with the younger kids. Through its clean design, large accommodating public spaces, airy classrooms, the school has uplifted the local community. Torres continues, "Everyone wants to be here! Neighborhood residents have tried to establish residency in the school's catchment area in order to send their children here."

A delightful art exhibition...
ently put together by the second
orders spanned the length of one
the long corridors of the class-
wing. The kids had created an
interpretive show about such
ious works as Van Gogh's Starry
ight, Da Vinci's Mona Lisa, and
isse's cutouts and still lifes. The
durable hallways provide a
perfect, immutable surface for
transient displays—gypsum
board would immediately have been
shreds. Additional glazed
ways were designed for each
to so that each class-
can present their trophy works
protected public areas.
The tan-brick, white-trimmed
ace of PS. 1566/5. 293 stands tall
ct to the adjacent row houses; in
her neighborhood it might not
as exciting as it is here. It is clear
in the cheerful faces of eager
formed children lining the hallways;
this school has gone well
and the dictates of education,
ing instead as an inviting beacon
ope for the whole community.
Camino Nuevo Middle School
Los Angeles, California

LIKE A MAGIC WAND, DALY GENIK’S SKILL TRANSFORMS NEGLECTED BUILDINGS INTO OPPORTUNITIES FOR CELEBRATION.

By Alice Kimm

In 2000, Kevin Daly and Chris Genik of Daly Genik Architects completed a highly acclaimed charter elementary school in Los Angeles [RECORD, February 2001, page 134]. The inspired transformation of an abandoned mini-mall, it fulfilled the first phase of a master plan for the new Camino Nuevo Charter Academy campus. The academy is the brainchild of Philip Lance, a highly proactive priest, who has been aided by school specialist Paul Cummins and charter-school developer ExED. Camino Nuevo responds to crisis conditions in one of the most impoverished areas of Los Angeles.

Featured here is the just-completed next phase—a middle school housed in an 8,500-square-foot, one-story former warehouse and an adjacent 10,500-square-foot, three-story former office building. The latter runs along Wilshire Boulevard, a major thoroughfare. With this project, Daly Genik continues its exploration into upgrading the conventions of generic building types and using derelict buildings to create vibrant cultural and civic facilities.

Program
When the school opens this fall, its 250 to 300 students will occupy 10 classrooms, four located in the one-story volume of the former warehouse and six on the second and third floors of the former office facility. (A continuous circulation system allows the two structures to function as one building.) The raised classrooms are linked by wide corridors that run directly alongside Wilshire. A parents’ center and the school’s administrative offices reside on the ground floor. An independently functioning community health center also occupies this level.

Solution
Philip Lance comments that an urban school “is a chance to make a great impact on a neighborhood, where you have a large captive constituency, and you can broaden the educational mission to include adults.” He thus challenged Daly Genik to create a facility that celebrates the neighborhood and welcomes its residents—a facility that is, both formally and metaphorically, transparent.
Rugged, perforated stainless-steel sheets face the existing tain wall along Hshire Boulevard. An attractive element is a giant sun-screen, mitigating the light, views, and sound to pass through its porous surface (right below).
The school's main entrance is located in the one-story former warehouse, where it abuts the former offices (left). West-facing clerestory windows and large openings in the roof bring light into the classrooms (right).

The main entrance to the school is located at the south end of the one-story former warehouse building. This structure is divided down the middle, with classrooms on the west side and the school's major circulation spine, or street, on the east. Looking through the front gates provides a captivating view down the street, which will be full of activity when the facility is open.

Introducing natural light into this building's interior was of utmost importance. This was accomplished with west-facing clerestory windows in the classrooms and large openings in the roof above the street. The openings are left uncovered; noises dissipate into the sky, and fresh air and light are present at all times. The street is further enlivened by a curved, folded, and colored plaster wall enclosing the classrooms. This wall further animates one's view into the school from the street outside.

The most interesting feature of the renovated, three-story office building is the treatment of the upper-story facades protecting the corridors along Wilshire Boulevard. The architects replaced the existing curtain wall with corrugated, perforated stainless-steel sheets to create a giant sunscreen. Light, views, and sound pass through its porous surface. From the street, silhouettes of people moving back and forth behind the facade are clearly visible. The transparency is vital; according to Kevin Daly, "Philip Lance's expecta-

Commentary
Camino Nuevo proves that liabilities such as run-down or abandoned buildings can be turned into assets. However, reusing existing structures is not this project's only lesson. Its openness to the surrounding neighborhood, in answer to Philip Lance's original mandate, creates an important urban impact. As Daly notes, "There is no way to isolate it. Because of its open-ended nature, the perimeter is never set. The boundary is a source of possibilities." He expands on the approach: "The school could become one in a chain of projects logically connected throughout the city as social infrastructure."

While there is little certainty that such a windfall of development would come to pass in the area, those who care about the quality of urban life are hopeful. Camino Nuevo provides an exciting alternative for needy neighborhoods that have only small parcels of land with existing buildings on them to offer up as potential development sites. If this school can take up an entire block previously composed of abandoned and underused structures and turn it into a vibrant and stabilizing force in the community, this is good news indeed.
Vegetation Systems Aftop Buildings Yield Multiple Environmental Benefits

OFING TECHNOLOGY DEVELOPED IN GERMANY IS STARTING TO TAKE ROOT IN NORTH AMERICA

Nancy B. Solomon, AIA

With a few glorious exceptions, rooftops have played a rather unglamorous role in modern construction. The top surface of a typical building is a necessary, utilitarian component that is technically addressed during design and construction and then goes unnoticed by all, hopefully, the maintenance crew. The horizontal space that once defined the building’s site—teeming in life and engaging in countless rejuvenating processes—is replaced by an inert, one-dimensional patch several stories in the air. Slowly but surely, owners, architects, and planners are beginning to recognize the value opportunities inherent in these virtually forgotten patches of real estate.

One very promising option is a green roof, a waterproof protective covering featuring a top layer of soil embedded in a growing medium. Conceptually speaking, the new vegetation replaces the ecology that once roved at grade by the building footprint. The plants form a ruggedly simple carpet or a lusciously elaborated garden. Popular in Europe for decades, green roofs are only now beginning to sprout up in North America.

Seeding the seeds

Rooftop vegetation is not new. For millennia, indigenous architecture was covered with plant material—from sod to thatch. Twenty-five hundred years ago, Babylon was renowned for its hanging gardens. And, in the early 20th century, Le Corbusier extolled roof gardens in his vision of the new city.

According to Linda S. Velazquez of Alpharetta, Georgia, who publishes a green-roof Web site (www.greenroofs.com), the idea for contemporary green roofs came from medieval Iceland and Scandinavia. For inhabitants of these resource-limited regions, sod was one of very few cheap, readily available building materials.

But green-roof technology began in earnest in Germany, where, in 1971, Gerda Gollwitzer and Werner Wirsing published Roof Areas Inhabited, Viable and Covered by Vegetation, a book that outlined the modern green-roof concept. Today, that country essentially mandates green roofs: They are required in some jurisdictions and are offset by tax incentives in others. Fourteen percent of all rooftops in Germany have been greened, according to Steven W. Peck, president of the Cardinal Group, in Toronto. In 1999, his firm formed Green Roofs for Healthy Cities (www.greenroofs.ca), a network of public and private organizations, to promote the application of this technology in North America.

The main draw for green roofs in Germany is, undoubtedly, their environmental benefits. Top on the list is their contribution to storm-water management. In highly developed, densely populated regions, the sewer infrastructure can be overwhelmed by the amount of water that quickly flows off conventional roofs during a heavy downpour. A green roof slows down, reduces, and even cleanses storm-water runoff. “It’s like having a giant sponge on the roof,” says Brian Lambert, marketing manager for the Garland Company, a roofing manufacturer based in Cleveland.

This permeable surface absorbs and retains water, allowing much of it to evaporate, and only very slowly releasing the rest to the ground—at which point it has a chance of reaching an aquifer rather than simply disappearing down a pipe. According to an industry rule of

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 152 and follow the instructions.

Learning Objectives

After reading this article, you should be able to:

Describe the components that make up a green roof.

Explain the environmental benefits of a green roof.

Identify types of plants suitable for a green roof.

For this story and more continuing education, as well as links to videos, white papers, and products, go to architecturalrecord.com.
City Hall, Chicago
The century-old City Hall (above) had been covered by a conventional ballast roof. By utilizing vertical columns and adding reinforcement where the skylights once spanned, the architects were able to install three different vegetation systems (right). The pilot project (above right) includes a perimeter path, which is recommended for maintenance.

Transplanting to North America
As green-roof technology has improved and our own environmental challenges loom ever larger, government leaders and clients are slowly realizing that the benefits of a living roof can also apply on this side of the Atlantic.

In fact, green roofs are gradually being added to the regulatory toolbox for storm-water management in the United States. Maryland's Department of Environment, for example, recommends that local jurisdictions consider it a permeable surface. Taking heed, Anne Arundel County now equates green roofs with grassy surfaces when calculating the amount of water that a new development must retain and treat, says Mark Plait, chief engineer for the county's Office of Planning and Zoning.

With regard to the urban heat island effect, one highly visible experiment with green roofs is taking place in Chicago. Concerned about the public health threat due to the increasing summer heat difference between downtown Chicago and its outlying suburbs, Mayor Richard Daley encouraged the Chicago Department of Environment to look for possible solutions. This effort has resulted in a 20,300-square-foot green roof on top of Chicago's City Hall [ARCHITECTURAL RECORD, February 2003, page 79].

A pilot project, completed in 2001, will test various plant types and green roof systems for this region. The design team included Weston Solutions, an environmental engineering company based in West Chester, Pennsylvania.
Chiropractic Health Center, Luzerne County, Pa.
Although most often applied to flat planes, green roofs can also be installed on sloped and even curved surfaces (left two). Here, plastic lumber battens were attached at the steepest sections to prevent soil slippage. Fabric mesh held soil in place until plant roots took hold. Water drains freely, although slowly, from green roof to eave. The extensive roof was planted with a type of sedum (below). Van der Ryn Architects of Sausalito, California, designed the center.

Building Science

Ever pragmatic, U.S. building owners are being motivated not only by environmental gains: "Longevity is one of the places where our pots see benefits," observes Russell Perry, AIA, managing partner at McDonough + Partners. To understand why, consider the three conditions that typically damage a conventional, black-membrane roof: harshness caused by the sun's UV radiation; thermal shock due to temperature differential between top and bottom layers; and punctures resulting from pedestrian traffic or dropped tools. The vegetation and soil layers of a green roof protect the membrane from all three.

Assuming the membrane is properly installed at the beginning, it could last much longer than an exposed roof membrane. No one knows for sure, as green roofs have not been in place long enough, but the industry has suggested a doubling or even quadrupling of membrane's life, thereby estimating a life expectancy of 20 to 40 years.

Anatomy of a Green Roof
All roofs, the most important characteristic of a green one is its ability to keep water out of a building. It does this with several protective layers: waterproof membrane, drainage system, fabric filter, growing medium, and vegetation. Depending on the particular system and project, a layer of insulation may be installed below the membrane, a root barrier may be added above the membrane, a wind barrier may be placed above new plants, and irrigation may be installed as part of the roof system.

The waterproof membrane is the most critical layer. "Vegetation can always be replanted," says Lambert, "but you've got a big problem if the building gets a leak." After installing the membrane, he recommends waiting long enough before planting to see if there are any holes. "Do a flood test. Try to make it leak. You want to make sure the materials and labor are top-notch," he cautions. Different green-roofing companies promote different membranes—from multi-ply modified bitumen to PVC—often depending on what their sister roofing company sells for a conventional roof.

A root barrier is usually specified when tall plants or small trees are included in the landscape design. It may not be needed when low-growing vegetation with very fine hairlike roots is planted. In this latter case, however, a root barrier may still be installed to protect the membrane from larger plants that could take root if seeds migrate from other areas by birds or wind.

A drainage system is required below the soil layer to handle excess water due to very heavy precipitation. The system essentially con-
20 River Terrace, Battery Park, New York City
An intensive green roof on the 17th floor (right) and an extensive one on the 27th floor are tied to a gray-water system: Roof runoff and other building wastewater, collected in a basement cistern (diagram, below right), will irrigate the midair gardens. In a typical building (below left), roof runoff is not reused. The project was designed by the New York office of Cesar Pelli & Associates and the New York landscape and urban design firm Balmori Associates in accordance with Battery Park City Authority’s Green Residential Guidelines.

sists of an elevated air space into which water can collect and, once it reaches a certain level, flow off the roof—typically through interior drains. As with membranes, the drainage layer varies from manufacturer to manufacturer: One, for example, relies on a plastic tray whose profile resembles an egg carton, while another installs a layer of gravel. Some drainage systems are designed so that a portion of the collected water can be saved and recycled back into the soil during arid periods. In comparing drainage systems, architects should be cognizant of how much water they can hold for how long a period, and how much they weigh. A very fine cloth filter is placed between the growing medium and drainage system so that only water can pass through.

Engineered soil and hardy plants
When it comes to living roofs, not all dirt is the same. In fact, the medium in which the vegetation is planted must be carefully engineered for the system to achieve its expected life. It would be a big mistake, for example, to install a soil that is more than 20 percent organic: “The plants will look great for the first two years, but then roof health will deteriorate because organic soil disintegrates quickly,” says horticulturist Ed Snodgrass, who studies and grows green-roof plants on his family farm, Emory Knoll Farms, in Street, Maryland (www.greenroofplants.com). Again, each manufacturer offers its own special blend that considers weight, water capacity, and compaction over time.

The depth of the growing medium and species of plant distinguish the two basic types of green roofs—extensive and intensive. Extensive green-roof systems have very shallow beds, in the order of 3 to 6 inches, that support only very hardy, low-growing vegetation. These are the most practical and economical green roofs, as they are lightweight, weighing little more than a traditional ballast roof—and require little or no maintenance or irrigation.

With deeper beds, intensive systems can grow many more varieties of plants—and even small trees. They can be much more aesthetically pleasing than extensive roofs, easily lending themselves to a gardenlike atmosphere. But the additional soil and taller vegetation translate into higher roof loads, so additional structural support is often necessary. This type of roof landscape typically requires regular maintenance—including watering, fertilizing, and mowing—that adds to ongoing operation costs. All nutrients from the fertilizer, which is water soluble, can slowly make their way to local water bodies, where they can add to the ecological havoc.

A lightweight growing medium can easily be lost to the wind until stabilized by mature plants. A mesh made out of a biodegradable material, such as jute, is recommended to cover the dirt temporarily.
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Alternatively, in some proprietary systems the plants are grown in plastic trays or sodlike mats on grade, so that they are fairly mature and secure in the growing medium before these components are lifted into place.

Rooftops can be harsh environments. The plants that survive the best are those that have adapted to similarly harsh locations. Imagine the handful of plants you would find growing on a windswept rock outcropping high up on a mountain, scorched by intense direct sunlight in the summer, frozen by snow in the winter, and drenched by rain in the spring. “That’s what you want to plant—not roses,” explains Perry. Fortunately, such hardy plants can be very attractive, and they come in many different colors, not just green.

By and large, the plants that seem to fare best on U.S. roofs are the same ones promoted in Germany: succulents, with varieties of sedum being the most common. Because of their particular metabolic processes, succulents are very adept at conserving water and can therefore survive drought conditions. And, when planted in the appropriate region and soil conditions, many do not need ongoing fertilization because the nutrients from their dropped leaves are simply reused. “It’s self-sustaining,” observes Perry.

But conditions—in terms of temperature fluctuations, light, rain, wind, maintenance, occupant access, to name a few—do vary from roof to roof, necessitating one type of plant over another. Priorities also vary: In the U.S., for example, there is a lot of pressure to use native plants on roofs despite the fact that, according to horticulturist Snodgrass, “don’t yet have any proven natives.”

Whether drought-tolerant low-growing vegetation or taller shrubs, all plants need sufficient water to get up and running. Contemporary, above-soil irrigation systems are installed for the first growing season. “It’s used as an insurance policy,” explains Lambert. If aesthetically very important, a permanent irrigation system may be installed about an inch below the soil to deliver water to the roots as needed.

Plowing ahead

Today, about 10 patented green-roof systems are available from about a dozen companies in North America. Each company typically offers service for a complete green-roof system, from membrane to plants. According to Schickedantz, however, an architect can, and often should, mix and match proprietary components to suit a project’s particular needs.

Some of these companies strictly focus on green roofs; others offer traditional roofing manufacturers that are adding green to their palette. In either case, the American firms have typically aligned themselves with German green-roof manufacturer and modified the German technology to suit North American building requirements and climatic conditions.
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However, the jury is still out as to whether these systems have been fully adapted to our continent. And there is not yet enough hard data distilled from rigorous testing—here or, for that matter, in Germany—to show quantitatively how well green roofs succeed in their expressed goals.

Fortunately, a few researchers in academia are beginning to rectify the situation. For example, Bill Hunt, P.E. (www.bae.ncsu.edu/people/faculty/hunt), extension specialist with the biological and agricultural department at North Carolina State University in Raleigh, has set up three experimental roofs to investigate, among other factors, the speed at which water runs off both conventional and green roofs, measure how much nitrogen and phosphorus are absorbed by the systems, and determine the optimum roof slope, soil type and thickness, and plant species for the southeast United States.

Despite the various systems currently on the market, Hunt admits that there are still a lot of design questions to be answered: How thick should the soil be? What type of soil should be used? What are the best plants for quick growth? How does soil depth affect plant growth and flood reduction? “Right now it’s a shotgun approach,” confesses Hunt. But not for long: “Soon there will be enough data so that we can make pretty good preliminary design recommendations,” he predicts.

In the meantime, to further their education, architects interested in this new technology may want to attend Greening Roofs for Sustainable Communities: The First Annual North American Green Roof Infrastructure Conference, Awards, and Trade Show. It takes place on May 29 and 30, 2003, in Chicago and is cosponsored by The City of Chicago and Green Roofs for Healthy Cities.

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**AIA/ARCHITECTURAL RECORD CONTINUING EDUCATION**

**INSTRUCTIONS**

- Read the article “Vegetation Systems Atop Buildings Yield Multiple Environmental Benefits” using the learning objectives provided.
- Complete the questions below, then fill in your answers (page 238).
- Fill out and submit the AIA/CES education reporting form (page 238) or download the form at www.architecturalrecord.com to receive one AIA learning unit.

**QUESTIONS**

1. Vegetation and soil protect rooftops from all except which type of damage?
   - a. UV radiation
   - b. water
   - c. thermal shock
   - d. punctures

2. The roof membrane’s life expectancy changes in which way due to vegetation?
   - a. it lasts 5 years less
   - b. there is no change
   - c. it lasts 10 years longer
   - d. it is expected to last 20 or more years longer

3. The most critical layer of a green roof is which?
   - a. soil layer
   - b. waterproof membrane
   - c. vegetation
   - d. filtered drainage

4. When is a root barrier specified?
   - a. when tall plants are used
   - b. when low-growing vegetation is used
   - c. when the drainage system is specified
   - d. when the soil layer is shallow

5. A drainage system is required to handle which?
   - a. daily watering
   - b. recycled water
   - c. excess water
   - d. stored water

6. Extensive green-roof systems can be described by all except which?
   - a. shallow soil bed
   - b. requires regular maintenance
   - c. supports low-growing vegetation
   - d. lightweight

7. Intensive green-roof systems can be described by all except which?
   - a. gardenlike atmosphere
   - b. deep soil bed
   - c. need structural support
   - d. economical green roofs

8. The type of plants best suited for rooftops is which?
   - a. roses
   - b. native plants
   - c. succulents
   - d. shade-loving plants

9. The environmental benefits of green roofs include all except which?
   - a. storm-water management
   - b. cooling the ambient air
   - c. releasing nitrogen into the drainage water
   - d. providing a habitat for insects and birds

10. Green roofs are encouraged in Germany by which means?
    - a. some jurisdictions offset cost by tax incentives
    - b. required by a constitutional amendment
    - c. cost of plants is subsidized by government
    - d. labor is provided by the government
School Construction:
Technology Is Changing the Way Kids Learn ... And the Classrooms in Which They Do It.

Stephen H. Daniels

been nearly seven years since former U.S. Secretary of Education Richard A. Riley released the nation’s first educational technology plan. That plan, with the lofty title “Getting America’s Students Ready for the 21st Century: The Technology Literacy Challenge,” transformed overnight what our students learn, how they are taught, and the Internet-driven wave of change that technology has had tremendous impact on classroom design itself.

The classrooms for the 21st century are shaped by Internet learning.

Programs defined as technology education are replacing programs known as industrial arts in the same way that industrial arts replaced “manual arts” 30 years ago, and both curricula and facilities are dramatically different.

“Architects who are pulling from their files, as the basis for new school plans today, blueprints from the 60s—and there are still a great number of them—are doing their clients a disservice,” says one Midwest-based tech education consultant. “To accommodate the new curriculum, schools today, especially the new labs, are wildly different than anything you and I grew up with.”

This continuing education piece will look at recent trends in technology education and will look briefly at how learning success can be influenced by effective design. In it, we will look at a number of technology labs, including those in which modular units replace “typical” classrooms and curriculum, and we will discuss the environments necessary to effect successful “project-based” learning.

Last year, for the third year in a row, U.S. school construction spending exceeded $20 billion—a little more than half of it in new facilities. Nearly 40 percent of the new high schools, and about 10 percent of the new middle schools, included technology labs. Of the nearly $10 billion in renovation of existing schools that was completed in 2002, a significant percentage was for converting existing industrial arts classrooms to technology education facilities.

“The philosophical change from industrial arts to technology education has involved the renaming of programs, the restructuring of courses and changes in facilities,” says Kenneth S. Volk, former assistant professor with East Carolina University’s Department of Business, Vocational and Technical Education, now a senior lecturer with the Hong Kong Institute of Education’s Department of Engineering and Technology Studies.

Between 1970, when the first university renamed and restructured programs from industrial arts to technology education, and 1990, the number of industrial arts teachers graduating from U.S. universities declined by more than 70 percent, according to Volk, and the decline over the past decade has been even more precipitous. Volk predicts the demise of industrial education in the U.S. by year 2005.

Dr. Michael DeMiranda, a Distinguished Technology Educator (DTE) at Colorado State University, says such a prediction is unfounded. “Some form of trade
The modular learning programs come with a new tool and facility demands, all their own—wind tunnels, race tracts, stress-testing apparatus for engineering modules, a six-ft.-high apparatus for experiments that teach the principles of magnetic levitation. A construction technology program is accompanied by a four-sided light box that demonstrates the heat dissipation values of four different window glass combinations including a low-e sandwich. Students use the equipment to gain hands-on experience with real-world materials and gain an understanding of real-world alternatives.

Technology education’s hardware and activities have been incorporated into other disciplines. Math and science teachers now use robotics, CAD and modular hardware typically found in technology education in order to provide concrete applications to their lessons. English classes, now often called “communication” incorporate video production, desktop publishing, and other “tools” found in technology education’s communication clusters.

**New Learning Methods Demand New Classroom Concepts**

“Young people in a modular learning environment work on projects together,” says a supplier. “They look at problems from every angle. They brainstorm possible solutions. They come up with a plan, test a model, keep the parts that work, and eventually write a narrative about their experience. They learn how the physical world really works in an environment that resembles the real working world.” And they do it, increasingly, in classrooms without desks.

Educators are still grappling with the notion of technology education as a way to achieve “technological literacy” in the U.S., and designers are attempting to provide answers to high-profile problems to school boards who sometimes don’t understand the questions.

Digital content and networked applications are transforming education. Department of Education officials. That transformation is increasing the pressure for stakeholders in public education. Increasingly, not only the tools of the technological transformation—computers and LANs and WANs (local and wide-area networks), but the curriculum itself, come from outside the traditional educational community.

The tech lab affords the architect and the school board a unique opportunity to design a space that ensures a “powerful” learning experience, says a supplier. What does that space look like?

“When it comes to specifying classroom equipment, most architects know what goes in a biology lab, but most have never been in a tech lab, and they have no idea about it. That’s where we come in.”

One technology education supplier operates four regional learning centers where both teachers and designers engage in seminars to understand the new technology and its accompanying curriculum. Between five and 10 percent of that audience is architects. Most, it is an epiphany, says a spokesperson. “They tell us they had no idea that was going on.”

At the 4,000-student Manual Arts High School in downtown Los Angeles, the third-oldest school in the city, once a percent African-American, now 80 percent Hispanic (most Manual Arts students body list Spanish as its first language), 11th-grader Ernesto Smith was quietly busy with other students—both female—at a workstation in a converted metal shop.

The students were constructing a working model of a maglev train, the first real-world version of which is to be unveiled by the Chinese this spring—a $1.1 billion, 36-mile system connecting Shanghai and Pudong. Incredibly, Smith and his classmates, understand the principle involved in the construction of a noiseless, frictionless rail project. Smith says of the process he gained an understanding “this is fun!”

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*School Construction: Technology is Changing the Way Kids Learn*
School Construction: Technology is Changing the Way Kids Learn

and students to exhibit projects, and storage areas give students a place to house their “works in progress.” Learning centers provide the opportunity for self-directed learning.

In some states—Virginia is one—traditional desks have been replaced by tables in more than one-quarter of all elementary classrooms. Nine of ten Virginia elementary schools have student work stations in their classrooms and 70 percent have special rooms for tutorials and small groups of students. Because contemporary teaching often crosses traditional academic disciplinary lines, many classrooms also now have moveable walls to accommodate student groups that may combine more than one class. One fifth of all Virginia elementary schools and half the state’s middle schools incorporate moveable walls as part of school design.

"More traditional arrangements are being replaced gradually by nontraditional organization of classrooms," says a recent report on design features in Virginia’s public schools. "Elementary and middle school classrooms organized by grade-level and high school classrooms organized by academic discipline are changing to include thematic, interdisciplinary, and family clusters.”

In each of the three years since 2000, according to the U.S. Department of Education, U.S. new school construction totaled more than $20 billion. The $20.34 billion in new construction in 2000 was the highest in history, and in each of the years since 2000, slightly more than half total school construction spending was on new facilities.

It is interesting to note the elements of that new construction, the extent to which industrial technology and vocational shops were a part of new school designs and the degree of technology support that went into new facilities. The numbers reflect the trend toward advanced technology education.

At the high school level, 35.7 percent of new schools included facilities for industrial technology classes; 26.8 percent included vocational shops. Just over nine percent of all new middle schools included industrial tech facilities; 3.1 percent, vocational shops. Nearly all—98.2 percent—of the high schools under construction in 2002 were supported by local area networks. Nearly 97 percent included fiber optics or cable. At the middle school level, 96.9 percent of all new facilities in 2002 included LANs; 98.4 percent, fiber optics or cable.

All This is New, Say Architects

In an effort to improve high school science, math, and technology education teaching and learning, the National Science Foundation sponsored a planning study, the objective of which was to develop criteria, standards, and a process for programming and planning prototype laboratories and support spaces for secondary school instruction. The results of that planning study can be found at www.labplan.com.

Girls in industrial arts class? Education is undergoing a revolution, so is room design. As the goals of education change to reflect the new educational needs of our society, so, say both educators and designers, do the strategies for technology integration. The new credo of federal educators is that it is vital to prepare students with critical thinking skills—to give them problem-solving strategies more in tune with a complex world.

One of the criticisms of modular, vendor-supplied curriculum is that it's too static, with the potential to include as much as middle school curriculum, while fun, are of limited educational value. The case of the more reliable of the modular vendors, however, curriculum can be designed by educators, or former educators, based on technology standards set federal, state, and in some cases local jurisdictions.

One of the architectural modules widely installed in U.S. classrooms has been exploring architectural history and comparing architectural styles on a 20-day program. On Day One, students are doing simple sketch-mimicking what they have seen the day before. By Day Three, students are viewing clients and doing preliminary site plans, and by Day Four, they design conceptual models and drawing sections and elevations of simple buildings. Eventually they will create 3-D models, consider the effects of the sun on building and environmental site issues. They will design a transit center, have introduction to AutoCAD, and, at the end, make a presentation to a "client" design problem of their choosing. All the while, they have recorded lessons in an electronic journal.

Educators refer to two very different teaching theories: directed instruction—lectures, worksheets and tests with specific expected responses; and what sometimes called constructivist teaching, which focuses on learning through problem-solving and stresses group work in place of individual performance. Critical that architects understand the distinction, because the classrooms each are very different. Small classrooms with rows of desks, maybe 30 of them, will suffice for the former.

Sters, not Rows; Tables, not Desks

tables are replacing rows of desks in many contemporary classrooms. Disadvantages are being added, and learning centers are being introduced. These design features are the outgrowth of a growing emphasis on problem-based learning. This project-based approach to learning establishes collaborative technology learning environments, or "collaboratories," that enable project-enhanced science/technology learning. Tables provide space for students to work together in either large, or small, groups. Display areas enable teachers to exhibit projects, and storage areas give students a place to house their "works in progress." Learning centers provide the opportunity for self-directed learning.

In some states—Virginia is one—traditional desks have been replaced by tables in more than one-quarter of all elementary classrooms. Nine of ten Virginia elementary schools have student work stations in their classrooms and 70 percent have special rooms for tutorials and small groups of students. Because contemporary teaching often crosses traditional academic disciplinary lines, many classrooms also now have moveable walls to accommodate student groups that may combine more than one class. One fifth of all Virginia elementary schools and half the state's middle schools incorporate moveable walls as part of school design.

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School Construction: Technology is Changing the Way Kids Learn

Architects with experience in technology lab design, and award-winners in new high school design were asked these questions:

1. How will the teaching spaces for math, science, computer science, and technology education be different in the next decade?
2. How can the architectural design ensure flexibility for future programmatic change?
3. Is there a preferred or ideal process for interacting with school representatives to ensure that the design and resulting facility will support current and future programs and pedagogy?

The responses in full, and the sources of the remarks can be viewed in the required reading for this continuing education section. (Instructions are at the end of this section.) In brief, however, the responses were these:

- we will be seeing more and more industrial technology shops converting to clean technology labs, reducing the need for large machinery and the traditional shop setting.
- schools, once designed as spaces for “passive” learning are changing to meet new demands, and learning spaces must now support a wide variety of learning activities and environments.
- flexibility is a key factor in tech lab design, and classrooms, in most cases, must be larger to accommodate computers and space for team-learning.
- furniture must be appropriate for technology integration. The old desk-chair combination will not accommodate the personal computer.
- expensive science “wet labs” are being reduced in number. They are being replaced by “virtual reality” stations in which the computer replaces hands-on experimentation.
- interior bearing walls with small-span columns are an impediment to flexible classroom design; mechanical, electrical and plumbing systems must be flexible enough to permit walls to move to accommodate combined classes and accommodate growth and future program changes, infrastructure must be fluid; cable trays and all technology routes must be accessible.
- redundancy in design of mechanical, electrical and plumbing equipment is critical, spaces must be adaptable to any use.

Space is a critical issue in technology education lab planning, as is the problem of maintaining a line-of-sight between teacher and students. "We often find ourselves trying to put a size-12 foot into a size-nine shoe," says Waltmeier. "If I am building a tech lab, the ideal space is open, with the modules against the walls. We find architects frequently trying to create tech labs within a space defined by the traditional classroom—-a space of about 900 sq. ft. The ideal tech lab space is at least twice that, or even 2,400 sq. ft."

At the Mendez Fundamental Intermediate School in Santa Ana, Calif., former science teacher David C. Greenwald now teaches technology in a room that was originally designed for a shop class. Because the education modules, each with its own 19-inch computer monitor, are arranged “traditionally,” in rows across the room as desks might have been arranged, and because Greenwald operates from one end of the room, students are lost behind their computers.

"Keeping everyone on task in the computer classroom is a challenge," he says. To solve the problem, Greenwald has installed roughly a dozen TV monitors throughout the room, so that he can see what each student is doing. The students are engaged; the exercise is a little like monitoring a department store security system, but despite classroom limitations he is enthusiastic about modular education: "Because of the nature of the lab, students are exceptionally motivated, and, he says, they are, therefore successful at advanced levels of learning." This, says Greenwald, "is the most challenging course my students have ever attempted, but it is also the most rewarding.

The Front of the Classroom is Where?

"When we ask teachers "Where is the front of your classroom? the answer is 'there really isn't one anymore,'" says one architect.

Ideally, says Diedre Weber, a home economics teacher at Eleanor J. Toll Middle School in Glendale, Calif., who for a year and-a-half has taught a modular education class called Family Consumer Sciences in a converted sewing classroom and who is now working with local architects on a wholesale renovation of the 75-year-old school, the teacher should be in the center of the classroom, and it should be slightly elevated to maintain a line-of-sight between students and teacher.

A frequent problem, say tech education designers, is getting teachers themselves, to think beyond traditional classroom settings. At Walnut High School in Cincinnati, Ohio, teachers were asked to contribute to a comprehensive plan for a recently completed Arts & Science center that would house the school's computer science labs. "Getting the staff to think beyond the basics, like science with working sinks and running water was a challenge," says Deborah Heeck, executive director of the school's alumni association. "Some wanted outlets to plug in extension cords. In a $10.5 million building, we weren't going to have extension cords," Heldman says.

Education consultants like Waltmeier most often work directly with school districts, but also host training sessions for teachers, administrators and architects, at which Waltmeier says, designers can network with prospective clients.

It is essential, says Waltmeier, that the school's vision of its tech lab be clear before construction drawings begin. "Change orders become expensive," he says. "The complexity and often heavy mechanical/electrical demands of tech education classrooms make mid-construction changes even more costly.

While much remains to be learned—and debated, this much is clear, say those working on the cutting edge of technology education reform: the overwhelming advances made by e-business have made e-learning—computer works, multimedia, content portals, search engines, electronic libraries and web-enable classrooms—an integral part of the 21st Century classroom.

The reform is forcing us to rethink the purpose and the architecture of our educational infrastructures in very fundamental ways.

For further background, readers are referred to the websites of the following organizations: the International Society for Technology in Education (ISTE), National Clearinghouse for Educational Facilities (NCEF), National Center for Educational Technologies (NCES), the National Educational Technology Standards Project (NETS) and the U.S. Department of Education's Office of Educational Technology (OET). Also of interest to classroom architects is the November 2002 report of the U.S. Department of Education's Office of Educational Research and Improvement: "Technology in Schools," which offers tools and guidelines assessing technology in elementary and secondary schools. It may be found at http://nces.ed.gov/pubs2003/20033313.pdf.

Click For Additional Required Reading

As part of the required material for this CES section, please read the archived comments section of the National Science Foundation planning study: To The Material Online, go to archrecord.construction.com/resources/contest. To request a faxed copy, contact Bonnie Grzelinski at (800) 323-8484 ext. 202, or email bgzelninski@paxpat.com.
LEARNING OBJECTIVES

- Know the trends in technology education and its impact on future learning environments.
- Be aware of how the design of schools can impact the learning and how students and teachers interact.
- Understand ways to design a technology lab to be flexible and allow for future growth in technology and learning.

INSTRUCTIONS
Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 238. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on Record's website—archrecord.construction.com—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

QUESTIONS

Q: 1. Last year, for the third year in a row, U.S. school construction spending exceeded:
   A: a. $120 million
      b. $10 billion
      c. $20 BILLION
      d. $25 billion

Q: 2. How much of the annual spending on U.S. school construction last year was in renovation of existing schools?
   A: a. nearly one third
      b. a little less than half
      c. a little more than half
      d. more than three fourths

Q: 3. Which of the two teaching theories focuses on learning through problem-solving and stresses group work in place of individual performance?
   A: a. Directed instruction
      b. Constructivist

Q: 4. The current model of small classrooms with rows of 30 desks would work for which style of teaching?
   A: a. Directed Instruction
      b. Constructivist

Q: 5. What percentage of high schools under construction in 2002 were supported by local area networks?
   A: a. 78.2%
      b. 88.2%
      c. 98.2%

Q: 6. Redundancy in design of mechanical, electrical, and plumbing equipment is critical.
   A: a. True
      b. False

Q: 7. An ideal tech lab space is which in comparison to current traditional classroom sizes?
   A: a. Small than
      b. Same size
      c. Larger than

Q: 8. Learning spaces of the future are being designed for one specific subject or activity per classroom.
   A: a. True
      b. False

Q: 9. The trend in classrooms is working in small groups.
   A: a. True
      b. False

Q: 10. All but which would allow for flexibility in a learning lab design?
   A: a. Electrical lighting on whips
      b. Speakers in the ceiling and zoned
      c. Accessible cable trays
      d. Small span columns

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Resilient Flooring Design Options

Adhesive flooring can mimic nature, reduce sound and static. With it, we can create limitless patterns that burst with contemporary color and energy, that the imagination and command attention. Tinkering with traditional manufacturers have created new product lines of heightened durability and ease of maintenance. New products and processes can help you qualify for Leadership in Energy & Environmental Design (LEED) credits. And—look—linoleum is back!

In this continuing education section, we will evaluate tile vs. sheet flooring, look at the product selection criteria for a range of flooring types and look at the characteristics of a range of both tile and sheet products available to commercial designers.

Tile gives the designer the ability to make many different “modular” designs; sheet flooring lends itself more easily to circular patterns. The “binder” in resilient flooring is, in the case of nearly all commercial flooring, vinyl.

As a general rule, the higher the vinyl content, the better the performance—and the higher the cost. Vinyl composition tile (VCT) is more easily, less expensively installed and more easily repaired, but requires more routine maintenance. With VCT, designers can create a harder, denser surface than is generally available with sheet flooring.

Sheet flooring offers a seamless application for critical environments. Relatively recently developed vinyl-enhanced tile (on the market for about the past three years) gives designers the option of a 16-in X 16-in. tile, nearly 80 percent larger than traditional 12-in X 12-in tile, reducing cost and enhancing performance.

Additives and Stabilizers: More “Meat in the Meatloaf”

Depending on the “recipe” selected to combine vinyl resin with selected additives and stabilizers, vinyl can be made flexible enough for wallcovering, rigid enough for pipe, can have nearly any texture or pattern, and can be made clear or in virtually any color. Vinyl’s durability, resistance to the elements and fire performance all can be affected by additives or stabilizers.

The major components of resilient flooring are vinyl and fillers, like limestone or clay for rigidity. Plasticizers, stabilizers and pigments are secondary components. In general, higher vinyl content increases resilience and long-term wear increases a flooring material’s resistance to indentation and its flexibility.

Vinyl by itself, without any filler, is inherently unstable. All products require some degree of filler and can require special adhesives or heat welding. In some
applications, like cleanrooms, where particulates are a problem, high-vinyl content flooring is a perfect solution.

"I use vinyl in virtually every project we do," says Erin Rindal, interior designer for Bassetti Architects, Seattle. "It's about durability and cleanability. Advances in vinyl means you can use products in locations and ways you couldn't in the past. In general, it is thicker, more durable than it once was."

And there are a lot more options now," Rindal says, "sound absorbing vinyls, for instance, are ideal for school corridors; we use welded sheet vinyl in nurses stations and training rooms."

**Design Considerations**

Many factors should be taken into consideration when determining which flooring material to select for a specific application. There is a broad range of floor coverings, each with specific performance characteristics for various applications.

"Designers must look first at the entire building environment," says the product manager for a Texas-based manufacturer. "The architect must know his client and the environment for which he is designing."

"Some flooring performs better in certain locations than others," he says. Solid vinyl requiring buff maintenance, for instance, may not be the best choice for entryways where road salt, sand, and oils may be tracked. There, more durable finish, which will require less frequent maintenance, is required to stand up to the wear-and-tear.

When looking at slip-resistant floors, designers need to look at those that offer the best performance along with ease of maintenance. A high coefficient of friction (COF) should not be the only factor in high-traffic areas that may require high maintenance because of the general nature of slip-resistant products. As a general rule, the higher the COF, the more maintenance the floor will require.

Designers must consider these performance characteristics when specifying resilient flooring:

- **Design flexibility.** Vinyl sheet flooring and tile are available in myriad styles and colors. Vinyl tile is available in shapes that can be custom cut and laid out in patterns using different colors or finishes. Tiles can be arranged to depict a corporate logo or to guide traffic in a hospital or retail setting. Resilient flooring's diverse product options allow for easy transition between marble, wood and stone visuals due to the similar, if not identical, gauges available. This consistent gauge profile eliminates the need for depressed slabs or alteration of door or cabinet heights in remodels. It allows for a more seamless transition between floorcoverings of almost any type.

- **Usage.** Designers must look at both aesthetics and safety and be aware of traffic patterns that will determine the best characteristics of the flooring. The flooring may need to support static loads or the movement of vehicles. Moisture resistance may be a critical factor, or resistance to fading.

- **Resilience.** Vinyl flooring reduces noise and provides comfort underfoot.

Unlike such hard surfaces as wood, laminate, terrazzo or ceramic tile, vinyl have "give" and thus are referred to as "resilient" flooring.

**Durability.** Vinyl flooring is durable and time-tested, maintaining its beauty under heavy foot traffic and use. It is moisture, chemical and stain resistant spills can be easily removed. When compared with alternative materials, vinyl offers an attractive installed cost with economical maintenance over the life of the floor.

**Safety features.** A wide range of both tile and sheet vinyl floors is available with enhanced slip-retardant surfaces suitable for a variety of commercial and institutional applications.

- **Moisture resistance.** May be critical depending on the type of subfloor, moisture conditions may affect adhesive performance. In most cases, resilient floors may be installed in areas where water might be spilled on the floor, providing the correct adhesive is used and the floor has a minimum number of seams.

- **Stain resistance.** Will vary by product and manufacturer. Special formulas are available for use in areas where exposure to chemicals and staining reagents is likely to occur. In general, vinyl floors are resistant to alkalies, acids, alcoholic solutions, greases and aliphatic hydrocarbons. Ketones, esters and chlorinated aromatic hydrocarbons may cause softening.

- **Light reflectivity.** Light reflectance data is published by manufacturers. When looking to accentuate natural lighting, lighter colored flooring is recommended. Light reflectance is a measure of the percentage of light reflected off a surface. The Illuminating Engineering Society of North America recommends that floors have a reflectance factor of 10-40 percent in offices, 10-50 percent in educational facilities, 20-30 percent in hospital operating rooms, an average of greater than 20 percent in industrial settings.

- **Sound Insulation.** Of special importance in areas with heavy floor traffic. Resilient flooring, in general, will cushion impacts and thereby reduce traffic noise or noise from dropped objects more than other hard-surface floors as wood, marble, ceramic or concrete. In addition, underlayments are available that further reduce impact noise and sound transmission.

- **Fire retardance and heat performance.** Most resilient floors are manufactured to be safe from normal fire hazards. In large-scale experiments that have been run to simulate actual fire conditions, vinyl flooring products have not been significant contributors to the spread of fire or resulting hazards. In fact, vinyl flooring resists burning and typically does not continue burning an external flame is removed. However, a resilient floor surface can be permanently damaged or scarred by burning cigarettes and matches or very hot items.

- **Cost.** Vinyl is a cost-effective flooring material with both initial and lifecycle cost. Vinyl lasts considerably longer than carpet and can, therefore, save on repairs and replacement and vinyl flooring typically costs less than other hard-surface floors. Typically, commercial vinyl tile floor has an installed cost of less than $1.25 to solid vinyl at $8.70 per square foot, depending on the thickness and pattern. Commercial sheet vinyl has an approximate installed cost of $2.64 to $6.00 per square foot, compared to $3.84 per square foot for wood parquet flooring (oak, sanguine, 3/8" thick, not including finish); $7.00 for ceramic tile (natural clay, thin set); and $7.75 for terrazzo (1-1/4" thick, bonded to cement). Commercial grade carpet ranges from $18.20 per square yard to $24.00 per square foot (nylon, level 100; 26 oz., light to medium traffic) to $70.00 per square yard ($20 per square foot patterned wool, 48 oz. heavy traffic).

- **Maintenance requirements.** Overall, vinyl is tough, resistant to scratching, scuffing, staining, indentation and other abuse. This durability is especially critical in commercial settings where routine wear and tear take a toll on floors. The thickness of a vinyl floor's wearlayer is an important characteristic in determining its performance and ease of maintenance. Thicker thicknesses are generally measured in mils, or thousands of an inch. Higher-quality vinyl floors may also utilize a urethane wear layer, while lower-priced floors generally feature a vinyl wear layer to protect the underlying pattern. In general, a urethane wear layer makes the floor easier to clean and more stain-resistant.

**Solid Vinyl Tile provides maximum resistance to indentation and stain resistance, making it ideal for high traffic areas such as post offices.**

Advertising supplement provided by Domco Tarkett Comm
Resilient Flooring Design Options

As shown above, Linoleum is a tremendously versatile product that lends to imaginative designs.

Patterns are applied to some sheet vinyl flooring using a rotogravure printing method, in which colors and patterns are printed on the surface of the base layer, or through an inlaid method, in which the design goes all the way to the backing. With rotogravure, a rotating cylinder prints colored inks on top of the core layer, offering virtually unlimited possibilities in patterns and designs. The printed pattern is covered with a clear vinyl wear layer and the product is oven-cured. In the inlaid process, solid-colored vinyl chips are laid on top of a carrier sheet and then bonded together, under heat and pressure, creating the resulting pattern.

Specifying Tile Types

Three general types of tile are distinguished by their vinyl content, the percentage of which determines the product’s resistance to long-term wear, its abrasion resistance, its ability to resist indentation, and its flexibility—its ability to compensate for minor substrate movement.

Two further tile subsets provide a broader range of aesthetic options: luxury vinyl tile and premium vinyl composition tile provide designers with an expanded range of aesthetic options. In addition, tile may be modified to increase both static control and slip resistance.

Vinyl composition tile is the industry standard for most commercial applications. In fact, VCT accounts for roughly 80 percent of all installed resilient flooring. In general, it is the lowest cost material available and the lowest installation cost. Although VCT may be maintenance intensive, it is highly durable, is noted for its long life and is, therefore, the most highly specified flooring material for low initial budget projects like schools and retail spaces.

VCT is distinguished by its high limestone content—the product is generally speaking 85 percent limestone, and is augmented with vinyl resin, plasticizers, stabilizers and pigments that make VCT available in an extraordinarily broad range of colors. It is a “modular” product, generally sold in one-eighth-in.-thick, 12-in.-X-12-in. squares. Modular installation, as opposed to sheet flooring, makes it easy to replace damaged tiles, and vinyl composition tile conforms to ASTM F-1066.

Premium vinyl composition tile has similar properties to traditional VCT. It, too, conforms to ASTM F-1066, but is available in a broader range of chips and sizes, can be non-directional as well as directional and costs slightly more than traditional VCT. Common applications for premium VCT are in retail and education settings, but it is also more widely seen in healthcare and corporate settings.

Vinyl enhanced tile (VET) is distinguished by its higher binder (vinyl) content—generally between 16 and 33 percent. It offers the advantage of greater...
resilience, longer wear, improved abrasion characteristics, and is available in
larger tiles than traditional VCT, 16-in. by 16-in. It is slightly more expensive
than traditional VCT, say manufacturers, but offers the advantage of lower
installation cost, and vinyl enhanced tile frequently includes a special topcoat
that minimizes maintenance costs. VET is commonly found in public areas, and
is widely used in schools, healthcare settings and retail spaces as well. It, too,
conforms to ASTM F-1066.

Sheet Categories
Inlaid sheet flooring combines inlaid vinyl chips in a matrix that is usually
attached to a felt (or vinyl, or fiberglass) backing, frequently with a protecto-
topcoat. With inlaid sheet flooring, the color or pattern is an integral part
wear layer. It is specified as an ASTM F-1303 Type II flooring.

Cushioned sheet flooring is overlain by a printed foam layer that creates
textured surface that can replicate, for instance, a brick design. The impre-
sion on the foam layer is accomplished through what is known as "cli-
cial embossing." This application is mostly in residential and light-
commercial projects like doctor or dentist offices. Cushioned
products, because they are generally very soft, may not wear as well
or other products and because of the foam layer, may not meet
the code requirements for large commercial projects.

"Homogeneous" sheet flooring is characterized by a cons-
color and pattern throughout the thickness of the flooring. I
what is known as a solid wear layer. The wear layer equals the
thickness of the product. Homogeneous flooring must have a
binder (vinyl) content of at least 50 percent.

"Heterogeneous" sheet flooring is a laminated product, not
often topped by a clear wear layer, frequently simulating wo-
stone, or other natural materials. It may be cushioned to en-
crease absorption and/ or underfoot comfort.

Performance-backed sheet flooring is another laminate
uct, either homogeneous or heterogeneous in manufacture with
backing of closed-cell PVC foam from 40 mls to a half-inch. It
thickness for use in applications where increased shock abso-
control or warmth are factors.

Slip-retardant sheet flooring, either heat-welded or flash
coved, offers a seamless area not available with tile. It also, ty-
has a higher resistance to staining than tile. Some manufacturers
offer a higher degree of stain resistance. These products are u
rethane-enhanced.

Static-control sheet flooring offers the same dissipative characteristics
SDT flooring, but is more sanitary. Common applications are hospital op-
ing rooms and clean rooms.

The Green Revival
Linoleum was the industry standard surface material of the 1950s, but by
mid-70s, the market for linoleum had virtually disappeared. Today, some
million worth of linoleum, all of it manufactured outside the U.S., is insta-
here, and the number is on the rise, say industry sources.

Manufactured using wood pulp, cork powder, limestone, linseed oil, p
tree resin and pigments, linoleum has come back into vogue because of it
atural ingredients and durability.

Linoleum is manufactured at only four plants in the world—all in Eu-
and is generally available only in sheet form, although some manufacture
offer linoleum in tile form. Linoleum is offered in a broad range of colors
patterns and offers the designer infinite design possibilities. It also possess
excellent "green" credentials.

"It's great stuff," Bassetti's Rinaldi says of linoleum. "You can do all kinds of
with it. The same product can be used underfoot and on countertops. Starch
uses it on counters and tabletops. You wouldn't use it on your countertop at
home—because it is generally too soft to cut on—but it is tremendously very

"Environmentally preferable," a phrase that goes to issues like indoor
quality, etc., has become a buzzword in our industry, but until recently
it has been a concern of hospitals. Now, it is becoming a larger issue," says Lisa
Brandy, a resource specialist Newport Beach, Calif.-based Taylor & Assoc.
Architects, a firm strongly devoted to healthcare.

"Designers are still early in the learning curve in considering 'green' in
with regard to floor coverings," says Brandt, partly because there have not
a great number of new hospitals built. But, at least in California, new hos-
construction is seeing a resurgence, primarily as a result of recently-passed
Senate Bill 5953, which requires all facilities to meet new seismic codes.

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The result is a huge growth in new facilities, all with new emphasis on incorporating ‘green’ technology. The flooring industry, especially manufacturers of resilient flooring, are testing the water to determine how best to accommodate that new demand,” says Brandt. “There was evidence of that at the recent ‘Surfaces’ trade show in Las Vegas,” she says, “and I think that in the next 18 months to two years, we will see a lot of new products that address ‘green’, as well as lifecycle cost issues.”

Interestingly, Brandt says, end users are now attending the same trade shows interiors specialists are and, as a result, are much better informed than ever before. “You don’t want to be sitting across the table and be uninformed,” she says.

Taylor & Associates is working now on design of a women’s pavilion for the Newport Beach Hoag Hospital, scheduled for completion in 2005. “Because the facility will be marketed directly to women, we are looking to create a ‘spa’ feel,” Brandt says. “The healthcare environment demands a sheet vinyl, but we would like to create a natural feel, maybe a wood look. That was once a problem, but the industry has come a phenomenally long way and now offers products that look really, really good, perform well and don’t look ‘plastic.’”

Incorporating new processes involving urethane systems that greatly reduce maintenance—and the resultant use of harsh chemical strippers and water usage—a new generation of resilient floorcoverings can help designers qualify for LEED credits on environmentally sensitive projects.

Permanent factory-installed urethane systems can “cut maintenance in half, depending upon the conditions,” says one manufacturer.

With respect to indoor air quality, some manufacturers are now working on certification for product lines that will meet GreenGuard emission requirements for volatile organic compounds (VOCs). ■

Click For Additional Required Reading
As part of the required material for this CES section, you are required to read additional online material. To access the material online, go to archrecord.construction.com/resources/conteduc. To request a faxed copy, contact Elizabeth Reese at Elizabeth.Reese@domcotarket.com.

LEARNING OBJECTIVES
- Determine the design and performance criteria for selecting resilient flooring.
- Understand the aesthetic and performance characteristics of tile vs. sheet flooring.
- Develop a comprehensive overview of available resilient floor products.

INSTRUCTIONS
Refer to the learning objectives above. Complete the questions below. Go to the self-report form on page 240. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self-report form on Record’s website—archrecord.construction.com—to receive one AIA/CES Learning Unit including one hour of health-safety welfare credit.

QUESTIONS

Q: 1. Which is more easily, less expensively installed and more easily repaired?
   A: a. Tile
       b. Sheet flooring.

Q: 2. The major components of resilient flooring are vinyl and:
   A: a. Plasticizers
       b. Fillers
       c. Stabilizers

Q: 3. In applications like cleanrooms, where particulates are a problem, which is a better solution?
   A: a. Higher-vinyl content
       b. Lower-vinyl content

Q: 4. As a general rule, the higher the coefficient of friction (COF) the lower the maintenance the floor will require.
   A: a. True
       b. False

Q: 5. The Illuminating Engineering Society of North America recommends that floors in offices have a reflectance factor of:
   A: a. 20-40 percent
       b. 30-50 percent
       c. 20-30 percent

Q: 6. Vinyl flooring products have not been significant contributors to the spread of fire or resulting hazards.
   A: a. True
       b. False

Q: 7. Higher quality vinyl floors may also utilize which:
   A: a. Vinyl wearlayer
       b. Urethane wearlayer

Q: 8. Which is used to minimize degradation and discoloration from heat and light.
   A: a. Plasticizers
       b. Stabilizers
       c. Pigments
       d. Fillers

Q: 9. The “calendering” process means:
   A: a. Components are mixed together then fed through a series of rollers to achieve the desired gauge.
       b. Melt-compounding the ingredients at high temperatures then molding into the desired shape.

Q: 10. Which account for roughly 80 percent of all installed resilient flooring?
    A: a. Vinyl composition tile (VCT)
        b. Vinyl enhance tile (VET)
        c. Solid vinyl tile (SVT)
Interdependence: Assessing New Risks and Sharing the Costs

The Critical Crossroads

Homeland Security is at a critical crossroads—the spending boom on expensive, security-based building improvements that was forecast in the months following Sept. 11 has not materialized. So what are the steps that architects and engineers must take to secure the built environment? How are they addressing interdependent factors like insurance costs and building codes—while calculating a level of risk that is acceptable to the public? And as architects and engineers respond to security threats, they must calculate how much security is realistic (and palatable) in the real world, where design and security meet developer and insurer expectations.

These issues only scratch the surface of the future and depth of homeland security. Attend this conference to gain specific solutions to these topics and more, including:

- Learn how architects, engineers, developers and owners calculate the risk equation
- Understand the government’s role—beyond setting and enforcing standards—in motivating builders more actively and creatively mitigate risk
- Gain insight on how strategic application of additional security has also enhanced functionality and productivity

Speakers Include:

- Robert Prieto, Chairman Parsons Brinckerhoff Inc.
- Norbert Young, Chairman, International Alliance for Interoperability of North America President, McGraw-Hill Construction

The 2003 McGraw-Hill Companies Homeland Security Summit & Exposition will address specific issues critical to the security of our system with a major track focusing on Architecture and Construction.

Don’t miss this solutions-oriented event that will shape the direction of public and private homeland security initiatives. Call or go online and register now!

Call Ryan Leeds at (800) 240-7645 extension 7.
For information about conference tracks and sessions, visit: www.mcgraw-hill.com/summit
The Gypsum Advantage
In Area Separation Walls

Effective fire resistance and sound attenuation have long been important considerations for those involved in the design and construction of townhouses and apartments. To satisfy these requirements, a growing number of architects and builders are switching to lightweight gypsum board area separation walls. Gypsum board systems are easy to erect and secure, meet all building code requirements, and provide economical fire protection and sound control.

When it comes to defining area separation-type walls and how they are to be constructed in townhouse and apartment applications, all roads lead through the national model building codes. And whether the codes define a wall system as a “fire wall,” “party wall,” “area separation wall,” or “townhouse separation wall,” it must meet the same requirements. Namely, it must be a wall that:

- Is continuous from the foundation to the underside of the protected roof sheathing or continues through the roof to form a parapet, and;
- Is designed to allow for collapse of the construction on the side of the wall exposed to fire without collapse of the separation wall.

Area separation walls made of gypsum board have been deemed suitable for use by every model building code because of their ability to effectively withstand fire and attenuate sound.

Often called drywall, wallboard, or plasterboard, gypsum board consists of a noncombustible core, primarily gypsum, and a paper facing on the front, back, and along the edges. Its sturdy, noncombustible core distinguishes it from products such as plywood, hardboard, and fiberboard. Once all joints and fastener heads are covered with a joint treatment material, gypsum board provides a smooth, continuous surface that is both aesthetically attractive and easy to work with.

What is Gypsum?

Gypsum is a mineral found in sedimentary rock formations. It occurs in a crystalline form known as calcium sulfate dihydrate (CaSO₄·2H₂O). One hundred pounds of gypsum rock contains approximately 21 pounds of chemically combined water.

To obtain gypsum suitable for manufacturing, the gypsum rock must be crushed and ground into a fine powder, then heated to about 350 degrees Fahrenheit. The heating process, called calcining, drives off about three-quarters of the chemically combined water.

Gypsum board is produced by mixing calcined gypsum with water and various additives until a slurry is formed. The slurry, in turn, is fed between continuous layers of paper on a “board” machine. As the board moves down a conveyor line, the calcium sulfate (gypsum) rehydrates and the gypsum crystals reform into their original rock state. During this process, the paper facing is chemically and mechanically bonded to the core to form a gypsum board. The gypsum board is subsequently cut to length and conveyed through dryers to remove any excess moisture.

Though gypsum has inherent fire-resistant qualities, each model building code mandates that any system used as an area separation wall must first be fire tested based on the requirements of a specific test standard, such as ASTM E 119, “Standard Test Method for Fire Tests of Building Construction and Materials,” or its equivalent. These test standards produce numerical ratings that can be used as a benchmark for comparing and evaluating fire-resistant systems. Fire-resistance classifications are the results of tests conducted on assemblies made up of specific materials put together in a specified manner; therefore, variation from the test conditions, or the specimen construction, including, but not
limited to, the type and size of materials and the method of construction which affect the fire-test response.

Model building codes usually require townhouse units to be separated by a two-hour fire-rated system. This is achieved by installing a single two-hour-rated wall such as a gypsum board area separation wall. In some circumstances, such as those defined in the International Residential Code (IRC) or the Uniform Building Code (UBC), the required fire separation rating may also be attained by installing two parallel, adjacent one-hour walls.

**Gypsum Board Area Separation Wall Components**

Gypsum board area separation walls must be installed using the components and installation methods described in the corresponding fire test or listing. The installation should not deviate from what is described in the test report, and should the system include materials that were not evaluated in the original test. Though materials cannot be substituted, the application of additional layers of gypsum board to a wall system is permitted since this will not compromise the wall’s durability or fire performance.

Since they were first introduced in the townhouse and apartment construction market, gypsum board area separation walls have gained a reputation for being easy and convenient to install and secure. For example, liner panels and metal components can be easily stacked, allowing the separation wall to be inserted during the framing phase of construction.

Gypsum board area separation walls are typically manufactured in either a solid (H-stud) or cavity-type design. The solid variety consists of three basic components:

- Gypsum liner panels that are 1-inch thick, 24- inches wide, and either 8-, 10-, 12- or 14-feet long.
- Metal framing members consisting of 2-inch-wide H-studs and U-shaped track.
- "Break away" L-shaped aluminum clips that soften at relatively low temperatures.

Solid systems are erected vertically one floor at a time. Two layers of 1-inch-thick liner panel are secured at the foundation by being inserted into 2-inch-wide tracks. The panels are held in place by 2-inch H-studs and are erected sequentially along the track. Each completed floor of area separation wall is capped with an inverted piece of track. Following the erection of the adjacent structural building frame, new panels are installed on the top of the completed floor of panels and the stacking process is repeated.

Cavity-type area separation walls are constructed with components typically incorporated into either steel stud partition systems, or gypsum board shaft wall enclosures, such as those used to enclose an elevator shaft in a multistory building. As with solid systems, cavity-type area separation walls are erected vertically, beginning with the installation of panels at the foundation.

Gypsum board area separation wall systems are attached to the adjacent structure by L-shaped aluminum clips. The clips are fastened to both sides of each stud at each floor or roof/ceiling intersection and provide lateral support for the wall. The clips maintain their full integrity until exposure to temperatures in excess of 1100 degrees Fahrenheit. When one side of the system is exposed to a fire of that intensity, the clips will soften and break away, allowing the adjacent structure on that side of the system to collapse without pulling down the fire-resistive separation wall. The clips on the opposite side of the area separation wall remain intact, since temperature on that side will be far below the point at which the clip will soften. Consequently, the fire-resistive wall system will remain standing, sparing the adjacent living space from significant damage.

The clips must be manufactured from aluminum in a thickness and size...
conforming to the requirements established by the representative fire test and the manufacturer of the area separation wall system. Use of a noncompliant clip, or elimination of the clips altogether, may result in the failure of the system to work as intended.

**Ensuring a Successful Application**

It is critical that the components of a gypsum board area separation wall system be protected from adverse weather and extreme or continuous moisture during and after the installation. Gypsum panels must also be shielded from sustained temperatures exceeding 125 degrees Fahrenheit / 52 degrees Centigrade. Consequently, gypsum board should not be installed in a sauna, or steam room, or where it will be directly exposed to the immediate heat produced by heat-producing appliances, such as a wood-burning stove.

Joints and fastener heads in the face layers of a gypsum board area separation wall system should be finished to comply with the requirements of the building codes. Joint tape to the face layer board joints (Level 1 as described in recommended Levels of Gypsum Board Finish, GA-214E) and a single coat of joint treatment over the fastener heads. Additional joint treatment may be used to satisfy aesthetic requirements. Joints between individual pieces of panel in a solid system are protected by the H-studs and do not require application of joint treatment material. Solid area separation wall systems must be disconnected from adjacent combustible framing members to be fully code compliant. The space is easily met by setting the adjacent wood framing members at 3/4-inch to one inch away from the liner panels; the specific distance is established by the representative fire test. If the space requirement cannot be met, the visible faces of the H-studs must be covered with 6-inch-wide gypsum board batten strips, full sheets of gypsum board, or mineral fiber insulation.

Building codes typically require the space between the area separation wall and the adjacent floor joists to be fireblocked to prevent fire from spreading vertically between floors. This can be achieved easily when building with gypsum board area separation walls by inserting continuous pieces of one-inch gypsum board liner panel, mineral fiber insulation, or other code-allowed material into the gap between the wall assembly and the adjacent floor joists. To ensure that it remains securely in place, fireblocking material should be firmly attached to adjacent construction.

**Advantages of Gypsum Board Systems**

Both solid and cavity-type area separation wall systems weigh no more than 10 pounds per square foot when erected—far less than comparable solid area separation walls made of masonry or concrete. In most construction, gypsum board’s light weight eliminates the need for costly footers or foundation modifications, and it allows the systems to be erected directly onto a poured concrete slab.

Gypsum board area separation walls can be erected up to four stories in height, but should never be used as structural elements of a building. Due to variations in limiting height between systems, architects should consult with the manufacturer to determine the maximum height attainable with a specific system.

Load-bearing walls, finished with a layer of gypsum board to provide enhanced aesthetics, are typically erected immediately adjacent and parallel to gypsum board area separation walls. For concealed spaces above finished ceilings and other areas where appearance is not critical and load-bearing walls are not needed, the adjoining walls can be eliminated without compromising the fire resistance of the area separation wall system. If a specialized end-use is intended for a finished area of a dwelling unit, the gypsum board applied to the interior finish walls may be water-resistant gypsum backing board, veneer base for gypsum plaster, or other gypsum specialty materials, provided that the replacement board has the same thickness and core as that described in the representative fire or sound test.

Gypsum board area separation walls can readily accommodate code-compliant electrical and plumbing systems without the installation of additional framing or furring. Code requirements will dictate the correct installation of electrical and plumbing systems and fixtures.

**Sound Control Requirements of Area Separation Walls**

Townhouse and apartment complexes rely heavily on area separation walls not only for safety, but also to limit the transmission of sound between individual residential units. The model codes typically require walls separating United States, these manufacturing or power-generating facilities are more than pleased to ship a steady stream of "production waste" to nearby gypsum board manufacturing facilities. Other "green" sources of gypsum are production waste from the gypsum board manufacturing plants and board waste from new construction. Gypsum plants throughout the United States and Canada reclaim usable gypsum by feeding production overruns or materials damaged during production back into the manufacturing cycle. New construction gypsum waste is also reclaimed in some areas and is, after reprocessing, fed back into the board production cycle.

Regardless of the source, "synthetic" or "reclaimed" gypsum meets the same quality standards as natural gypsum, helps to control production costs, and eliminates a costly waste disposal problem.
townhouse units to maintain a minimum Sound Transmission Class (STC) rating of 45 to 50 to ensure that sound attenuation occurs between occupied units. To achieve these ratings, it is imperative that the following procedures be followed:

- All system components must be installed as designed. Any deviation from the recommended design or the addition of components not specified by the manufacturer can significantly reduce the sound attenuating ability of the separation wall.
- Wall areas must be free of gaps or voids in insulating material.
- Flanking paths through which sound can travel must be eliminated.
- Systems must be airtight. Perimeters of gypsum board face layers, outside edges of all membrane cutouts, and all penetrations must be fully caulked. Openings for fixtures and outlets must be cut to the proper size and sealed.
- Solid area separation wall systems can easily be constructed to provide STC ratings in excess of 60. Cavity-type area separation walls can also be constructed to achieve STC ratings that exceed model building code requirements.

**Building Codes Require Parapets For Area Separation Walls**

The model building codes generally require area separation walls to be constructed with a parapet—a vertical segment of the wall that extends through the roof to a specific height, usually 30 to 36 inches above the roofline. Gypsum board area separation walls can be constructed with parapets or as long as the total erected height of the wall system does not exceed the manufacturer’s established maximum and the parapets are protected from the elements by a code-compliant cladding or finishing system.

Building codes usually allow builders to eliminate parapets in townhouse construction if the proper combination of the following conditions is met:

- The roof is covered with a code-defined minimum (usually Class C) roofing material and:

- The roof decking or sheathing is constructed with noncombustible material, or approved fire-retardant-treated wood, for a minimum distance of four feet on each side of the firewall or:
- A layer of 5/8-inch-thick type X gypsum board is installed immediately beneath the roof sheathing for a distance of at least 4 feet on either side of the townhouse separation wall.

**Summary**

- Model building codes allow the use of gypsum board area separation in townhouse and apartment applications.
- Gypsum board area separation wall systems are fire tested using code required test standards, such as ASTM E 119, "Standard Test Method for Tests of Building Construction and Materials."
- Gypsum board area separation walls are designed to comply with code requirements that define the required integrity of an area separation wall.
- Gypsum board area separation walls can be constructed in either solid cavity design, depending on their intended use.
- Gypsum board area separation wall systems are light in weight, use few components, and are installed as the building is framed.
- Gypsum board area separation walls can be erected up to four stories in height (depending on manufacturer limitations), but should never be structural elements of a building.
- Gypsum board area separation walls can be constructed to satisfy typical building code standards for sound attenuation between townhouse or apartment units.
- Gypsum board area separation walls can be constructed with or without a parapet.

**Gypsum Board Roof Underlayment:**

**A Code-Compliant Alternative to Roof Parapets**

The use of 5/8-inch thick type X gypsum board as an underlayment for combustible roofs in townhouse and apartment construction is an effective way to resist the spread of fire from unit to unit over the top of area separation walls. This approach to fire protection is a code-compliant alternative to the use of roof parapets for separating dwelling units.

Building codes generally allow for the elimination of a parapet in townhouse or apartment construction when the roof is covered with a code-specified minimum (usually Class C) roofing material and the roof is constructed with either noncombustible material or fire-retardant-treated wood, or the roof incorporates a layer of 5/8-inch-thick type X gypsum board as a roof sheathing underlayment. If type X gypsum board is used, it must be placed immediately beneath combustible roof sheathing for a distance of at least four feet on either side of the area separation wall.

The gypsum industry has developed three code-compliant methods for installing a gypsum board roof underlayment: the ledger strip method; the partial roof underlayment method; and the full roof underlayment method. Although model codes generally permit any of these methods to be used as an alternative to parapet construction, individual code provisions may vary.

**Ledger-strip Method**

In the ledger strip method, 5/8-inch thick pieces of type X gypsum board are applied to the top side of nominal 2-inch by 2-inch ledger strips that have been attached to the sides of the roof framing members so that the upper surface of the gypsum board is flush with the top of the trusses or rafters. Ledger strips are cut and attached to form a continuous strip.

The gypsum board is cut to fit tightly between the roof framing, supported by and attached to the ledger strips with minimum 1 1/4-inch long fasteners spaced a maximum of 48 inches on center. Care must be taken to ensure the application of the board end joints that span between framing members fit together snugly.

**Partial Roof Underlayment Method**

In this method, 5/8-inch-thick sheets of type X gypsum board are installed under the combustible roof sheathing on both sides of the area separation for the minimum distance required by the appropriate building code, typically at least four feet.

The gypsum board is applied on top of the roof framing prior to the installation of the combustible roof sheathing. All gypsum board edges parallel to roof framing members should occur over and be supported by roof framing. Gypsum board must be nailed to each framing member using at least two nails. At a minimum, nails must be 1 3/8-inch long gypsum board nails or 4d common nails. In addition, board end and edge joints should be together snugly.

Trusses and rafters not covered with gypsum board must be shimmed provide a straight and uniform base for the attachment of the combustible sheathing. Sheathing applied over the gypsum board underlayment must installed with sheathing joints offset from the gypsum board joints, and fasteners must be increased by 5/8 of an inch to account for the thickness of the gypsum board and shims. The roof membrane is applied as specified by the manufacturer. As an alternate to shimming, two different sizes of roof framing members may be used to achieve a uniform roofing surface.

**Full Roof Underlayment**

The full roof underlayment method offers a number of advantages over the partial roof underlayment and ledger strip methods. First, it provides the greatest degree of fire protection. Second, it is the least complicated of the three methods to install; finally, it is generally the most cost effective when the additional labor costs of other methods are factored in; particularly in developments where individual housing units are relatively narrow.

The full roof underlayment method requires an application of 5/8-inch thick type X gypsum board over the entire roof area. The gypsum board is applied perpendicularly to and on top of roof framing members before the
combustible roof sheathing is installed. All gypsum board end joints should occur over and be supported by roof framing members.

Nailing methods and nail types and sizes are identical to those used in the partial roof underlayment method. Fasteners used to attach the roof sheathing must be increased in length by 5/8-inch to account for the thickness of the gypsum board. Roof sheathing must be attached to the roof framing so that sheathing joints are offset from joints in the gypsum board.

**Additional Concepts**

Unlike gypsum board systems that provide wall and ceiling fire-resistance ratings, the joints between gypsum boards installed in the three methods previously described need not be finished with joint treatment materials.

In addition, there is no requirement to treat the nails used to secure gypsum board pieces or sheets to framing members.

Screws may substituted for the prescribed nails when the length and head diameter of the screw equal or exceed those of the nails specified and the screw spacing does not exceed the spacing defined for the nails.

Areas where gypsum board is used as an underlayment should be adequately ventilated to control moisture and reduce temperature. Roof framing used to support gypsum board should be installed so that spacing does not exceed standard wood industry criteria. In addition, gypsum board must be protected from inclement weather during installation and until the roof membrane installation is complete.

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**Click for Additional Required Reading**

archrecord.construction.com/resources/conteduc. To obtain a faxed copy of the supplemental material, please call the Gypsum Association at (202) 289-5440. The test below includes questions derived from the online material.

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**LEARNING OBJECTIVES**

- Know the applications and installation of light-weight solid and cavity-type gypsum board area separation walls in townhouses and apartments.
- Understand fire protection capabilities of gypsum board systems and fire resistance ratings and tests.
- Review sound control features and parapets of gypsum board systems.

**INSTRUCTIONS**

Refer to the learning objectives above. Complete the questions below. Go to the self report form on page 240. Follow the reporting instructions, answer the test questions and submit the form. Or use the Continuing Education self report form on Record's website—archrecord.construction.com—to receive one AIA/CES Learning Unit including one hour of health safety welfare credit.

**QUESTIONS**

**Q:** 1. Area separation-walls must:

**A:**

- a. Be continuous from the foundation to the underside of the protected roof sheathing
- b. Continue through the roof to form a parapet
- c. Both A and B
- d. Either A or B

**Q:** 2. Area separation walls made of gypsum board have been deemed suitable for use by every model building code because of their ability to effectively withstand fire and attenuate sound.

**A:**

- a. True
- b. False

**Q:** 3. In the manufacturing process, calcining the gypsum rock drives off about how much of the chemically combined water:

**A:**

- a. 1/4
- b. 1/3
- c. 1/2
- d. 3/4

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In Graz, Austria, a new arts center will speak its own digital language

It’s not often that a city searching for an architectural landmark turns to a design that looks like a digitally active digestive system.

Of course, not many towns are like Graz, Austria, a provincial capital that is filling its skyline with modern buildings and has been named the 2003 cultural capital of Europe by the European Union Ministers of Culture.

The city is constructing several new projects, including a town hall, concert hall, literature museum, airport, children’s museum, and urban gathering space. But one of the most prominent new works is the Kunsthaus, or Art House, a contemporary art-exhibition space on the city’s riverfront. The project was conceived by London architects Peter Cook and Colin Fournier, along with Austrian architectural firm Arge Kunsthaus. Standing across the Mur River from the city core, the Kunsthaus is Graz’s most visible new project, and the town hopes it will help revitalize the neglected neighborhood it resides in.

The building, to be completed in September 2003, can be described as biomorphic, thanks to an irregularly shaped mass reminiscent of a pancreas, liver, or stomach, as well as elongated skylight nozzles emerging from the building’s exterior. Its smooth facade is composed of blue acrylic panels, most of which are opaque. The architects say this neighborhood’s scale and historic character. “If we had designed a conventional building with an orthogonal volume, the building mass would have been out of proportion with the old surrounding [structures],” said Jonkhans. “We wanted to create a building with varying appearances from different perspectives: Depending on distance and viewing angle, Kunsthaus will appear different.”

The building’s facade literally speaks to the heart of the city through its digital display skin composed of about 1,000 computer-controlled circular fluorescent light tubes that send out messages and animated displays. Known as BIX (a cross between the words “big” and “pixel”), the layer of light tubes is mounted behind a layer of outer acrylic glass, which covers most of the eastern facade and curves along the contours of the building.

Realities:United, the Berlin firm that created the skin, points out that the screen’s organic, built-in nature and its large, low-resolution “pixels” (i.e., the fluorescent tubes) distinguish it from the digital screens mounted on many other buildings, such as those in Times Square. The firm’s cofounder, Jan Edler, is “gloriously incapable” of projecting most
Digital Practice

typical television and film sequences, such as ads and movie trailers. Instead, it will display work designed specifically for the building and catered to the owners' or artists' intentions. "If company XYZ is going to sponsor an exhibition, they will not be able to just take the latest company [information] and show it on the facade. It will just not work," said Edler. "There will always be the basic requirement to work with this special BIX format—and in this way, to work with the special architecture of the building itself."

Software developed by RealitiesUnited called BIX.OS lets artists design programs for the facade by creating features such as repetitions, random/shuffle options, and automatic timers. Kunsthaus's curator Peter Pakesch is now conceiving of several projects for the building with designers and writers.

The building's flexible gallery space is fitted with more than 1,000 cyberports for multimedia art installations and to let visitors connect to the Internet. The museum will also host digital artists in residence.

Graz, points out Fourmier, is already an established cultural and industrial hub that is known currently for its Schlossberg, a medieval castle hill. But the city still sought an iconic building, "one more little jewel in a town that has a long history of culture," he said. It has already attracted widespread attention thanks to its placement in last year's Venice Biennale. Its unusual nature, the architects predict, will endear it to the city, despite the fact that it's far from indigenous.

As Cook noted in a recent lecture, "It may be full of ideas, but it is not concepts, but they are concepts that have to do with integration, and the only question is how long before it becomes incorporated into the city." Sam Lubell

Project team relied heavily on digital collaboration to rebuild the Winter Garden quickly

After the Winter Garden suffered extensive damage on September 11, 2001, the owner turned to Cesar Pelli & Associates, the original architect, for help. With ambitious plans to reopen the building by the following September 11, the architect had only nine months to redesign the celebrated glass dome, order new materials, and rebuild the entire facade. According to the project team, digital design techniques and collaboration were key factors in meeting a tight deadline.

The $50 million restoration project included replacing nearly 70 percent of the arched ceiling, half of the grand staircase, and the marble flooring. A sheer wall of "U" glass that spans from floor to ceiling and overlooks West Street replaced the ruined facade. Setting back a lobby wall by 15 feet expanded the lobby to create more spacious gathering area that was no longer just a thoroughway to the now-absent twin towers. "We had to change the entire character of the Winter Garden in a short period of time," said Rafael Pelli, the head architect on the redesign. "And we had to make the new wall work with the old details and to create good transitions between the new and the old." Pelli and design team leader Craig Copeland, AIA, agreed that technology-enabled cooperation between architects, subcontractors, and manufacturers made the project possible.

Adamson & Associates, the architects of record, digitized the original contract documents from the 1980s by scanning them and using them as an "underlay" to create CAD drawings. Once the drawings were done, the architects used these drawings to verify key dimensions and structural elements with the contractor, Turner Construction. "There were no as-built drawings done, but in this manner we ended up creating a set of as-builts and then using those to move forward with the design," Copeland said.

Digital designers dboxstudio of Manhattan created a variety of images of the Winter Garden as it underwent redesign. Using scanned photographs of the building before it was damaged in the terror attacks, designers at Cesar Pelli Associates did hand sketches of proposed changes, then turned them over to dboxstudio, which uses software like 3D Studio VIZ and Photoshop to create visualizations. They made a 3D frame of each project onto which were overlaid different materials and facade designs. "It was the most efficient and expedient way to evaluate materials and to help the client and contractor understand what the goals were," said Copeland. Added Pelli, "The [subcontractors] were able to construct better and quicker because they had input into the design method. That made the process superior from the standpoint of design and constructability."

No collaboration software was used; the players merely shared AutoCAD and other files via e-mail. Renderers at dboxstudio maintained a project Web site, where clients could log on to comment on the work. "The circumstances were particular for this project that everybody was in a mind-set of true collaboration," said Copeland. "If I could ever re-create these circumstances in a more typical project, I say these methods worked well." Victoria Rivkin with D.S.
Nondestructive Testing Probes Dome’s Safety

ONE OF THE WORLD’S LARGEST UNREINFORCED MASONRY DOMES SAFE JUST BECAUSE IT LOOKS SAFE?

Charles Linn, FAIA

In 1890, Seth Low, Columbia’s president, championed the relocation of that small college from Midtown Manhattan to Morningside Heights far to the north. When donors balked at the expense, Low decided to lead by example. He pledged $1 million to build a library to anchor the new location. The building would honor his father, a tea trader and owner of a fleet of clipper ships. Low Memorial Library is the centerpiece of McKim, Mead and White’s 1894 master plan and is still regarded by many as the most prominent building on campus. Charles McKim designed the library to constructed entirely of masonry, without a steel superstructure. It is an 80-foot-tall dome divided into four sections. Each dome consists of a central rotunda covered by a pair of concentric rings that rest on top of the other. The inner dome is made of terra cotta, and the outer dome is made of iron-frame-supported metal lath. The outer dome, whose primary support is provided by monumental arches and pendentives, is covered with limestone panels. Until recently, the composition of its supporting structure had gone unstudied.

It is little wonder that the administration of Columbia University considers its collection of 24 McKim, Mead and White buildings to be one of its greatest assets. In recent years, more than $170 million has been spent to repair and preserve the architectural treasures. When attention turned to the Low Memorial Library, a study of the stability of the dome was given priority. But the structure is complicated. University architect Irwin Lefkowitz, AIA, admits, “We had no idea what was up there.”

The only indication on Low’s final ink-on-linen working drawings was a pair of concentric arcs from which the dome’s location proportions could be inferred. Construction photographs were not helpful as the architects and engineers might have wished. One image shows construction on the stone inner portion of one of the arches on the dome just finished, with the centering still in place. The next in the series shows the dome all but finished.

While searching through boxes of correspondence written at the building was under construction, Castillo discovered that the firings about the outer dome’s construction were made in a fashion would be called “fast-tracking” today. She found correspondence from the contractor, Norcross Brothers of Massachusetts, and the firm, Mead and White office that revealed that even as the great arches and pendentives that would support the exterior dome were under construction, exactly how it would be built was still being dis-
cussed. Guastavino tile was actually shown on drawings discovered by Castillo, but according to a letter she located, Norcross declined to guarantee Guastavino’s work. Another proposal drawing showed that thin-shell concrete was considered, but by the time the city building department had approved it, winter weather had set in, making it too cold to execute such work.

When Castillo and Meade began their initial visual survey of Low’s upper reaches, university workers led them up a series of narrow circular staircases into the a huge, pitch-black attic space between the inner and outer domes. There, the flashlights on their miner’s helmets revealed that the outer dome was actually made of brick, not the steel framing that they had been led to expect by drawings that have appeared in reference materials about McKim, Mead and White buildings. Evidently, the masonry was laid up over wooden centering which had been covered with roofing felt—fragments of it were still stuck to the mortar inside the dome more than 100 years later.

Learning that the dome was brick encouraged speculation about a number of other issues. Was this a wholly masonry structure, or were metal reinforcing or other layers of material being concealed inside it? If metal reinforcing or anchors had been used to reinforce the dome, was it corroding and therefore prone to failure? How much did the dome move over the course of a year, and above all, was it safe? There had been cracks in the arches that support the dome for as long as one could remember, and the cast-iron window frames under the arch had been deformed for decades. “What was alarming,” says Castillo, “was that there were reports of sand coming down on the people occupying two of the four balconies under the great arches. Why was that happening after 100 years?”

Nondestructive testing techniques

Determining whether the dome over Low was safe required the use of a variety of nondestructive testing methods. These allowed the team to “see” within the dome’s structure without having to penetrate it with chisels, drills, or probes. Silman Associates hired GB Geotechnical in Cambridge, England-based firm that specializes in nondestructive testing, to help. The firm used two techniques at Low: impulse radar testing and electromagnetic testing. Impulse radar uses an instrument to measure the speed at which high-frequency electromagnetic waves applied to a structure bounce back. It is convenient to use in locations that are difficult to reach because it only requires access to one side of the material being tested. Experts viewing the instruments’ output can determine if voids or multiple layers of different materials are present in the area being sampled.
Electromagnetic detection was also used. This employs an instrument that passes an alternating electrical current through a coil of metallic wire that, in turn, creates a magnetic field. When the coil is moved over a surface and the instrument indicates that its magnetic field has been disturbed, the presence of a ferrous material like steel or iron is indicated. As impulse radar and electromagnetic detection were applied to the exterior surface of Low's dome, engineers concentrated on areas where it was likely that reinforcing would be found, if it existed. They were able to determine that, in fact, the dome is made largely of unreinforced brick and is likely the largest of its kind in the country. From the nondestructive testing and visual inspections alone, the dome appeared to be solid and stable.

**Survey simplifies CAD drawings and structural analysis**

Than Associates used version 7.44 of SAP2000 Plus, a program for static dynamic finite element analysis of structures, to verify where tensile stresses would be high in the outer dome and its supporting structure. This would show the engineers the obvious places where they should look for cracking. In order to use the program, the engineers needed to be able to create a mathematical model of the geometry of the dome and its supporting structure and to assign loads to this hypothetical structural system. This required an extensive set of drawings, and estimates from the engineers of the size of the dome's dead load—wind and live loads were considered to be negligible—and how it was distributed.

But the team couldn't just tape off these measurements. The space is very complicated, and most of it is impossible to access. The apex of the plaster dome is more than 100 feet above the rotunda floor. GB Geotechnics quickly established dimensions by positioning a laser surveying instrument in a number of locations in and around the building: inside the dome's attic, outside on the roof, and in the rotunda proper. The locations of millions of points were recorded by the survey. These were supplemented by handmade measurements, all the points referenced back to a single station, and the data compiled in a way that allowed AutoCAD drawings to be made.

Once the dimensions of the dome, arches, and piers were known, and the volume of material in the dome calculated, loads could be estimated by using the known density of the type of brick the dome was made of. Among the graphical options for SAP2000 Plus are wire-frame axonometrics that use different colors to represent different kinds of stress. These showed a surprising amount of tension in the dome's lower portion, which surely would have failed if not for a pair of monumental 1-inch-by-12-inch iron tension rings that encircle its base. Elsewhere,
cracks did appear where the computer model led engineers to expect them: at the tops of the supporting arches. So far, there were no surprises. The last question was whether the cracks were getting worse.

**Measuring movement**

To determine how much Low’s dome is moving, Silman Associates had Vibra-Tech, a Mount Holly, N.J.—based consulting firm, install a remote vibration monitoring system. Eighteen devices, called vibrating wire crack meters, were installed at Low. These can accurately monitor changes in the width of a crack of only one hundredth of an inch. The ongoing readings from each are recorded by a computer called a data logger every 15 minutes throughout the year. The data logger is connected to Silman’s office by modem for study. Temperature and moisture meters were also installed around the building so that movement can be corroborated against changes in the weather.

It was especially important that crack meters be installed over open joints in the faces of the arches, at their apaxes, which are presumed to have existed from the time when construction of Low was just complete. The erection of a scaffold would have taken months, cost hundreds of thousands of dollars, and prevented the use of one of the university’s most important gathering spaces. It was impossible to bring a cherry-picker into the rotunda—there simply wasn’t any way to maneuver it into the space.

The graph shows how much movement has been measured by crack meters installed on all four arches, plotted against temperature, over the course of a year. Each crack meter (lower left) is attached by a cable to the data logger. Kent Diebolt, of Vertical Access, is shown installing one of the meters on the vertical face of one of Low’s monumental arches. Diebolt also did a visual survey using video, and “sounded” the inner plaster dome.

Helpman Architects and Robert Silman Associates have concluded that Low’s dome is quite safe. Cracks are present where computer analysis indicates that they should be expected, and according to data recorded for the remote monitoring system, they are stable. Has the testing therefore been a colossal waste of money? Hardly, considering that the building is in placeable, and safety is a concern—the rotunda is often filled with hundreds of people. Prior to the initiation of this project, no one could really say if the dome was safe. It is a bonus that it has probably been studied more thoroughly than any unreinforced masonry dome besides that of the Duomo in Florence. What has been learned will contribute much to structural engineers’ understanding of masonry dome behavior. Irwin Leiskowitz asserts: “Low has served Columbia University well for more than 100 years. We want to ensure that it will serve us for 100 more.”

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Digital Architect

Interview: A Visit with BKSK Architects

Deborah Snoonian, P.E.

Founded in 1985, BKSK Architects is a 30-person, four-partner firm in Manhattan. About a third of their work involves high-end residential design, either for individual clients or for developers and owners who convert entire buildings from industrial to residential use. The balance of their projects involves a variety of building types, including office and institutional buildings, child-care centers, and places of worship. RECORD sat down recently with partner Joan Krevlin and associate Todd Poisson to discuss the firm’s technology.

ARCHITECTURAL RECORD: First things first—Mac or PC?

JOHN KREVLIN: We’re all on Macs. We chose our CAD package, Vectorworks, because we felt it was more intuitive to use and easier to learn than other CAD programs. And Vectorworks is Mac-compatible, so if Macs was a natural choice for us. We do maintain one PC in the office, to translate some AutoCAD files into Vectorworks and to use AIA’s Contract Documents software. I really wish that package were available for the Mac platform. [Editor’s note: the AIA plans to make this product dual-platform in the future.]

AR: Do you employ anybody on staff for technical support?

JK: No, but we have an on-call consultant, Rick Bernstein, who does this work for us: maintains workstations, installs software, trains the staff. We find we get better service by hiring tech support people on a contract basis.

TODD POISSON: Rick is an irreplaceable asset. He steps in to do presentation renderings for us when needed, as well. And he teaches periodic classes to small groups of us, to keep us up to date on various types of software. We also try to appoint one person as an “expert” in each of the software packages, so we can go to that person when we have questions.

AR: Who designed your Web site? Do you maintain it in-house?

JK: A company called the Brooklyn Digital Foundry designed our site (www.brooklyndfoundry.com). We chose them because we really admired the sites they’d built for other architecture firms, like Tod Williams Billie Tsien. The Foundry also designed a very user-friendly interface to allow us to upload text and photos ourselves.

TP: We ran into an interesting conflict when we were designing our Web site. AOL doesn’t support Flash 6 [used to create animated Web pages], so we had to create both HTML and Flash versions of our site. We have a lot of residential clients that use AOL to access the Internet, so we need our site to be accessible by all possible venues.

AR: Is there a difference between younger and older staff when it comes to technological proficiency?

TP: Yes. And the older/younger divide changes continuously—it seems to happen in 10-year increments. Heavy-duty software prowess is the domain of the younger junior architects, who learn by doing things over and over or from school experience. There isn’t a project with a big enough budget for me to learn Form-Z, but I’d love to master that program.

AR: What’s the biggest technological challenge your firm faces?

JK: I’d say it’s color printing. Getting the colors to display correctly on-screen and on paper is tougher than it sounds, and the printers are expensive to buy and maintain.

AR: If you could create any pie-in-the-sky application or techno-toy for your practice, what would it be?

TP: We’d like to find database software that can be shared office-wide.

JK: We really need an application that will let us maintain a list of contacts, leads, past clients, things like that. We just haven’t found anything yet that’s Mac-compatible and easy to use.

BKSK upgrades its hardware continuously—none of their computers is more than three years old. Apple Macintosh G4, from $1,499

www.apple.com

The firm uses digital cameras to document site conditions and construction.

Canon PowerShot S200, $299

www.usa.canon.com

Partner Harry Kendall and associate Todd Poisson rely on Handspring Visors to organize their days.

Handspring Visor Pro, $199

www.handspring.com

For more information on technology for architects, including news, vendor lists, and links, visit Digital Architect at architecturalrecord.com.
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(continued on page 190)
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**Brazill Rendering System**
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This plug-in to popular rendering programs 3D Studio MAX and Autodesk VIZ is geared to the film and broadcast industries, but architects have been adopting the tool as well for modeling their work. Users claim its simplified interface and intuitive set of tools are its primary selling points. A test version is available free of charge from the company’s Web site, and SplitterFish intends for the software eventually to run on other rendering platforms and perhaps as a standalone program. Windows OS only.

**FacilityCenter 8i**
*TRIRIGA*
888/874-7442 or 702/932-4444  
www.tririga.com

For firms that help clients manage their real estate assets, FacilityCenter 8i offers a Web-based platform in which users can enter, view, and manage life-cycle information such as capital improvements and operation and maintenance activities. The system is capable of tracking information about not only real estate assets, but locations and key personnel as well. Users can customize features such as entry fields, data forms, and work-flow sequences, as well as establish built-in “triggers” to automate tasks such as scheduling of maintenance activities or regular assessments of key holdings. Las Vegas–based TRIRIGA developed the tool after acquiring the FacilityCenter product from Peregrine Systems last year.

**REALS**
*Kojima Corporation (Japan) and University of Utah Graduate School of Architecture*
813-3404-3311 (in Japan)  
www.reals3d.com

This rendering program is the result of an ongoing collaboration between a leading Japanese software company and the graduate school of architecture at the University of Utah. Available in beta as a free download, REALS will debut as a commercial product this May. The developers claim that the main selling point is that the program was developed by designers for designers, meaning it’s not saddled with hundreds of complex functions only special-effects directors need. Its “canvas,” the rendering window, is large enough to fit multiple images and views of the same project for comparison. The developers claim that compared to similar software, REALS has faster mouse response time and quicker rendering of spaces lit by multiple sources. REALS can convert files and information from popular design software such as ArchiCAD, Form-Z, AutoCAD, ADT, and Rhinoceros. Windows OS only.

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For architects on the go, QuickTopics eBooks offer a fast way to stay afloat of how to run their firms.
In February, the Office of Thierry W. Despont unveiled its design of Vincent’s Choice, an exhibition at the Van Gogh Museum, in Amsterdam, celebrating the 150th anniversary of the artist’s birth on March 30. Continuing through June 15, the architect’s installation juxtaposes works that Van Gogh admired—from Old Masters to Impressionists—in a sweeping, “operatic” setting. The Angelo Donghia Materials Library and Study Center at Parsons School of Design, in New York City, designed by architect Christof Fino, is a new research resource for students, faculty, and scholars, with an exhibition gallery open to the public.

In the correlative worlds of furniture and fashion design, where trends in color and form are sometimes shared (or knocked off), there’s an often-repeated refrain that “it’s all about the brand.” Whether or not consumers follow the work of an individual furniture designer or couturier, long-term brand loyalty secured by a manufacturer or retailer goes a long way toward weathering economic ups and downs.

Historically, it has been the quality of the merchandise, the attention to detail by customer service, and the image-conjuring romance of advertising that has driven the engines of retail stores and to-the-trade showrooms. Today, perhaps more than ever before, the architectural interiors of such spaces are literally helping to build the brands. While many fashion houses and furniture purveyors spent much of the past decade creating spare, white boxes, architects and interior designers are now enlisted to captivate customers via environments with a sharpened point of view.

For Allsteel, regional vernacular styles supported by palettes of indigenous materials distinguish a series of client resource centers across the country. Gensler kept the brand consistent by implementing corporate standards such as ceiling and conference-room treatments. At B&B Italia in London (right), the Minimalist style of John Pawson warms to a more inhabited feeling through his collaboration with furniture designer and architect Antonio Citterio. Retailer Burberry, meanwhile, is sprucing up a staid image with a broader line of more progressive wares, and as a crucial strategic move, by constructing more progressive store interiors. Architects are even creating their own brands: Two companies showcased this month were founded by architects to sell furniture designed by architects. Remember their names during the global rollout: ray20 and TRUCK. Consider yourself branded. William Weathersby, Jr.
Wire pendants, strung with lights evoke fanciful images of bleweeds floating above Texas pecan tables. Allsteel Resource Center. Local materials such as limestone, barn wood, steel are expressed in Modern Meets Rural (opposite).
ensler fashions a resource center for Allsteel in Dallas that incorporates regional architectural influences

John Peter Radulski

ollowing its successful design of the Allsteel headquarters in Muscatine, Iowa [a Business Week/Architectural Record Award winner; see RECORD, November 2002, page 96], the San Francisco office of Gensler was tapped by the office furniture manufacturer to create four new resource centers across the country. A year-old company now under a new corporate parent, HON, Allsteel sought to express its Midwestern core values while reflecting each new local vernacular design influences.

As Gensler partner in charge Collin Burry explains, the resource centers in Los Angeles, Chicago, Washington, D.C., and Dallas are designed to provide dealers, specifiers, and other end users with more than a traditional furniture showroom experience. “Regardless of location, the client wanted each facility to serve the local design community with meeting spaces where professional organizations, such as the Dallas International Interior Design Association, could gather,” Burry says. “Functional flexibility was wed to interior finishes and furnishings visually allude to each geographical location.”

Peter Radulski is the former editor of Hospitality Design magazine. He is a writer and design consultant based in Westport, Conn.

regional soul but not so vernacular in spirit that they overwhelm Allsteel’s furniture designs or brand image.”

While the circulation pattern in the Washington, D.C., resource center, for example, subtly alludes to that city’s monumental Capitol rotunda and the historic street grid developed by Pierre Charles L’Enfant, the Dallas facility speaks with a restrained Texan twang.

The 8,400-square-foot, street-level space on McKinney Avenue has an irregular, nine-sided footprint with a shape that can be likened to a dumbbell. Burry took advantage of this unpromising rental space by drawing on a common mid-19th-century Texas residential type called a dog-trot house: two cabins separated by a 10-to-15-foot-wide covered breezeway that provided shade and a place for family dogs to sleep. At

Project: Allsteel Resource Center, Dallas
Architect, interior designer: Gensler, San Francisco—Collin Burry, principal; Sophie Caster, Kate Clemens, Thom Shelton, Frank Lin, Dian Duvall, Nao Etsuki, Kevin Sawyer, project team
Engineer: Schmidt Stacy
Consultants: Architecture & Light—Rudy Rodriguez (lighting); Studio 585 (graphic design)
General contractor: Constructors Dallas
Leather, Suede, Stone, and Barn Wood Speak in a Texan Twang. A Dog-Trot Layout Evokes the Local Heritage.

Allsteel Dallas, the architects placed the main street entrance on axis with the narrowest portion of the resource center to create a bridge between the two larger functional areas.

Recently housing a nightclub, the space was gutted, leaving 17-foot-high ceilings and a concrete slab floor. While some existing HVAC systems were salvaged, most components are newly installed and left largely exposed along with structural elements overhead, a theme continued from the headquarters design and throughout all the resource centers.

A galvanized-steel waterfall opposite the entrance was retained from the space’s nightlife role. The company name is spelled out in steel letters for immediate brand recognition, while the cascading water creates consistent aural and visual interest. A Parsons table–style reception desk in front of the water feature is constructed of Texas pecan and faced leather panels for a contemporary edge. This central space serves as a transition between meeting rooms, education areas, offices and computer stations, and furniture display areas. To one side is the so-called community center where visitors can sit at a coffee bar, settle into lounge chairs or a sofa in front of a fireplace (made by a HON subsidiary), or meet informally at a large conference table, also made of Texas pecan. The fireplace was faced with reclaimed barn siding for an appropriately rustic appearance. In a Texan mode, the rug and pillows are cowhide, while dark-wood-framed furniture is upholstered in leather and suede.

The conference table is ringed by Z-shaped steel stools designed by Martha Sturdy. Adjacent glass walls afford a panoramic view of the doors and become a branding beacon at night. The visible HVAC systems along the ceiling helps to rein in the room’s expansive height, and oval steel-wire spheres intertwined with lights add a sculptural element whimsically referencing tumbleweeds.

An enclosed 10-seat conference room is located on one side...
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Beyond the fireplace (below) is a guest services area where mirrors take the shape of 10-gallon hats and hairdos. An oculus pierces the wall to add a sense of openness. A rough-hewn Texas-limestone wall serves as a backdrop for change furniture displays (left) while murals of the Texas landscape flank three views above product displays (bottom left).

the common area and is sheathed in hot-rolled steel with a blue Pocket barn doors are fabricated from prominently grained Texas pe.

To the other side of the entrance are Allsteel workspace vignettes outfitted for use by clients. A photomural depicting the Texas landscape wraps the upper portion of three walls like postcards from the frontier. The balance of earth tones and hard and soft materials—a wall sheathed in rough-hewn Texas limestone; minimally textured wool carpet tiles set within smoothly finished, tinted concrete flooring; over lounge seating and tables—brings a refined, updated ranch style to doing business in Texas. “We have strived to create an environment that facilitates interaction and networking,” says Timothy Smith, Allsteel president of marketing services. “We hope our clients will see the resource center as the answer to those needs.”

Sources
Paneling: Carlisle Restoration
Lumber
Laminates: Abet Laminati; Formica
Carpet: Interface
Paints and stains: Benjamin Moore; ICI; Richard James
Lighting: Lightolier
Furniture: Custom; Allsteel; ROOM; Chista; Martha Sturdy; Tucker Robbins

Upholstery: Maharam; Edelman
Hardware: Dorma; Hafele; Form Surfaces; Schlage
Specialty Surfacing, fixtures: Ardex; Catellani & Smith
Fireplace: Heatilator

www For more information on the people and products involved in this project, go to Projects at architecturalrecord.com.
The famous Burberry plaid is expressed along the grand staircase in oak and steel.

By William Weathersby, Jr.

The Burberry trench coat—with its distinctive plaid lining of camel, black, red, and white—is an icon of British fashion. Founded in 1856 by Thomas Burberry (the inventor of gabardine and later the trench coat style during World War I), the retailer has sold coats worn by Captain Roald Amundsen on his trek to the South Pole, Bogart and Bergman on the tarmac in Casablanca, and Audrey Hepburn in Breakfast at Tiffany’s, not to mention legions of international travelers. Since 1997, under the guidance of new chief executive Rose Marie Bravo, Burberry has sought to leverage that legacy into a loftier position as a purveyor of a broader range of luxury clothing, perfume, accessories, and housewares.

The classic Burberry crest is inscribed with the motto Prorsum,

Contributing editor William Weathersby, Jr., is a freelance writer based in Manhattan. He edits the lighting and interiors special sections of RECORD.
Latin for “forward.” As Bravo explains, a centerpiece of the new business strategy is a forward-looking rollout of new flagships and the overhaul of Burberry’s more than 70 existing stores. Following the opening of new locations in London, Barcelona, Orlando, Coral Gables, Florida, and New York City’s SoHo, last fall the company unveiled a new flagship on Manhattan’s 57th Street where the architectural and interior design details serve as their own calling card for the brand. The existing Burberry store at the site was gutted and combined with an adjacent town house to the east that had been a flagship for Escada. The resulting six-story, 24,000-square-foot Burberry store is threaded with abstractions of the trademark plaid, plus interpretations of herringbones, pinstripes, and other weaves in materials such as wood marquetry, mosaic tile, and glass. It’s a haberdasher’s eye peering through the lenses of engineering and building crafts.

The store’s new facade, designed by the New York office of Gensler, serves as a Burberry billboard of sorts, as well as a preview of interior collage of pattern and texture. Translating the trademark plaid into an abstracted grid of Magny Jaune stone, glazing, and bronze metal means the facade animates the building and dramatically doubles Burberry’s frontage on the shopping boulevard. (Record Building Technology present more details on the facade’s design and engineering in May.)

Inside, Gensler, the architect of record for the building core shell, worked with retail interior specialists Barteluce Architect Associates to weave the floor plates of the two existing buildings into a seamless whole. Replacing the roof and removing the party walls, the team inserted a new steel structural grid and tackled floors where there was sometimes a 2-to-7-inch variance in the levels of the two buildings. Sections of the ceiling were recessed and many interior walls removed to create open spaces that flow from front to back at a town-houselike scale.
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For interior furnishings and finishes, Burberry’s in-house visual and store planning team collaborated with interior designer Randall A. Ridless in New York and Mark Pinney Associates in London to fashion spaces with the feeling of an English club. Each floor has a distinctive look, from woven-leather rugs in the men’s sportswear department on level six to a red Plexiglas wall punctuated by steel cubes that hold teapots in the Mad Tea Cup café set near the facade on three.

Signaling a dash of wit regarding the Burberry heritage, the foyerlike entry is paved with mosaic glass tiles that write the plaid large. A custom wood marquetry table designed by David Linley continues the play on plaid. Beyond the accessories area, a focal point is a grand staircase whose scale is based on those found in English country houses, but translated into a modern idiom. Rising three floors to an illuminated glass ceiling, the floating staircase is a play of oak, steel, and red plaster.

Elsewhere, white oak floors and paneling evoke the buff color of the Burberry trench, while floors inlaid with accents of macassar ebony wood and amber glass lend a bespoke, tailored feeling. Furnishings custom designed by Ridless include parchment and polished steel tables, Lucite lounge chairs, and sculptural, ebony-edged vitrines.

“It’s not always easy to translate the look of fabric or fashion details to an architectural medium,” Ridless says. “We wanted the connections to be subtle rather than literal, with the richness coming from the materials and craftsmanship.” Mad for plaid, Burberry makes its raincoats escorting architectural motifs past nostalgia toward a modern edge.

Project: Burberry, 57th Street, New York City
Architect of record: Gensler
Interior architect of record: Bartelucci Architects & Associates
Interior designers: Randall A. Ridless; Mark Pinney Associates
Lighting designer: Johnson Schwinghammer

Sources
Cabinetry, woodwork: Modern V
Crafts
Wood flooring: Architectural Systems
Furniture: Custom; David Linley
Hardware: FSB; 555 Design

www For more information on the people and products involved in this project, go to Projects at architecturalrecord.com.
R
enowned as the éminence grise of modern Minimalism, British architect John Pawson is in great demand by retailers seeking his particular brand of what he describes as "exquisite restraint." He has done virtually the house architect for Calvin Klein and the world and is at present working on a new Peruvian monastery in the Czech Republic. But how Pawson's sometimes starkly austere approach meshes with the more mainstream design tradition of manufacturer B&B Italia, which sells upscale furniture through showrooms featuring elaborate room settings?

The answer, as seen in B&B’s combined London showroom and U.K. headquarters, is by pairing the architecture of Pawson with the interior design sensibilities of Antonio Citterio, who—as the Italian way—studied architecture before embarking on a career as a leading furniture designer. With much of output made and marketed by B&B, Citterio's stamp should be on this interior anyway: His furniture and light designs are strongly architectural. His presence in London also provides a degree of continuity with other showrooms for the company around the world, most of which Citterio had a hand in designing.

Pawson is not typically yoked with anyone, still often imposed upon by a corporate ethos—which explain why this is not one of his better-known interiors. But the outcome, by two men from very different backgrounds who are near-contemporaries in their early 50s, is architecture of a high order. Pawson led the leading role. He made all the big moves and signed most of the details, including finishes. Citterio dressed the space, employing largely freestanding groupings of furniture and some unusual hanging angular glass panels currently used to display downs by Philippe Starck. The project architect was Denton Corker Marshall, with a team led by Stephen Quinlan.

To Pawson fell the task of making sense of an extraordinarily awkward site: long, thin, and landlocked with a relatively small entrance. Hugh Pearman is a freelance writer based in London. He frequently writes for Architectural Record about European architectural and interiors projects.
Some furniture vignettes rest atop stacks of oiled natural oak (above). The long, vaulted space is a versatile backdrop for changing furniture displays (near right). Its volume is screened by an angular foyer (far right). Roomlike orange containers showcase new lines (opposite).
At one end, and the other—400 feet away—abutting a sunken rail-
line of London’s subway system. Nor could any windows be placed
at the flanks of the building because they adjoined properties to either
side. Despite such constraints, the location (previously used as a Porsche
showroom) is prime. A showroom frontage in the area, known as
Eton Cross, a haven of upmarket design and fashion shops in an
elite neighborhood close to the South Kensington museum district, is
lucrative to a company like B&B Italia.

Spatially, the showroom is a tour de force. Patrons arrive in a
double-height lobby, its limestone-framed glass frontage forming part of
a trabeated composition that includes another store unit alongside.
In this reception lobby, a long ramp of oak set in a steel tray gently
ends to the main showroom floor through a single-height space. Set
beside and slightly below the ramp is a linear display area. From this com-
pressed introductory space, one is released into the main double-height
showroom, dominated by a bravura column-free curving and tilted roof
that is plastered and tinted white. Light, both daylight and electric, is
brought into the showroom through glazed slots running along each edge
of the roof. A mezzanine gallery runs along the higher side of the space.
The composition terminates with a glazed, angled end wall where the
building abuts the sunken subway tracks.

Materials are simple—limestone flooring, slate tiles cladding the
side wall, varnished oak on the open-tread stairs to the mezzanine, glass
and stainless-steel balustrades, and white-painted plasterwork. Display
areas on the main floor are indicated by low platforms of dark-stained
oak, interspersed with room-size freestanding display cabinets with a
shiny orange finish. Thematically, the display is arranged by Citterio as a series of “atmospheres,” or living areas—sleeping, living, dining, and breakfast—plus a section tucked under the black-ceilinged mezzanine devoted to Citterio-designed kitchens made by Arclinea. Another section at one end of the main showroom space is devoted to Flos lighting.

The display on the mezzanine level is again Citterio-designed furniture, but this time it’s a collection of his more conservative, predominantly timber-based pieces for Maxalto, a B&B subsidiary brand that sells well in Britain and France.

The zoning of the showroom creates a rhythm that breaks up the long main space while preserving its drama. The presence of many nodding forms of Achille Castiglione’s famous Arco lamps reinforces the theme of the pure curve. Offices are tucked away behind the scenes; the showroom functions as B&B’s U.K. headquarters for both retail and contract sales, but this activity is not allowed to spill out into the public areas.

For its showrooms and offices worldwide, B&B Italia’s policy is to enlist the finest architects from each country where it is represented while maintaining a corporate ethos through the presence of Citterio. In the case of this extraordinary London showroom, mutual respect is apparent. It is very John Pawson in its calm simplicity and play of light. Yet in its bold consumerist aspects it is also recognizably Citterio. This collaborative work is something of a hidden gem.

**Sources**
- **Furniture:** B&B Italia; Maxalto
- **Lighting:** Flos; Via Bizzumo
- **Tiles:** Ascot

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**ray20, Long Island City, New York**

Part of the ray20 stable of designers, New Zealander Simon James (above left) studied spatial design before focusing on furniture full-time. New York City artist Chris Ferebee and design journalist Laurice Parkin (above right) collaborate on furniture with sinuous architectural curves under the name Five Twenty One Design. Run by architects, ray20 can be contacted at www.ray20.com.

The Hive Modular by Five Twenty One Design features walnut veneer over molded plywood. Legs are turned aluminum.

The Jetson Sofa by Simon James comes in three sizes and three standard upholsteries.

James's curving L4 Table is available in white legs and dark-stained veneer with exposed plywood edges.
Furniture designed by architects" calls to mind limited editions for well-heeled clients on one hand, or feats of imaginative assembly forced by meager budgets on the other. In the New York City area, new companies founded by architects—ray20 and TRUCK product architecture—are bringing an entrepreneurial edge to the creation of furniture and interior accessories, attracting retail customers with a range of affordable, innovative designs.

Founded last year by architects Cheri Caso and Paul Withers, TRUCK is a new furniture source whose platform is a quarterly catalog, linking with a global network of designers—including Swedish architects Jonas Lindvall and Marten Claesson—the duo curate the collection as a catalog-cum-compendium; besides products and prices, there are reading lists, short essays on topics like Scandinavian Modern, and odes to such Great Design Moments as the inventions of Velcro and the Bikini.

TRUCK, meanwhile, ventured out of the gate in 2001 as a spin-off of Rogers Marvel Architects. "The furniture designs grew out of our retail interiors work for Kate Spade," says principal Jennifer Carpenter. With leather provided by Spade, the studio first designed a set of molded calfskin place mats, and product lines quickly expanded. The pieces are available at retail stores nationwide. William Weathersby, Jr.

TRUCK product architecture, New York City
Architects Jonathan Marvel, Jennifer Carpenter, and Rob Rogers (above) chose the name TRUCK for its connotations of reliability and functionality. Product architecture describes their approach to materials and form. The products are all made in the U.S. by craftsmen from specialties including glassmaking, leatherworking, and scientific-lenscrafting. Go to www.the-truck.com.

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all chain chic

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showroom of the month

Boffi, Los Angeles

Italian architect Piero Lissoni (above) transformed a former furniture and piano showroom built in the 1920s in Santa Monica, California, into a dramatic, Minimal space for Boffi’s contemporary kitchen and bath products. Lissoni, who also serves as Boffi’s creative director and premier product designer, opened the 10,000-square-foot space by adding skylights and partially carving out the second floor to allow views of the area below. The ground floor offers seven complete kitchen displays, while the upper floor offers 10 bathroom installations with staff offices located at the rear. A shiny black epoxy coating on the ground floor offsets the other materials used for the showroom and its products on display, including steel, aluminum, matte and glossy lacquer, wood, and stone. Three sweeping expanses of glass panes on the facade serve to bring both sunlight and passersby into the new showroom. 310/458-9300. Boffi Los Angeles, Santa Monica, Calif. CIRCLE 201

The New Face of Neutra

Richard Neutra developed the Channel Heights school project in 1942, he designed the Boomerang, featuring a veneered plywood frame and woven seat, for its interiors. Under guidance of Dion Neutra, House Industries and Otto Design Group have created a limited edition of chairs available in genuine walnut or maple finish. House also introduces a series of modern pillows and the Neutraface font collection, designed by the Modern master. 800/888-4390. House Industries, Yorklyn, Del. CIRCLE 202

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Engraved walls
Intaglio, named after the term—derived from the Italian intaglia—which means to cut or engrave, is a collection of vinyl wall coverings developed by designer Lori Weitzner for Pallas Verticals. The three designs in the collection are Type II, 54" wide, 100 percent vinyl, 20-ounce wall coverings for contract and residential applications. Crossings is inspired by a woven jacquard in Pallas Collection, Pleats Please has the 3D look of pleated silk, and Velveteen emulates the look of crushed silk velvet. 800/4-PALLAS. Pallas Textiles, Green Bay, Wis. CIRCLE

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Sitting on the dock
Inspired by techniques used in the construction of wooden docks, the Dock Chair Series is comprised of ergonomically designed wood slats that are laminated to a molded wooden frame. Designed by Espen Voll and Tore Borgensen of Oslo, Norway, the high-back stacking and low-back lounge chairs feature a shell of molded birch with walnut or oak veneer, legs of stainless steel, and an optional upholstered seat and back cushion. 415/762-8129. SkyPad, Toronto. CIRCLE 210

Hiding your tracks
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New Products

Baseball-size hail, hurricane-force winds, termites, fungus, and the usual scorching sun and freezing temperatures of the seasons are just a few of the challenges faced by the manufacturers of roofing and siding products. Today, offerings such as reflective roof membranes are expected to provide greater energy performance, in addition to their role in thermal and moisture protection. Rita F. Catinella

Exterior siding helps keep new medical office building on budget

SmithGroup California selected materials such as Exterior Insulation Finishing Systems (EIFS) and corrugated aluminum for the exterior siding. The use of these siding materials in combination with sim-detailling helped the designers en the project in under budget 144 per square foot. The 24,300-square-foot medical building, located within a hospital campus in Mission Hills, California, faces one elevation facing the hospital, one facing the industrial plant for the campus, and others that enclose new courtyards or between spaces. The design team at SmithGroup felt the combination of EIFS by Dryvit and painted corrugated aluminum from Acoa Cladding Systems would create a richer building that could respond to these different conditions. EIFS were used on the south side, facing the hospital, while painted corrugated aluminum, which costs about the same as EIFS, was used on the north side, which faces the industrial plant. The walls that face the courtyard areas feature both materials. Instead of capping the corners where two planes of corrugated aluminum meet, the designers developed a welding detail that allowed the material to be mitered.

One advantage to using EIFS was the bevel top edge, which permitted a monolithic wall without visible flashing (draining is behind the parapet). Another advantage was the ability to express long, continuous wall surfaces without the undulation and imperfections associated with traditional stucco. 800/556-7752. Dryvit, West Warwick, R.I. CIRCLE 211. 770/840-6456. Acoa Cladding Systems, Norcross, Ga. CIRCLE 212

Innovations of new metal wall panel and roof system offerings

Tremco Incorporated has introduced two new metal wall panels and standing-seam metal roof systems include the TremLock VP, TremLock LSP, and TremLock SL ducts.

TremLock VP, Tremco's standard design panel for new or retrofit roof systems, is capable of spanning secondary structural members spaced up to 5' and can be applied to light-gauge-steel framing, plywood, and metal decks. TremLock LSP is designed for a minimum of 1/2" slope and can be used in new construction over an open span or in a retrofit construction over structural framing.

The last addition, TremLock SL, is a standing-seam metal roof system for vertical and steep-sloped roofs.

All the TremLock metal roof systems are 24-gauge steel and available in a variety of standard architectural colors. 800/562-2728. Tremco Incorporated, Beachwood, Ohio. CIRCLE 213

Redesigned roof trims series

Perimeter Systems has redesigned the Press-Loc Series of architectural copings and snap-on gravel stops. The secure bar design of the gravel stop (below) works on a variety of roof membranes and allows for a leak-proof gravel-stop edge that is resistant to wind-uplift. The new coping features conceal spring-loaded compression cleats that allow the installer to easily snap the coping into position in a vertical fashion. 919/775-7353. Perimeter Systems, Sanford, N.C. CIRCLE 214

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more information, circle item numbers on Reader Service Card or go to www.architecturalrecord.com Advertisers & Products info.
New Products

**Bolder vinyl siding**
Heritage Hill vinyl siding features the weather-resistant Geloy material that makes it possible to produce vinyl siding in dark, bold colors without concerns about fading. In addition to being fade-resistant, Geloy does not have the propensity for heat distortion seen in some pure acrylic siding products. Available in traditional and Dutch lap profiles, Heritage Hill is an ultra-low-gloss product that features a wood-grain emboss. 800/BUILD GP. Georgia-Pacific, Atlanta. **CIRCLE 215**

**Reflective modified bitumen membrane saves energy**
StressPly ELV Mineral is Garland’s latest modified bitumen technology. The high-performance membrane (featuring a fiberglass/polyester reinforcement) has a mineral surface with a reflectivity rating that doubles the standard mine used in the roofing industry today. This specially developed mineral significantly lowers ambient roof temperatures, resulting in energy savings Garland claims no other multi-ply, mineral surfaced roof system can match. In addition, the system provides long-term UV weathering resistance while incorporating post-consumer recycled rubber scrap tires. 800/321-9336. The Garland Company, Cleveland. **CIRCLE 216**

**Passed the test**
Accelerated weather testing of Honeywell’s Millennium membrane system concluded that the membrane portion submerged in water for 6,000 hours had the same low temperature flexibility exhibited by the membrane before testing. The system includes granular surface membranes, smooth membranes, base sheets, adhesives, and mechanics. 800/221-6490. Honeywell Commercial Roofing Systems, Cary, N.C. **CIRCLE 217**

**Seven-inch solid-core siding**
Crane developed CraneBoard7 as a new solid-core siding offering to match the 7" siding profile. CraneBoard7 has a seamless appearance and a 3/4" profile with no visible nail heads. Unlike fiber cement, CraneBoard7 is lightweight and impervious to moisture. The backing has an R-value of 4.0 and carries the Energy Star logo, the only siding that can make this claim, according to the manufacturer. 800/733-8469. Crane Performance Siding, Columbus, Ohio. **CIRCLE 218**

**Fluid membrane**
ExoTite Waterproofing is a polymer-enhanced, single-component, fluid-applied asphalt-emulsion waterproofing membrane designed for vertical or horizontal commercial applications. Spray application allows for continuous coverage, even in areas with complex detailing. ExoTite can be applied to concrete, masonry, and other structural substrates. 888/903-KOCH. Koch Waterproofing Solutions, Reynoldsburg, Ohio. **CIRCLE 219**

**Slate look shingles**
The Berkshire Collection, Owens Corning’s newest residential roofing line, is intended to give homeowners the upscale look of slate with the durability and performance of an asphalt shingle. These dimensional premium laminate shingles offer a combination of seven colors found in natural slate and five designer colors. Backed by a limited lifetime warranty, Berkshire shingles feature resistance to algae and high winds. 800/GS/PINK. Owens Corning, Toledo. **CIRCLE 220**
Product Briefs

Carpet awards
Solutia Doc Awards competition, now in its 14th year, recognizes outstanding achievement in contract projects that include carpet made from Solutia Ultralon nylon 6,6. The award was given to firms, including Reza Ali, principal, and her team at Wirt Design, Los Angeles, for the Shaw Contract's Visual Elements and Synthesis style in the Homestore corporate headquarters facility in Lake Village, California (shown). 866/858-7668. Solutia, St. Louis. CIRCLE 221

Commercial faucets
Gerber commercial kitchen and lavatory faucets are vandal-resistant, feature compliant blade handles, and have smooth lines for easier cleaning. The bodies and spouts are built with heavy cast brass for a range of commercial kitchen and bathroom applications. 847/675-6570. Gerber Plumbing Fixtures, Lincolnwood, Ill. CIRCLE 223

Textured copper
Revere Liberty Collection features a selection of textures Rigidized Metals Corporation have been applied to Revere Classic Copper. The collection can be used to create a modern, tech, or rustic finish on walls, ceilings, mansards, and any type architectural accent. The lightweight and malleable textures are for use in applications throughout the home, including kitchen counters and backspashes, as well as fireplaces (shown). 800/448-1776. Revere Metal Products, Rome, N.Y. CIRCLE 224

Product of the Month
Schindler 400A Elevator
The Schindler 400A traction elevator system eliminates the need for a machine room and unsightly roof penetration. The system's compact machine can be mounted directly to the elevator rails—requiring less building construction interface and less lead time. The system uses advanced permanent magnet drives for a clean, oil-free operation, and it uses up to 40 percent less power than traditional drives. No oil also eliminates the potential for belowground leaks. In the elevator's underslung design, cables run diagonally beneath the cab for optimal balance and less side-to-side vibration. The unit is serviced from atop the cab, which is fitted with safety guardrails.

The 400A is suitable for two to 20 stops, features variable frequency drives, speeds of 200 and 350 fpm, and rises of up to 200 feet. It comes in 2,500 lbs., 2,000 lbs., 3,000 lbs., and 3,500 lbs. configurations. 973/397-6564. Schindler Elevator Corporation, Morristown, N.J. CIRCLE 222

A Commercial-grade fiberboard panels
LP Specialty Products introduces a new line of commercial-grade Ultra High Density Fiberboard (UHDF) panels as an alternative to ceramic tile, metallic surfaces, and high-pressure laminates in light construction projects including hotels/motels, offices, and commercial laundry rooms. The panels are made from a newly developed UHDF and feature a hard acrylic polymer topcoat that makes the panels water-, stain-, scratch-, and mildew-resistant. They are available in eight different color/finish combinations. 800/866-4323. LP Specialty, Huntersville, N.C. CIRCLE 225

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Product Briefs

► New colors for the year
DuPont Corian has added six new colors to its palette, bringing the total offering to more than 130. The introductions include one graphic solid and five soft neutrals: Acorn, Blue Pebble, Delta Sand, Doeskin, and Willow (shown). Graphic Blue is a new addition to the design series in the “brights” sub-palette. Corian can be used for applications throughout the home, including countertops, backsplashes, vanity tops, wall cladding, tub and shower surrounds, desktops, and windowsills.

DuPont's Zodiaq quartz surfaces introduces four new colors to its palette, bringing that total offering to 25. The new colors are Autumn Light, Cappuccino, Cinnamon Spice, and Copper Sunset. DuPont Surfaces, Wilmington, Del. CIRCLE 226

► Nearly trackless record
The Individual Panel Sliding System consists of discrete glass panels and frames available in wood or aluminum with a wide range of muntin, finish, and glazing options. Unlike other sliding wall systems, the Individual Panel Sliding System is supported from a hidden track above the panels. As a result, a single narrow track is required for the floor; if weatherproofing is not a consideration, then trackless options are available. Panels can be stacked conveniently out of (top). The system is suitable for restaurants, stores, mall fronts, ski lodges, conference rooms, offices, and churches. 800/411-NANA. Nana Wall Systems, Mill Valley, Calif. CIRCLE 227

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lovable files and walls
C-Series Pedestal and Lateral files, from Trendway, feature integrated locks, 8-gauge steel, full-extension slides with steel ball bearings, and adjustable glides. Designed for multiple applications, the C-Series Pedestal (below) can stand alone, be used under a work surface, or function as a mobile file. The Lateral files' two- to five-tier shelving units that can be aligned side by side. Trendway has updated the literature for its movable wall product, Trendwell, in response to a resurfacing of interest in the product. 616/399-3900. Trendway, Holland, Mich. CIRCLE 228

Designer glass film
A line of 18 LLumar glass-enhancement films have been introduced as an alternative to glass etching. In addition to providing glass safety and UV-protection, the films now offer a wide range of colors, patterns, designs, and textures, including frosted white, opaque (shown), square and striped designs, and small and large dots. Many of the films can also be used on metal, painted, or other flat and cylindrical surfaces. 800/2-LLUMAR, CPFilms, Martinsville, Va. CIRCLE 229

Melodious seating option
Lyric upholstered stackable guest seating can be used for public reception rooms, training classroom and lecture halls, office guest seating, and food service and general hospitality applications. The chair's seat and back are made of rigid, one-piece, high-impact, blow-molded plastic. Polyurethane-padded and upholstered options cover seat and back or seat only. 972/641-2860. Vecta, Grand Prairie, Tex. CIRCLE 230

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**Product Briefs**

**Electric file system**
The MediaStation ELF (electric lateral files) consists of a series of vertically arranged rotating carriers controlled by an electronic keypad or software. By taking advantage of unused overhead space, the ELF can hold the same number of files as traditional four-drawer filing cabinets or lateral files in 50 to 60 percent less space. The system works with FastPic Office records-management software. 800/639-5805. MegsStar Systems, Marietta, Ohio. CIRCLE 232

**Soybean backing**
Pacificrest's BioBak system integrates BioBalance polymers into polyurethane commercial carpet backings. The special polymers, manufactured with a soybean-based polyol, provide an alternative chemistry for producing polyurethane carpet backings. In addition, up to 5 percent postindustrial content has been added to the carpet-backing composition. 800/522-8838. Pacificrest Mills, Irvine, Calif. CIRCLE 231

**Certified door line**
Marshfield introduces two additions to their family of Environmental Class wood door products—the noncombustible and 20-minute-rated particleboard core doors, certified by Scientific Certification Systems. The doors are suitable for use in offices, schools, hospitals, government facilities, and other commercial applications where specifying green products is the goal. 800/869-3661. Marshfield Door Systems, Marshfield, Wis. CIRCLE 233

**Sound off**
SoundCell sound-absorbing concrete masonry units utilize a skewed internal construction to focus and redirect reflected sound into a sound-absorbing cavity, resulting in lower noise levels. The unit provides multiple levels of noise relief at most frequencies and improves overall sound quality. The units are available in a variety of colors based on customers' needs. 800/445-0034. The Proudfoot Company, Monroe, Conn. CIRCLE 230

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www.portcement.org/masonry
Perpetual motion

HON's Perpetual Seating has been awarded a Good Design 2002 award from The Chicago Athenaeum: Museum of Architecture and Design. Perpetual Seating features a frame design manufactured with solid steel wire that allows the seat and back to flex independently of each other, providing automatic adjustment as the individual moves. The Good Design Show—the annual exhibition of the winners—is scheduled to open April 1, 2003, at the Chicago Athenaeum. 800/553-8230. The HON Company, Muscatine, Iowa. CIRCLE 236

Professional floor panels

Weyerhaeuser introduces Structurwood Gold professional-grade, single-layer flooring. Structurwood is manufactured flat and installed flat, therefore assuring a more stable floor system. Weyerhaeuser claims that its engineering protects against buckling, cupping, warping, sagging, veneer defects, and delamination, while eliminating weak spots, like core voids. The fully sanded panel is guaranteed not to need edge sanding due to water absorption. The product is produced primarily from wood species such as southern pine, aspen, yellow poplar, and other underutilized hardwoods. For more information on Structurwood, refer to this month's Product Literature section, 877/235-6873. Weyerhaeuser Company, Federal Way, Wash. CIRCLE 235
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Bendheim the company known for its vast selection of architectural glass introduces Quickship, a selection of 14 specialty laminated glasses, cut to size and ready to ship in two weeks or less.*

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*Some limitations may apply.

Product Literature

Ceiling catalog
The new Chicago Metallic 2003 ceiling-product catalog has been redesigned for quick access to information on all the company’s metal, panel, and grid products. Browse CSI-formatted technical-product specs, a comprehensive product-applications specifier, fire-rated assemblies, colors, and finishes. 800/323-7164. Chicago Metallic, Chicago. CIRCLE 237

Pendant-mounted fixtures
A brochure describing Litecontrol’s new family of individual pendant-mounted architectural fluorescent lighting fixtures is now available. The new family of high-performance lighting fixtures offers 21 different product choices with a variety of options, including fixture design, size, distribution, and lamping. 781/294-0100. Litecontrol, Hanson, Mass. CIRCLE 238

Flooring kit
Weyerhaeuser offers a Structurwood Gold product-information kit, including product photos, technical information, specifications, and warranty information. For more information on the premium flooring product line, refer to this month’s Product Briefs section. 888/235-6873. Weyerhaeuser Company, Federal Way, Wash. CIRCLE 239

NEW SITES FOR CYBERSURFING
This site launches Bretford’s new brand and design platform www.bretford.com

A site that includes virtual building tour and elaborate cutaway product images www.gypsum.com

Enhancements of this site include a virtual shower planner www.kohler.com

Three new online tools make the process of working with hardwood easier www.hardwoodcouncil.com

Environmental responsibility
A new 16-page brochure from Armstrong reviews the Armstrong portfolio of commercial products, including both ceiling systems and floors that contribute to sustainable design. In the area of commercial floors, the brochure explains why linoleum’s combination of ingred and long life cycle make it one of the “greenest” floor coverings available today. 877/ARMSTRONG. Armstrong World Industries, Lancaster, Pa. CIRCLE 240

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PRODUCT LITERATURE

Sink brochure/CD
Bates and Bates new Product Pavilion brochure showcases a collection of marble, metals, and new PVD finishes for the company’s upscale kitchen and bath basins for homes, hotels, restaurants, and offices. The brochure comes complete with sink specifications and features utility baskets and sink grids. The company has also produced a multimedia CD that showcases its basins and pedestals crafted from ceramics, natural stone, and metal. The CD presentation also highlights the company’s Weathered Collection, Stainless Steel Collection, Airegr Collection, and Problem Solvers Series. 562/808-2290. Bates and Bates, Paramount, Calif. CIRCLE 241

Wood office furnishings
CCN International offers a new comprehensive brochure for its Crofton Collection of handcrafted, fine wood office furniture, for management, reception, and conference-room applications. The large-scale photographs show a range of desks, conference and side tables, reception stations, storage credenzas, and display cabinets. 315/789-4000. CCN International, Geneva, N.Y. CIRCLE 242

Metal panels
A new 36-page catalog available from Petersen Aluminum describes the company’s complete line of architectural metal for roofing, mansards, and facades. The catalog illustrates the use of Clad material in a variety of applications and colors. 800/323-1960. Petersen Aluminum Corporation, Elk Grove Village, Ill. CIRCLE 243

Wood info CD
The Southern Pine Council, along with APA-The Engineered Wood Association and the American Institute of Timber Construction, has introduced an updated version of the Wood Is Today interactive CD. Designed for architecture, engineering, and building-construction students, as well as the education of practicing professionals and their customers, the CD contains 22 video clips and 132 PDF literature files. 504/443-4464. Southern Forest Products Association, Kenner, La. CIRCLE 244

Mold prevention
Cammil Farr has published an informative bulletin on the role of air filtration in control the spread of mold through systems. 973/816-7300. Cammill Farr, Riverdale, N.J. CIRCLE 245

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**Program title:** School Construction: Technology Is Changing the Way Kids Learn, Architectural Record (03/03, page 159)

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Profile

Lee Bey: From architecture critic to Chicago's City Hall

Interviewed by John E. Czarnecki, Assoc. AIA

Although not trained as an architect, Lee Bey is one of the most influential people when it comes to Chicago's built environment. The City of Chicago's Mayoral Deputy Chief of Staff for Planning and Design since May 2001, Bey was the architecture critic for the Chicago Sun-Times during the previous four years. A Chicago native, he has taken his knowledge of the city and architecture to City Hall, where he advises Mayor Richard M. Daley on architecture and urban-planning issues, such as downtown development, lakefront protection, parks construction, and architectural preservation. Bey is also the spokesperson for the mayor on issues that are contentious, such as the Soldier Field reconstruction, which the mayor supports.

Q: When working with Mayor Daley, who is known for having a strong interest in city building, making Chicago one of the "greenest" cities, how much influence do you have on his policy? Do you find yourself always on the same page on issues? I didn't see architecture and neither did the mayor, but we approach it in a similar way. We're both natives who want to improve the city. There are times, as an adviser, when I am able to challenge a notion or say no.

The face of public housing is drastically changing Chicago. Are you the mayor's voice at the table in discussions on public housing? Yes. And the mayor is passionate about this. As the new housing development gets to a stage where they are about to be approved, the mayor's office weighs in heavily to make sure that buildings are not just attractive but that they make sense in the neighborhood.

What has your role been with the redevelopment of Soldier Field? When I started in May 2001, construction hadn't begun yet and we were still pinning down design points—things that the mayor wanted. My original job was to see that those tweaks got in. From point, my role expanded to become the mayor's personal enforcer some days, negotiator other days, and holder other days.

What's the biggest difference between your prior role as an architecture critic and your current role working with the mayor? Compared to work with a newspaper, the stakes are higher. My actions or inactions can reflect on the mayor, so an adjustment was tough for me to make. Perhaps I can assume that what I am saying are the mayor's words.

When you left the Sun-Times, the newspaper did replace you with a new architecture critic. Now Chicago has only one architecture critic, Blair Kamin [architectural media contributing editor], at the Chicago Tribune. In your mind, how important is it for daily newspapers to have architecture critics? I tried my darndest to get the Sun-Times to hire someone else for whatever reason, it just didn't. It's a real loss. Blair and I were the competing architecture critics in the United States. Architecture critics are extremely important, especially in these post-9/11 times. People care more about the built environment now, and the papers need to pick up on that and really seize the moment. The architecture critic can be an advocate and explain the complex world of architecture to the layman. There has to be a place for criticism—to challenge why things are being built.

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