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Silent Architects

IN THIS ISSUE, WE EXAMINE ARCHITECTS WHOSE QUIET PRESENCE IN the profession has gone largely unnoticed—practitioners who work within corporations, institutions, and government. While architects have long worked outside the mainstream of private firms, those who do so have been grudgingly accepted, more as client representatives than as lobbyists for good design. But as more private firms seek government and university commissions during the recession, the stature of such “silent” architects is growing. It is these professionals who are increasingly influencing what gets built—and how—in the 1990s.

To broaden professional and public awareness of alternatives to traditional practice, last year the AIA formed the Careers Task Force, an advisory group of university, state, and other architects familiar with jobs that break the conventional architecture-firm mold. The group's first meeting, held last November, not only addressed the need to educate would-be and practicing architects about conventional careers in design, but also about jobs outside the profession that involve no designing whatsoever. The task force members are now developing educational programs and ways of publicizing career alternatives for architects, and their suggestions will be taken up by the AIA Board of Directors this December. A seminar planned for the AIA's national convention in June, “The New Profession: Careers in Architecture,” will promote jobs “beyond traditional limits.”

The AIA admits that its initiative has been spurred by the recession-induced need to keep architects working. But a more comprehensive view of architects' responsibilities is long overdue. Not only are more architects working outside the broadly defined practice of architecture (about 8 percent of AIA members), but those in private practice are increasingly involved in activities beyond design. Drawing attention to these alternative ways of practicing underscores the message that architecture is more than the creation of isolated buildings by a lone designer; it requires a collaborative process harnessing many talents outside the drafting room.

Those architects working outside private firms are just as valuable to this process as their conventional counterparts. Their increasing numbers will result in better clients and greater opportunities for all architects. As practice continues to change over the decade, these “silent” architects will have a stronger voice in determining the quality of our environment. ■

—DEBORAH K. DIETSCH

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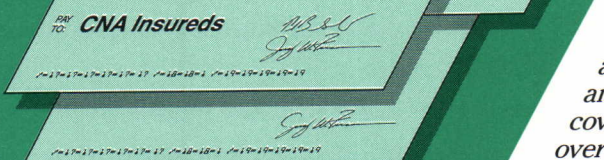
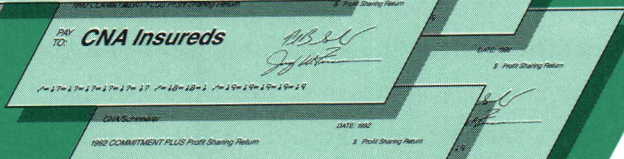
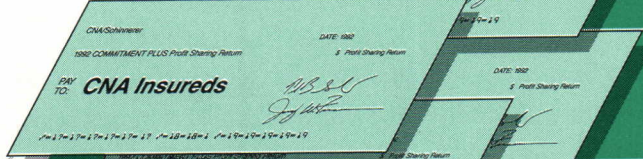
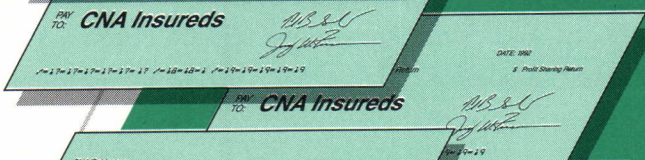
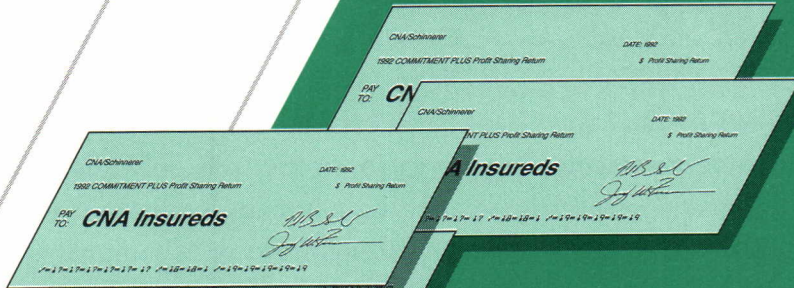
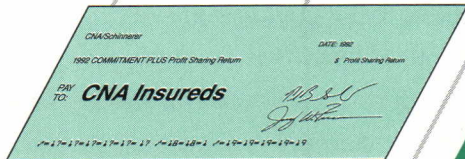
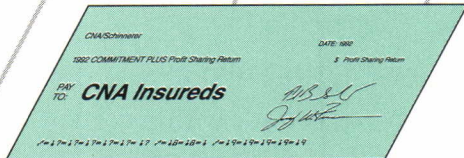
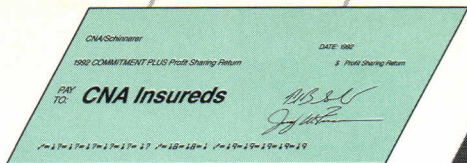
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innovate



EXPLORATION 92 Engaging Society in Vital Ways

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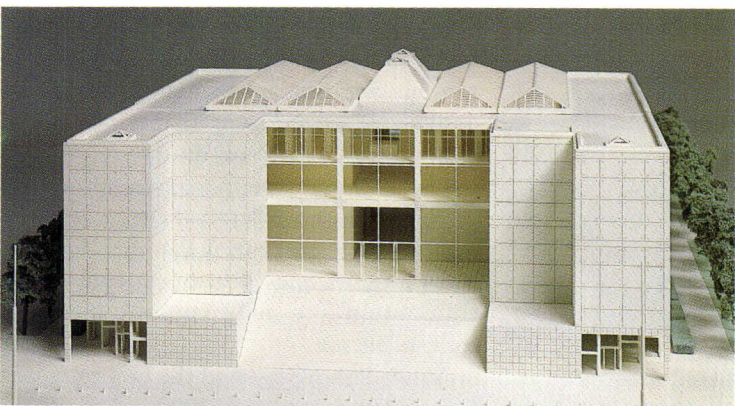
The American Institute of Architects
National Convention and Design Exposition Boston June 19-22 1992

PHOTO: Chicago skyline, c. 1920, THE BETTMANN ARCHIVE



NEWS

Rethinking the 1960s • Honoring Pittsburgh's Renaissance • AIA Lobbies Congress



Chicago Museum Design Unveiled

CHICAGO'S ARCHITECTURE COMMUNITY WAS in an uproar last year when the city's Museum of Contemporary Art (MCA) picked six finalists to design its new \$55 million building and sculpture garden. Not one of the six firms was from Chicago, a blow to designers in the first city of American architecture. But when the museum revealed models of its new home on March 19, there was hardly a whimper of protest. The architect who was awarded the prized commission, Josef Paul Kleihues of Berlin, fashioned a scheme with the pragmatism and understated elegance that have long represented the best of Chicago design.

That a foreigner seized upon the essence of Chicago architecture, and blended it with his own theory of "poetic rationalism," might seem surprising. Although Kleihues has designed several museums, including the Museum for Prehistory and Early History in Frankfurt, the MCA is his first major commission in the United States.

His MCA design is well-suited to its high-profile site, a 2-acre plot occupied by a National Guard Armory scheduled to be demolished in 1993. Located between the historic Water Tower and Lake Michigan, the site sits on a stretch of public land that offers a swath of green amid the high-rise canyons of North Michigan Avenue. In its massing, materials, and configuration, Kleihues's scheme responds sensitively to its surroundings. The 25,000-square-foot project also will provide the 25-year-old MCA with a well-conceived



MCA's monumental staircase and 56-foot-high curtain wall (top left) face west toward historic Water Tower (far right in model above) and North Michigan Avenue (site plan). Skylit, barrel-vaulted spaces will occupy upper level (top right) with temporary exhibition spaces below.

interior that boasts four times the museum's current exhibition space.

In true Miesian fashion, Kleihues split the MCA site into a pair of identical 1-acre squares: one for the 72-foot-tall building, the other for the sculpture garden, which will be raised 16 feet above street level. But the real roots of his design can be traced much further back than Mies. In plan and elevation, the grid of the new museum refers to the modular architecture of William LeBaron Jenney's Leiter buildings, as well as Louis

Sullivan's Carson Pirie Scott store. A monumental staircase, which will beckon harried pedestrians to stop and sit in the summer sun, was inspired by Karl Friedrich Schinkel's Altes Museum in Berlin. Once inside, visitors will gaze straight through an atrium, 56 feet tall at its apex, to Lake Michigan. "It would be difficult to find a location in Chicago better suited to that dialogue between transparency and containment that is so characteristic of an art museum," Kleihues explains.

The museum's interior promises to fulfill its mission to support the cutting edge of contemporary culture. Two artificially illuminated temporary exhibition galleries with movable ceilings are designed to respond to the changing scales and media of today's art. But the most poetic spaces may turn out to be second-floor galleries housing the museum's permanent collection; their skylit, barrel-vaulted rooms recall the serenity of Louis Kahn's Kimbell Art Museum.

While there is much to look forward to in the completed museum, scheduled to open in 1995, questions remain over the exterior materials: Indiana limestone for the first story and cast aluminum for the upper stories. How the two materials will be joined together visually, and how the cast aluminum will appear from the street, remain unclear. But the Berliner's overall design shows every sign of living up to Chicago's vaunted architectural tradition. Kleihues's next mission is to prove that God is in his details.

—BLAIR KAMIN

Blair Kamin writes for the Chicago Tribune.



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AIA Lobbies for Jobs, Infrastructure, and Preservation

AIA UPDATE

WITH MORE ARCHITECTS out of work, the AIA is pushing Congress to authorize funds that would create jobs, spark the economy, and rebuild communities. In March, New Jersey architect Ronald Bertone testified before the U.S. House of Representatives's Public Works and Transportation Committee on the Anti-Recession Infrastructure Jobs Act—a bill that would provide \$10 billion to jump-start public works projects ready for construction within 90 days of approval. The legislation would create 500,000 jobs, according to its author, Representative Robert A. Roe (D-NJ), who modeled the bill after 1976 and 1977 public works programs that provided 334,000 jobs. Unless Congress knocks down the “fire walls” in the 1990 budget agreement that block transfer of defense dollars to domestic programs, the bill’s passage is doubtful.

According to a recent AIA report, 90 percent of the structures to receive architects’ attention in the 21st century already exist to-



PHILIP BUJAKOWSKI

Testifying before the U.S. Senate, AIA President W. Cecil Steward recommended that the clearinghouse for preservation technology be based at architecture schools.

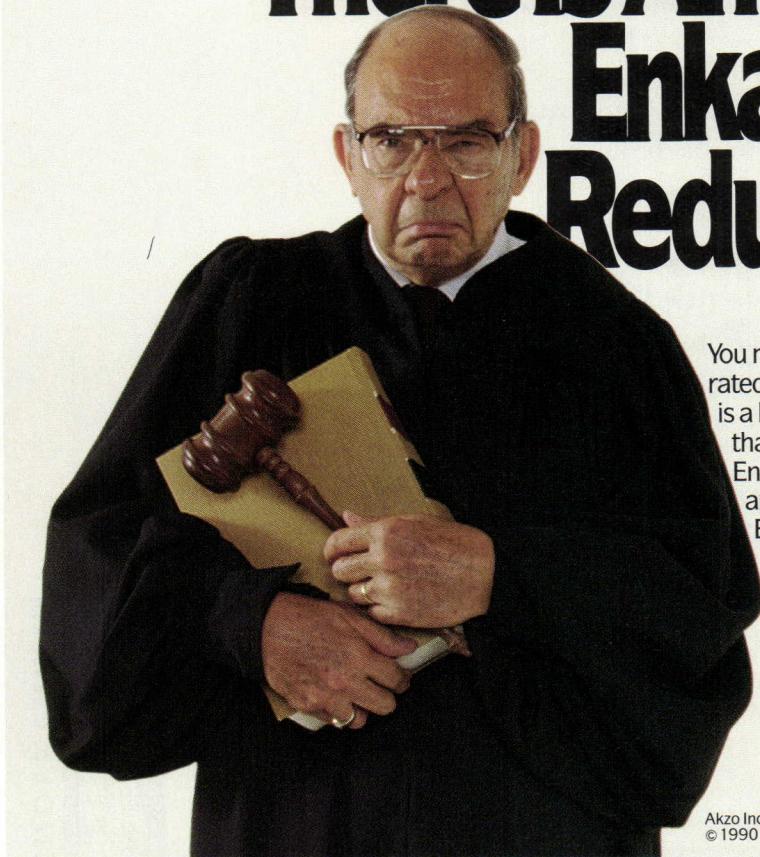
day. The AIA is therefore urging Congress to amend the National Historic Preservation Act to strengthen preservation laws, delegate more responsibility to states and localities for the protection of landmarks, and expand federal education programs. Appearing before the

Senate Subcommittee on Public Lands, National Parks, and Forests last March, AIA President W. Cecil Steward emphasized the need for more technical training, stating that our nation was ill-prepared to repair historic buildings damaged during Charleston’s Hurricane Hugo and San Francisco’s 1989 earthquake.

The amendments, introduced by Senator Wyche Fowler, Jr., (D-GA) last year, call for the creation of a National Center for Preservation Technology as a clearinghouse for conservation information. To stretch the center’s projected \$5 million yearly budget, Steward recommends establishing the facility within a school of architecture and linking it to other schools through computers. “Having consistent information,” Steward argued, “would strengthen the preservation curriculum of these schools, ensuring that our future professionals are properly trained.” The legislation is awaiting action by the House Subcommittee on National Parks and Public Lands. ■

—K.S.

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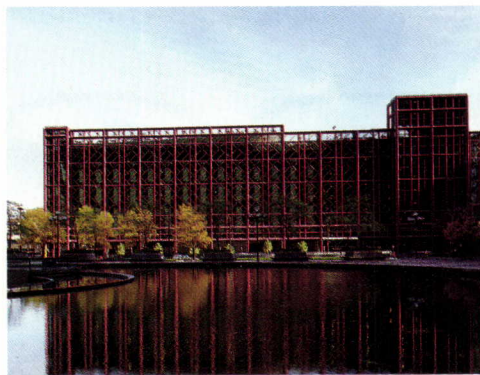
A W A R D S

Minnesota Society Honors Local Projects

THE AIA MINNESOTA 1991 HONOR AWARDS jury recognized projects that express a sophisticated conservatism and environmental responsibility, according to juror Barton Myers of Los Angeles. Myers was joined by Laurence Booth of Chicago and Richard Fernau of Berkeley, California, in selecting 12 projects from 104 entries. The winners included two civic building additions: the Minnesota Judicial Center by The Leonard Parker Associates (ARCHITECTURE, November 1991, pages 80-87), which experiments with historic context; and the United States Post Office General Mail Facility by Hammel Green and Abrahamson, which respects an original 1928 Art Deco building and waterfront location. Two structures by Ellerbe Becket—the First Avenue Cooling Plant, which hides rooftop mechanical systems behind painted chain link fencing, and the Wildlife Interpretive Center (ARCHITECTURE, January 1992, pages 44-49)—were recognized as dynamic assemblages of disparate forms. The jury also commended LHB Engineers & Architects for transforming a dilapidated St. Paul city block into a neighborhood of 21 affordable homes, and Salmela Fosdick's Pruitt Residence overlooking Lake Superior, which inventively draws upon vernacular forms. ■

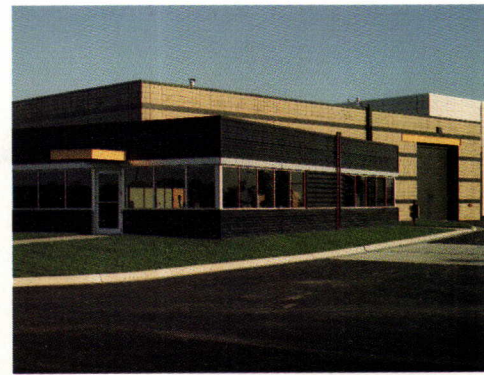


United States Post Office—General Mail Facility
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Hammel Green and Abrahamson, Architects

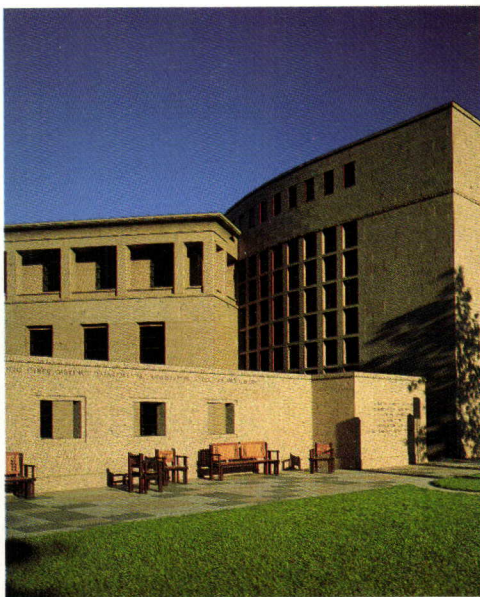


SHIN AND JOEL KOYAMA

Fourth Avenue Parking Ramp
Minneapolis, Minnesota
Opus Architects & Engineers



School Bus Maintenance and Storage Facility
West St. Paul, Minnesota
Ellerbe Becket, Architects



GEORGE HEINRICH

Minnesota Judicial Center
St. Paul, Minnesota
The Leonard Parker Associates, Architects



SHIN AND JOEL KOYAMA

United Children's Hospital
St. Paul, Minnesota
Hammel Green and Abrahamson, Architects



General Mills Recognition Court
Golden Valley, Minnesota
Meyer, Scherer & Rockcastle, Architects



Sacred Heart Church Restoration
Notre Dame, Indiana
Ellerbe Becket, Architects



CHRISTIAN KORAB

Lake Harriet Refectory
Minneapolis, Minnesota
Frederick Bentz/Milo Thompson/Robert Rietow, Architects



JEFF GOLDBERG/ESTO

Wildlife Education and Interpretive Center
Minneapolis, Minnesota
Ellerbe Becket, Architects

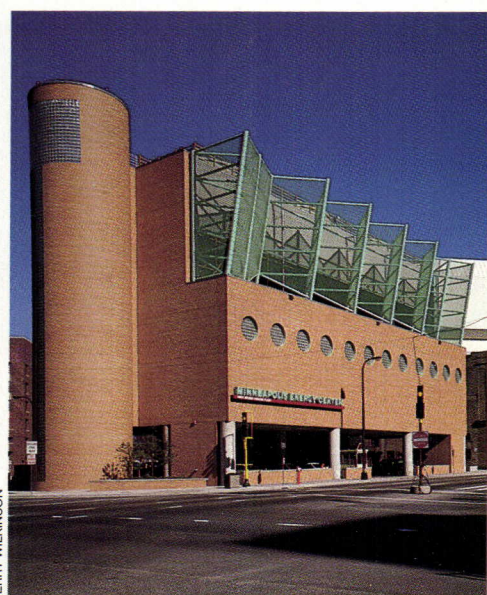


Ston Park Place
St. Paul, Minnesota
HB Engineers & Architects



PETER KERZE

Pruitt Residence
Castle Danger, Minnesota
Salmela Fosdick, Ltd., Architects



TERRY WILKINSON

First Avenue Cooling Plant
Minneapolis, Minnesota
Ellerbe Becket, Architects

OUR STEEL JOISTS ARE AT THE WORLD

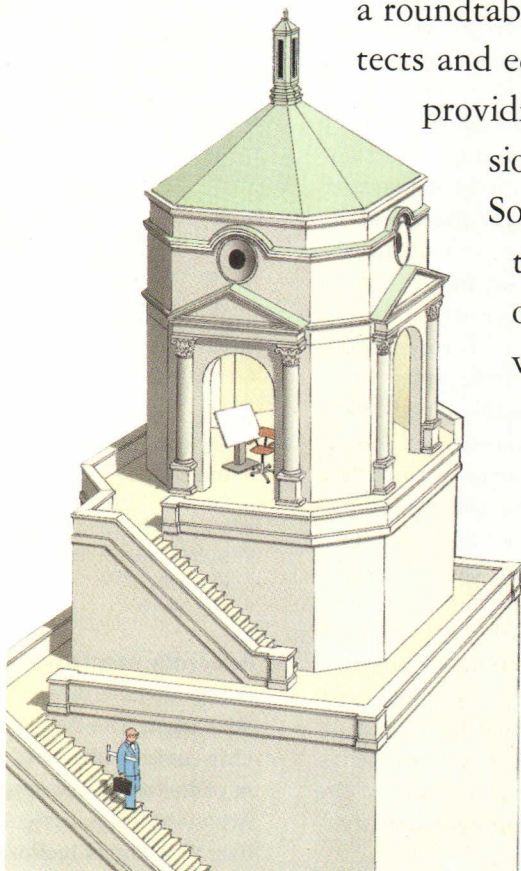


Practice Alternatives

THIS MONTH, WE DEPART FROM OUR USUAL FOCUS ON buildings to feature architects who have taken the road less travelled, choosing careers in government, civic organizations, corporations, and universities rather than working for private firms. Contrary to the common stereotype, these men and women are not working behind the scenes, but hold prominent positions that greatly influence the way buildings are programmed, designed, and constructed. They are not only helping their organizations to be better clients, but are educating the public about the value of architecture.

For architects in private practice, the typical path from design to construction is becoming more circuitous, requiring firms to blaze new trails. An essay by Dana Cuff, author of *Architecture: The Story of Practice*, discusses the reasons for this growing complexity, and a roundtable on project delivery reveals how architects and educators are responding to new ways of providing services. For most firms, the recession is an inescapable catalyst for change. Some firms are successfully coping with the sluggish economy by concentrating on specialized building types and services, as discussed in an article on niche markets. And a few enterprising architects are testing a new management philosophy to better serve their clients and ensure their own survival.

Throughout this issue, we encourage architects to venture out of design's ivory tower and take advantage of the growing opportunities that lie beyond the limits of traditional practice. ■



Michael A. Dobbins

C I V I C A R C H I T E C T

City Catalyst

BIRMINGHAM, ALABAMA, IS NOT A TYPICAL SOUTHERN CITY. Founded six years after the Civil War, the city's economy was originally based on heavy manufacturing, not agriculture, and its urban development responded to the Industrial Revolution rather than antebellum traditions. Likewise, the most influential architect in the city's government, Michael A. Dobbins, FAIA, is not a

typical Southern bureaucrat. A native of Denver, Colorado, Dobbins graduated from Phillips Exeter Academy and Yale University. He worked for an architect in Sweden for a year before earning a master's degree in 1965 from the Yale School of Architecture, chaired at the time by Paul Rudolph. Despite his Ivy League education, Dobbins is the antithesis of the elitist architect. "I have always been interested in aspects of design that affect ordinary people," he contends. "My opinions got me into a lot of trouble at Yale in the 1960s." Dobbins's views might have been countercultural, but he managed to land a job in Rudolph's office after graduation.



MICHAEL A. DOBBINS

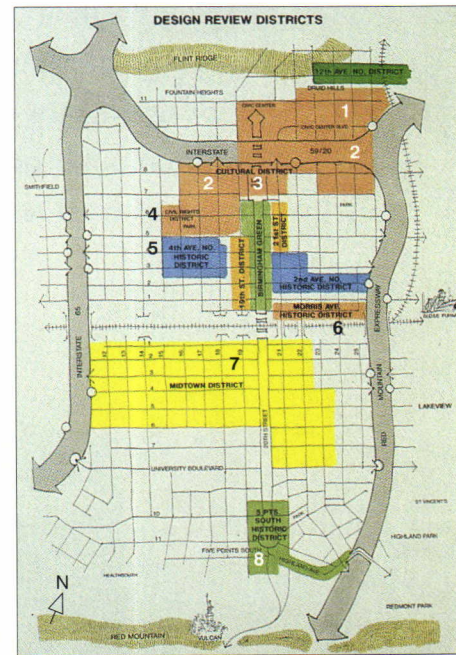
In 1967, Dobbins first tasted public service under Mayor John V. Lindsay in New York City's formidable Urban Design Group of the city's planning department (his colleagues included Jaquelin Robertson and Jonathan Barnett). During his five-year stint in New York, Dobbins was immersed in the zoning, financing, and politics of construction—"all the things you don't learn in architecture school." Rather than becoming averse to these processes, Dobbins recalls, "I was intrigued when I realized how much government regulations shape architecture." After three years in New Orleans as a transportation planner and instructor at Tulane University, Dobbins joined Birmingham's Department of Urban Planning in 1979. He was named director of the department in 1986.

Birmingham was ripe for a public archi-

ecture advocate like Dobbins. In 1976, the local AIA chapter sponsored a Regional Urban Design Assistance Team, a charette that targeted three working-class neighborhoods in the city for redevelopment. In addition, Operation New Birmingham, a nonprofit organization founded in the late 1960s to encourage development, was becoming a more influential proponent of urban design, and a strong grass-roots commitment to preservation had emerged.

To his credit, Dobbins didn't come to town with grand notions, but with the patience to work within the system as he gradually reshaped Birmingham's urban fabric. During his 13 years at city hall, he has established a design review process that encourages citizen participation. In addition, Birmingham's municipal government now formally recognizes 100 neighborhoods. Each district receives capital funding and has an elected board of representatives with a voice in city planning commission and city council deliberations. A citywide design review committee appointed by the city council (four of its 11 members must be architects or landscape architects) has the authority to approve permits for new construction, demolition, and renovation. "The policymakers had to be convinced that design should be a factor in their deliberations," Dobbins recalls, "while the designers had to be convinced of the value of the deliberative processes that characterize civic decision-making."

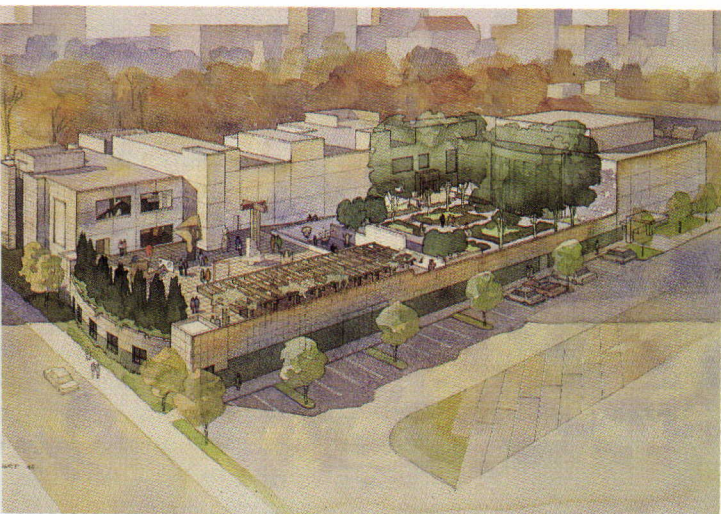
Dobbins's technique has been to target



CITY CENTER MASTER PLAN

- 1 CIVIC CENTER
- 2 CULTURAL DISTRICT
- 3 LINN PARK
- 4 CIVIL RIGHTS DISTRICT
- 5 FOURTH AVENUE NORTH HISTORIC DISTRICT
- 6 MORRIS AVENUE HISTORIC DISTRICT
- 7 MIDTOWN DISTRICT
- 8 FIVE POINTS

A recently adopted master plan (above) recognizes the diversity of Birmingham's downtown. Linn Park is bordered by the civic center complex to the north (top right in photo) and Birmingham Museum of Art (facing page, bottom left). The Birmingham Civil Rights Institute (facing page, bottom right) is now under construction.

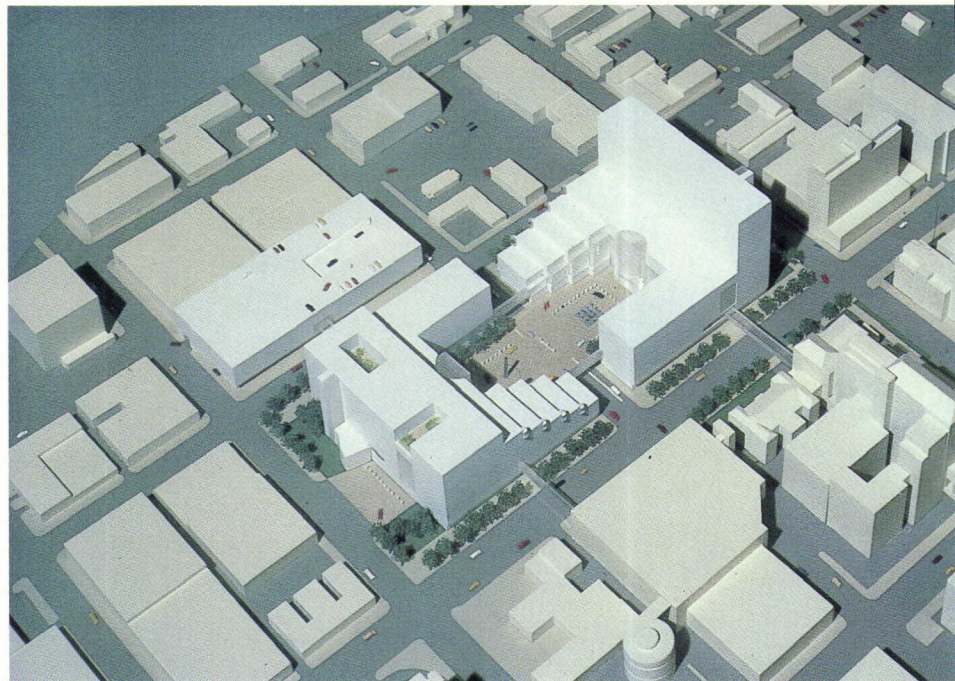


districts of the city for revitalization, rather than to sponsor individual buildings; he is as interested in the spaces between buildings as the buildings themselves. In the mid-1980s, Dobbins directed the renovation of Linn Park, the city's first public park in the heart of Birmingham, and revitalized a six-block stretch of the downtown's principal artery, 20th Street. In conjunction with a major expansion by Emery Kirkwood & Associates to the Birmingham/Jefferson County Civic Center (a 1968 design by Geddes Brecher Qualls Cunningham), Dobbins rerouted and upgraded a street to create new vehicular access and renovated the pedestrian approach from Linn Park. But he has not forgotten less prosperous areas: virtually every neighborhood has received some public streetscape investment.

Projects around the city in various stages of design and construction reflect a growing appreciation of quality architecture on the part of the municipal government and the private sector. A \$17 million expansion of the Birmingham Museum of Art by Edward Larrabee Barnes, in association with KPS Group, is scheduled for completion next year and will be the linchpin in the city's cultural arts district along the western edge of Linn Park. A new campus for the Alabama School of Fine Arts by Renneker, Tichansky & Associates, now starting construction, will anchor the western boundary of the cultural district.

As the city's demographics and political leadership have shifted from a white to a black majority, Dobbins has stressed an inclusive approach to urban planning and an awareness of social concerns. Accordingly, the Birmingham Civil Rights Institute will open later this year as the centerpiece of the city's Civil Rights District, which encompasses sites of civil rights demonstrations in the 1960s. Although the Civil Rights Institute is a quasi-public foundation, Dobbins worked closely with the Institute's board throughout the planning of the complex, which was designed by R.L. Brown & Associates with design consultant J. Max Bond, Jr., of Davis, Brody & Associates.

"It is the mind of the architect that is best suited to bring . . . a city into a symphonic character," Louis Kahn asserted in a lecture at the Pratt Institute in 1973. As Dobbins orchestrates Birmingham's commitment to enriching its urban fabric, he demonstrates Kahn's belief in civic-minded design. "We must emphasize the common ground that holds a city together," Dobbins maintains. "It must reflect the public will, not the expression of an individual." —LYNN NESMITH



Phase one (left in model above) incorporates a stepped configuration (facing page, top), granite cladding (below), and entrance canopy (bottom) to engage the street (facing page, bottom).



**Kirklin Clinic
Pei Cobb Freed & Partners
with TRO Architects**

WHEN MAJOR NEW PROJECTS ARE PROPOSED in Birmingham, Michael A. Dobbins insists on "snatching good urban design from the jaws of good architecture." Pei Cobb Freed & Partners's new Kirklin Clinic is a prime example of the city architect's emphasis on the urban ensemble and the role of the community design-review process. The latest component in the University of Alabama at Birmingham's (UAB) expanding medical complex, the \$125 million clinic is located on the city's principal north-south spine, approximately halfway between downtown and the revitalized Five Points neighborhood. Kirklin Clinic is UAB's first facility east of 20th Street, and a major concern was the five-story building's relationship to the street, according to Dobbins. Although the clinic resisted placing street-level retail along 20th Street, the architects articulated the ground floor with a series of recessed windows and landscape plazas. They also included 18,000 square feet of retail along the ground level of the facility's adjacent 1,450-car parking deck. The first phase of the clinic, scheduled to open this month, is clad in a gridded Italian white granite. The five-story, 430,000-square-foot facility will consolidate the medical center's outpatient services, housing approximately 660 staff physicians, surgeons, and dentists. The second phase calls for another 430,000-square-foot structure to the south (right preliminary model, top photo).



Neal P. Stowe

S T A T E A R C H I T E C T

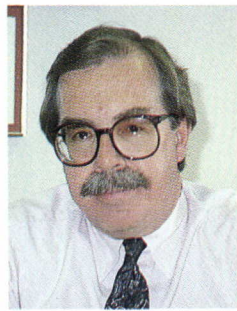
State Asset

IN 1986, REPUBLICAN GOVERNOR NORMAN H. BANGERTER OF Utah crossed party lines to appoint a Democrat, Neal Stowe, AIA, as state architect. Stowe, a committed public servant, has made the governor's defection worthwhile. Because he believes that careful planning produces "smarter" buildings, Stowe demands that each state-sponsored project be fully programmed, including a detailed cost estimate, before funds are requested from the state legislature. Since the 48-year-old Stowe took office, no additional funds have been requested for such projects, and Utah, an economically thriving state, has saved dramatic amounts on design and construction.

Fiscal management isn't the only skill that serves Stowe in the public sector. As an architecture student at the University of Utah during the early 1970s, Stowe was active in Salt Lake City's community design center, called Assist, a local planning consortium devoted to encouraging partnerships with business to address the city's problems. After graduating in 1971, Stowe spent 15 years working for two architectural firms in the state capital. Named a partner in the firm of Richardson Associates in 1983, he also presided over Assist's board from 1980 to 1984. Three years later, he led the Utah Soci-

ety of the AIA as president.

As director of Utah's Division of Facilities Construction and Management, Stowe oversees an inventory of some 4,000 state buildings that constitute a range of building types: corrections facilities, higher education campuses, applied technology campuses, courthouses, and state agency offices in Salt Lake City. The capitol, a turn-of-the-century granite landmark, recently underwent an office renovation under Stowe's assurance to the legislature that it would meet its 10-month construction schedule and \$4 million budget.



NEAL P. STOWE

Below the state capitol spreads Brigham Young's urban handiwork, Salt Lake City, currently being reshaped under Stowe's guidance. An art museum, to be located in a revitalized Union Pacific depot, and a new consolidated courts complex are under way. The \$62 million courts project involves a partner-

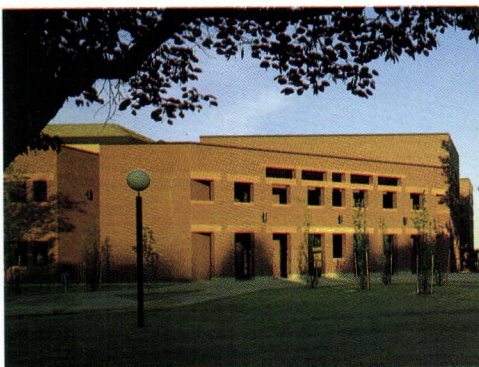
ship with the city and has already spawned a local alliance with businessmen, similar to Stowe's earlier work with Assist.

To encourage more Utah firms to interview for state work, Stowe added a local twist to the selection process. He invites one architectural firm per week to present its credentials at a brown-bag lunch with his staff, free from the pressures of a specific job interview. As a result of Stowe's aggressive open-door policy, 33 percent of state construction and planning projects are awarded to firms that have never worked with state government.

While Stowe never aspired to be a bureaucrat, he clearly relishes his job, attacking 18-hour workdays and tough legislative questioning with energetic confidence. Aware that the majority of the state's largest projects involve public funding, he feels both responsibility and opportunity. "Working with agencies and users," Stowe explains, "architects create purpose and direction for the future of Utah."

—ROBERT A. IVY, JR.

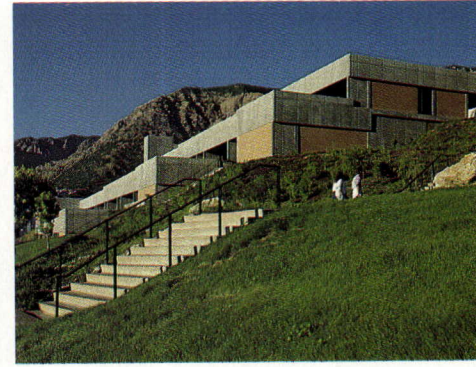
Stowe oversees buildings such as a dance center (below left) and biological research facility (below center) at the University of Utah, and the health sciences building (below) at Weber State University. The Dixie Center complex (facing page), at Dixie College in St. George, also serves as the city's convention and community center.



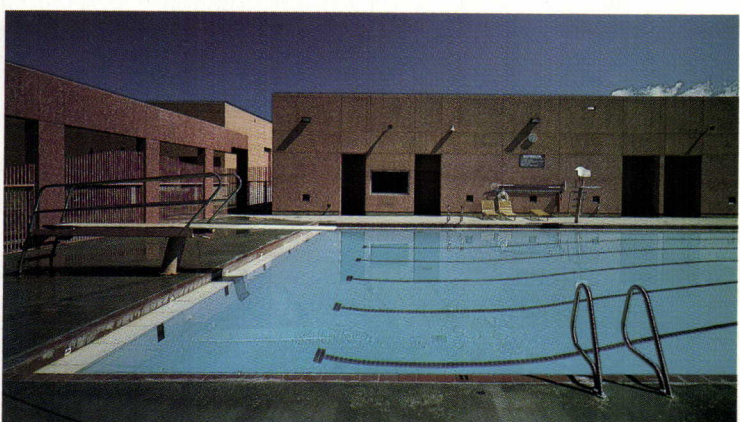
ALICE SHEETS MARRIOTT CENTER FOR DANCE
FFKR, ARCHITECTS



ECCLES INSTITUTE OF GENETICS
FFKR, ARCHITECTS



ALLIED HEALTH SCIENCES BUILDING
ASTLE/ERICSON & ASSOCIATES, ARCHITECTS



RICK McCLAIN

William Scott Higgins

F E D E R A L A R C H I T E C T

Guardian of Justice

CROWDING IS A FACT OF LIFE IN AMERICAN PRISONS. IN-
deed, a recent U.S. Supreme Court ruling makes it easier for
state and local officials to challenge court settlements that
require them to improve prison conditions. Yet despite the high
court's ruling—and despite a hardening of public attitudes toward
criminals and stricter sentencing guidelines for convicted offenders—

the Justice Department's Federal Bureau of Prisons prides itself on maintaining humane environments for both inmates and staff. Likewise, the bureau is moving as swiftly as possible to keep up with demand as the federal prison population burgeons.

Architect Scott Higgins, who heads the Bureau of Prisons's Office of Design and Construction, has spent his entire professional life working to meet these goals. After graduating from the University of Oklahoma with a bachelor of architecture degree in 1967, Higgins joined the bureau; seven years later, he was named administrator of its regional facility management office in Dallas. In 1983, he returned to Washington, D.C., to head the bureau's design division.

Higgins's tenure has paralleled sweeping philosophical changes in prison design and an

increase in the federal prison population—from 20,000 in 1967 to more than 66,000 in 1992. The year that Higgins joined the bureau, President Lyndon B. Johnson appointed



WILLIAM SCOTT HIGGINS

a commission to study prison reform, resulting in a Department of Justice pilot program to upgrade correctional facilities. A revolutionary new management approach was introduced: direct supervision, an open prison environment in which inmates and staff freely intermingle. This approach to incarceration required new architecture, which resulted in a wave of building for the federal prison system. The num-

ber of new facilities has grown from 28 to 68 during Higgins's nine years with the office of design and construction.

"When the bureau embarked on a major building program 25 years ago," recalls Higgins, "there was an understanding that qual-

ity design was an important component. Three prototypical urban prisons, which opened between 1974 and 1975, reflected the bureau's new architectural standards: a facility in Chicago designed by Harry Weese & Associates; another in New York City by Gruzen & Partners; and a third in San Diego by Tucker Sadler & Bennett. "The Chicago facility is a milestone in the federal prison system," Higgins asserts. "Weese's triangular plan for the housing unit remains the model for all prison housing."

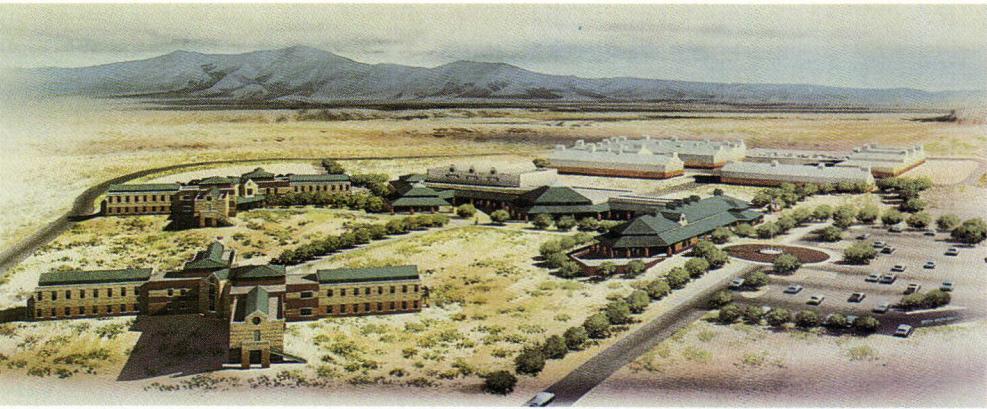
Despite the success of these facilities, increasing crime and mandatory federal sentencing laws have led to an explosion in the prison population over the past decade. As a result, the bureau has had to build more prisons than ever before in its history; in 1990, for example, the federal prison population grew by 10.7 percent. Currently, \$2 billion worth of federal prison projects are being designed and constructed, and Congress has appropriated another \$269 million for 1992.

This boom in prison population has led Higgins and his staff to develop a campus model for new medium- and minimum-security

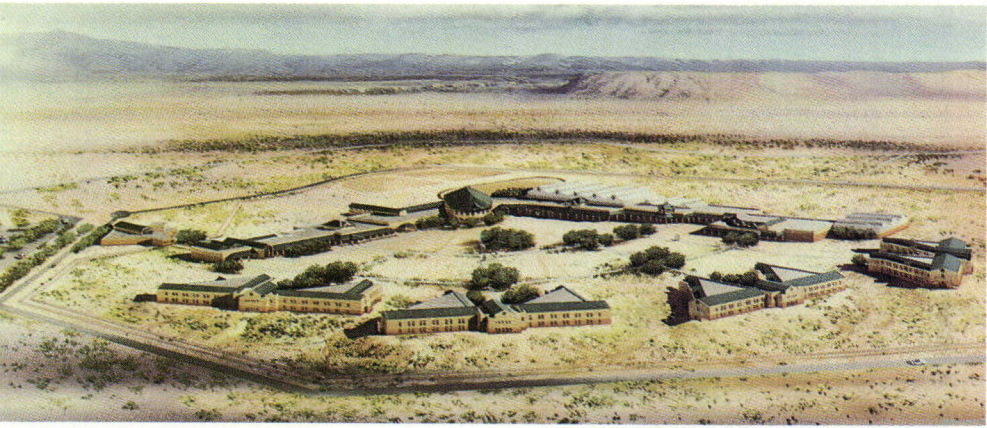
Scheduled to open in 1993, the bureau's Cumberland complex, designed by RTKL, incorporates a campus plan comprising a medium-security facility (below) and an adjacent minimum-security prison camp.



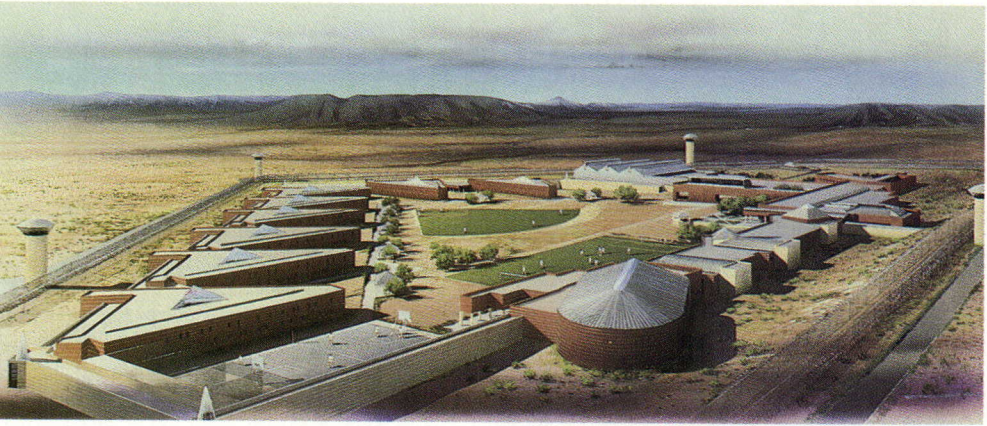
FEDERAL CORRECTIONAL INSTITUTION, CUMBERLAND, MARYLAND



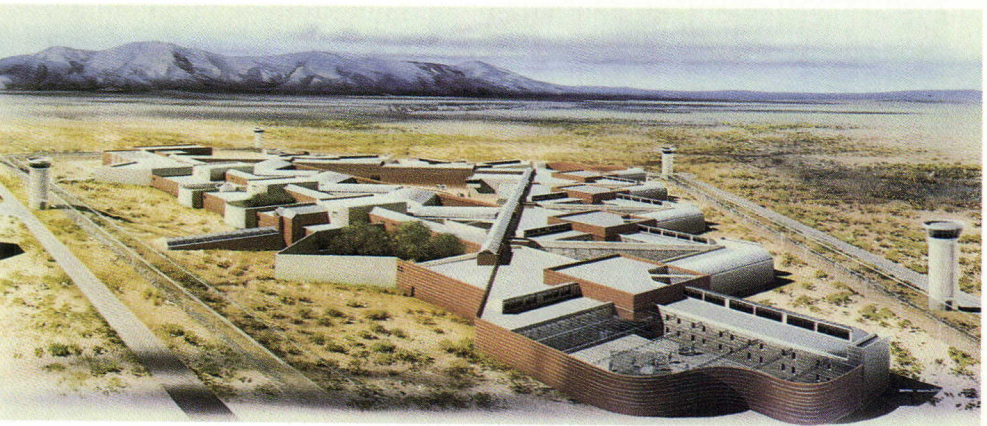
MINIMUM SECURITY



MEDIUM SECURITY



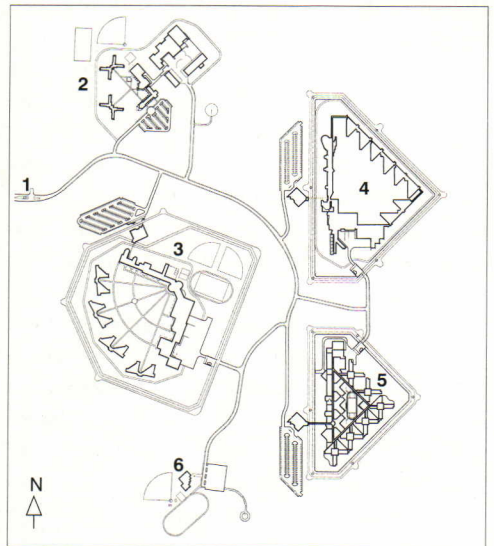
HIGH SECURITY



MAXIMUM SECURITY

**Federal Correctional Complex
Florence, Colorado
LKA Partners/Lescher and Mahoney/
DLR Group, Architects**

THE FLORENCE COMPLEX REPRESENTS THE first time the U.S. Federal Bureau of Prisons has located four facilities of varying degrees of security on one site (master plan, below). Scheduled to open in phases later this year and next year, the 600-acre complex houses a minimum-security camp (top left), a medium-security institution (second from top), a high-security penitentiary (second from bottom), and a maximum-security penitentiary (bottom). Although Lescher and Mahoney had designed a medium-security facility in Phoenix in the early 1980s, the firm worked closely with bureau architects in programming and designing the bureau's first facility constructed specifically to serve as a maximum-security facility for confining the federal system's most dangerous inmates. Located in a sparsely populated, environmentally sensitive area 40 miles southwest of Colorado Springs, the Florence complex reflects Higgins's commitment to site-specific solutions that also function as models for future facilities. The architects, working in joint venture, utilized complementary materials and developed an architectural vocabulary to create a unified compound that differentiates the four levels of security through density and massing.



FLORENCE MASTER PLAN

- 1 MAIN ENTRANCE
- 2 MINIMUM SECURITY
- 3 MEDIUM SECURITY
- 4 HIGH SECURITY
- 5 MAXIMUM SECURITY
- 6 TRAINING CENTER

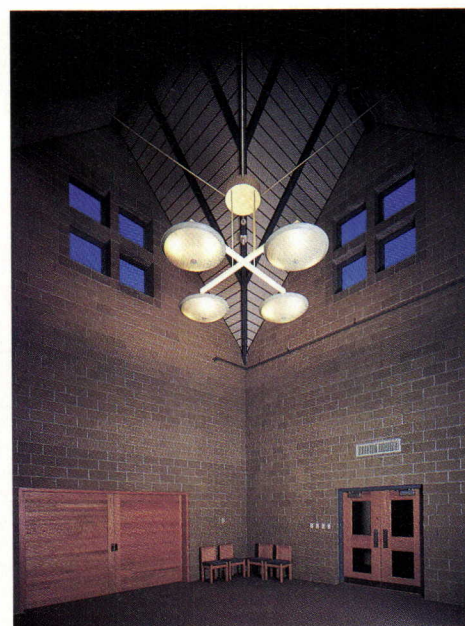
rity federal prisons. This campus plan, which originated in Otisville, New York, with a 1980 design by Davis, Brody & Associates, clusters triangular housing modules and communal structures around a courtyard. "Otisville set the standard," explains Higgins, "but the bureau's medium-security facilities have constantly evolved during the last decade." The campus model has continued to develop under the federal architect, with 14 new facilities opening within the past 10 years. The next important prison model was the 1989 Sheridan, Oregon, facility by Zimmer Gunsul Frasca Partnership, which in turn served as a forerunner to the Three Rivers, Texas, facility (facing page). Both prisons encompass a medium-security compound and an adjacent minimum-security prison camp.

Higgins is very sensitive to the fact that his office oversees an enormous public expenditure. The less institutional look of the recently completed medium-security prisons can be credited to the bureau's search for the most cost-effective structures. "Our new facilities are as much a reaction to the expense of utilizing super-security prison hardware as trying to create a 'normal' atmosphere for the inmate," explains Higgins. His commitment to fiscal responsibility encourages architects to incorporate local building materials and construction techniques.

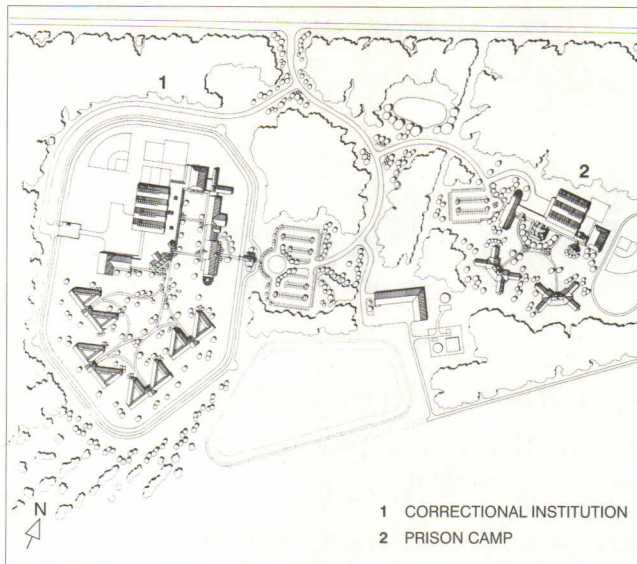
Although a few large and specialized firms design many new federal correctional facilities, the bureau is willing to consider firms that are not "prison architects," using the federal government's standard qualifications-based selection process. Architecture firms submit an SF-255 qualifications statement; the final decision is made from a short list of four to six firms. Once selected, the design firm works with one of the bureau's 13 staff architects, who serve under Higgins and manage a project from programming through construction. Firms currently working on federal prisons include the Kling-Lindquist Partnership, DMJM, Dworsky Associates, Odell Associates, and Middleton McMillan Architects. Keyes Condon Florance Eichbaum Esocoff King was recently selected to design a 1,200-bed facility in Washington, D.C.

As head of the bureau's Office of Design and Construction, Higgins has directed the largest federal prison-building program in the country's history. Although the 1993 appropriation for new construction is only \$118 million—less than 10 percent of Higgins's budget three years before—prison construction promises to remain strong throughout the decade.

—LYNN NESMITH



Three Rivers's medium-security facility wraps around a central courtyard (facing page, top) anchored by administrative wing to the east (facing page, center), gymnasium to the north, and chapel (facing page, bottom left). The architects exposed the structure's roof gables within the dining room (facing page, bottom right). The satellite camp (below) also links administrative buildings with arcades and features a sunny cafeteria (bottom right). The camp's gym is crowned with a metal roof and exposed trusses (bottom left).



THREE RIVERS SITE PLAN



**Federal Correctional Center
Three Rivers, Texas
Hellmuth, Obata & Kassabaum, Architects**

LIKE MANY PRISON PROJECTS DESIGNED UNDER the auspices of the Federal Bureau of Prisons, the Three Rivers complex comprises a medium-security facility and a satellite camp. The site of the new prison is a 302-acre tract approximately 70 miles south of San Antonio near the Choke Canyon Reservoir. Unlike many government agencies that strive for uniformity, the U.S. Bureau of Prisons strongly encourages architects to incorporate regional materials and building techniques. In recalling his experiences at the Three Rivers facility, HOK project architect Gordon Gilmore credited the bureau with "appreciating good design and being open to our ideas." Accordingly, HOK incorporated split-faced concrete masonry blocks and stucco with standing-seam metal roofs to recall the scale and massing of South Texas vernacular architecture. Further responding to the bureau's goal of blending with the rural context, HOK developed a master plan with approximately 30 percent of the site left as a landscaped buffer of indigenous vegetation.

The main component of the complex (facing page) is a medium-security facility with buildings arranged in a campuslike setting—albeit within a double-perimeter security fence. The 30 acres within the fence contain the workings of a small city, including administrative offices, clinic, dining facilities, commissary, laundry and clothing exchange, library, classrooms, nondenominational chapel, gymnasium, and recreational facilities. The architects organized administrative and inmate services buildings around a 450-foot-long central courtyard and connected the structures with covered arcades. The prison's 958 inmates are housed in four two-story buildings, each divided into two triangular wings with two floors of cells surrounding a multipurpose room.

For the adjacent minimum-security prison camp, the architects kept the buildings' profiles deliberately low and fragmented and repeated the rooflines, window proportions, color, and materials of the main prison facility to the west. Administrative/inmate services and dormitories are also grouped around a central landscaped courtyard. To house the camp's 289 inmates, the architects designed a pair of one-story residential structures that define the southern edge of the camp's facility. Each building contains four open dormitory wings. ■

Arthur Rosenblatt

C I V I C A R C H I T E C T

Public Servant

MORE THAN 30 YEARS AGO, FOLLOWING THE DREAM OF most young architects, Arthur Rosenblatt quit his drafting job and opened an office in New York City. It was an audacious move that Rosenblatt, married with two young children, would soon regret: lacking enough commissions, he was forced to close his practice within the year. The architect was soon to improve

his lot, however, by inventing an alternative career that has made him a force behind New York's most powerful cultural institutions.

Self-reinventors can always do with some help, and Rosenblatt's came in the form of his next boss, the late architect Irwin S. Chanin, who allowed Rosenblatt to participate in the civic life of New York during working hours. The young architect joined a community planning board and helped neighborhood groups to fight for better park design and maintenance. As a result of these volunteer activities, in 1966, the newly appointed parks commissioner, Thomas P.F. Hoving, named Rosenblatt first deputy commissioner of New York City's Department of Parks, Recreation and Cultural Affairs—a job that was to lead to a lifetime of public service.

In his two years as deputy commissioner, Rosenblatt initiated the first major construction program for New York's parks and cultural facilities since the Robert Moses era. In 1968, once again summoned by Hoving, now director of the Metropolitan Museum of Art, Rosenblatt became the Met's vice president for architecture and planning, a position he held for 18 years. In that capacity, he was responsible for the museum's more than \$1 billion renovation and expansion, designed by Kevin Roche John Dinkeloo & Associates. (During the last four years, he also served as director of capital projects for the New York Public Library restoration by Davis, Brody & Associates and restoration architect Giorgio Cavaglieri.)

In 1986, Rosenblatt became the director of the U.S. Holocaust Memorial Museum in Washington, D.C. Responsible for program development, as well as securing approvals from the federal Fine Arts Commission, National Capital Planning Commission, and D.C. Historic Preservation Review Board, he was instrumental in the selection of Pei Cobb Freed & Partners to design the building.

Today, Arthur Rosenblatt, FAIA, is back in New York serving as vice president of the Grand Central Partnership (GCP), a private, nonprofit group consisting of property owners, commercial tenants, and city officials dedicated to the restoration and rebuilding of the 53-block area surrounding Grand Central Terminal. This high-density district includes nearly 53 million square feet of commercial space within an irregular boundary that stretches from 38th to 48th streets between Second and

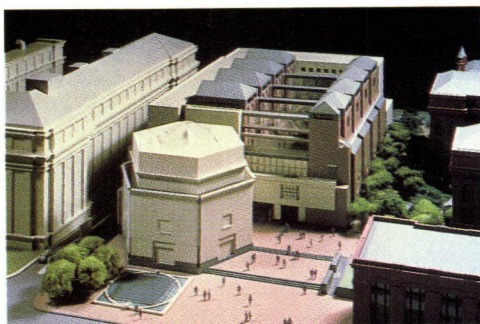
Fifth avenues. Dilapidated, seedy, and a magnet for the homeless, it has long been out-classed by adjoining business districts; capital improvements, funded by property owners through a self-imposed tax assessment, are expected to cost \$28 million. Architect of the GCP is Benjamin Thompson & Associates, which has drawn up a five-year master plan. BTA's proposals include the recently completed lighting of the terminal, the restoration of the 1919 viaduct, storefront and street design criteria, and a new system of lighting, signage, and traffic signals (facing page).

Meanwhile, Rosenblatt is currently steering the project through New York City's Art Commission, Landmarks Preservation Commission, Department of Consumer Affairs, Department of Transportation, Department of Parks and Recreation, Fire Department and Community Planning Boards 5 and 6, a task that will test his well-earned political skills. "Too many architects," he asserts, "present their projects in a manner that reveal total innocence of the political realities. They need to function as effectively in the public sector as they do in the private."

—MILDRED F. SCHMERTZ



ARTHUR ROSENBLATT

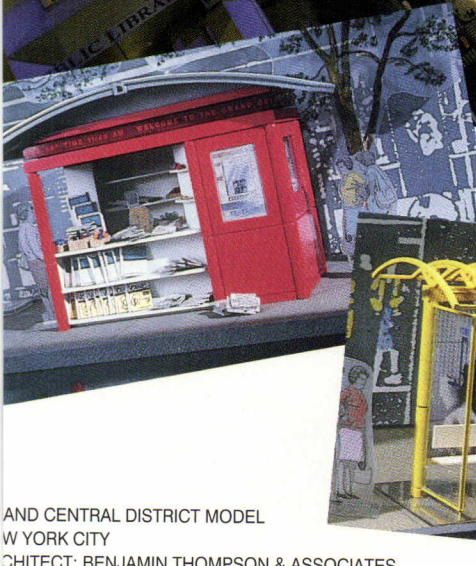
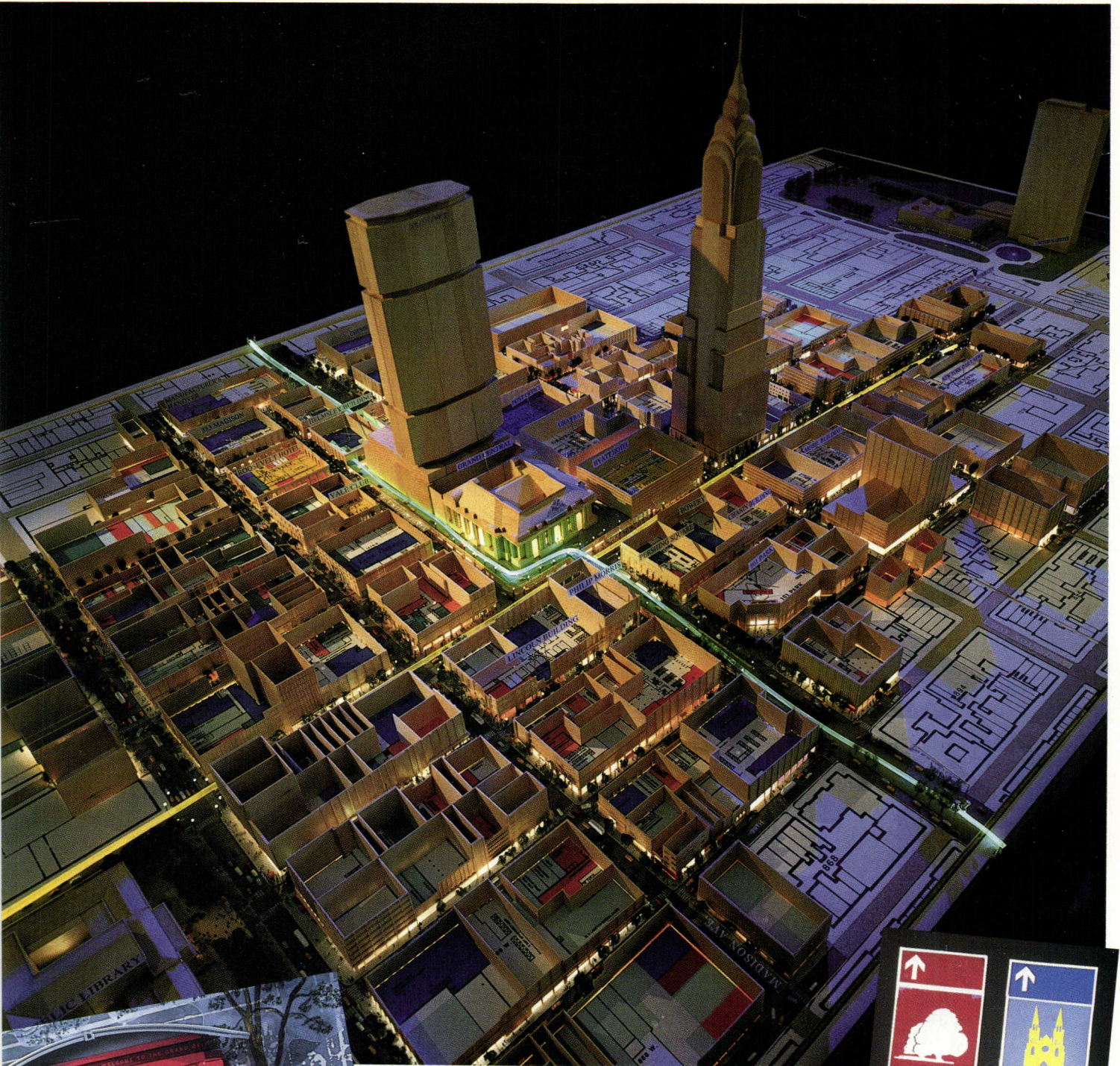


UNITED STATES HOLOCAUST MEMORIAL MUSEUM, WASHINGTON, D.C.
ARCHITECT: PEI COBB FREED & PARTNERS



METROPOLITAN MUSEUM OF ART, NEW YORK CITY
ARCHITECT FOR EXPANSION AND RENOVATION:
KEVIN ROCHE JOHN DINKELOO & ASSOCIATES

Rosenblatt supervised improvement of Grand Central Terminal, directed development of the U.S. Holocaust Memorial Museum (below left), and served as vice president for the Metropolitan Museum of Art (below).



AND CENTRAL DISTRICT MODEL
 W YORK CITY
 CHITECT: BENJAMIN THOMPSON & ASSOCIATES

Wing Chao

C O R P O R A T E A R C H I T E C T

Disney Developer

IN 1953, AS HE CONTEMPLATED THE DESIGN OF A NEW KIND OF amusement park in Anaheim, California, Walt Disney consulted Los Angeles architect Welton Becket. Legend has it that after Becket toured Disney's animation and motion picture studios, he told the famous film producer to forget about commissioning an architect. With its set designers, art directors, and animators, the company had

all the talent Disney needed; Disney then formed the original "Imagineers," a group of about 20 people culled from the studio, to design Disneyland. The company has relied on in-house design talent ever since to create its theme parks around the world, and today the Imagineers number 3,000, of which 70 are architects.

But Disney's most celebrated design is now cultivated by the Disney Development Company, the entertainment conglomerate's real estate arm. It was established in 1984 with the arrival of Walt Disney Company Chairman and CEO Michael Eisner, a self-described architecture buff. "In a company such as ours, architecture and design are part of our very fabric, interwoven into the environments we create," explains Eisner. "Architects are smart, well-educated, and recognize good ideas. I'll trade a good investment banker for an architect any day."

The chairman's appreciation of architects is reflected in the Disney Development Company, which is responsible for everything Disney builds except the theme parks, which are handled by the Imagineers. The development company master-plans the company's vast real estate holdings in California, Florida, Japan, and France; it determines land use, interviews outside architects for new building commissions, and invites architects to compete for the design of guest facilities. Disney Development's in-house architects manage projects throughout design and construction.

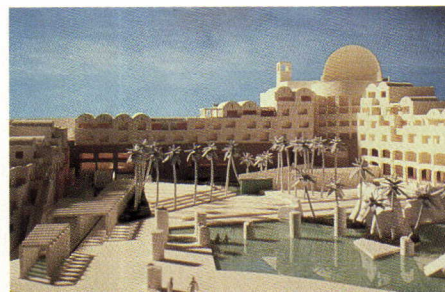
The senior vice president for master plan-

ning, architecture, and design at Disney Development Company, Wing Chao, FAIA, is such an architect. Born in Chungking, China, Chao holds degrees in architecture and urban planning from the University of California, Berkeley and Harvard University. He joined Disney in 1972 after working for the architecture firms of Charles Luckman and John Carl Warnecke in Los Angeles. After two years at Disney World in Orlando, Chao spent a decade working as an Imagineer in Oakdale, California. In 1984, he moved to Disney Development and began working on projects

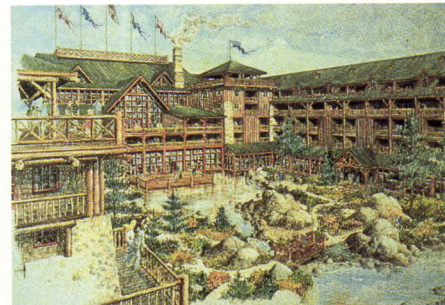
such as Michael Graves's Swan and Dolphin hotels and Robert A.M. Stern's Casting Center and the Yacht and Beach Club Resorts (ARCHITECTURE, June 1991, pages 90-93). More recently, Chao directed Graves's Team Disney Building in Burbank, California (ARCHITECTURE, June 1991, pages 80-89); Arata Isozaki's Team Disney Building in Orlando (ARCHITECTURE, April 1991, page 30); and a congeries of hotels, restaurants, and other attractions for the recently opened 5,000-acre Euro Disneyland near Paris, designed by such architects as Stern, Graves, Antoine Predock, and Frank Gehry. Today, Chao divides his time between Orlando and Paris, and is about to start new projects in Anaheim, where a second theme park is being designed for Disneyland. He is also coordinating efforts to expand Disney World's hospitality facilities in Orlando with several new hotels (right) designed by Antoine Predock and



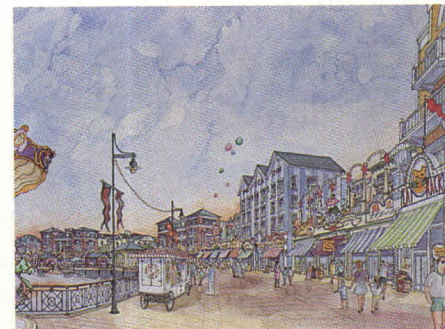
WING CHAO



MEDITERRANEAN RESORT
ANTOINE PREDOCK, ARCHITECT



WILDERNESS LODGE
DOMINICK ASSOCIATES, ARCHITECTS



DISNEY'S BOARDWALK
ROBERT A.M. STERN ARCHITECTS



**Vacation Club
Walt Disney World
Orlando, Florida**

THE DISNEY VACATION CLUB AT WALT DISNEY World in Orlando, Florida, is a new venture for the company in vacation time-sharing. Although club members don't actually own a unit, the design is geared to make the Vacation Club buildings variegated in appearance to suggest individual houses (top left). Of the 478 units planned for construction, 197 have been completed, along with a hospitality house (above), which contains a restaurant, snack bar, convenience store, pool, sauna, and a big, comfortable living room that can be used by club members. The residential units were designed by Bassenian/Lagoni of Santa Ana Heights, California, while Richardson Nagy Martin of Newport Beach, California, designed the hospitality house.

The club's theme, which was determined by Wing Chao, Michael Eisner, and Peter Rummell prior to hiring an outside architect for design, is the colorful architecture of Florida's Key West. The design architects for the residential units consulted with Chao and studied Key West architecture before starting design work. The two- and three-story buildings (left), which are sited diagonally to one another to create vistas of the nearby golf course and other recreational areas, contain a variety of studios and one-, two-, and three-bedroom units that range in size from 410 square feet to 2,360 square feet. Different types of decorative exterior siding, pastel colors, and metal roofs with varying slopes and heights suggest separate houses. —M.J.C.



Robert A.M. Stern, among other architects.

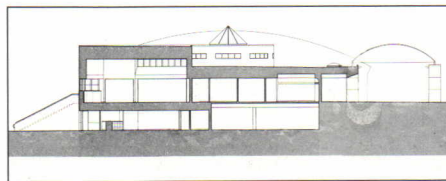
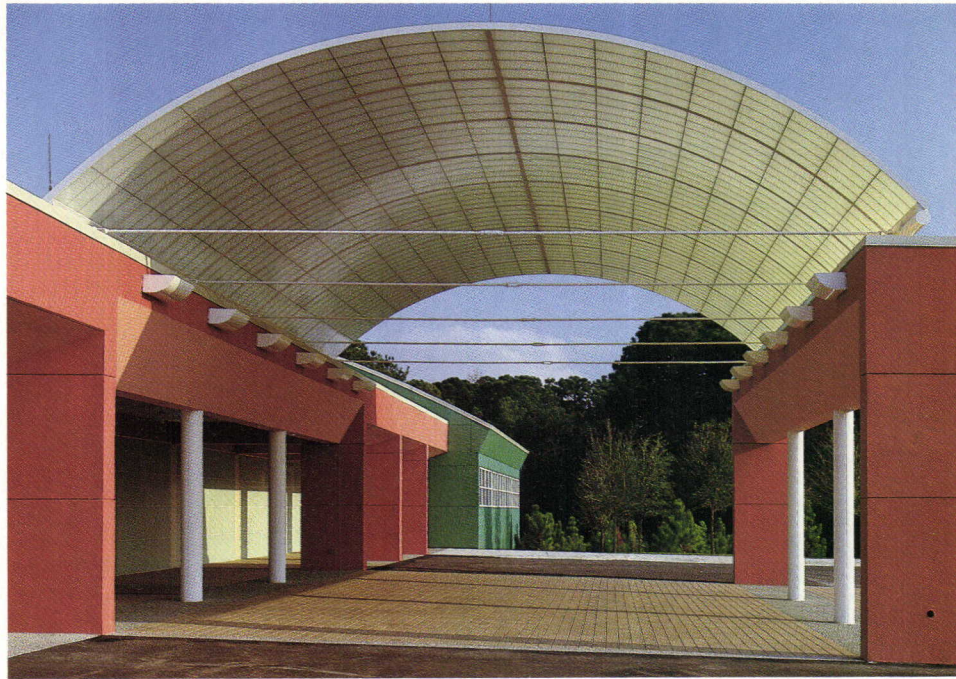
Rather than rely on in-house talent for its resorts and vacation centers, Disney seeks outside architects for their freshness and creativity. "I could hire 50 creative people to be in-house architects and do these projects," says Chao, "but it would be a Disney product. When Stern or Rossi designs buildings for us, we're making the public aware of architecture."

Typically, a project will start with a brainstorming session among Chao, Eisner, and Disney Development President Peter Rummell to determine the project's theme. For the recently completed Disney Vacation Club in Orlando, for example, the theme evolved from discussions about popular vacation spots. "We get a lot of our ideas from the *New York Times's* Travel section," explains Chao. When they decided to model the club on the Victorian and Caribbean styles of Key West, Chao and Rummell spent a day walking around the Florida island, noting the different pastel shades, wood siding, ornament, and metal roofs of its buildings.

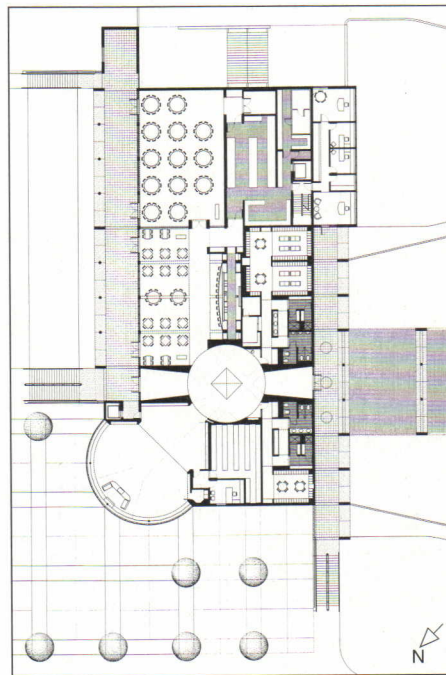
After determining a project's theme, Chao may invite three or four architects to submit design schemes. Invited architects are selected based on past work for Disney, or through magazines, books, exhibits, or word of mouth. More ideas are discussed, more architects may be consulted, and, finally, one architect, or, more commonly, a team of architects (one firm responsible for design, the other for production of construction documents) is chosen. As designs develop, they are critiqued by Disney's finance, operations, resort management, marketing, and Imagineering staff, according to Chao, who is constantly in contact with the architects himself, faxing ideas back and forth and guiding development. Robert Stern, now a member of Disney's corporate board of directors, has been through a number of these presentations and likens the experience to an audition. "They're made on a soundstage, with rows of chairs occupied by people from the company," notes Stern. "Decisions about a building's design are made with the same level of involvement as those made about a movie, by watching the rushes."

Chao maintains that in cultivating the work of outside architects, the "wow factor," as he calls it, is always a guiding design principle. "The first time you see Disneyland's Magic Kingdom castle, you say, 'Wow,'" explains Chao. "We want to make sure that every time you turn a corner, you have that experience, even when you go back to your hotel room."

—MICHAEL J. CROSBIE



SECTION THROUGH ARCADE



SITE PLAN

Golf club bridges sloped site with pro shop, locker rooms, grill and banquet facilities (facing page, top). Steel and fiberglass porte cochere (above) defines southeast elevation, while two-story northeast elevation (facing page, bottom) overlooks lake.

**Bonnet Creek Golf Club
Walt Disney World
Gwathmey Siegel & Associates**

DISNEY CONSIDERED FOUR ARCHITECTURAL firms before selecting Gwathmey Siegel & Associates to design the golf club's clean, Modern structure. "We first considered traditional country-club architecture," explains Wing Chao, "so we had a couple of Georgian schemes, but they didn't seem right." Given the context of natural landforms, the idea of creating a contrasting, sculptural object in the landscape seemed promising. "We looked at Philip Johnson's Glass House in New Canaan, Connecticut, which is surrounded by trees, as inspiration," says Chao.

Sunk into a hill, the two-story building appears as one story when approached from the southwest. A crisply detailed porte cochere of thin steel frame and translucent fiberglass arcs over the entry. The splayed walls of the foyer lead to a round skylit core, from which the building's functions are visible: a pro shop to the north, whose ribbon window frame sliver views of the golf course; a grill and banquet room to the east, overlooking lake on the building's northeast side; an locker rooms to the northwest and south. The building also acts as a gateway to the golf course, with a long flight of stairs extending to the building's lakeside. Bold, deep colors, each applied to a separate element, are not the typical muted colors of Disney World but serve to distinguish the building among the rolling, green hills. Chao praises the golf club as a "jewel in the landscape." —M.J.C.



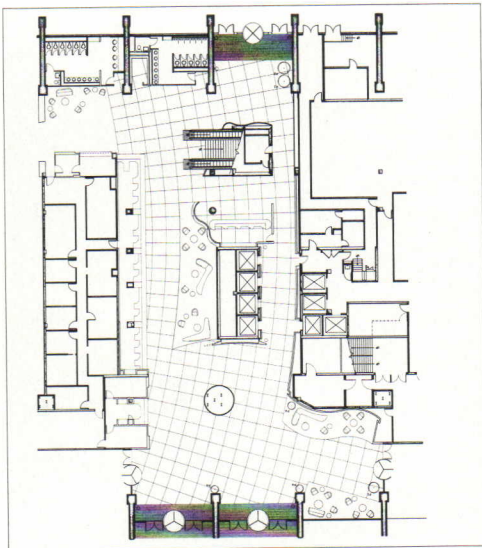
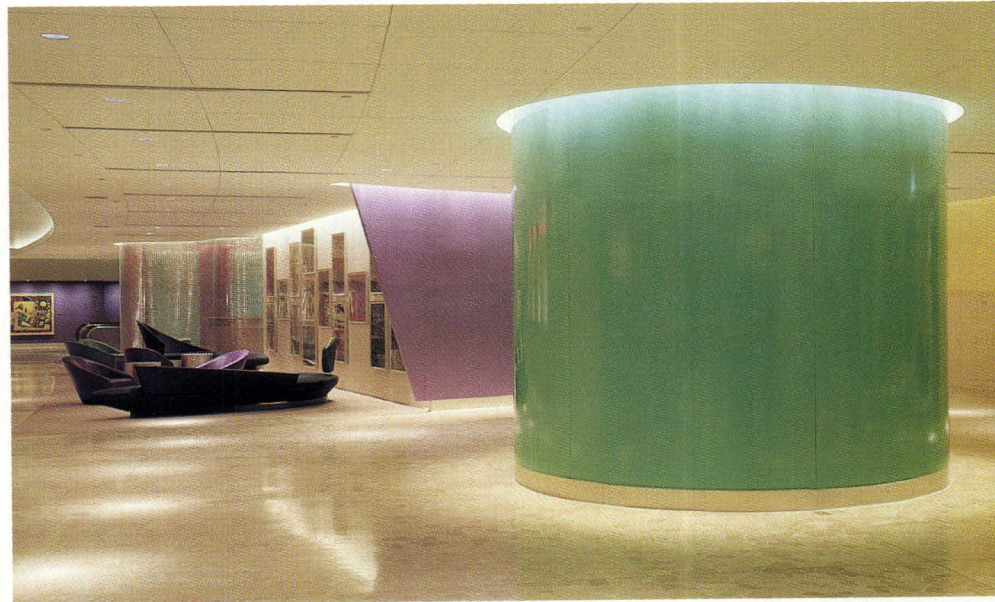
Contemporary Resort Hotel Lobby
Walt Disney World
Daroff Design

DISNEY WORLD'S CONTEMPORARY HOTEL, designed by Welton Becket in 1971, is an icon of "futuristic" architecture, with a 15-story atrium through which a monorail glides. But the future is not what it used to be, and 20 years later, the Contemporary's interior appeared frayed, if not downright depressing. Philadelphia-based Daroff Design introduced bright new colors, materials, and dynamic geometries that would make even the Jetsons feel at home.

"We had to live up to the name 'Contemporary,'" says Wing Chao in describing the renovation. "An initial scheme showed a clean, Modern design, but we thought it was too commercial and would soon look out-dated. Then we started looking at the work of contemporary artists Andy Warhol, Frank Stella, Jasper Johns. How could their esthetic be applied to three-dimensional space?"

Daroff Design met the requirements by skewing and radiating grids on walls and floors to give the illusion that the lobby is in constant motion, shifting within its container. The 18,000-square-foot space was expanded by glazing three structural bays on the exterior to capture needed daylight. Ceilings were dropped around core elements such as elevators and the reception desk to make ceilings appear higher elsewhere. Curved walls in synthetic stone and perforated metal act as sculptural objects, playing off carpet patterns and furnishings. Colors throughout were chosen to coordinate with Gwathmey Siegel's new convention center next door.

—M.J.C.



HOTEL LOBBY



Curved, radiating floor grids (plan) suggest motion, as curved ceiling planes (above and left) raise perceived lobby height. Lacquer-finished fiberglass columns, furniture, and perforated metal screens (facing page) animate the low, rectilinear lobby.



Urban Advocate

ARCHITECT DOUGLAS GARDNER ADMITS THAT HE TOOK on the role of architect with Maguire Thomas Partners, the Los Angeles-based real estate giant, with some trepidation. After 13 years with I.M. Pei & Partners, where he had begun practice fresh out of Yale Architecture School in 1975, Gardner feared he “might be disenfranchised from the design process.” But the 41-year-old architect explains, “I was surprised to discover that my influence on architecture is more potent working here than it might be in conventional practice.”

Maguire Thomas Partners, with a staff of about 225 and offices in Los Angeles, Dallas, and Philadelphia, specializes in mixed-use development in urban settings. Started in 1965, the development company has completed approximately 19 million square feet of projects, including the Solana office and commercial park in Dallas/Fort Worth by Legorreta Arquitectos and Leason Pomeroy Associates, and Plaza Las Fuentes in downtown Pasadena by Moore Ruble Yudell, Lawrence Halprin, Gruen Associates, and Barton Myers Associates. Gardner first associated with Maguire Thomas while he was working in Pei's office on Commerce Square in Philadelphia: approximately 2 million square feet of office space and a public plaza. The architect was impressed with the developer's philosophy, which is that responsible design contributes to the life of a city. Instead of constructing isolated office towers with little connection to their surroundings, the company has developed challenging, complex projects that incorporate pedestrian open space, parks, mixed uses, and sensitive scale.

Upon joining Maguire Thomas in 1989, Gardner became project manager of Playa Vista, a mixed-use development planned for a 1,000-acre site on the west side of Los Angeles, just southeast of Marina del Rey. The

project will combine residential, office, retail, recreational, and educational uses with open space (facing page) and is being planned by a cast of designers noted for their urban work, including Andres Duany and Elizabeth Plater-Zyberk; Moore Ruble Yudell Architects; Legorreta Arquitectos; Moule & Polyzoides Architects and Urbanists; and Hanna/Olin landscape architects.

Maguire Thomas develops its projects using a team approach, with an architect often serving as project manager. The Playa Vista team comprises about 15 people within the company: financial, accounting, and property management personnel; public policy experts; a construction manager; and support staff. Gardner has supervised continual meetings with planning, engineering, transportation, and environmental protection bodies, from the California Coastal Commission to the Army Corps of Engineers. He and Nelson Rising, the company's partner-in-charge of Playa Vista, have also spent many hours presenting and discussing the design with local community groups. The site borders five L.A. communities, each with a half dozen neighborhood organizations. “They often call us, curious about the plan,” admits Gardner. “We make presentations and keep them updated about the design.”

In working with the design team, Gardner

finds that he most often wears the hat of a developer. He sets the agenda and conducts the team's quarterly meetings, guides the design, and clarifies development priorities. “I also act as a critic,” notes Gardner, “and set ground rules for the work of the design team.” Buzz Yudell of Moore Ruble Yudell explains that Gardner's guiding role has kept Playa Vista grounded in the reality of complex urban design. “He can represent all sides of a situation, knowing how architects work the development company's goals, and getting things built within existing political and financial restraints.”

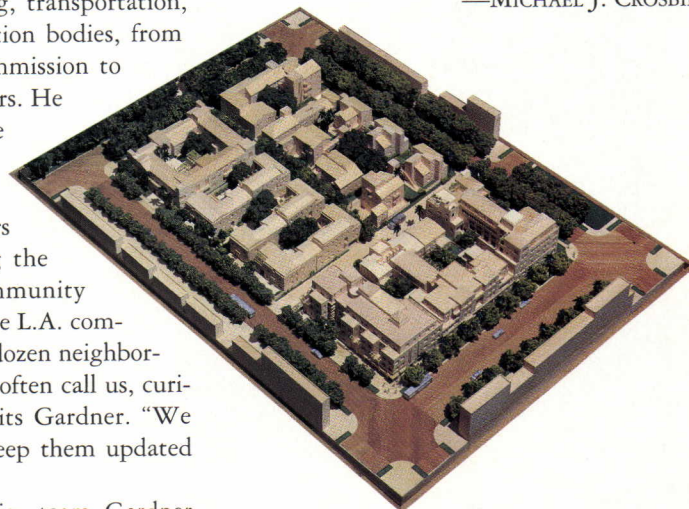
Gardner claims that his experiences as a corporate architect have made him more aware of how architects may significantly affect design if they step out of their private-practitioner role. As he points out, architects often become involved in the design of a building only after important decisions about program, site, and size have been decided.

“The conventional role of the architect is reactive: to respond to a given set of problems, rather than defining what those problems are,” notes Gardner. “Working as an architect within a development company, I can influence fundamental issues—transportation, land use, building program—that will ultimately be translated into built form.”

—MICHAEL J. CROSS



DOUGLAS GARDNER



Playa Vista
Los Angeles, California

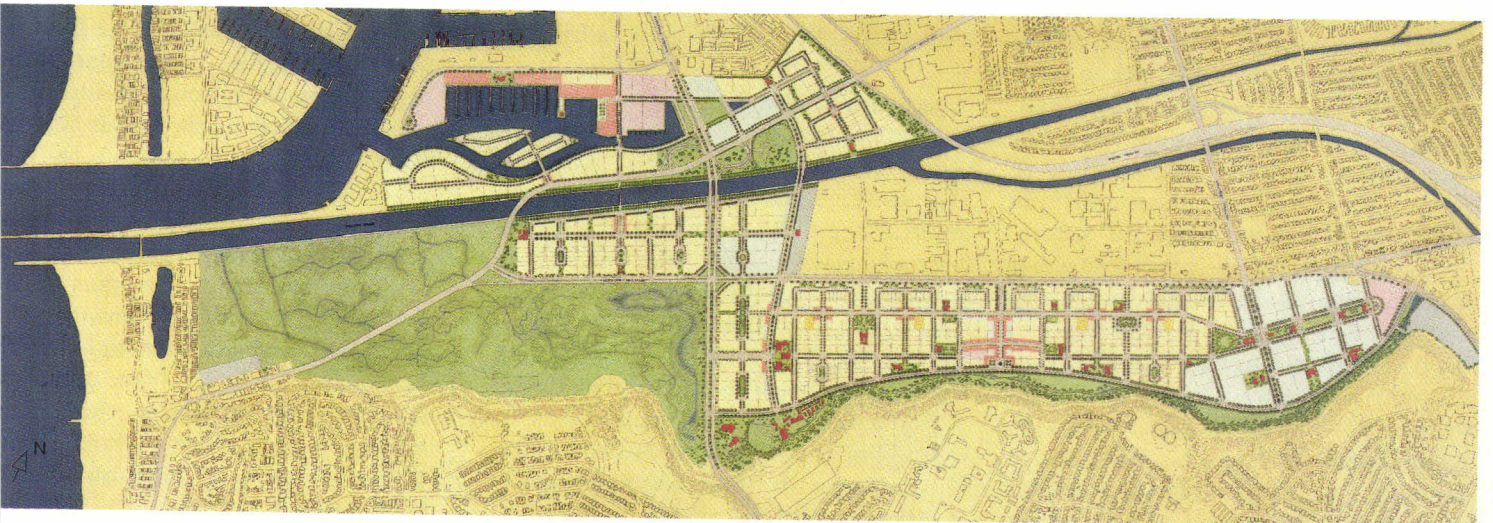
THE DESIGN OF PLAYA VISTA, A LARGE INDUSTRIAL TRACT southeast of Marina del Rey, attempts to reverse conventional planning: low density, restrictive zoning, and reliance on automobile transport. The 1,000-acre development will create seven distinct neighborhoods, each with its own mix of housing, offices, retail, hotels, schools, and recreational uses—all within a five-minute walk of any residence. An internal public transit system, bicycle paths, and pedestrian routes will link the neighborhoods. Fully 40 percent of the acreage will be left as open space, including a 260-acre wetland preserve, linear parks systems, playing fields, jogging paths, and waterfront areas.

Playa Vista will comprise approximately 13,000 multifamily residential units, many based on the courtyard housing common to Los Angeles. Streets will be heavily planted with trees and vegetation native to the region. The development will also incorporate its own "ecological infrastructure" to help relieve the strain on the region's present systems, with its own recycling facilities and wastewater and solid-waste treatment systems.

Douglas Gardner attests, "Securing entitlements for this project is a major undertaking, and the approval process is numbingly complex." Gardner has supervised planning, coordinated consultants, and negotiated with public agencies for approvals for the project. "Los Angeles has a reputation for 'anything goes' in terms of development," says Gardner, "and for not dealing with growth responsibly. Playa Vista will demonstrate that this needn't be the case." Construction is scheduled to begin in the spring of 1993, with completion in 1995. ■

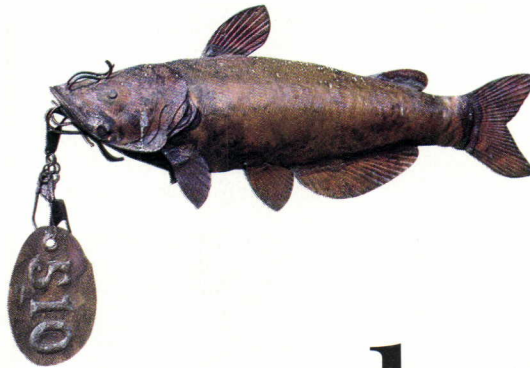


At Playa Vista (bottom), retail centers (top) are located adjacent to housing. Among multifamily housing schemes are luxury condominiums (above) and traditional California houses clustered around courtyards (left and facing page).



Bass Pro Shops

C O R P O R A T E A R C H I T E C T S



Backwoods Craft

DEEP IN THE OZARK MOUNTAINS, NOT FAR FROM MUTTON Hollow Craft Village, Baldknobbers Hillbilly Jamboree Show, and Haunted Hayrides, a rustic mountain retreat artfully blends 19th-century craftsmanship with late 20th-century technology. While many visitors may think it has been there forever, the 201-room backwoods getaway has taken shape over the past four years. That's a tribute to owner John L. Morris and the in-house staff he employs to design and build every structure on the 300-acre parcel.

Big Cedar Lodge is one of several subsidiaries of Bass Pro Shops, the 21-year-old sporting-goods retailer and manufacturer best known for Bass Pro Shops Outdoor World, a giant hunting and fishing emporium in Springfield, Missouri. Founded by 44-year-old Morris, an avid hunter, fisherman, and conservationist, the retail operation has grown into a 315,000-square-foot extravaganza that bills itself as "the world's largest sporting-goods store by reputation." A large part of its appeal is its hybrid nature—part fisherman's paradise, part department store, part aquatic museum. Drawing more than three million visitors a year, it rivals St. Louis's Gateway Arch as the number-one tourist attraction in the "Show Me" state.

Capitalizing on the phenomenal growth of his first business, Morris branched out into related areas over the past 15 years, launching Tracker Marine, a designer and manufacturer of power boats; Redhead, a sportswear maker; American Rod and Gun, a wholesale supplier; and Outdoor World Travel, a travel agency specializing in adventure trips. After years of commissioning architectural firms for specific



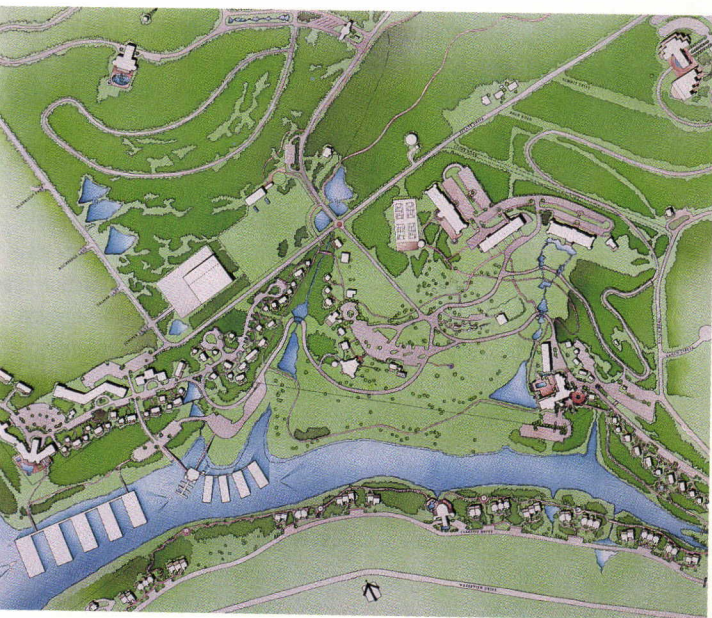
(LEFT TO RIGHT): DONALD BRIGGS, JAN BURCH, GUY ESSARY, THOMAS JOWETT, RENE WADE; JEFF MASTERS (SEATED IN FRONT)

projects, he decided nearly five years ago to form an in-house office to oversee the company's many building projects, and hired Thomas W. Jowett to serve as its director. Jowett, 39, a native of Independence, Missouri, who was educated at the University of Nebraska, first met Morris while he was director of design for a Kansas City firm commissioned by Bass Pro Shops; he went to work for Morris's company in November of 1987.

Jowett was joined eight months later by Donald Briggs, a 35-year-old Muskogee, Oklahoma, native who studied at the University of Arkansas. Before coming to Bass Pro

Big Cedar Lodge Ridgedale, Missouri

FROM THE MINUTE VISITORS DRIVE through the entrance gate and up the winding trail that leads to the registration house for Big Cedar Lodge, they are treated to an Ozark original. Constructed on land that was once the private getaway of railroad magnate Harry Worman and later used as a dude ranch, the lodge consists of more than three dozen buildings that overlook Table Rock Lake, a man-made body of water that has become a regional center for hunting and fishing. A rustic restaurant and community building (facing page, top) frame a pool that overlooks the lake below. The four-story Valley View Lodge (facing page, bottom right), the largest single building on the property, is reminiscent of an Adirondack lodge, with starburst patterns in cedar under the eaves. A site plan by Bass Pro Shops' architecture department (facing page, bottom left) shows how the buildings are clustered on the former Worman estate, whose original residence has been converted into a registration area and gift shop. After four years, the community is a mixture of recycled older buildings and new ones built nearby, with styles ranging from Tudoresque to Late Victorian that reinforce a symbiotic relationship to the surrounding landscape. "One of our primary objectives has been to touch the human emotions by creating a strong feeling of place," maintains in-house architect Donald Briggs.





MIKE SINCLAIR / SINCLAIR-REINSCHE



Shops, Briggs recalls, he worked for five companies in five years, specializing in custom houses, commercial work, and ecclesiastical design. In 1989, Morris hired Rene Wade, a Springfield native and graduate of the town's recently accredited Hammons School of Architecture at Drury College. Rounding out the department are design coordinator Jeff Masters, who is pursuing an interior design degree; construction supervisor Guy Essary; and office manager Jan Burch.

The Bass Pro Shops team also manages a full-time staff of cabinetmakers, ironworkers, and other craftsmen, and hires additional consultants as needed. All demonstrate the kind of homegrown talent that is in touch with the region's traditions. "We're from Missouri and we're trying to capture Missouri," says Tim Burrows, a 45-year-old metal artisan who had his own welding shop before joining Morris. "We want to leave something for others when we're gone."

The staff works out of the corporate offices that Bass Pro Shops maintains in the shopping mall next to Outdoor World. The design studio is visible through a storefront window—a sign of its importance within the organization. Jowett is in charge of management and design, and Briggs is his chief designer. Wade works on construction documents and signage for the various properties, and Masters handles exhibit work, fixtures, and other store design. All spend time in the field, overseeing construction and working alongside contractors and craftsmen.

Although they recently completed a new manufacturing facility for Tracker Marine and are planning to expand Outdoor World, much of the staffers' attention these days is devoted to Big Cedar Lodge, 50 miles to the south of Springfield in Ridgedale, Missouri. There, Jowett, Briggs, and the design team are to Morris what Imagineers are to Disney's Michael Eisner. And what they have produced at Big Cedar Lodge is nothing less than a Disneyland of the Ozarks.

After four years of development, the camp-like resort is a mixture of recycled older buildings and new ones constructed nearby, all showcasing vernacular building traditions of the Ozark Mountains. Styles include Tudoresque, Late Victorian, and Adirondack Rustic. Guest accommodations range from simple log cabins to cozy cottages to spacious suites inside a four-story lodge that features panoramic views of Table Rock Lake. The owner originally wanted to make Big Cedar Lodge a campground for hunting and fishing, but later decided to create a more upscale re-

sort for couples or families, complete with a corporate meeting center. The grounds include stables, a marina, and other facilities for horseback riding, hunting, fishing, tennis, and miniature golf. Because the lodge has been so successful, with occupancy rates of 80 percent or more even in winter, the owner has kept the architects busy making plans for its expansion, including a possible golf course, more cabins, and perhaps permanent residences. "We have a workload projected for the next 20 years," Briggs maintains. "There is no end in sight."

Briggs says the design process works well because the team members are comfortable working with one another and are "on the same wavelength" as Morris. At Big Cedar, the owner typically discusses a project with corporate architect Thomas Jowett, who then might ask Briggs to design it. Briggs, in turn, gives the design to the carpenters or metalworkers to fabricate. The process is essentially the same whether the project is large or small.

Jowett stresses that the goal of the in-house architects is to carry out Morris's vision, not their own. But he and Briggs say Morris gives them enough latitude and encouragement to be creative. The reward, they say, comes from helping the owner realize his vision—and touching other people in the process. "People are really hungry for something that is not generic," Briggs maintains. "I think there is a real desire for craftsmanship." Adds Jowett, "You study in school about Gothic cathedrals and how the stone masons carved faces into the walls as an expression of themselves. That spirit is being revived here."

—EDWARD GUNTER

Collaboration between architects and craftsmen at Big Cedar Lodge is evident throughout the 38-building complex. A cedar, ponderosa pine, and gnarled oak stairway in the community building (top left) leads to the "grand view" room (center left), with timber roof trusses. A large stained glass window provides views of the lake from one of the guest cottages (bottom left), which also features a taxidermic menagerie. To create lighting (facing page), in-house architect Donald Briggs drew rough sketches (facing page, left column) to give craftsmen Tim Burrows and Jay Wood an idea of the size and character of the fixtures, then allowed them to develop the designs on their own. Deer antlers, turtle shells, and other natural forms convey hunting and fishing themes. "I think of it as Ozark-itecture," says Briggs.

Frank Zwart

CAMPUS ARCHITECT

Campus Steward

ALTHOUGH THE STATE'S ECONOMY IS STRUGGLING LIKE the rest of the nation's, the nine campuses of the University of California (UC) system are engaged in their biggest building program since the 1960s. With \$3 billion worth of construction projects currently under way and plans on the boards for a 10th campus in the Merced-Modesto region, construction at UC, funded largely by state bond issues passed in the late 1980s, has turned the nine schools into modern-day WPA projects. According to Michael J. Bocchicchio, the architect who serves as assistant vice president-facilities administrator of the entire UC system, "Governor Wilson views building within our university system as one way to stimulate the state's economy. We have to grow to meet demand." The state guarantees a spot at the University of California to the top 12 percent of graduating seniors; the class of 2005 is expected to exceed the class of 1992 by as much as 23 percent.



FRANK ZWART

That growth has pushed architects working within the UC system to new prominence, as both stewards of their respective campuses and as agents for commissioning leading architects from around the country. The campus architect whose university environment may be most affected by the need to accommodate more students is Frank Zwart of the University of California, Santa Cruz.

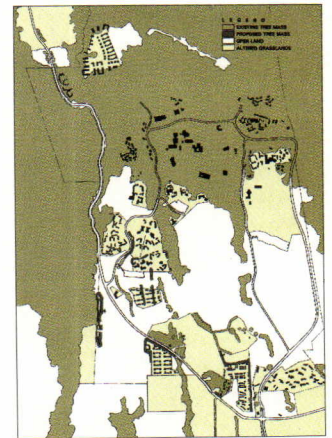
Set among 2,000 acres of Northern California coastal forest and grassland, the university now boasts 10,000 students and anticipates a 50 percent increase by 2005. The institution comprises eight distinct colleges, each with its own architectural as well as academic identity, surrounding a campus core of science and library buildings. UCSC is also a haven for social and environmental activists; both students and townspeople were arrested in a recent protest against cutting trees for new buildings. Zwart, a former UCSC student

with an abiding interest in preserving the campus's pristine environment, admits, "The best of our buildings extraordinarily respect the land. As the campus gets larger, that's harder and harder to do."

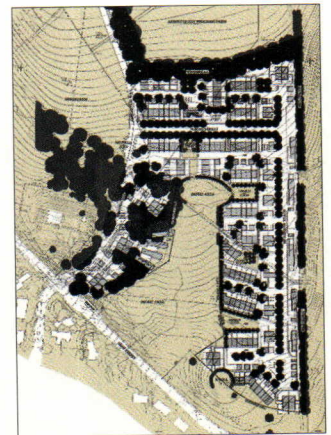
Since opening in 1965, UC Santa Cruz has followed a long-range development plan by John Carl Warnecke and Associates and Anshen + Allen, for which the grandfather of landscape architecture, site planning, and preservation in California, Thomas Church, served as a consultant. That plan and its three subsequent revisions provide the impetus for a long tradition of buildings in harmony with their surroundings.

Zwart sees his challenge as shepherding the school's inevitable growth while protecting its environmental legacy. A second-generation California native who graduated with a math degree in 1971, Zwart's first response to a professor who suggested a career in architecture was that he didn't want anything to do with the buildings being constructed at the time. Yet he had only to look around at Santa Cruz's new campus, at Joseph Esherick's Stevenson College and Hugh Stubbins's Porter College, to be inspired. Zwart began Princeton's architecture program in 1973, one of two Santa Cruz students in a class of 15.

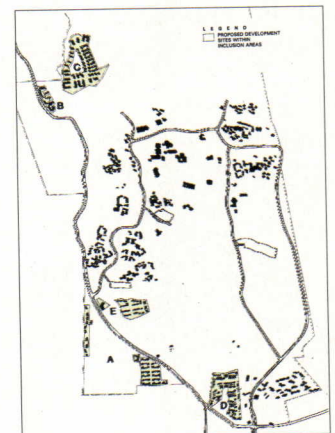
Housing studies of the UCSC campus (right) by the team of William Turnbull Associates, Community Development By Design, LSA Associates, and Lyndon/Buchanan Associates are designed to respect natural areas.



PROPOSED LANDSCAPE PATTERN



PROPOSED DEVELOPMENT AREAS



PRELIMINARY SITE PLAN



1
 COLLEGES NINE AND TEN
 ESHERICK HOMSEY DODGE AND DAVIS



2
 SCIENCE LIBRARY
 ESHERICK HOMSEY DODGE AND DAVIS

PETER AARONJESTO



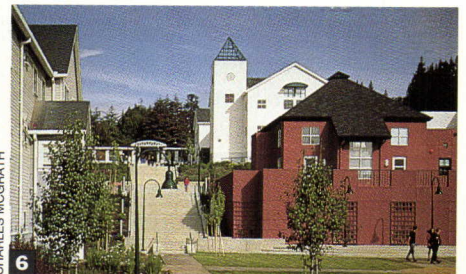
3
 EARTH AND MARINE SCIENCES BUILDING
 ZIMMER GUNSUL FRASCA PARTNERSHIP



4
 STUDENT CENTER
 BRUNAU & HARTMAN



5
 MUSIC FACILITY
 ANTOINE PREDOCK, ARCHITECT



CHARLES MCGRATH

6
 COLLEGE EIGHT
 SIMON MARTIN-VEGUE WINKELSTEIN MORIS

"It may sound corny," Zwart confesses, "but I feel that my choice of profession is in large part due to having studied here, and I feel very close to the campus. It's a chance to repay a kind of debt." Zwart joined the campus architecture staff in 1985 after working for several small firms on both coasts; he was hired to head the 28-person office after a nationwide search in 1988.

The current \$100 million building program under Zwart's stewardship includes a physical sciences building by Moore Ruble Yudell and McLellan Copenhagen; a music facility by Antoine Predock; Esherick Homsey Dodge and Davis's Colleges Nine and Ten, and Zimmer Gunsul Frasca Partnership's earth and marine sciences building. With only a third of its land presently developed, UC Santa Cruz clearly has room to accommodate future state-of-the-art facilities as well.

Zwart plays a hands-on role in all stages of the architect selection process, but his is by no means the final say. Once a project for the campus has been approved by the state's board of regents, Zwart's office advertises it in local newspapers, requesting that firms submit statements of interest. He and his staff screen 40 to 70 responses, narrowing the field to 20-25 firms which are sent questionnaires. These firms are asked for references from clients and contractors, and are required to prove prior experience on similar building projects. The responses are evaluated by Zwart and his staff, who cut the submissions down to 10, which are sent to a selection committee comprising the campus architect, another architect from Zwart's staff, members of the department—including students—requesting the building, and the university's director of capital planning. The group narrows the field to the four or five firms that will actually present their qualifications to the selection committee, which then chooses an architect by consensus. "People come to similar conclusions very quickly," Zwart notes. "A lot of proposals come across as being too corporate, and people will say, 'That's not right for Santa Cruz.' The campus is a real lesson in the power of good design."

Over the next decade, Zwart would like the campus's growth to appear seamless, preserving the natural beauty that the 42-year-old architect learned to respect as a student 25 years ago. "When you are a campus architect, you live with what you do," Zwart muses. "For projects that are great successes, that's terrific. For those that are less successful, you have painful reminders of what needs to be better next time." —HEIDI LANDECKER



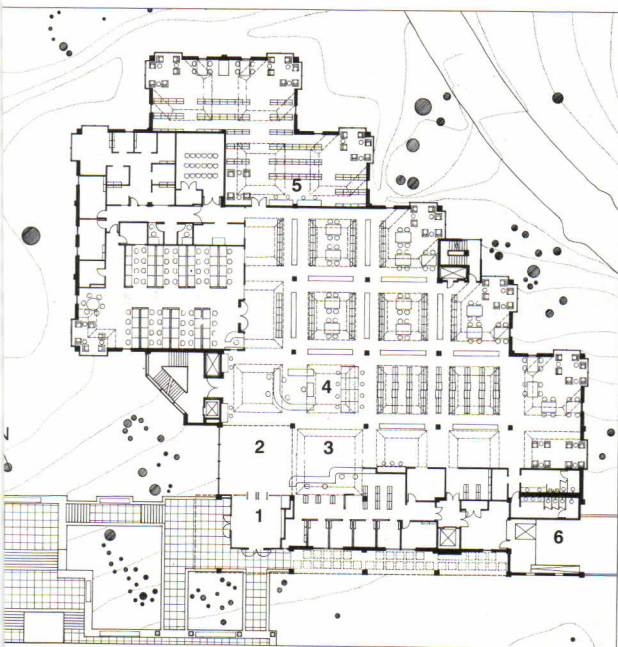
Science Library
Esherick Homsey Dodge and Davis

ORIGINALLY SELECTED IN THE EARLY 1980S to build an addition to an existing science library, Esherick Homsey Dodge and Davis (EHDD) was on the job when Frank Zwart was hired as associate architect in the office he now heads. As funds came through for a new library, Zwart worked with the librarians to help convey their program needs to the architects, serving as a liaison between the users and the design team throughout the project. He credits the architects with making that an easy task, adding, "They broached creative solutions to fit the user's needs."

Situated on a ridge called Science Hill, the Science Library demonstrates one of Zwart's priorities: creating open spaces within the campus core. With landscape architects Nishita & Carter, who designed the landscape of earlier Santa Cruz colleges when they worked for Lawrence Halprin, EHDD included a tree-shaded plaza at the library's entrance. This public space links the library to an existing science laboratory and classroom building on the site and creates a gathering point for science students.

The architects solved the problem of building on a wooded slope without removing too many trees by arranging the library into a sawtooth footprint. The building steps down the hillside, its main entrance located on the second floor, which is level with the site's highest point. Special functions such as periodicals, reference services, and the card catalog are also organized on this level, which is sandwiched between the stacks on the first and third floors. The primary reading spaces are positioned along the northeast side of the building, where the sawtooth perimeter and steel-framed glass walls afford the best views of surrounding trees. "We developed these corner reading areas as open, treehouse-type spaces that thrust out into the woods," asserts EHDD project designer and manager Todd Sklar, who adds that he kept a picture of his childhood treehouse at his desk while working on the library.

The periodicals room, which is extremely important to students and faculty engaged in scientific research, is elevated on a concrete column (facing page, bottom). In the interest of retaining a simple, maintenance-free structure, the architects chose concrete bearing walls supporting waffle slabs. The architects clad stair towers and elevator shafts in copper to provide a visual accent and link the building with nearby copper-roofed buildings. ■



Plaza (facing page, top) connects library with Science Hill buildings. Library's lobby leads to circulation desk on the main floor (top). Corner reading areas (above) are achieved by a sawtooth footprint (plan). Board-formed concrete (facing page, bottom) is vertically oriented to repeat surrounding trees. Open waffle slab creates trellis at building's south side (facing page, center).

- 1 ENTRY
- 2 LOBBY
- 3 CIRCULATION
- 4 REFERENCE
- 5 CATALOG
- 6 LOADING DOCK

1st LEVEL PLAN

Boone Hellmann

CAMPUS ARCHITECT

College Unifier

WHEN CAMPUS ARCHITECT MAXWELL BOONE HELLMANN, AIA (known as Boone), arrived at the University of California at San Diego (UCSD) in 1985, he was planning to attend law school. Although he now is in charge of UCSD's \$638 million capital improvements program; directs a staff of 75 architects, engineers, accountants, and support people; oversees \$200 million worth of projects currently under construction; and recently received his AIA chapter's annual Corporate Architect award, Hellmann still seems somewhat astonished by his professional success. The 37-year-old architect clearly loves his work, but adds that he "fell into this job by accident. I never even knew this career existed."

An architect trained in both the theoretical program of the University of Oregon and the nuts-and-bolts program of the University of Idaho, Hellmann began working in 1977 for his father's 15-person Reno, Nevada, firm, Raymond Hellmann, Architect. The younger Hellmann says his father's practice designed "everything from doghouses to hospitals"—that is, from a kennel for the humane society to an addition to a local VA hospital. Hellmann passed the state licensing exam in 1980; that same year, his father was diagnosed with cancer, leaving 26-year-old Hellmann, the youngest registered architect in Nevada, responsible for running the firm. "It was trial by fire," says Hellmann. He survived, and even successfully administered a large commission for a western regional headquarters for the Gannett newspaper conglomerate. After his father recovered and returned 18 months later, Hellmann decided to start his own Reno firm with another architect; but his experience with large projects left him dissatisfied with the residential work his young firm was able to secure.

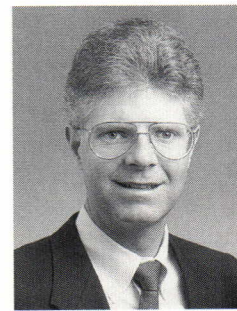
Always interested in construction litigation, Hellmann began thinking about law school, a goal he had pursued briefly as an undergraduate a decade earlier. He was considering Western State University's law pro-

gram in San Diego when, coincidentally, he heard about a job opportunity as a project manager on the UCSD campus. He applied, was hired as associate architect with the school's Office of Facilities Design and Construction in 1985, and planned to begin law school the following year.

But as one of the first new architects hired by UCSD, Hellmann arrived just as California's strong economy facilitated much-needed development on the 23-year-old campus. The recession of the 1970s had precluded any new construction, and California demographers had miscalculated the size of the student population for the 1980s. By the middle of the decade, the UC system was running out of room. When Hellmann was promoted in August 1986 to assistant director of design, he "put law school on the back burner."

As right-hand man to Assistant Vice Chancellor (the campus architect's official title) Charles Powers, Hellmann's responsibilities included hiring architects and engineers to support what was clearly going to be the biggest building program since UCSD moved to its present site, a former U.S. Marine Corps training camp, in 1962. Because the office lacked a sense of architecture as a service profession, Hellmann recruited design and engineering professionals with private-practice experience. In the mid-1980s, he was involved in commissioning buildings by Kaplan McLaughlin Diaz, Charles Moore, and the relatively unknown Antoine Predock.

The process of campus-building took off rapidly, but not without problems. UCSD's 1,600-acre site includes three components: to the west, Scripps Institute of Oceanography, which is positioned along Pacific coastal bluffs; West Campus, which straddles coastal ridge; and East Campus, a chapparal marked by canyons and arroyos that fill with water in the rainy season, supporting lush vegetation. A much-loved, 363-acre eucalyptus grove runs through the center of the campus, and vistas of the ocean to the west and the Cuyamaca foothills to the east are possible



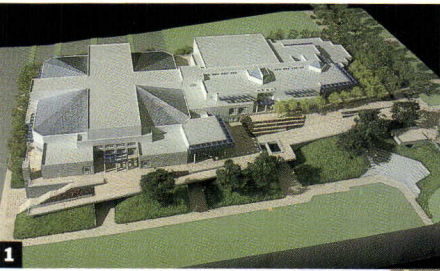
BOONE HELLMANN

ble from West Campus. As site clearing for new buildings began to be cleared, UCSD's articulate and environmentally conscientious academic community grew concerned about the lack of planning that seemed to surround new campus development.

In the resulting turmoil, Charles Powers decided to return to private consulting, and Boone Hellmann stepped easily into the office's top post in November

1987. One of his first tasks was to assist in the preparation of a new master plan by Skidmore, Owings & Merrill, Richard Bender (dean of UC Berkeley's School of Architecture), landscape architect Emmet Wemple, and others. As a result of the detailed campus plan, completed in 1989, canyons, groves, and arroyos are protected, and areas for further development and preservation are delineated. Throughout, the goal of preserving the neighborhood identity of UCSD's five different colleges is paramount.

Hellmann's mandate includes shepherding huge building projects, such as the recently completed Molecular Biology Research Facility by Moore Ruble Yudell (ARCHITECTURE March 1991, pages 78-81) through the UC system's Byzantine design review and approvals process. On campus, Hellmann is a member of the Capital Outlay Space Advisory Committee, which reviews department



1
INTRAMURAL AND ATHLETIC CENTER
PARKIN ARCHITECTS



2
BIOLOGY FIELD STATION
HANSHEN + ALLEN, ARCHITECTS



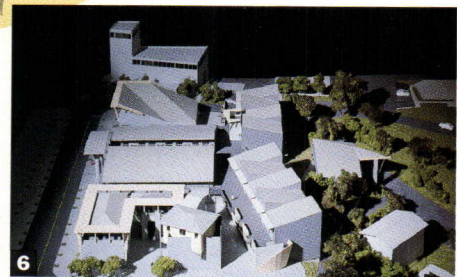
3
CAMPUS SERVICES COMPLEX
HANSHEN + ALLEN, ARCHITECTS



4
ENGINEERING BUILDING UNIT II
HIMMER GUNSUL FRASCA PARTNERSHIP



5
CENTRAL LIBRARY ADDITION
GUNNAR BIRKERTS, ARCHITECT



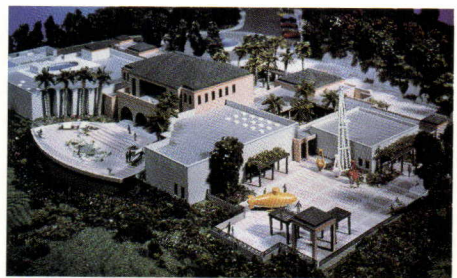
6
VISUAL ARTS BUILDING
R.L. BINDER, ARCHITECTURE & PLANNING



7
CLINICAL SCIENCES BUILDING
ARTHUR ERICKSON, ARCHITECT



8
EARLY CHILDHOOD EDUCATION CENTER
CHARLES AND ELIZABETH LEE, ARCHITECTS



SCRIPPS AQUARIUM-MUSEUM (NOT SHOWN)
WHEELER WIMER BLACKMAN, ARCHITECTS

requests and establishes priorities for new facilities. Based on the committee's recommendation, the university submits a funding request to David P. Gardner, president of the UC system, whose office establishes systemwide priorities. Once approved, building projects are sent to the legislature for funding, and then advertised in major regional newspapers, from which 50 to 70 responses are received.

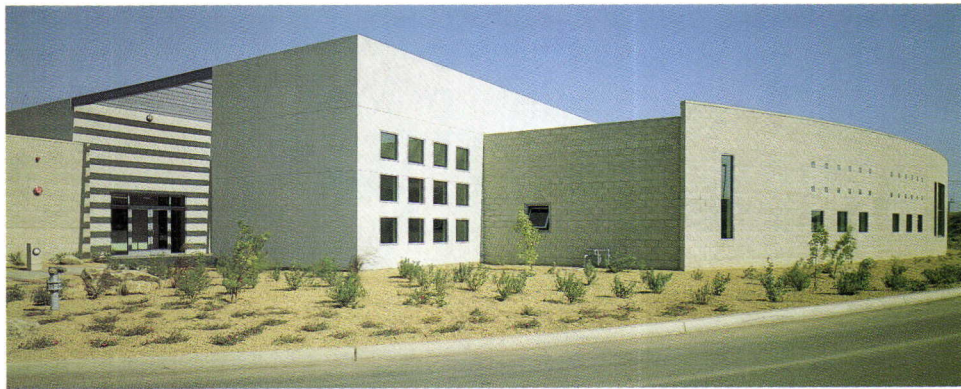
Often, the respondents are a who's who of architectural firms: James Stewart Polshek and Partners, Richard Meier and Partners, and Frank O. Gehry & Associates have all applied. The UC system doesn't need to advertise heavily to attract this kind of competition. "There's a phenomenal grapevine," Hellmann explains. "The university constructs 100-year buildings and pays its bills on time."

Hellmann administers a screening and selection committee comprising architects from his office, the campus planning office, the university's budget office, user representatives, and a member of the design review board, a UCSD anomaly currently made up of outside architects Joseph Esherick, William Turnbull, Rob Quigley, and Ignacio Bunster-Ossa of Wallace Roberts & Todd. The selection committee creates a short list of architects, who present their ideas and credentials to the committee, which awards commissions by consensus.

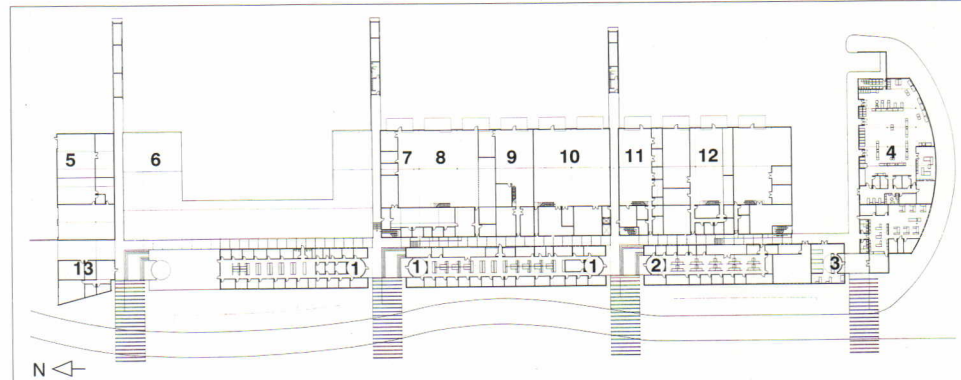
As to why star architects are often chosen, Hellmann explains, "It's hard not to be impressed by the experience of renowned firms." He adds that since the university hires its faculty from among top academics all over the world, it is not surprising that it commissions prominent architects as well.

Although the campus was established on its present site at about the same time that the University of California began construction of its Santa Cruz campus, San Diego lacked the early, preservation-minded, long-range development plans that governed the northern campus (see pages 62-65). As a result, San Diego's different colleges, though academically similar to UCSC's, have never seemed part of a unified whole. Hellmann's goal for the future is to knit these disparate colleges into a cohesive fabric. He foresees creating walkways, rows of eucalyptus trees, and unifying elements that will link the various college "neighborhoods" with a central university core. "My vision," Hellmann muses, "is to get rid of the stigma that UCSD doesn't hold together. To do that, landscape is even more important than bricks and mortar."

—HEIDI LANDECKER



Viewed from the UCSD campus, the Campus Services Complex (top) is a linear structure that contains a post office and graphics and communications offices. Curved southern elevation (above) directs visitors to parking on the west side of the building; a high steel trellis marks its most heavily traveled entrance. Cylindrical forms designate entrances (left), which are linked by walkways that also lead to overlooks facing the arroyo.



CAMPUS SERVICES COMPLEX—SITE PLAN

PHASE 1

- 1 PPS ADMINISTRATION
- 2 TELECOMMUNICATIONS
- 3 GRAPHICS
- 4 MAIL SERVICES

PHASE 2

- 5 GROUNDS MAINTENANCE
- 6 GARAGE/TRANSPORTATION
- 7 LOCK/KEY SHOP
- 8 PPS STORES

- 9 PLUMBING SHOP
- 10 CARPENTRY SHOP
- 11 MECHANICAL SHOP
- 12 ELECTRICAL SHOP
- 13 GROUNDS ADMINISTRATION

**Campus Services Complex
Biology Field Station**
Anshen + Allen, Architects

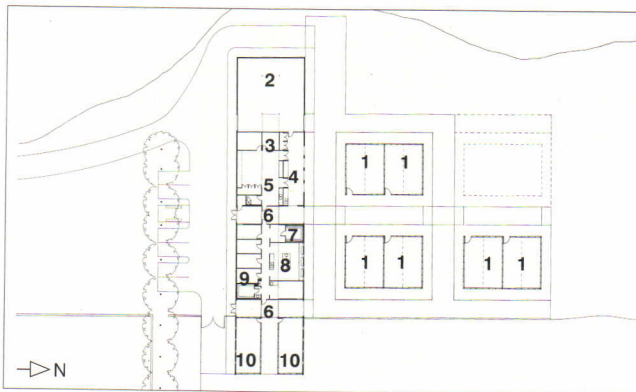
"HOW DO YOU GET SUPERIOR DESIGN FOR some warehouses?" asked Boone Hellmann, in seeking architects for a campus services building and new biology field station on a 17-acre site near a major freeway. He resolved the problem by choosing Anshen + Allen, which seemed intrigued by the challenge of designing an unglamorous project on a highly visible site. Hellmann's mandate required designing two very diverse buildings: the Biology Field Station, which consists of labs, offices, and six greenhouses; and Campus Services, which houses the university's post office, telecommunications, and graphics and printing services. Anshen + Allen's solution was to design esthetically complementary buildings that create a cohesive unit on the site.

Hellmann collaborated with principal David Rinehart and senior designer Dennis McFadden to develop a three-phase scheme that places the complex at the edge of a natural arroyo. The first, completed phase of the project includes the 140,000-square-foot Campus Services building on the southern portion of the site, with an axial north-south near footprint. To the north, the Biology Field Station is oriented along an east-west spine, with a south-facing entrance.

The Campus Services Complex comprises five buildings linked by walkways and courtyards. Cylindrical forms mark the main entrances to the one-story ensemble, and the concrete block walls appear to rise from the arroyo. Mail sorting is housed behind a curved facade at the southernmost end of the building, designed to direct visitors around to the entrances. Brightly colored awnings along the western elevation shield office windows from summer sun and distinguish the facade with a man-made element.

The Biology Field Station includes a narrow rectangle of offices and labs containing cold rooms and growth rooms with special lighting for plant experiments. Like the Campus Services building, the structure features concrete block walls and trellises.

When the second phase of the project is completed in 1994, the one-story buildings will be flanked on their eastern side by a row of warehouses to accommodate university maintenance crews. The final phase will comprise garages, creating a coherent enclave that meets Hellmann's goal of preserving neighborhoods within a unified campus. ■



BIOLOGY FIELD STATION SITE PLAN

- | | |
|---------------------|----------------|
| 1 GREENHOUSE | 6 BREEZEWAY |
| 2 STORAGE | 7 COLD ROOM |
| 3 OFFICE | 8 LABORATORY |
| 4 COVERED WORK AREA | 9 GROWTH ROOM |
| 5 SHOP | 10 SHADE HOUSE |

The Biology Field Station comprises two concrete bearing walls that enclose a steel-framed volume (above center) containing laboratories and offices. Greenhouses are located to the north and are used for agricultural experimentation. Two openings in southern elevation (top) connect to breezeways (above) that lead to greenhouses. At the easternmost end of the building are shade houses, required by the university's population-control biologists for research with animals.

Master Planner

FOR CAMPUS ARCHITECT CHARLES WARNER "DUKE" OAKLEY, AIA, flexibility, patience, and an ability to steer through mountains of bureaucracy are all in a day's work. His job includes overseeing some \$1.1 billion worth of projects currently in programming, design, working drawings, or construction at the University of California, Los Angeles (UCLA), one of the nation's top research institutions. Under his surveillance is the largest building program of all the nine colleges in the UC system, on one of the smallest campuses, with the system's largest student population. Where UC San Diego (pages 66-69) supports 18,000 students on 1,600 acres and UC Santa Cruz (pages 62-65) houses 10,000 on 2,000 acres, UCLA maintains a steady population of 35,000 on 419 acres. Oakley likens the dense, urban campus to a small city. "But where else," asks the director of Capital Programs, Design & Construction, "does an architect get the chance to visualize a comprehensive environment and receive the tools to make it real?"

Established in 1929 on a group of north-south-running ridges that reminded its earliest architects of Italian hills, UCLA's campus, with its Lombardian Romanesque central core, is also the second oldest in the system. Therefore, a portion of Oakley's budget goes to renovating and replacing older structures, many of which have their own architectural identity and emotional appeal. For instance, the site of Pei Cobb Freed & Partners's Anderson Graduate School of Management, now under construction, impinged upon 9 wooded acres that belonged to the Corinne A. Seeds University Elementary School (UES), a private school built on campus in 1946. A much-loved school for faculty children, the UES included several classrooms designed in the 1950s by Richard Neutra. Oakley commissioned a study of the Neutra buildings, revealing that the late Modern master had designed them in partnership with California architect Robert Alexander, as expansions to Alexander's original complex for the school.

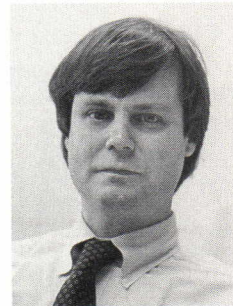
Oakley's staff analyzed the site, and, in the end, came up with a scheme that meant razing three of the Neutra-Alexander buildings. "Not without regrets," Oakley admits. "It's sort of like growing up." A new, state-of-the-art school building has been designed by Los Angeles architect Barton Phelps. As if completing a circle, Phelps included Alexander, now retired, on the design team.

Such history and density necessitate sound planning and urban design for new buildings, so Oakley administers a thorough pre-RFQ process. His staff, which includes 40 architects, carries out a feasibility study and develops a detailed master plan. They pick the site, determine circulation, underground utilities, landscape and parking, and they develop the program. "We then take our best shot at two or three conceptual designs for the project," explains Sarah Jensen, associate director of Capital Programs, Design & Construction, and they then estimate costs to see if the project matches its funds. "By the time the architect is selected," Jensen maintains, "we have a good set of master-planning guidelines, a good existing-conditions survey, a program, and a budget." The in-house design is abandoned, but commissioned architects are required to work within the master plan drawn up by Oakley and his staff.

"Getting a design on paper isn't the answer for me," says Oakley, who has used a wheelchair for mobility since a sports accident at Dartmouth College left him a paraplegic. "I

want to get the project built." For the 47-year-old architect, getting a project built means seeing it through the state funding cycle, gaining approval from users, administration, academic senate, and California's Board of Regents, and then bringing together users and architects to get them talking the same language. According to Oakley, that process is the challenge: "If you want to bring about your ideas of quality architecture and good campus design, you have to get it built."

Architects whose buildings are now part of the UCLA campus attest that constructing them was no easy task. Barton Phelps, whose addition to the university's rare books library was completed in 1990, describes UCLA's democratic approvals process as a bureaucracy that tends to work against good architecture. "Duke walks the line between that bureaucracy and his heartfelt concerns about trying to do the best building possible. That's an enormously stressful, continually compromised position that a lot of ar-

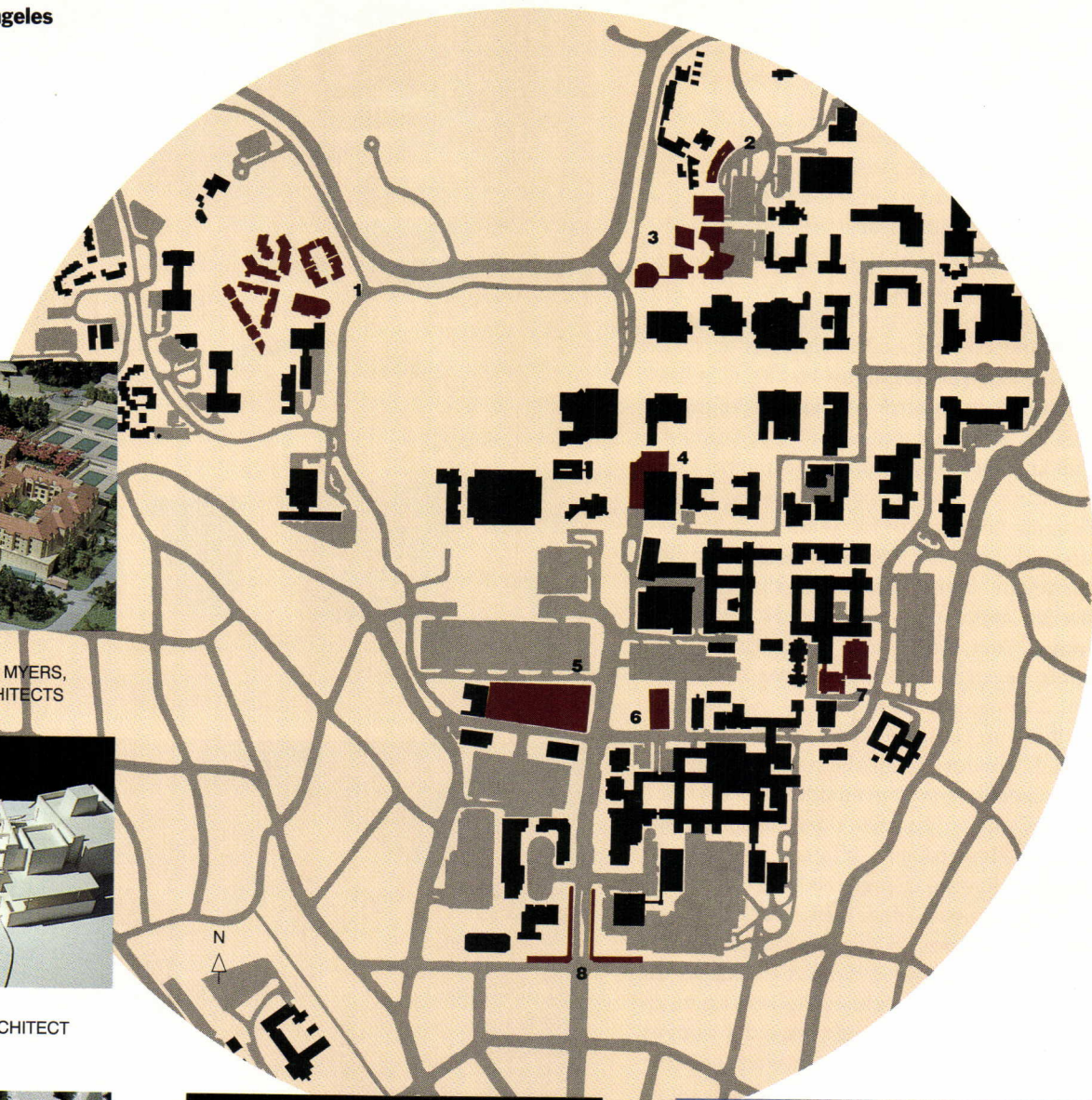


CHARLES WARNER OAKLEY

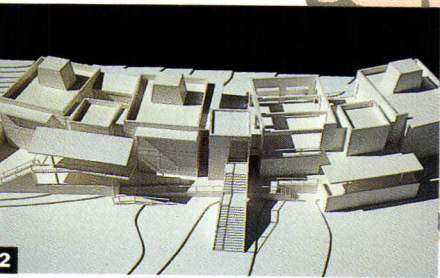
chitects wouldn't be able to tolerate. But he is fundamentally interested in the greatest good for the most people." Part of the reason architects appreciate Oakley is that he understands their frustration with the university's endless meetings and red tape. When Phelps called to complain about a hang-up on the library project, Oakley soothed him, commenting, "If it makes you feel any better, this week I've received calls like this from Harry Cobb, Robert Venturi, and Craig Hodgetts."

However, as Los Angeles architect Rebecca Binder points out, Oakley also gives architects free rein, affording them the responsibility they require to do their best work. Binder's addition to the Ackerman Student Union will incorporate much-needed space into the 30-year-old Welton Becket-designed building, as well as reconfigure both streetscape and scale along Westwood Plaza, t-

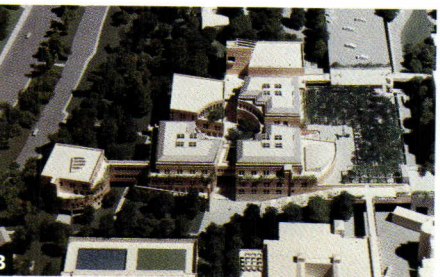
University of California, Los Angeles
Westwood, California



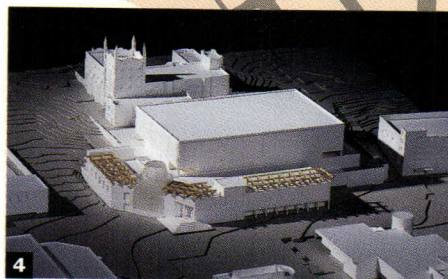
1 NORTHWEST HOUSING
JEFFREY HEDD, ANTOINE PREDOCK, BARTON MYERS,
AND GENSLER & ASSOCIATES, ARCHITECTS



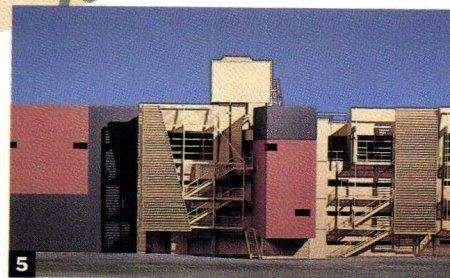
2 UNIVERSITY ELEMENTARY SCHOOL
BARTON PHELPS & ASSOCIATES, ARCHITECT



3 ANDERSON SCHOOL OF MANAGEMENT
DEWEI COBB FREED & PARTNERS, ARCHITECT



4 ACKERMAN UNION ADDITION
R.L. BINDER, ARCHITECT



5 CHILLER PLANT WITH COGENERATION
HOLT HINSHAW PFAU JONES, ARCHITECT



6 MACDONALD RESEARCH LABORATORIES
FRANCESCO CENTURI, SCOTT BROWN AND ASSOCIATES
AND PAYETTE ASSOCIATES, ARCHITECTS



7 BIOCHEMISTRY BUILDING
ANSHEN + ALLEN, ARCHITECT



8 UCLA GATEWAY
HODGETTS AND FUNG DESIGN ASSOCIATES

DAVID HEWITT/ANNE GARRISON

campus's most important pedestrian zone. "He gives us good directions and the latitude to get the work done," Binder asserts.

Oakley's experience uniquely positions him to appreciate the university's history as well as its present needs. Before joining UCLA, he studied architecture under Louis Kahn at the University of Pennsylvania, practiced for eight years with John Carl Warnecke & Associates, served as consultant to UCLA's campus architects and Engineers office six years ago. Retaining the title of campus architect, he was promoted to director of Capital Programs, Design & Construction in 1990, bringing building construction under his purview. He first came to the campus in 1984 as project designer and director for Warnecke's renovation of Royce Hall, the 1929 Lombardian Romanesque building that, as the architect notes, "appears on all our trays and coffee mugs." Yet Oakley recognizes that UCLA, which began as a commuter college for teachers, now needs modern medical and scientific facilities to compete with the other top research institutions in the nation. "When I took sociology at Dartmouth 30 years ago," Oakley quips, "you didn't need a lab. Education has changed, and architects who want to compete have to change too."

A committed Modernist, Oakley nevertheless recognizes a need for blending new and old into a unified campus ensemble. "In the '50s and '60s, architects unwilling to go against the Modernist tide created a campus that lacked coherence and a sense of identity," he admits. He describes that last phase of campus-building, which ended in the early '60s, as a series of ad hoc choices that eroded the order established by the original architects of the Neo-Romanesque campus core. "Whatever we accomplish in the period of my tenure," Oakley muses, "I don't think we can err on the side of too much order."

To that end, Oakley perceives his current projects as a series of individual places that, together, will make a sum greater than the parts. "When I look for architects, I want people who have proved that they can design in such a way that the whole is strengthened." For instance, shortly after awarding the MacDonald Research Laboratories to Robert Venturi, the university commissioned Anshen + Allen to design another laboratory at the end of a nearby walkway. "Their approach is dialectically opposite," Oakley admits, "but the bones of what they do, how they feel the building functioning as a part of the campus, are the same." —HEIDI LANDECKER



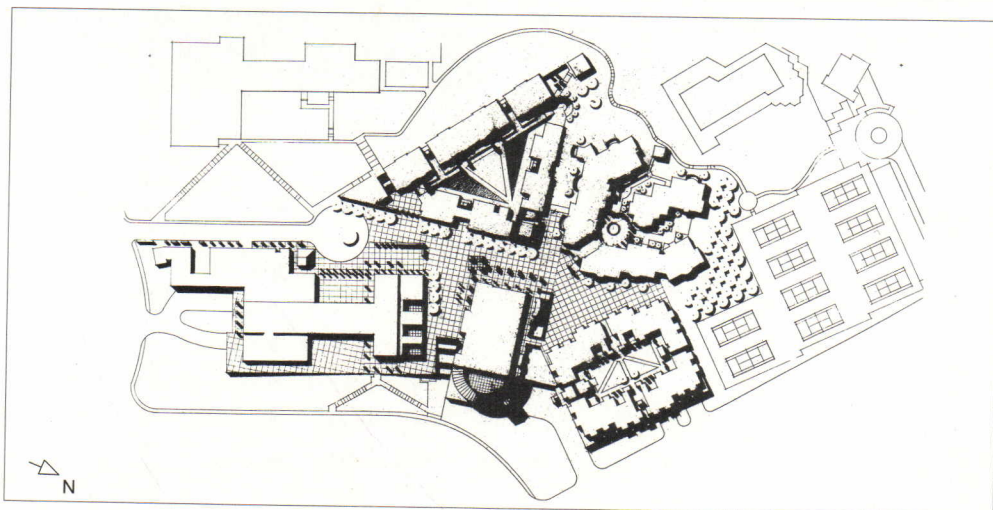
Antoine Predock's Northwest Housing residences are arranged around a triangular courtyard (above), and include a convenience store/café area (top) and dormitory buildings (left). Esherick Homsey Dodge and Davis's new dormitories (facing page) are clustered around courtyards. The complex also includes Barton Myers's rectangular residence building over a parking garage and a common building with circular bay overlooking the campus.

Northwest Housing
Esherick Homsey Dodge and Davis,
Gensler Associates, Antoine Predock, and
Barton Myers, Architects

CHARLES OAKLEY LIKENS UCLA'S 1960s HIGH-rise dormitories to Pruitt Igoe, the country's most infamous public housing complex. For a new, 1,260-bed residential complex, his department determined that new housing could be inserted among the existing dormitories by relocating tennis courts. Working with the housing administration, Oakley and his staff came up with the idea of a student village, with a central commons and cafeteria building, open spaces, snack bars, and cafés. To avoid uniformity in such a large complex, Oakley's office advertised for diversity of architectural expression and coordinated planning, best carried out by a team of architects. Los Angeles architect Barton Myers, who teaches at UCLA, created a team including his own firm, Antoine Predock, and Esherick Homsey Dodge and Davis (EHDD) as design architects, with Gensler & Associates designated "executive architect," or liaison with the university. The team was selected because of EHDD's housing experience, Predock's inventiveness, and Myers's familiarity with UCLA, as well as the solid reputation of Gensler & Associates, the firm that signed the contract with the university and was responsible for the completion of all phases of the project.

"We wanted to respond to UCLA's complex mosaic of cultures," Myers explains. The team arranged the residences as three 400-unit complexes, each organized into "houses" of 50 units around a courtyard. The dorms will be served by Myers's Commons Building (center of plan), to be completed, along with his rectangular dormitory (right in plan), in summer 1992. Completed buildings include Antoine Predock's residences and café, configured around a sloping triangular courtyard (facing page, center). EHDD's complex includes eight irregularly configured houses, each with its own entrance, central stair, and living room.

Oakley's challenge included arbitrating budgetary disputes between the housing office and the design architects, several of whom remain dissatisfied with the resolution of their projects. George Homsey laments the loss of ellipses that would have softened his firm's residences, while Antoine Predock regrets the university's color palette. Oakley admits that the project probably fails to meet its designers' expectations, but wishes "the architects could understand how much better off we are with their housing than we were before."



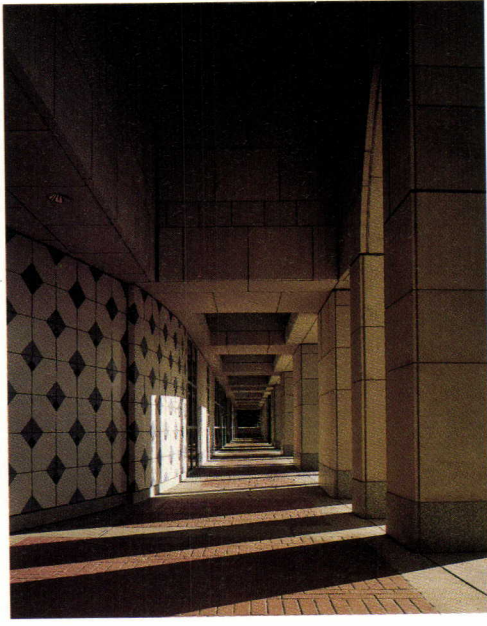
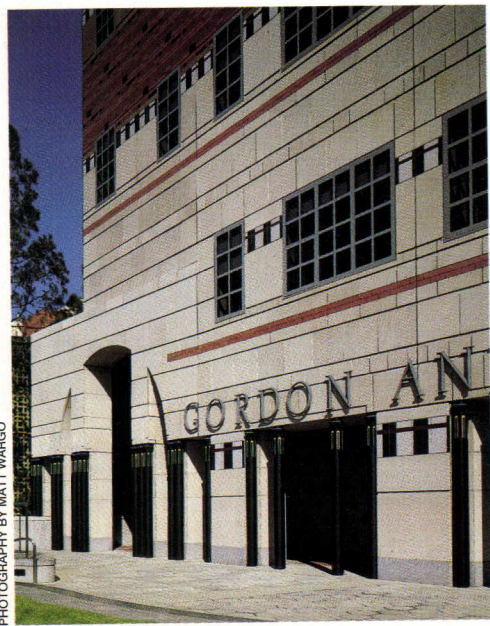


Gordon and Virginia MacDonald Medical Research Laboratories
Venturi, Scott Brown and Associates
and Payette Associates, Architects

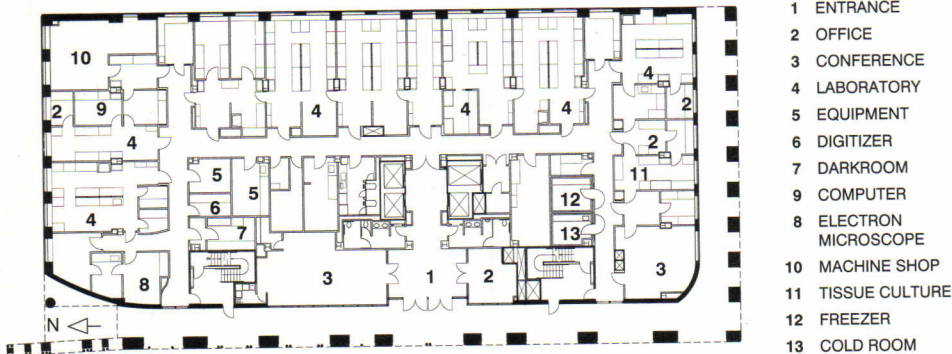
BEFORE ANY ARCHITECTS WERE COMMISSIONED for the 155,000-square-foot research laboratory for UCLA's medical school, Duke Oakley and his staff conducted a detailed master plan of the southern edge of campus, an area located between the medical school complex and the main campus. A parking lot was designated a site for two science buildings enclosing a courtyard, with a walkway along their northern perimeter to connect UCLA's main thoroughfare to the Court of the Sciences on the ridge above. Before advertising for an architect, the office researched successful labs around the country and sent RFQs to several architects noted for their labs. "Forty bad labs wasn't as good a recommendation as one good one," notes Oakley. The team of Venturi, Scott Brown and Payette Associates had recently finished the Lewis Thomas Laboratory at Princeton, so they were asked to submit a proposal, and were ultimately selected by a committee of users, administrators, and Oakley himself.

Oakley describes the next phase of his work as representing "the users of the walkways and open spaces." Although funding was only secure for one structure, Venturi was asked to include a scheme for an eventual second building on the site, defining the plaza between them. Oakley administered a series of meetings between users and designers, including one between Venturi and UCLA chancellor Charles E. Young. "Venturi explained his building as a loft space full of labs wrapped with a brick skin," Oakley recalls "and described how, in his mind, this was what a lab should be in the waning days of the 20th century."

Venturi's design accommodates Payette's flexible interiors, and its patterned brick exterior (facing page) recalls UCLA's Lombardian Romanesque central core. Limestone was selected to clad the first three stories of the building (top left) because the architect felt its light color would cheer the courtyard. A staircase leads up through an arch, angled slightly away from the building, pointing the way to a new walkway that will create an important east-west axis for the campus. At the base of the stair, a two-dimensional UCLA bruin surmounts a pedestal (facing page). Glazed tiles and steel columns adorn the arcade (above left and center left) to create a pedestrian scale at ground level.



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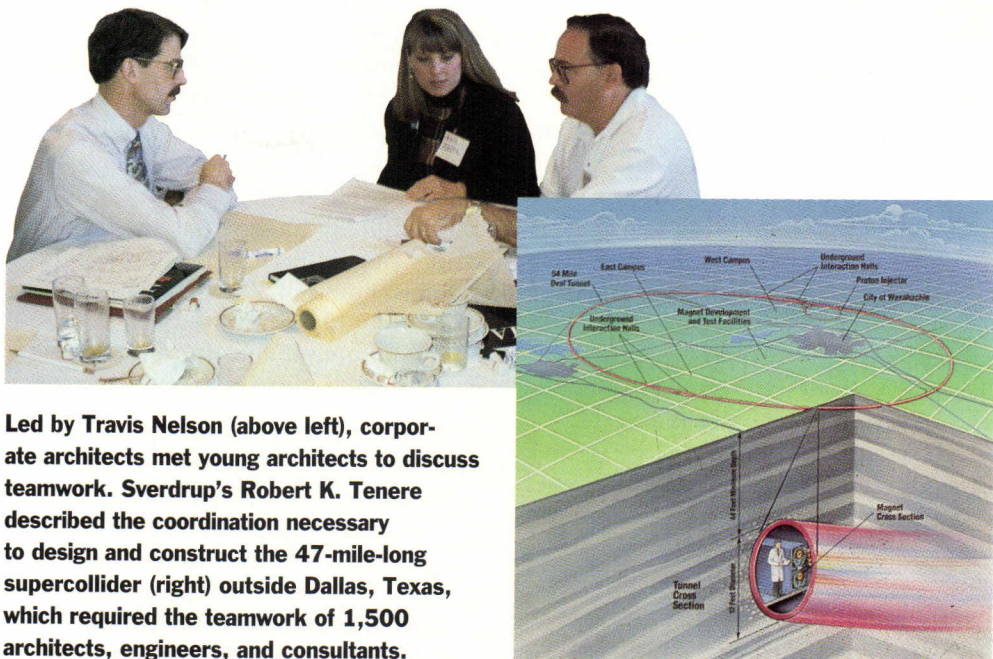
Information on building construction, professional development, and events

AIA Committees Focus on Career Alternatives

AIA UPDATE THE DEARTH OF JOBS IN ARCHITECTURE firms over the past five years is having at least one positive effect on the profession: nontraditional career opportunities are being explored by both the AIA's Young Architects Forum (YAF) and its Corporate Architects Committee. The two groups met this past February 28–29 in San Antonio, Texas, to exchange views from two ends of the professional spectrum.

The YAF, which now boasts 28 groups in local AIA chapters around the country, was founded in 1989 to address the concerns of architects in their first decade of practice. This year's program, entitled "Highly Adaptive Strategies for New Professional Realities," included sessions with AIA Resident Fellow James R. Franklin, who discussed nontraditional management methods. In his research into design excellence, Franklin found that including the client in the design team breeds trust and familiarity, which are often more valuable than an iron-clad contract.

A YAF panel, "Careers in the Corporate World," featured Robin Ellerthorpe of CRSS Architects, Shelby Pruett, Jr., of Sverdrup Corporation, and John Sicard, chair of the AIA's Corporate Architects Committee. The practitioners agreed that architects coming out of school—and even the schools themselves—are too narrowly focused on design, and ill-suited to meet the complex demands of practice. Sicard, who himself left traditional practice in 1971, harnessed his talents to the growing field of project management



Led by Travis Nelson (above left), corporate architects met young architects to discuss teamwork. Sverdrup's Robert K. Tenere described the coordination necessary to design and construct the 47-mile-long supercollider (right) outside Dallas, Texas, which required the teamwork of 1,500 architects, engineers, and consultants.

and served as director of project management at UCLA for 20 years.

A Corporate Architects Committee session entitled "Implementation of Complex Projects: New Professional Directions" explored the technical and management skills needed to lead complex projects in the building industry. Joseph Scarano, western regional president of Lehrer, McGovern, Bovis, described the architect's nontraditional role in construction management of the Statue of Liberty restoration. Joseph R. Talentino and James A. Goggan of Melvin Simon and Associates discussed the complexities of coordinating designers and contractors for Bloomington, Minnesota's 4.5 million-square-foot Mall of America, now under construction.

On the final afternoon of the conference, YAF and Corporate Architects Committee members held a joint session to confirm the importance of team effort in design, addressing the

significance of interpersonal dynamics. Incorporating role-playing, young architects interviewed "clients" played by the corporate architects in a bid to win a hypothetical commission for a teleconference center. Franklin suggested that the client's personality type be considered when staffing the design team, especially for the initial interview: an aggressive architect's correct neckwear and slick portfolio may not impress a reserved client.

Another problem revealed during the session is architects' preference for persuasion over participation and collaboration. Trained as problem-solvers, architects tend to convince clients, contractors, or even fellow architects to accept their thoroughly reasoned conclusions. Instead, Franklin argued, the architect should involve the client by seeking participation and information. Finding common ground and overlapping aspirations will unite architects with their clients and allied professionals, involving those outside architecture in the process of design. ■

—JON THOMPSON

Jon Thompson is associate professor of architecture at the University of Texas at San Antonio.

New Resource for Practitioners

IN APRIL, THE UNIVERSITY OF CINCINNATI'S CENTER FOR the Study of the Practice of Architecture published the first issue of *Practices*, a biannual journal intended to bridge the gap between academic researchers and practicing architects. Editorial coverage, which includes profiles and interviews of leading practitioners, essays, book reviews, and reports on the center's symposiums and surveys, is designed to focus on business, intellectual, and ethical issues. The current issue includes a panel discussion on human resource development and retaining talent in the office. For information: (513) 556-6426. —M.S.H.

Fragmented Dreams, Flexible Practices

New roles and new methods of practice are significantly changing the profession.

THE MOST OFTEN-HEARD LAMENT OF ARCHITECTS is that they must regain lost power and stake a larger claim over building and design services. But to reassert the profession's power, architects must first understand that while design—their most central task—has not changed significantly, the broader context in which buildings develop has been irrevocably altered. Architectural services are becoming increasingly divided among myriad specialists and consultants. The politics of building have vastly expanded into the public domain through liability, regulation, and citizen participation. And technical knowledge has advanced so rapidly that conception and execution are specializations themselves.

This fragmentation creates a heightened need for management of the design process, since single buildings are now created by geographically and ideologically separated firms. The transformation has been under way for decades and now significantly affects how architects go about their business. As a result, opposing responses have emerged from within the profession: firms try to be comprehensive in order to deliver all services, or develop associations with other firms in order to deliver services collaboratively. Robert Gutman observes these trends in his seminal book, *Architectural Practice: A Critical View* (Princeton Architectural Press, 1988), contending that firms are growing either large and comprehensive, or small and specialized.

The economy's effect

HOW LONG WILL THE CURRENT RECESSION last? The litany among developers, "Stay alive till '95," appears to have some basis in fact, according to Bill Fanning, director of research for the Newton, Massachusetts-based *Professional Services Management Journal* (PSMJ). Current quantities of building stock and likely absorption rates suggest that every market is overbuilt except low-end housing, where architects have been least likely to contribute. Fanning adds that architects rendering traditional services will be hardest hit, since the market for private clients has shrunk drastically, while infrastructure, transportation,

and environmental work has been growing at a steady pace.

For most architects, this is not their first nor their last recession. When sociologist Judith Blau of the University of North Carolina at Chapel Hill conducted her study of New York architectural firms during the recession of the 1970s (*Architects and Firms*, MIT Press, 1984), she found that half of all firms went out of business. All indications are that, in most areas, the 1990s will be even more difficult to survive. The same outcomes are likely: large firms survive by slowly winnowing their sheer bulk; some small entrepreneurial firms that respond flexibly will do well in times of economic hardship. Short-term effects include more competition for fewer jobs, lower fees, and higher unemployment.

Today, an architectural commission is a constellation of coordinated pieces, with some projects so complex that they defy comprehension.

In the aftermath, architecture will become a leaner profession with more practitioners working in the public sector, in client organizations, and abroad. This trend will further increase public awareness of architects' value, benefiting the profession as a whole.

Nontraditional careers in architecture have been difficult to track, since data is typically gathered from private firms rather than alternative workplaces such as corporations or institutions. In a 1991 survey of AIA members, one out of six indicated that his or her primary professional activities were conducted outside of an architectural firm or private practice. Richard W. Hobbs, group vice president of AIA's Practice/Education group, estimates that half of all architects will be employed outside firms in the near future. The majority of these nontraditional practitioners will work directly for a public or private client organization.

Fragmentation in action

IN A PROFESSION BASED ON THE RENAISSANCE myth and the Bauhaus ideal of an architect designing everything from spoons to cities, fragmentation and specialization have been difficult to accept. The "architect" is scattered among many design and construction professionals who deliver the necessary complement of services. Consultants far outnumber architects on any project as specialization and the threat of liability encourage each trade to handle a narrowly tailored piece of the overall project services. One example of this specialization is the Monterey Bay Aquarium, designed by Esherick Homsey Dodge and Davis, with more than 200 consultants and 16 review panels, resulting in 200 pages of working drawings.

By contrast, when Henry Hobson Richardson built in the late 1800s, his office produced one set of construction drawings, often inked and colored on linen, that were sent to the job site. This one fact—and all that it implies—is almost inconceivable from today's perspective. Richardson faced few consultants, few review processes, few documented changes, and had little need for record keeping. He worked very closely with his builders so that details could be produced during construction. The load-bearing masonry of his buildings, which constituted both the structure and the finish, enabled design, technology, and construction to be unified.

Current forms of specialization reflect the demand for more sophisticated services from more sophisticated clients, the pressure of liability, and the expertise needed to perform services competently. The more technical and scientific knowledge demanded of contemporary architecture further fragments the profession. Rapidly developing materials and building systems, for example, require cooperation with networks of product representatives and a level of experimentation that increases liability exposure, elevating the stature of the specifications writer. Computers, which have greatly enhanced architects' information-management abilities, have also placed a stupefying amount of information

at their fingertips. Electronic mail and fax machines have taken both time and space out of verbal and graphic communication.

Fragmentation is also decidedly apparent in the entitlement and approval processes, given the pressing issues of growth and environmental management. Extensive negotiations are required among myriad community groups, review boards, regulatory jurisdictions, and clients, each with constraints that the architect must weigh when shaping a building. The burden of compliance has consequences for a project's timely progress, profitability, and design quality. Architect Ron Jerde, principal of The Jerde Partnership in Venice, California, and an effective player in the political design arena, argues that projects heavily scrutinized by agencies and interest groups must be designed like clay pots—with forethought about design elements that may "burn off in the firing." Some architects estimate that present projects entail three times the administrative work that they would have 10 years ago.

flexible response

AS A RESULT OF SUCH COMPLICATIONS, THE typical architecture firm must construct and reconstruct itself around the different projects it undertakes. Architects themselves have become specialists, in part because the more sophisticated clients of the 1980s and 1990s have demanded greater performance, dividing their commissions to get it. Public and private client organizations, now with their own in-house architects and project managers, subcontract pieces of their projects, creating teams of specialized consultants. Differing

project-delivery systems have evolved to respond to client demand, and to related conditions such as liability, project complexity, and geographic separation of design firm and project site.

In theory, there is no limit to the ways projects can be organized. The most common segmentation assigns one firm the role of design architect with another firm acting as executive or associated architect. The first handles schematics and design development; the second completes construction documents and supervision. Other variations are possible: the very first steps of a commission, such as programming, master planning, or community participation programs, are completed by an independent firm that hands its results to the design architect; large Japanese development/construction companies subcontract their working drawings but maintain responsibility for the rest of the implementation phase. In a survey I conducted in 1991 of 66 widely varied recent buildings in the Los Angeles area, about 6 percent were designed by one office and produced by another. The phenomenon is most apparent in high-profile commissions; based on my survey of buildings published in professional magazines between 1987 and 1990, more than a third of the projects were structured as some kind of split commission.

The most interesting and effective reactions to such changes in project-delivery systems have not been from the firms that specialize in one phase or another, or even from those that take the opposite design-build strategy. Rather, firms that are prototypes for the future embrace the concept of flexible

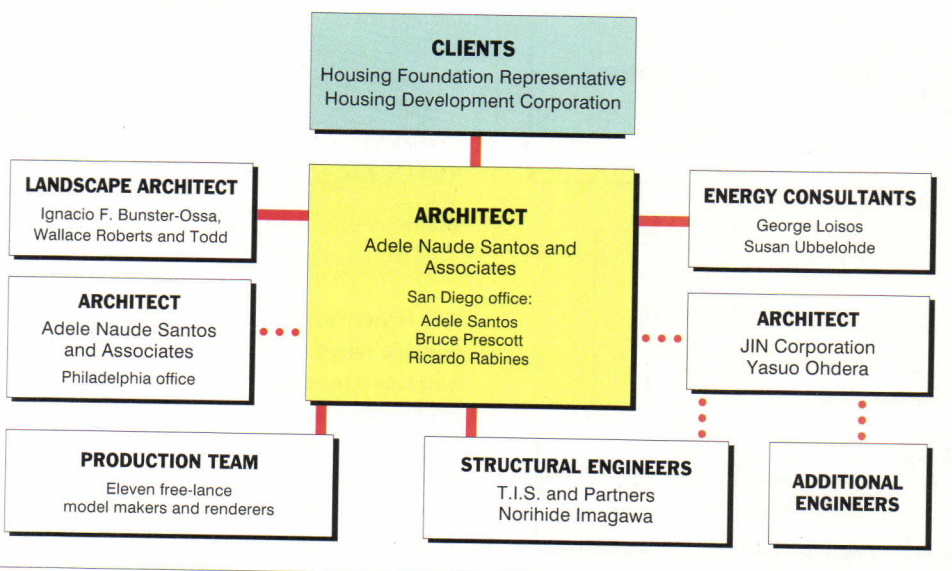
production, echoing other service and manufacturing industries, from the film industry to retail clothing. At least three different types of practice—the elastic firm, the mosaic firm, and the nomadic architect—demonstrate appropriate responses to conditions architects confront today.

Elastic model

SOME SMALL FIRMS ACHIEVE AN EFFECTIVE elasticity by staffing on a project-by-project basis. An example of such a practice is the three-person San Diego firm headed by Adele Naude Santos. Expanding and associating as needed to compete for jobs, her West Coast office grew temporarily to 17 people to work on a recent competition for a massive, multi-use development on Rokko Island in Japan. When American architects work in distant cities or foreign countries, it is often advantageous to associate with local firms and consultants for political reasons as well as for their knowledge of local building practices. In Japan, Santos works with one architect, Yasuo Ohdera of JIN Corporation, who tailors a production team to fit each commission, with Tokyo-based engineers T.I.S. and Partners consistently involved in the structural design.

Both at home and abroad, Santos achieves a desired quality and reliability with a small core of collaborators. Her firm has been very successful in assembling talented people—including environmental artists, landscape architects, developers, and associated architectural firms—to win design competitions, so that a unique project team is tailored to each client. The crux of such an elastic model is a small, capable core team with a network of

Elastic Model



JOHN DURANT

Adele Santos's San Diego firm temporarily expanded from three to 17 (left) to compete for a mixed-use project on Rokko Island in Kobe, Japan (above). Had her firm been commissioned, Santos would have enlarged the team to include her Philadelphia office, a Japanese architect, and consulting engineers. This strategy is appropriate for small firms undertaking large projects.

reliable and talented collaborators, located where and when there is a ready supply of skilled, relatively inexpensive labor, such as in urban areas during a recession or in university towns. Some architects have found another way to achieve elasticity: they harness their computers to produce work at a scale equivalent to much larger firms.

Mosaic model

A DIFFERENT TYPE OF FLEXIBILITY IS POSSIBLE among larger firms that link varied pieces of their own organization with outside consultants for each commission to create a mosaic of interconnected services. The Hillier Group in Princeton, New Jersey, demonstrates how this model works. The firm operates internally as a constellation of independent studios, each loosely specialized by building type or market segment, and each with its own design, technical, administrative, and marketing leaders. The education studio, for example, with Alan Chimacoff as lead designer, has won a number of high-profile commissions on university campuses. The advantage of comprehensive specialization is apparent in Hillier's university laboratory buildings, where the education studio collaborates with the research and development studio on the interiors, rather than with an independent architectural specialist. In turn, the studios are served by a set of centralized departments for specifications writing, accounting, and so on. Depending on the job, the studios perform full services, act as design architects with an associated firm, or contract for only the construction documents. The office also has a division responsible for construction manage-

ment of its own projects as well as those of other firms. While this structure sounds like a textbook matrix organization, it frequently subverts its own structure in order to respond to new projects. People are temporarily pulled from all studios into a new space to work on a big, fast-track project; Hillier's "corporate" studio, for example, designed the recently opened New Jersey Aquarium in Camden.

Only a large firm can be this comprehensive, but few large firms have so embraced flexibility. One difficulty confronting the mosaic firm is image and marketing, since it behaves as a wide range of offices rather than as one coherent and consistent entity. Another problem is managing the pieces within the firm. As Hillier's director of design technology, Bob Barnett is responsible for maintaining a project's integrity throughout the design and building processes, shepherding the cast of contributors across what has, in many firms, become a distressing chasm between conception and execution.

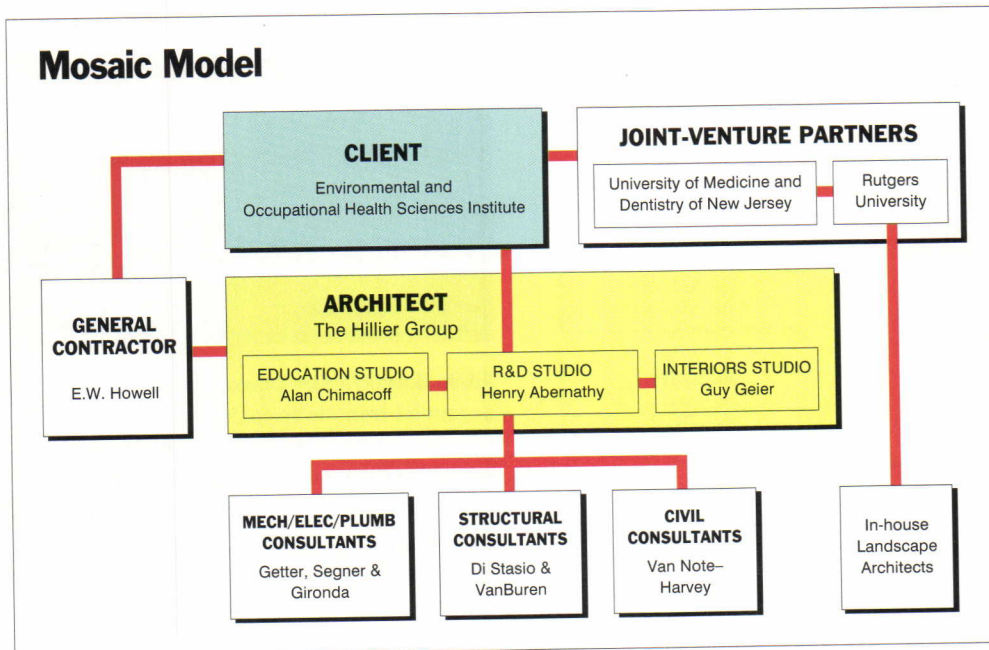
Nomadic model

A THIRD AND SEEMINGLY IDIOSYNCRATIC form of flexible practice is exemplified by AIA Gold Medalist Charles Moore's affiliations with various practices around the country, including Moore Ruble Yudell in Santa Monica; Centerbrook in Essex, Connecticut; Urban Innovations Group in Los Angeles; and Moore/Anderson Architects in Austin. While I argue that the office is where the project is, Moore and others like him maintain that the office is where the architect is. This model depends on the lead architect's name recognition and willingness to be a design nomad,

and the ability of each office to follow through.

The vagabond architect only functions in collaboration with a team of talented architects who can carry a project forward, maintaining the clarity of the proverbial napkin sketch. For example, the 45-person firm Moore Ruble Yudell (MRY) is surviving the recession with sizable projects on the West Coast, in Germany, and in Japan. The design process at MRY might begin on a retreat, when the three partners sequester themselves for intensive focus on several projects. The partners remain actively involved through design development, with Moore flying in for several days each month to review projects. MRY places high value on design collaboration, structuring all phases of every project around a high degree of overlap of partners, of design firm and production firm, of conceptual phases and detailing.

On a commission such as the Nishiokamoto housing development in Kobe, Japan, for Mitsui-Fudosan Company, Moore, Yudell, and consultant Tina Beebe met initially with the clients. The group, later joined by Ruble, came up with a design concept that organized housing blocks around a sequence of gardens. The building and landscape design were carried out by MRY, working with Mitsui Construction Company's architectural and construction management divisions, as well as a Japanese landscape firm that delivered technical and production services. Periodic meetings of partners, project team, clients, and associates kept the concept alive as the building developed. For their projects abroad, MRY associates with a local firm that undertakes construction documents, while



The Hillier Group has developed a comprehensive range of specialized services that can be pieced together to suit each client and commission. For example, three distinct in-house studios (left) collaborated on the Environmental and Occupational Health Sciences Institute (above) at Rutgers University. This mosaic model is applicable to large and midsize firms.

simultaneously maintaining some construction-supervision responsibilities. This overlapping interconnection, rather than a clear division of labor, affords consistency within an otherwise fragmented process.

Emerging roles

WHAT THE ELASTIC, MOSAIC, AND NOMADIC forms of practice have in common is flexibility and delivery of services to other professionals rather than directly to clients. Thus, a design architect works with—and often contracts for—a production architect; a firm takes on construction management of another architect's project; an environmental artist and landscape architect work as consultants to the design team; a project team hires four recent graduates on a short-term basis.

The future will require even more skillful navigation through uncharted territory. Firms will need to restructure project teams in response to the requirements of each commission, and they must become integral parts of architectural and other networks to compete for work. This process will require having something real to offer—either expertise or commissions—as well as demonstrated collaborative skills. Marketing and management will become more difficult, and design quality will be harder to maintain under less standardized conditions. Office management will take a back seat to project management. Successful firms will find a way to integrate management into their varied routines, so that dramatically more unpredictable projects meet clients' ever-more exacting demands.

New types of contracts and procedures must develop to accommodate these projects.

At present, legal requirements are more likely to dominate the coordination of divided labor than are goals of design quality. The tendency is to keep each set of services as distinct as possible, even though the project would benefit from greater overlap among contributors. Moreover, the client, or constellation of clients, wields new power over those teams that operate as a fragmented association rather than as a collaborative venture. The best buildings will result from very messy interactions among team players.

This growing complication may be the most difficult transformation of all. My studies of projects and firms over the past 10 years, documented in *Architecture: The Story of Practice* (MIT Press, 1991), indicate that architects' in-house teams should remain small and loosely organized, and there should be a great deal of overlap among teams of contributors. For example, some of the architects responsible for working drawings should participate in the design phases, and members of the design team should move temporarily with the project when it goes to the production office. In divided projects, if design and management are separated, as has been the trend, design tends to lose out. For this reason, a firm's management goals must be better integrated with design goals.

For individual architects, new roles, new services, and new arenas for practice are emerging. The "people work" of architecture—defined by Roger Montgomery, dean of the University of California, College of Environmental Design in Berkeley, as the social aspects of architecture, from management to programming to community facilitation—

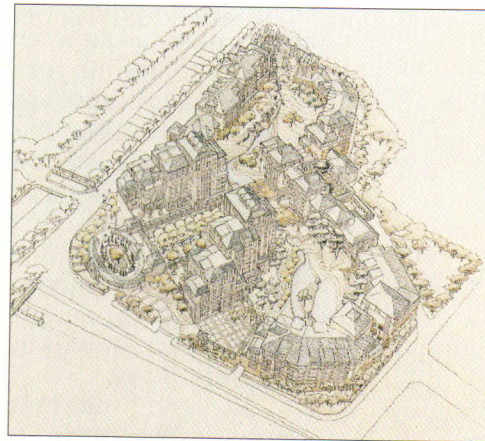
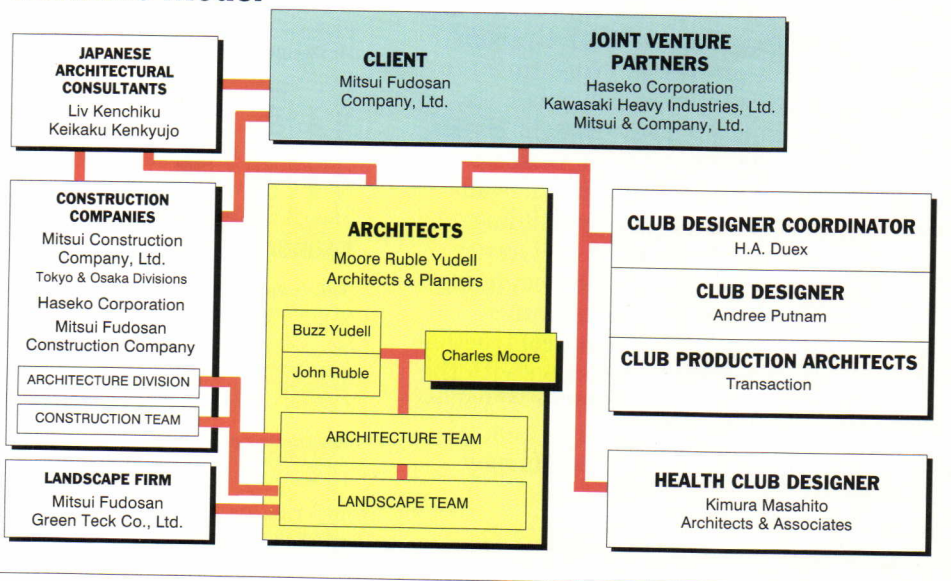
will continue to grow. Architects will also be faced with expanding opportunities in client organizations such as real-estate development companies, public agencies, and private corporations. These architects typically perform some design services, manage projects, and hire outside architect-consultants. Within the building industry, architects will wear a variety of hats, from cost consulting and specifications writing to metalworking. As specialization continues, this group of renegade practitioners will expand.

The coming decades will witness a great deal of confusion as the profession reels from the recession, the fragmentation of services, and the required flexibility of practice. The assistance of professional and educational institutions to sort out this process will become paramount. Schools of architecture must respond to the new mandates for education, redirecting the focus from design only, to design plus many other skills. Postprofessional training should become more prevalent and, as part of a general strategy to increase professional competence and ensure societal responsibility, architecture should develop a model closer to that of the medical profession, which requires continuing education. Training will also shift to address the demand for greater leadership and negotiation skills. Perhaps most urgent is new thinking about project management aimed at welding together the exigencies of contemporary practice with design quality.

—DANA CUFF

Dana Cuff is a founding faculty member of the new School of Architecture at UC San Diego.

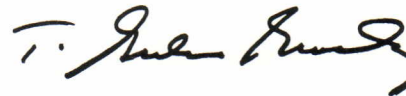
Nomadic Model



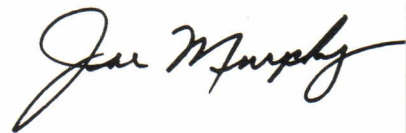
Architect Charles Moore maintains nomadic ties to several firms. Moore Ruble Yudell Architects, of Santa Monica, designed the Nishiokamoto housing project (above) in Kobe, Japan, working with Japanese developers and their consultants (left).

“Joe is very availa

T. Graham Bradley is a principal of Bradley Likins Dillow Drayton, AIA, a 60-year-old firm located in Decatur, Illinois. He is a Fellow of the AIA and a past director of the national AIA. He is also past president of both the Central Illinois Chapter of the AIA and the Illinois Council of the AIA.



Joe Murphy is president of Insurance Designers, an independent insurance agency based in Petersburg, Illinois. He is a member of the Professional Liability Agents Network (PLAN), a nationwide group that specializes in serving the risk management needs of design professionals.



There's no typical day for Joe Murphy, but at least a couple of days a week you'll find him driving 250 or so miles in several different directions to: spend two hours discussing loss prevention with an architect and helping him fill out a DPIC application, two hours talking about a structural engineer's changing practice and completing a renewal application, another hour talking about project insurance with another architect, and more time with another renewal application. He met Graham on a trip like that about eight years ago. Graham had a problem on his professional liability policy and Joe helped straighten it out.

Joe says, "I don't think you have to come on strong—I think it's just being there when they need you. You finally get to the place where, when they think they have a problem, they call you—they just plain can't think of anyone else to call."

Joe's spent over 20 years in the insurance business, and nearly ten representing DPIC. Today he can hardly remember the days before he knew about professional liability for design professionals: almost 100% of his time is spent with architects and engineers. Because of his expertise and his proximity to the state capitol, he works with Graham and other design professionals to provide input to policymakers, working with government bodies like the state Capital Development Board, which handles all renovations and new buildings for the state. He's a "reference point" for them—their sounding board on what the insurance industry thinks about contractual clauses under discussion with the AIA, ACEC and others. If you're a design professional in central Illinois, you'll see Joe Murphy.

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New Directions in Project Delivery

Architects and educators debate the changing process of building.

AS THE DESIGN, MANAGEMENT, AND EXECUTION of buildings becomes increasingly complicated, the architect has been drawn into a kaleidoscope of arrangements with other practitioners, contractors, project managers, and allied professionals to provide client services. These many permutations, each with its own set of contractual relationships, form a complex array of project-delivery systems.

In design-bid-build, the most familiar project-delivery system, a client first commissions an architect to design a building and produce a set of construction documents. Based on these documents, contractors bid for the project, and the client selects a builder with the architect's help. In construction-management, an owner hires a construction consultant early in the project, in addition to the architect, to better integrate the design and construction phases. In design-build, architect and contractor work together as a single entity. And in split commissions, the design is developed by one firm and the construction documents and administration are handled by another.

To discuss these project-delivery alternatives and their implications for the profession, ARCHITECTURE invited prominent educators, AIA officers, and architects representing different types of practices. The panel, moderated by ARCHITECTURE Senior Editors Nancy B. Solomon and Michael J. Crosbie, consisted of Max Bond, Jr., partner of Davis, Brody & Associates and dean of the architecture school at City University of New York; Robert Gutman, visiting professor of architecture at Princeton and distinguished professor of sociology at Rutgers; George T. Heery, president of Satulah Group, Atlanta; Herbert McLaughlin, principal of Kaplan McLaughlin Diaz, San Francisco; AIA President-Elect Susan A. Maxman, principal of Susan Maxman Architects, Philadelphia; James S. Polshek, principal of James Stewart Polshek and Partners, New York City; AIA President W. Cecil Steward, dean of the College of Architecture, University of Nebraska-Lincoln; and Jane H. Weinzapfel, principal of Leers, Weinzapfel Associates, Boston.

—N.B.S.



PHOTOGRAPH BY JEFF GOLDBERG / ESTO

Gathered in New York City, panelists (above) discussed project-delivery systems here and abroad, client needs and expectations in today's competitive market, and the growing gap between education and practice.

Architecture: *Is the traditional delivery system, often referred to as design-bid-build, sufficient for creating architecture today?*

Robert Gutman: I feel the design-bid-build system is a myth that has been perpetrated by the architectural profession over the last century and a half. But if you go back into the history of building and architectural practice, the client often assumed major responsibility, as did the contractor. I don't understand why one should now assume that design-bid-build is the only way to get good architecture. Clearly, from the point of view of many architects, it's the preferred way. But if you look at what's happening out there, there's an enormous range of project-delivery systems, and architects have been very skillful in finding a place for themselves in other methods of delivery.

W. Cecil Steward: The bid-package process seems to have become most prevalent in public work, and is in fact instituted by law in many states and jurisdictions. But to save money, there appears to be a growing desire in the public sector to shift away from the bid package to design-build. In some cases, design-build is being used to circumvent the legalities of what some people see as a lengthy prebuild process.

Herbert McLaughlin: I'd say the major reason design-build is emerging in the public sector

is the rise of the delay claim, which occurs when the contractor claims that the drawings are technically correct but he can't interpret them—either because the information is not there or it is not well organized—and so his time of construction runs beyond what was anticipated. To build a case, the contractor will typically deluge the architect with requests for information. The contractor's lawyer or claims adviser will then go before the owner or judge and say, "Obviously, the drawings are inadequate. My poor client had a schedule of 10 weeks to do this \$70 million building, which he could have accomplished if only the drawings had been better."

Susan A. Maxman: They often claim delays when materials aren't available. Then you're in a position where you have to sacrifice what you selected and make substitutions.

Architecture: *Can the use of a project manager mitigate these problems?*

McLaughlin: They give public clients a sense of comfort that a "professional" is looking out for their interests and advising them as to what the standards should be.

George T. Heery: A good project manager can do a lot to steer his client away from the claims assault.

Architecture: *Are project managers coming from a particular sector of the industry?*

McLaughlin: Construction, I'd say.

Heery: Some of the best project managers I've ever seen have been architects.

Steward: I believe some architects are even specializing in it.

J. Max Bond, Jr.: I really question the whole business of project management. I've had three experiences with outside project managers, and in each case, they really did not help the process. The real problem is that architects ought to be able to convince clients that we can manage the project ourselves. Many project managers know less about building than we do, yet they've got the client convinced that they are needed as outside overseers. Project management puts another person between the architect and the client. Clear communication between architect and client is difficult enough to establish. Instead

"I always thought the architect's role was to be a mediator between the builder and the owner. Now we are seen as an adversary by one or both."

of easing the situation, adding a supposedly neutral intermediary just makes communication that much more difficult.

Heery: You're right, assuming the architect serves his client in the way that was traditionally envisioned, and does it well. Unfortunately, the architectural profession has failed to protect the client's best interests. Architects have ceased to represent the cutting edge of construction technology and the most practical way of building buildings. That knowledge is not even found among contractors anymore. Construction technology today lies among specialty subcontractors and product manufacturers.

McLaughlin: Where the relationship between the architect and the client tends to disintegrate is during construction. Even though we may allocate 25 percent of our budgeted fee to construction, it's not enough to have a real presence on the job. So the client sees the contractor every day—rather than the architect—and the contractor says the architect is screwing up. The owner then trusts the contractor or brings in a manager from outside. I don't know what we can do about it, but the erosion is steady.

James Stewart Polshek: We've given up our birthright in some way. No one is to blame; it has more to do with a general breakdown of trust in this country. Those of us who have practiced in Japan or Europe know that the element of trust between the various parties is extremely high. Here, that trust simply does not exist. Not only are there contractor delay claims; the client is also aiming at the architect. That reinforces my fears about the continued existence of our profession. The architect's reputation for sustaining a leadership role in the entire process has so significantly eroded that clients and contractors are taking advantage of us. And this economy is accelerating that enormously.

Maxman: You can see the strength waning all the time, but I feel it's due to the choices architects have made in terms of their training. The "star" system has really shifted attention away from an overview of all the abilities required to produce architecture. But I'm much more hopeful about the future of the profession, because I see a whole shift in

our value systems among everyone in this country. Americans are not going to value only expediency and economy: they're going to value other things that have been lost in the past 20 years. If architects can start to demonstrate these values, we will see a change in the stature of the profession over the next decade.

Bond: I agree with you in some ways, but I think that the problem is that architects' value systems are not changing. The star system is absolutely destroying the profession, because it invalidates the work of most architects. We have good architects, but they're not stars. Therefore, the client does not value their work. As a result, the good architects want to become stars, so they ignore the

realities of doing things well in favor of some myth of form. And the students think that the best solution is not to build at all, but to produce wonderful drawings.

Polshek: The bifurcation of the profession into the boutique on one hand and the big, corporate design-build firm on the other leaves the middle empty. The small firms say, "You big guys are Philistines, and we little guys are the artists." Then the big firms respond, "We're successful in business and therefore respected in America, and you little guys are out to lunch and destroying the profession." If the middle doesn't take hold and begin to assert the value of design along with these other values, we're going to continue our downward spiral.

Steward: I see some positive signs of change in the industry as a whole. The Associated General Contractors of America has adopted a partnering concept that grew out of work by the Army Corps of Engineers. The client's representative, architect, contractor, and materials suppliers come together at the beginning of a project to determine responsibilities. The approach attempts to get rid of the adversarial attitude among the players and move toward an interdependent attitude. Another positive sign is the Forum on the Construction Industry, a series of conferences and seminars put together by the American Bar Association on

alternative dispute-resolution methods. It's a legitimate, honest search for better cooperation within the industry.

Polshek: I believe that construction everywhere, and in this country in particular, continues to be asystematic overall. As a result, the profitability for the people who are building is marginal. As long as it remains marginal, and the issues of unpredictable profitability are not addressed, I'm not sure that these well-intentioned and very intelligent efforts at solving problems in advance are going to be very helpful. I always thought the architect's role was to be the owner's agent until a contract was signed, at which point the architect became a mediator between the builder and the owner. That position is really lost—we are now seen as an adversary by one or both. These questions regarding the appropriate emphasis on design are terribly important. But frankly, if we lose that tool of design, I'm not sure what we have left. Then we're not going to be designing buildings; we're all going to be project managers.

Heery: When you are detailing expansion joints and writing specifications, you're designing the building. But a lot of architects don't think like that.

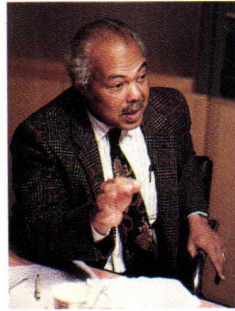
McLaughlin: On a positive note, I think my firm is creating a better set of contract documents than it has ever done in the past, because of the computer and out of necessity. We are turning out much better documents in the U.S. than you see anywhere else in the world.

Polshek: I agree, but I question whether these better documents result in better buildings.

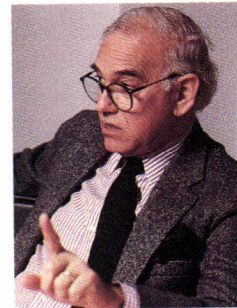
Heery: They usually do. We've built better buildings in the U.S. than in almost any other country. I think the Japanese are close to us, maybe better in

some respects. But we build a lot better buildings than most European architects do.

Gutman: What you are talking about are very large building projects—often with commercial clients who are very shrewd about how they go about minimizing risk. The majority of firms in the profession, however, are very small, the average firm is five or fewer. And most of them work on very small projects, and they work in a situation that is not far removed from the traditional image of the de



J. MAX BOND, JR.



JAMES S. POLSHEK

“Design-build is like going to the doctor and the undertaker at the same time. A hybrid between traditional design-bid-build and design-build is best.”

design-bid-build system. For architects who design interiors or small projects, or handle facility management, the old system works reasonably well. But for large projects, clients have learned that the way to get the best product is to exert maximum executive control over the total project. And if they can't find the architectural firm that will give them that kind of service, they set up alternative methods: construction management, project management, more in-house control, and so on. If you take the newly built and renovated total square footage added each year in the U.S., the traditional system still dominates. But on the big projects—the projects with the biggest budgets—this system has vanished.

Heery: It's not very fruitful to discuss delivery systems without talking about the type of projects and owners, which I think fall into three basic camps. One scenario involves the very small project, which often relies on the traditional process very successfully. Another scenario consists of a client who regularly buys construction, such as a developer or a company that owns a retail chain and builds new stores every year. This is a construction-heavy client to whom the industry is responsive because the industry gets more business from them by being responsive. The third scenario involves a large corporate, institutional, governmental, or university client that occasionally buys construction. These clients have very little expertise and no entrepreneurial characteristics to their organizations. And these clients are what most major architectural practices live on. Many architects have comfortably operated under developers; it's the university, corporate, and government agencies that have attracted most of the delay claims.

Architecture: *How would you try to solve these problems?*

Heery: There are several problems with the traditional system: for one, it assumes that we can prepare a perfect set of drawings and specifications, which is not humanly possible. For another, the owner believes it takes too long and too much money to get to the point where he has an enforceable price. In addition, architects have driven up the cost of

construction because we no longer represent new technology. We inherently build unnecessary costs into the construction of the building because construction technology lies with subcontractors and building product manufacturers, who are left out of the design process. Furthermore, the owner is increasingly exposed to claims, most of which result from errors and omissions in the drawings or specifications, or the fact that the architect was not responsive or gave a poor ruling. Finally, and maybe worst, is if the roof leaks when the building is finished, the owner can't find out who's at fault. The architect says he designed it right. The contractor says he put it in the way it was designed and speci-

fied. And in the meantime, water keeps dripping on the owner's merchandise. Design-build, in theory, deals with some of these problems. But, as my father used to say, design-build is like going to the doctor and the undertaker at the same time.

I believe it's best for clients to have someone who has their interests at heart, so I prefer a hybrid between the traditional system and design-build. In the hybrid, a client retains an architect to lead the owner through the planning process and to develop the design through the design development phase. This architect then helps the client enter into a design-build contract, on a two-step award basis. The second step, construction, is not awarded until the second architect—the architect of record who works for the design-build contractor—completes the construction documents to the owner's satisfaction. The owner has two architects looking at details and a contractor who has a vested interest in making the details right. A lot of people in this country are beginning to look into such a hybrid. It's essentially the way Japan's construction industry is organized.

Bond: Isn't it similar to France's system?

Heery: Yes, but there are also French firms that do the working drawings but are not part of a construction company. In this hybrid approach, it's important that the architect of

record be a subcontractor to the contractor.

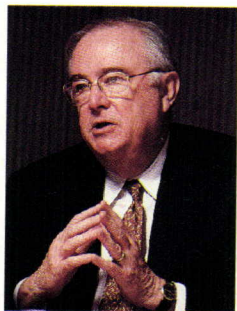
Jane H. Weinzapfel: In the U.S., we have a litigious capitalistic culture that values independence and individuality, which creates a particular climate for construction and design. I think the particular conditions of design-bid-build, however, can successfully work for the client, contractor, and architect—perhaps not in every project to the same degree, because client motivations are very different. Clients expect to have their goals understood and verbalized by a compatible individual who produces good documents and brings in a reliable cost estimator early in the process. It is not a perfect system, but I believe it's a good one.

Contractors, even with their lawyers in their back pockets, want to do good work because they want more jobs in that area. Even contractors with a tough reputation want to get in and out of a job quickly, and are receptive to cooperative attitudes. I think the old role of the architect as a mediator during construction can still be effective, even in those kinds of situations.

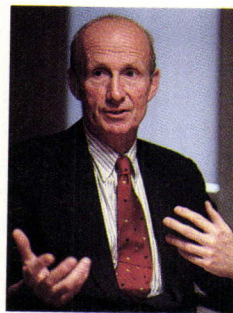
McLaughlin: What does the typical architect, who doesn't have access to this hybrid system, do? The first thing he or she could do is hire a third party, such as a project manager, who would come in for four hours before the architect is hired and spend some

time with the potential client to establish realistic expectations of the process. Frequently, the owner's expectations are unrealistic. In addition, clients sense that the architect has an ax to grind. I'm saying you don't need a project manager's full services as they are being sold today. I think the architect can do as good a job on the site as most project managers. But it's so critical to get those client expectations to a realistic level. It's terribly important, for instance, that the client understand that the architect should establish the baseline construction schedule. Don't let the contractor set the schedule, because he may establish a short one to set himself up for a delay claim.

Maxman: The architect often has the first chance of establishing a relationship with a client. The architect must do it in a very substantial way that can be carried through the



GEORGE T. HEERY



HERBERT MCLAUGHLIN

“Social involvement extends beyond project delivery. The question then becomes, ‘Is architecture a single building artifact, or is it a part of the social fabric?’”

whole process, and then must continue to be very responsible during construction administration. This includes representing both owner and contractor fairly, and encouraging a team approach to problem-solving. What's happened in the past is that the system has broken down in our litigious society through lack of trust, cost overruns, and so on. But I think there is an opportunity to make the traditional system work.

McLaughlin: I think the AIA could play a real role in this area of educating architects to educate clients. We have formed a group of large firms in the Bay Area, for instance, that meets once a month. We talk about a variety of problems related to insurance, financial forms, and how to handle delay claims. I think all of us would agree that it's been very helpful.

Gutman: It's very effective. A similar support group in Boston and another in New York City also meet on a regular basis.

Steward: But to move toward taking more responsibility for the technology of construction, we're going to have to develop a more structured method of education than we currently have. The schools have moved away from teaching technology; the internship program and the mentoring relationship are weak because so many practices have given up technology and moved primarily to design. We have no continuing professional development process other than these ad hoc support groups that tend to come and go. Becoming educated in technology and practice currently depends on the interest of the individual, rather than on the system.

Gutman: The schools are a major obstacle here in terms of how the student's perception of the architect's role is shaped.

Bond: But doesn't the architect eventually get over school?

Maxman: I don't know if they ever do! I know so many successful architects who still feel inadequate because they are not stars. That's the kind of culture that is spread in our architecture schools.

Architecture: *One of the issues we want to address today is the joining of the two camps in a split commission: a star firm doing design and another firm doing production.*

Polshek: It's bad business. Most of our work



SUSAN A. MAXMAN

right now comes from architects in other parts of the country who have been set aside by members of their own communities. The client tells them, “You guys are great and we enjoy playing golf together, but this is a really important commission. We need a signature architect for this job.” For the sake of survival, we have to play along, but I don't like it. I don't like to give away production. There are some very famous architects in this country who split their practices, and the built results reflect it in measurable ways.

Architecture: *Who puts the team together when design and production are split?*

McLaughlin: Sometimes the client will tell us, “We want a local presence, so pick who you

would like to work with in that area.” There are many times when we could do the construction documents ourselves, but we don't because we think it would be more efficient and effective to have the documents done locally. If you believe in as much construction administration interchange as we do, you're going to want somebody 20 minutes from the job site rather than hundreds of miles away.

Gutman: I think we've reached the stage now in American architectural practice where it tends to be very fractured. More and more projects are done by what we used to consider odd combinations of firms, contractors, and clients. Without a doubt, this is the direction in which the profession is moving.

McLaughlin: Local firms that resent outside firms coming into their hometowns should initiate programs that establish firm credibility. For example, our firm has a pro bono program called Giving Something Back. It focuses on two areas: one is urban planning and design for communities, the other is building research through such methods as post-occupancy evaluations. We went to six hospitals, for example, and analyzed all the changes that have taken place in five key departments over a 21-year period. We were able to establish different patterns of change that demanded rationally different types of construction. From this came a theory called “The

Hospital as Village.” It was a fabulous sales tool, valuable both to the profession and to the quality of our firm.

Steward: Social involvement is a very key point. While it doesn't directly relate to project delivery, it reflects an attitude about the meaning of architecture. It begs the question, “Is architecture the single building artifact, or is it a part of the social fabric, the contributor to the culture in which we live and work?” I suspect that such a broad attitude provides your firm with an opportunity to evaluate a culture more quickly and more accurately than a firm without this perspective.

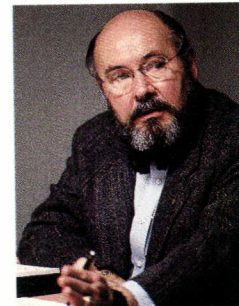
Bond: We need to make a distinction here. We're talking about two different reasons why outsiders are brought in. One is the star system, where a signature designer is brought in to give form. The other is where architects are brought in from the outside because of a particular expertise or experience. That may also be a form of stardom, but I think it is fine. These are two different situations that have very different outcomes.

Steward: Do you think that in the '60s, '70s, and '80s the architectural professional has shirked responsibility? I think we've institutionalized a stepping back from responsibility. An example is when the AIA changed the contract document on construction administration from “supervision” to “observation.”

Heery: I don't see it so much as shirking responsibility; I see it as failing to take advantage of opportunity. Most architects want to be in charge, they want to be the one who has the closest relationship with the client, controls the end product, and pleases the client. But more and more architects have decided that being in charge is not really a very politically smart idea.

Architecture: *Will architectural education evolve in a way that makes it more responsive to the problems that practitioners are now confronting?*

Bond: There are a lot of schools that prepare people for practice, but they are not considered the elite schools. The schools associated with the major universities have abandoned the idea of teaching people how to practice. That has to do with the class structure of the profession, and of this country. “Signature” may be another word for “class” or “elite.” I



W. CECIL STEWARD

"We're at a point where there are interesting new challenges that are going to be resolved by practitioners, many of whom are far ahead of academia."

think in education, the division between schools is absolutely clear. The elite schools have decided that the way to be intellectually respectable is to abandon the more practical aspects of architecture. I think a lot of schools do a good job educating as well as training architects, but they are not recognized.

Gutman: But there must be something else operating here. We all experience this terrible split in the schools and in the profession between design and construction, fabrication, or technology—whatever you want to call it. But the question I keep asking myself is, "How did this come about?" It's not a result of some conspiracy. It's not really the result of the media, even though they play a

major role. It must have something to do with the nature of construction. There's been a change somehow in the complexity of buildings, and in their construction, that makes it possible for some people to be "skilled" in design, whatever that means, so that they are still considered architects despite their lack of skill in putting buildings together. Meanwhile, others focus on fabrication. Only if we examine how the process of building has changed can we begin to think about how to bring design and construction together again.

Steward: If architectural education begins to take on the role of teaching specialists, then we've missed the boat. Not long ago, I heard Bob Stern make a very articulate comment about the state of architectural education. He said, "To play a symphony, first you need to know the scales. Schools of architecture are not teaching the scales." We are taking too broad an attitude toward what architecture wants to become without understanding what steps are needed to get us there.

Gutman: I don't think we can assume that our only problem is that the schools don't know how to transmit this knowledge. There remain certain unanswered questions. I know some firms that are looking for design technologists—people who are skillful in putting design and construction together. I know people who make a career as independent consultants specializing in how to put a skin on a building or how to develop certain kinds of wall sections. This suggests that it's more

than just an organizational or curriculum problem; we're at a point in the development of architecture where there are interesting new challenges, many of which are going to be resolved by practitioners. One thing that is impressive is that the practitioners are far ahead of academia in addressing some of

these questions. If we could only get some of this know-how into the curriculum, I think the schools would be better off.

Architecture: *What can offices do on their own to educate interns and architects about the issues addressed here?*

Steward: After formal education, but before accepting full professional responsibilities, a candidate must have the opportunity to gain technical knowl-

edge. The internship development program was set up to try to accomplish this goal while recognizing that it is very difficult for the small practitioner to carve out special training time. Mentorship is something every professional owes to the profession, regardless of his or her views about practice. The AIA and the profession have not done a good job of instilling this attitude among us.

Gutman: The new trend in professional education is to speak of lifelong learning, that education does not end with the degree. I just finished a survey of 10 large firms in the U.S. to find out what they do in this area of continuing professional development. A formal structure is developing in larger firms. It turns out that each firm spends about 2 percent of its gross income on professional education: sending staff to AIA meetings or specialized seminars, for example, or running in-house seminars on technical topics.

In smaller firms, there is typically a wider range of experience through which the young intern learns a larger number of technical skills than he or she would in a large firm. But there are many large, production-oriented firms in the U.S. in which architects are never rotated out of their jobs. And when you talk to their supervisors and point out that this person really should have some other kind of experience if they're going to be valuable to

the firm in the long run, these managers say they can't afford to shift their people now, because they're in the middle of a project and their skills are needed. You go back three months later, and they say the same thing. Somehow, one has to convince managers of large firms that the younger employees need a variety of experiences.

Weinzapfel: In the last year and a half, we have seen students get more involved with what's happening in the profession. Twenty students from MIT took the initiative to set up their own office visits. Sixty Harvard students toured a steel-framed building under construction for a structures course. A class from MIT toured 10 offices with a specific agenda: one firm talked about the design process, another discussed construction documents, and a third reviewed contracts.

Bond: Most schools operate on the myth of the architect. The great project is the single-family house for a rich client that you can design down to the last detail. The whole thing is full of assumptions that have nothing to do with the way most architects practice. At City University, we say there should be much more teamwork because when students get out of school, they are going to be working with other people—engineers, clients, and other architects. One of the things that has really changed in the past few years is

how you get work. It shapes the project-delivery systems. That's part of the reason for the recent boom in joint ventures, associations, and competition among practitioners.

Gutman: One of the strengths of American architecture is that it has always maintained a strong business strain. In the 19th century, you couldn't practice architecture unless you were willing to think of yourself as a

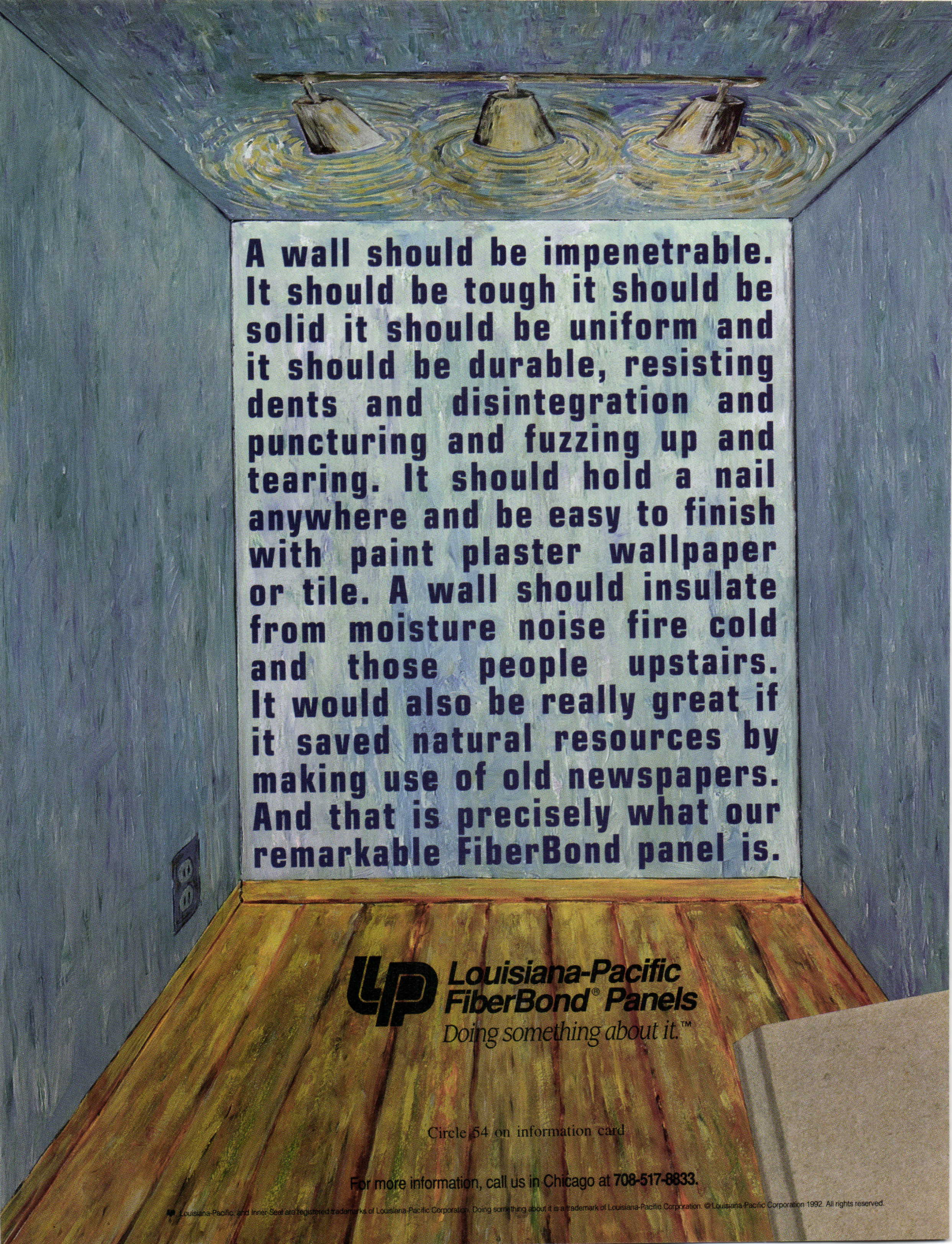
businessman—that is, not be embarrassed by those things that the schools often encourage students to be embarrassed by. Because it is very entrepreneurial and responsive, I have great confidence in the future of the profession in this country. That architects will go out and put something together to get a job is exactly what is required in today's setting. Out of this comes the skill and confidence that enables American architects to do a better job than architects in other countries. ■



JANE H. WEINZAPFEL



ROBERT GUTMAN



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Carving a Niche for the '90s

To fight the recession, architects are creating specialty markets.

BILLINGS ARE DOWN. THE OFFICE IS QUIET. Already you've reorganized the catalogs in your office library a dozen times. So why do the architects across town seem as busy as ever? What are they doing?

Many of the healthiest firms in the country are cashing in on specialties developed in response to an increasingly sophisticated clientele, the growing complexity of buildings, and stiff competition for jobs due to an overcrowded profession. Other firms, backed into a corner by the dearth of architectural commissions, are developing such niche markets just to stay afloat.

Lawrence Jackson, Kevin Ary, and Steven Hamilton of Burbank, California, for example, moved into their niche four years ago when they set up shop as L.A. Architects—specialists in automated teller machines. “Not a lot of architects go looking to knock a hole in the wall and put a machine through it,” Jackson says. “But when you design 300 of them, they start to add up.”

L.A. Architects is among a growing number of firms nationwide that are packaging their “products” in ways that were never discussed in Professional Practice 101. Some are becoming experts in a specific building type, focusing their marketing efforts on a narrow base of similar clients. Others are creating special services that cut across myriad building types, targeting only a narrow segment of the tasks required to guide any building from preprogramming to post-occupancy evaluation. Even large corporate firms are searching for ways to acquire new specialties that will differentiate them from their counterparts—sometimes by raiding competitors’ staffs, collaborating with niche firms, or buying specialty firms outright.

In fact, according to some experts, the days of the generalist practice may already be history. “Six years ago, people were horrified at the idea of becoming a niche firm,” says Ellen Flynn-Heapes, president of Flynn-Heapes Consulting in Washington, D.C., and a frequent speaker at marketing seminars around the country. “It really was not until the economy stopped in its tracks that niche markets

became viable strategies for all firms.”

Marketing and management consultants and firm principals all suggest that survival in the 1990s requires a narrower focus and a more analytical approach to doing business than most architects have been accustomed to. “Typical architects have done a little bit of everything,” explains Frederick White of Mark Zweig & Associates, a management consulting firm based in Natick, Massachusetts. “But as clients are getting more sophisticated, they are asking architects, ‘What have you done for clients like me?’” Specialization is what clients are after, and if your firm doesn’t offer it, another firm will.

But becoming a niche firm doesn’t necessarily mean throwing your hard-earned credentials out the window. Gray Plosser, presi-

According to some experts, the days of the generalist practice are history. Survival in the 1990s requires a narrower focus.

dent of KPS Group in Birmingham, Alabama, says his 65-person firm has expanded its range of services in recent years while seeking to develop specialties that will give it competitive advantages. “The two coexist in the philosophies of many large organizations,” Plosser notes. One of many specialties KPS is pursuing today is federal courthouses, well funded in the federal budget. The firm’s track record in the field includes an award-winning judicial facility in Birmingham and a new commission in Shreveport, Louisiana.

Other firms have capitalized on their expertise in a specific building type to spin off entirely new businesses. Cambridge Seven Associates, for example, which will complete its fifth aquarium this year in Genoa, Italy, formed a sister corporation in 1990 to provide construction management and consulting services for such projects as aquariums and animal exhibition facilities.

For those on the lookout for specialties to develop in the '90s, consultant Flynn-Heapes advises that architects look to the baby boom for clues. Swells in construction activity have accompanied the postwar generation’s passage through primary and secondary schools in the '50s and '60s, colleges through the '70s, and white-collar offices in the '80s. Now the baby boom generation has reached what Flynn-Heapes calls the “cruising years” of midlife leisure and material comfort, and a high percentage has young children.

For architects, these developments offer niche opportunities in recreation, religion, cultural and entertainment facilities, and vacation houses. Other growing niches include commercial renovations, healthcare, judicial facilities, and airports, according to *Design Firm Management & Administration Report*, a New York-based newsletter.

But enterprising firms needn’t stop at these markets. Continued growth in the entertainment/theme park industry offers new opportunities to explore the boundaries of architectural design (see following pages). A sustained source of funds for scientific inquiry has raised the demand for new research laboratories. And moving beyond strict notions of design, architects are adding to their menus a range of services in predesign, facilities management, and building diagnostics.

It remains to be seen whether this growing specialization signals a fracturing of architectural practice—or simply a pluralism that more closely resembles segmented professions such as law and medicine. But there are those who watch from the sidelines as architects scramble to find new modes of practice and, like Darwin, see a process of natural selection taking place.

Maintains Santa Monica architect Craig Hodgetts, whose professional activities include TV production, entertainment design, and architecture, “Alternative destinies are valid. They will reinvigorate the profession.”

—VERNON MAYS

Vernon Mays is editor of Inform, the architecture magazine of the Virginia Society AIA.

Entertainment Design: Experience over Form

FROM CAMP SNOOPY AT MALL OF AMERICA IN Bloomington, Minnesota, to Dollywood in Pigeon Forge, Tennessee, popular culture is setting the standard for projects that architects are executing for the entertainment industry. How much of this work exists? In 1992 alone, more than \$330 million worth of construction in amusement parks nationwide will open, according to the trade publication *Amusement Business*. Such projects as restaurants, retail-entertainment complexes, and casinos with "themed" environments are adding to this lucrative niche market.

Many architects have broken into the entertainment market by taking up set design, teaming with specialists in lighting or product design, or cultivating relationships over many years with entertainment companies. But Craig Hodgetts of Hodgetts and Fung Design Associates in Santa Monica, California, was led to the industry through an invitation to conceptualize TV commercials. That led to commissions for themed buildings, where Hodgetts quickly learned that, in the entertainment world, God is not in the details but in devices to elicit emotional response. In working for industry giants such as Disney and MCA, he draws upon film techniques such as framing, jump-cutting, lighting, and surprise. The first step in designing an entertainment district for Tokyo Disneyland, for

Hodgetts and Fung Design Associates's entertainment projects include Rockplex, a nightclub at Universal Studios (bottom left). At Japan Sealife Park, an ecological theme is explored by ITEC Productions through underwater environments (bottom right).

example, was not developing a program but a "script."

Others who work in this niche agree that accessibility to popular culture is the key to entertainment design. Explains architect Gregory Beck of Orlando-based ITEC, a firm that develops audio, lighting, special effects, and control systems for animated shows and amusement rides, "Whatever the theme is, it's the excitement of the guest that is top priority, not a nice elevation. It's experience over form." As Beck points out, designing theme parks and other entertainment-related buildings requires multidisciplinary teams of architects, lighting designers, acousticians, and industrial designers, who combine a wide variety of expertise in theme projects.

William Castle, vice president of design at Peckham, Guyton, Albers & Viets (PGAV) of St. Louis, likens the major theme parks to "cities without bedrooms." Everything that happens in a city goes on during a typical day in a theme park, Castle says, and the design has to accommodate similar ranges of activities and "rush hours." As the primary architectural consultant to Busch Entertainment Corporation in St. Louis since the early 1970s, PGAV has developed a menu of services from master planning to theming roller coasters.

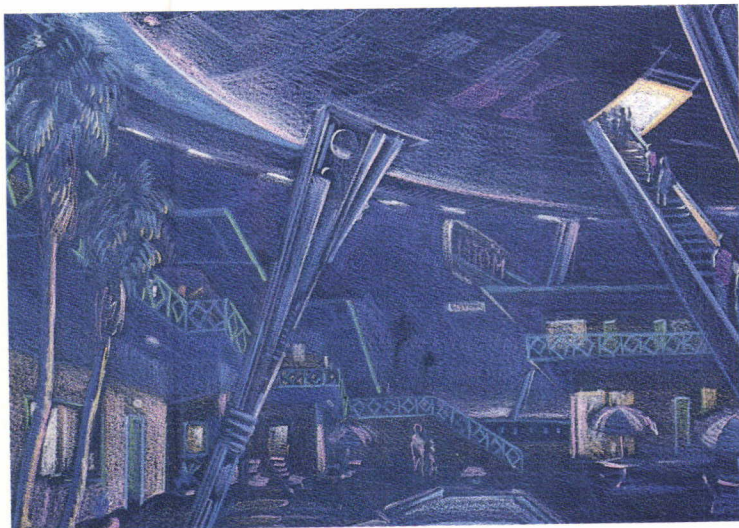
While some attractions are designed to generate crowds, others (like the Universal CityWalk in Los Angeles) are built to serve a preexisting audience. Five to 7 million tourists pass through Universal Studios each year, a statistic that prompted the owners to build a mixed-use office, retail, and entertainment complex that would connect the disparate studio facilities and provide a destination for the

local clientele. They brought in The Jerde Partnership of Venice, California, to develop a master plan, and the architects "themed" the complex as a prototypical L.A. street. The firm photographed Sunset Boulevard, Westwood Boulevard, Melrose Avenue, and Larchmont Village to catalog the collage of styles that make up the streets.

After nearly 33 years designing entertainment enterprises, the Duell Corporation of Los Angeles may well be the mother of all theme designers. Six Flags Over Texas, the first theme park designed by the 20-person firm, opened in 1961. Since then, Duell has become a specialist in mass entertainment attractions in the United States, Europe, and Asia.

Currently, Duell is providing construction management services for the MGM Grand theme park in Las Vegas, where 12 shows and rides designed by the firm convey the experience of moviemaking. Over the years, Duell has been involved with every aspect of the project, from finding the site to managing the park. According to Duell Vice President Ira West, requirements for theme parks are so broad that architects may be called upon to design sophisticated theaters, restaurants, and rides. Duell has even been asked to include casinos, water fountains, and thoroughbred racetracks.

Such theme design seems almost as much social science as it is architecture. "It goes into the psychology of what people expect to see and do," notes West. "It starts on the highway. People have to know where to park, where to get tickets. And they come in all ages, with different interests. You have to meet the needs of them all." —V.M.



ROCKPLEX, UNIVERSAL STUDIOS
HODGETTS AND FUNG DESIGN ASSOCIATES

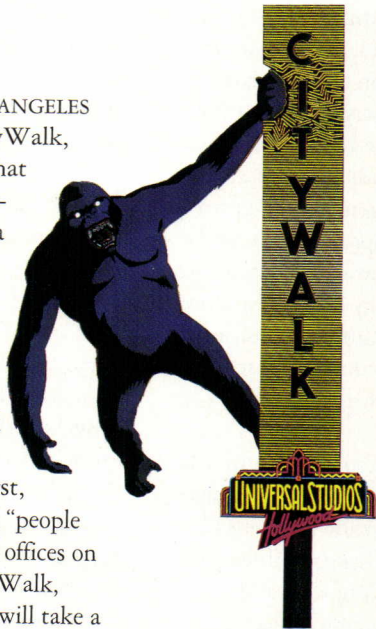


JAPAN SEALIFE PARK
ITEC PRODUCTIONS



CityWalk
Universal Studios, California

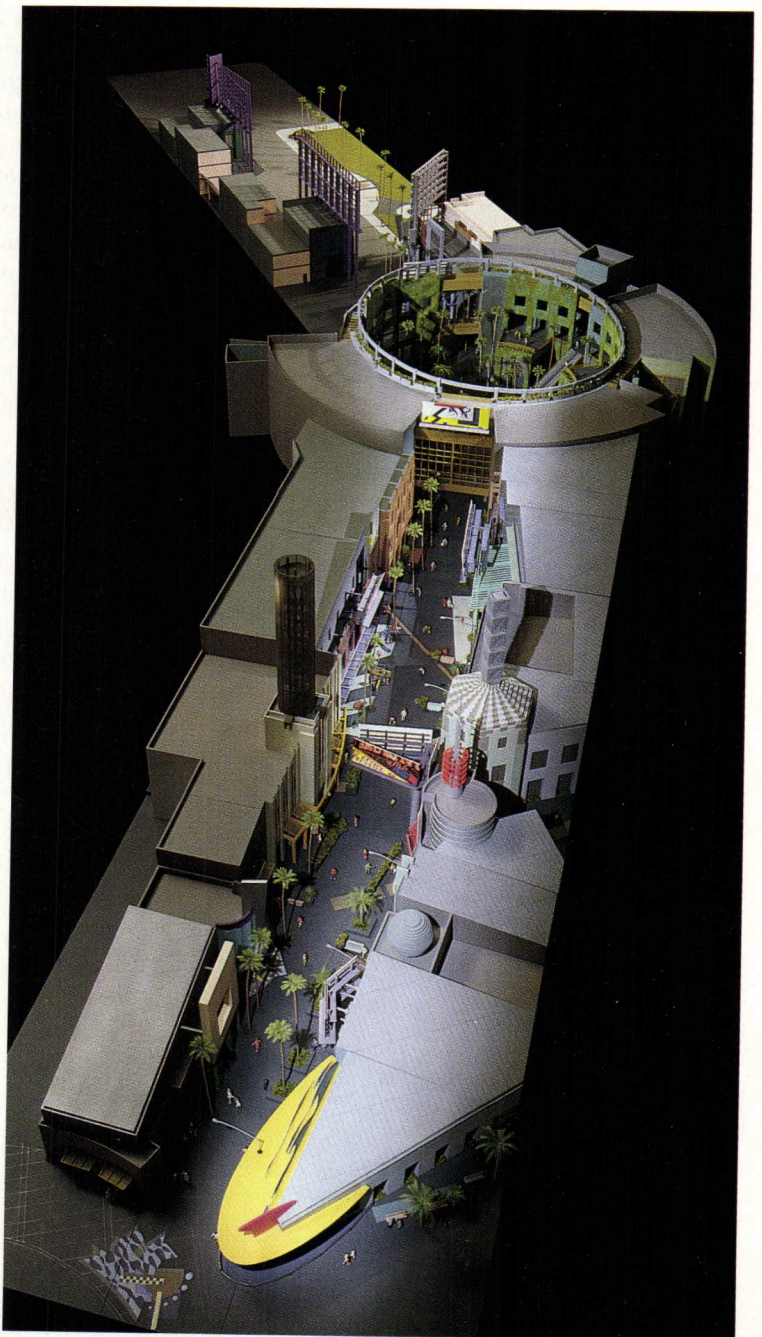
THE GLAMOUR AND GLITZ OF LOS ANGELES provide the grist for Universal CityWalk, an ambitious 4-acre infill project that will connect the existing amphitheater, studios, and 18-screen cinema complex at Universal Studios. Designed by The Jerde Partnership of Venice, California, restaurants, clubs, sidewalk cafés, retail boutiques, an art gallery, and UCLA extension classrooms will be spread along the four-block street, which is divided into two districts. The first, West Walk, is an intimately scaled "people street," with shops at street level and offices on the second and third floors. On East Walk, the entertainment district, buildings will take a back seat to signs, billboards, and animated lighting systems. The project is scheduled to be completed this fall.



—V.M.



Universal Studios's CityWalk (top) simulates the architecture and street life of Los Angeles (left and right), and includes film imagery (above).



Predesign: Starting at Square One

TO GET A FOOT IN THE DOOR WITH NEW clients, architects are increasingly offering "pre-design" services ranging from feasibility and site acquisition to rezoning assistance and project scheduling. Just as most medium to large projects require extensive programming before design begins, they also demand that someone perform the phases of a project prior to schematics. Why not an architect?

Entering this niche market can be as simple as selling the expertise. Sherertz Franklin Crawford Shaffner of Roanoke, Virginia, markets predesign services that include scheduling, agency consulting, surveys of existing facilities, marketing materials, site analyses, and utility studies—all areas of development and construction that benefit from the architect's perspective. Other predesign skills may require additional training. Acquiring the ability to perform credible market analyses or financial feasibility studies, for example, might call for business or real estate courses.

Benjamin Rook, chairman and CEO of Odell Associates in Charlotte, North Carolina, focused his mid-career sabbatical at Harvard on the financial, legal, and regulatory dimensions of predesign. When Rook returned to the firm, Odell began offering a new service package that starts with the fundamental question of whether to build at all.

Odell Associates's diagram (below left) indicates the relationship of predesign services to design and construction. Architects such as HLW that offer strategic planning as a predesign service often generate alternatives to building configuration, massing, and scale (bottom right).

If a city wants a new athletic facility, Odell's predesign services include setting up the land deal. Likewise, if a West Coast computer company wants to move East, Odell generates cost scenarios to help select the city, neighborhood, and even the specific parcel of land. The firm's predesign services encompass five project types: public stadiums, corporate headquarters, airports, healthcare facilities, and government buildings. "Sometimes we do the architectural work, and sometimes we don't," says Rook.

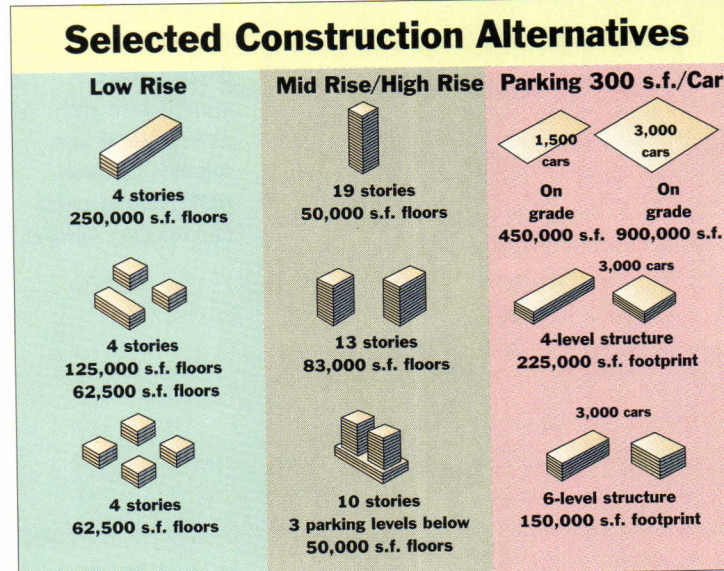
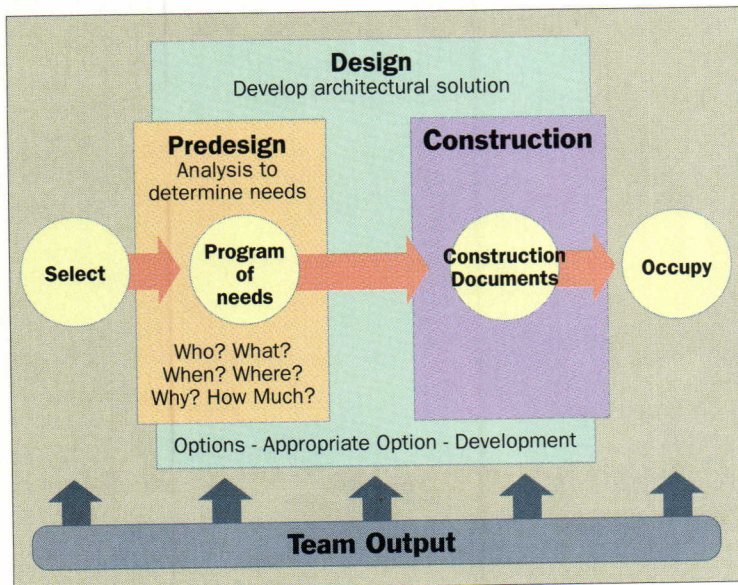
HTB of Oklahoma City provides a similar range of predesign services to the U.S. Department of Labor's Job Corps program. In joint venture with Los Angeles-based DMJM, HTB has a three-year contract to manage the renovation and expansion of 107 job-training centers around the country. The HTB/DMJM team has developed expertise in real estate, project planning and budgeting, and design and construction management. The firms determine the need for improvements, and they plan renovations and new construction. In addition, the team solicits proposals, forms selection panels, determines scope of services, writes A/E contracts, evaluates construction bids, and recommends which architects and contractors get hired.

Other national firms such as Gensler & Associates are touting their ability to help companies make long-range building plans, develop databases of existing facilities, and evaluate potential building sites and configurations before initiating new projects.

But predesign services are not solely the bailiwick of corporate megafirms. Bruce Finkelstein, owner of HBF+ Architects, a

two-person office in Baltimore, runs a successful consulting service for people who want to build additions to their houses. "What we found out is that people love talking to architects," explains Finkelstein. "They just think architects don't want to talk to them if their projects are too small." He has overcome that barrier and generated good public relations for the profession, while creating a service that is helping him ride out the slack economy. From the start, Finkelstein makes it clear to his clients that his service is not a cheap way to get a full set of drawings. The first, and sometimes only, meeting is a two-hour session to which the clients must bring a simple measured plan of their house. At the end of the appointment, the client is likely to end up with a diagrammatic floor plan of the addition covered with explanatory notes.

Focusing on predesign is a tested alternative for Walter Moleski, owner of ERG/Environmental Resource Group in Philadelphia. Moleski decided to specialize when, as a young architect, he realized that he got bigger and more interesting projects from the programming side of his practice. Today, he promotes ERG's expertise in environmental psychology and organizational development to win contracts that have included housing proposals for Seattle University, programming a training campus for the U.S. Fish and Wildlife Service, and conducting community surveys for public housing projects in Philadelphia. "We act as the advocate of the owner," he says. "Although we may be hired by the architect, we are still making sure the owner's needs are being met." —V.M.



Facilities Management: Recession-proof Market

IN AN ERA OF MERGERS, ACQUISITIONS, CONSOLIDATIONS, and employee turnover, businesses and institutions are recognizing that offices and equipment are assets to be modified in response to changing personnel and space needs. As a result, the field of facilities management has grown more sophisticated, from operation and maintenance schedules to complex strategies for assessing the best use of a company's resources. Because the requirements for such services is constant, whether a potential client is building or not, facilities management is a virtually recession-proof market. And more potential clients are now looking for outside help. In the current recession, more businesses are inclined to contract out facilities management services in order to minimize permanent staff, opening a wider door of opportunity for architects to provide consulting services and refine the relatively new discipline.

Because facilities management is a new and rapidly changing market, few firms can offer the edge of experience over those architects hoping to enter the specialty. Gensler & Associates, HOK, SOM, and CRSS have been visibly marketing facilities management as a distinct service since the early 1980s, but large firm size is not a requirement. For example, architect Michael Irvine formed Irvine Architects Associates, a one-person corporate-interiors planning and design firm in 1983. Recognizing the potential of facilities management, the Houston-based practice grew to a staff of 30, largely by serving corporate clients within the region's notoriously depressed real estate market.

Facilities management is highly dependent on the computer. CADD, however, is only the backbone for attaching interactive databases that make up a complete computer-aided facilities management system (ARCHITECTURE, June 1991, pages 114-121), according to architect Bruce Forbes, creator of Jung/Brannen's Archibus CAFM system. Forbes also recommends that architects considering facilities management services undertake the certification programs now offered by the Houston-based International Facilities Management Association (IFMA) before attempting to "hang out their shingles."

Facilities management typically begins once the architect's traditional involvement is completed: after a building is finished and occupied. Working drawings and construction documents can then be expanded into a facilities database, and workplace standards for

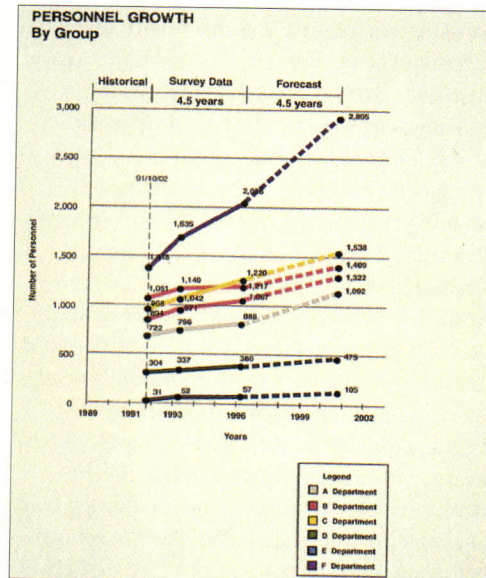
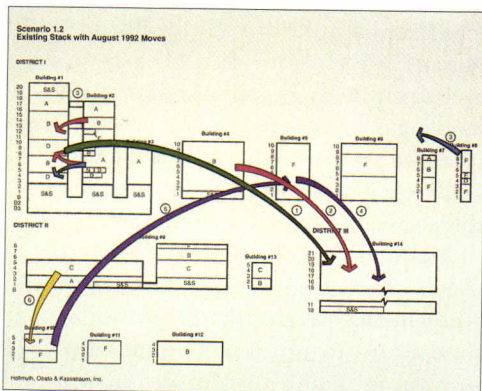
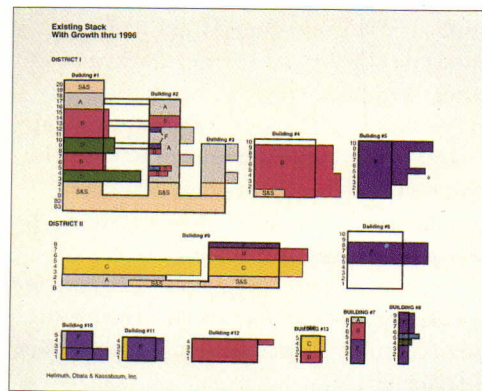
equipment, furnishings, and programming can evolve into a forecasting tool for future space requirements. By nature, this service is a logical outgrowth of the training and experience architects have developed as building designers. And as architect Michael Schley, president of the consulting firm FM:Systems, indicates, the information generated as a byproduct of design is also a valuable management asset. "If it is packaged correctly, facilities management can be provided as an additional service," Schley maintains.

But trying to supply a client with a comprehensive package of services, from schematics to management of the finished building, has its stumbling blocks. Once a company occupies its new headquarters, its operations staff may become involved with correcting deficiencies that they attribute to the initial design. The architect must then convince the client that future facilities management services will promote the company's best interest in the long run.

In addition to providing expertise that extends previous design work, architects are also offering completely separate, stand-alone facilities management on a continuing retainer basis or as a one-time service. The Memphis-based architecture firm Askew Nixon Ferguson & Wolfe, for example, has taken the idea one step further. This year it formed On-Line, a separate facilities management company, after having provided such services within the firm for several years. Principal Lee Askew explains that creating a separate facilities group overcame client suspicions that architects were angling for future building commissions. The formation of On-Line also provided confidence that facilities management was not "another tacked-on service" beyond the architecture firm's genuine interests, Askew says. And if IFMA's growth from eight founding members in 1980 to more than 11,000 today is any indicator of the increased market demand for facilities management services, many architects would be wise to expand their interests in the field, rather than limit their focus to new construction projects.

—M.S.H.

Facilities management efficiently organizes space and equipment, often through open-plan workstations (top right). For example, HOK's interactive computer databases allocate departments (second from top) to their best locations (third from top) in response to forecast changes in personnel (right).



Building Diagnostics: Success From Failure

"THERE ARE PLENTY OF ARCHITECTS WHO can figure out why the roof is leaking," says George Heery, founder of Heery International. But how can a firm turn that knowledge into a marketable specialty? Architects' experience in studying, designing, and specifying building systems is increasingly being applied to building diagnostics—a service based on examining and determining the cause of construction deficiencies.

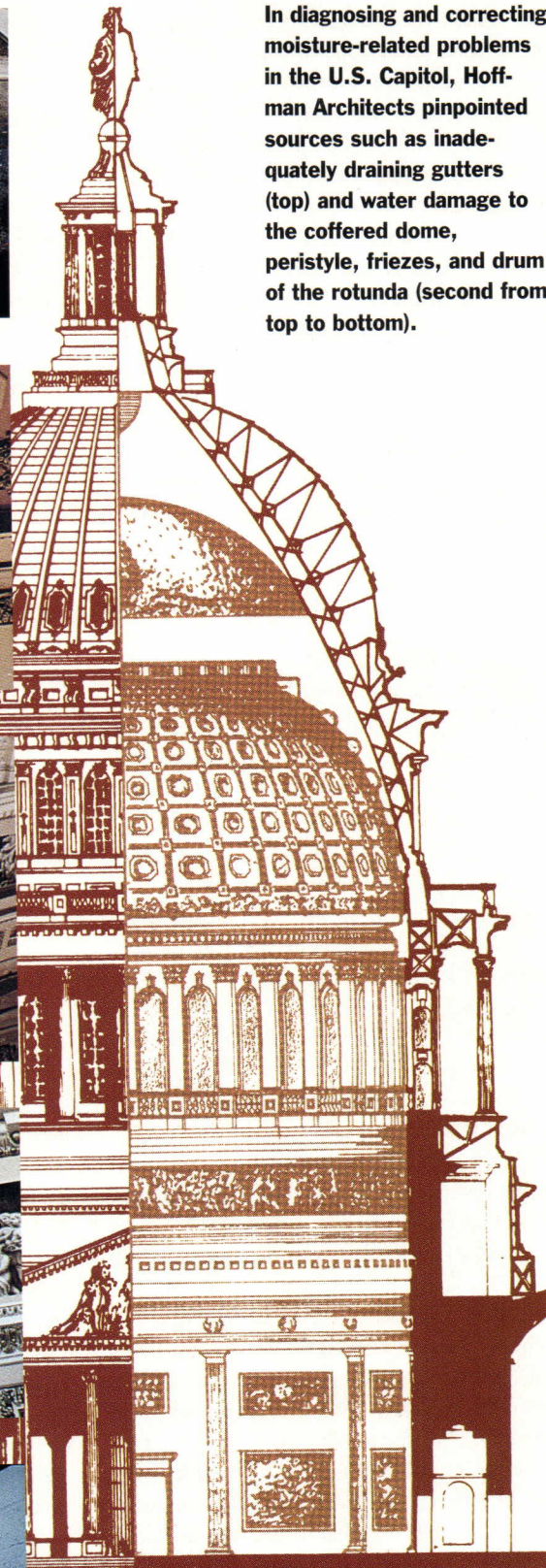
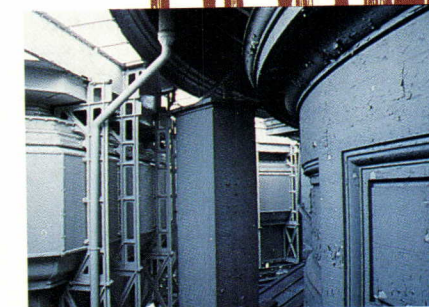
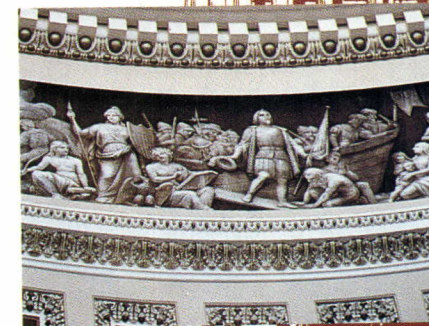
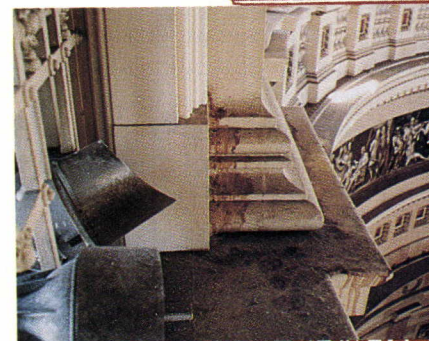
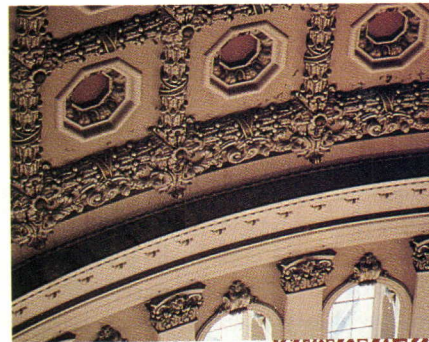
According to Heery, there is plenty of room for architects in the business of construction investigation, but they must first overcome the profession's loss of credibility as technical experts. In 1989, Heery gained clients' confidence by forming an architect-led company called American Construction Investigations, a building-diagnostics service firm that is independent of his design practice, and is now part of the Satulah Group, the multiservice organization he heads.

Architecture firms vying for such work are competing less with one another than with other consultants, according to John Hoffman, a principal of North Haven, Connecticut-based Hoffman Architects. The firm was founded principally as a design office in 1977, but in 1984, Hoffman decided to specialize exclusively in investigating and correcting building deficiencies. The firm now devotes its entire practice to the investigation and rehabilitation of existing facilities, primarily those damaged by water infiltration.

Hoffman discovered many corporate clients had no plans to build, but frequently required diagnostic services to determine the appropriate treatment for commonly failed systems, including roofs, plazas, curtain walls, and parking garages. As leaders of a construction-related profession with an added sensitivity to design, architects are the logical choice for determining design deficiencies and suggesting cures, Hoffman maintains.

Architects have also successfully demonstrated their inherent skills in analyzing building systems for the federal government. Paramus, New Jersey-based DiGeronimo Architects, for example, is now securing fees from the multibillion-dollar federal bailout of failed property loans. The architects seized on the Resolution Trust Corporation's need for "engineering" reports to appraise the existing conditions of their vast property holdings for prospective buyers. Such a niche demonstrates the range of opportunities now available to architects willing to correct others' apparent failures.

—M.S.H.



In diagnosing and correcting moisture-related problems in the U.S. Capitol, Hoffman Architects pinpointed sources such as inadequately draining gutters (top) and water damage to the coffered dome, peristyle, friezes, and drum of the rotunda (second from top to bottom).

Research Labs: Promising Future

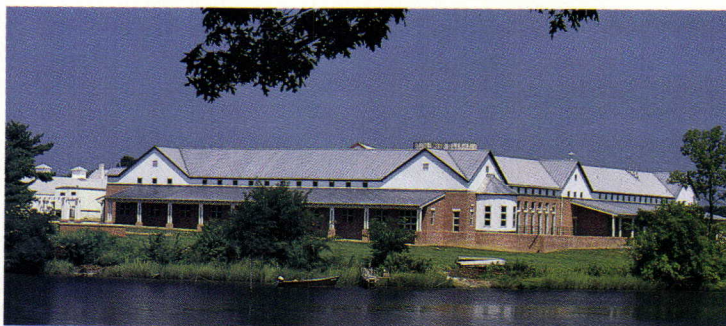
FOR THE AVERAGE FIRM, ENTERING THE highly specialized market for lab facilities requires weaving intricate building systems with complex programming requirements. A proven track record of projects akin to labs, even if completed on time and within budget, is rarely enough to convince potential clients of a firm's technical skills.

But for architects who manage to enter the lab market, the future is promising. According to F.W. Dodge, 390 new laboratory buildings were on the boards during the first half of 1991; the lion's share of those commissions are being handled by a few experienced specialty firms. San Francisco-based Anshen + Allen boasts 27 current lab projects in progress on 15 university campuses. And New York-based Haines Lundberg Waehler (HLW), with a 50-year history in lab design, has 11 such projects on the boards or under construction—approximately 75 percent of the firm's work.

However, firms with a history in the allied disciplines of medical facilities and other academic buildings may also be positioned to enter the lab market. For example, Arizona-based Anderson DeBartelo Pan, specialists in healthcare since the 1970s, has now devoted one of its three offices entirely to the academic lab market in the Southwest. Previous work at Harvard helped Boston-based Payette Associates, now considered a premier lab-design firm, secure its first such commission. New York-based Mitchell/Giurgola completed several projects for Columbia University before it was awarded its first lab on the campus in the mid-1970s. Baltimore-based Ayers Saint Gross's first academic research facility, a building type that constitutes 80 percent of its current work, followed previous campus projects at Johns Hopkins University.

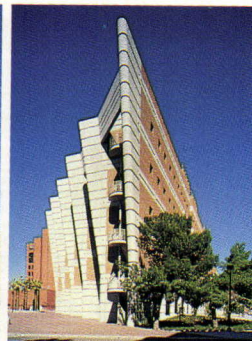
A well-designed facility housing state-of-the-art laboratories is seen as a means of attracting the best and brightest researchers. Therefore, universities and private industry often commission a signature firm to inject an otherwise technically competent project with a high design profile. Local firms vying for a project in their region also offer outside practices that specialize in laboratory design the opportunity to enter a new geographic market. By working with specialists on the technical requirements of labs, an inexperienced firm can get its foot in the door and shorten the lengthy learning curve for these technically sophisticated buildings.

—M.S.H.



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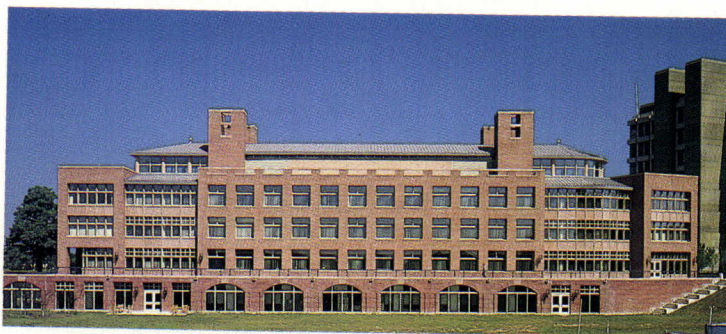


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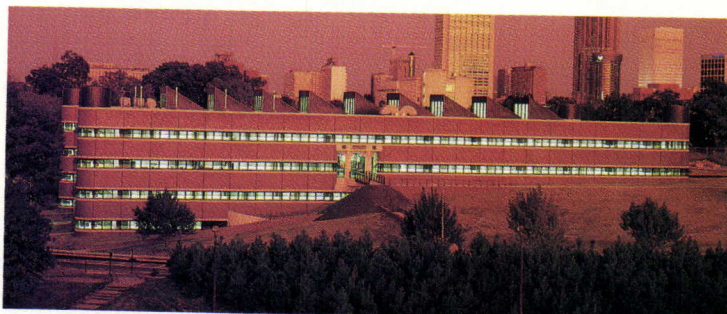
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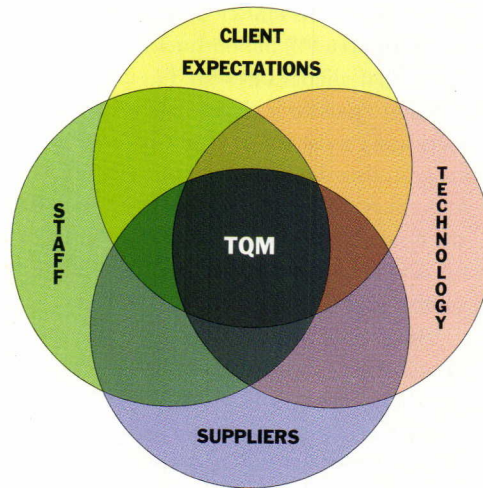
Total Quality Management

Architects adopt business practices touted by Japanese manufacturers.

A NEW BUZZWORD HAS RECENTLY TAKEN hold in the architecture profession: Total Quality Management, or TQM. Borrowed from manufacturing and service industries, TQM is a management style that promotes communication, worker participation, and statistical analysis to improve production. For the past few years, seminars to explain the concept have been offered at the annual conventions of the Construction Specifier Institute and the National Association of Home Builders. An organization called the Design and Construction Quality Institute (DCQI) was founded in 1989 to promote TQM in the building industry. Several professional societies, including the AIA, are members of the DCQI Quality Coalition. Government agencies, such as the Army Corps of Engineers, Naval Facilities Engineering Command, and United States Postal Service are implementing TQM in their building programs. Now a few business-savvy architecture firms have adopted the management technique to remain competitive in the 1990s.

Quality is not new to architects. In recent years, many firms have developed programs for quality control and quality assurance. One way to implement quality control, for example, is to review construction documents once completed; quality assurance may be achieved by following a project manual that details all the steps required to take a project from programming to punch list. Total Quality Management, however, takes a broader, holistic view. Explains Tom McCune, vice president and director of quality assurance of HOK in St. Louis, "Quality Management is how you shape the firm's culture, how you treat people, how you relate to clients." Taken in its entirety, TQM appears to radically subvert the organizational structure of the typical American business. The company is viewed not as a hierarchy of positions and job titles but as an interconnected whole. Under TQM, the processes that convert raw materials—whether they be steel or concepts—into a finished product are paramount to ensuring a successful project.

However, many elements of TQM sound



Deming's 14 Points

1. Create constancy of purpose for improvement of product and service.
2. Adopt the new philosophy.
3. Cease dependence on inspection to achieve quality.
4. End the practice of awarding business on the basis of price tag alone. Instead, minimize total cost by working with a single supplier.
5. Constantly improve every process for planning, production, and service.
6. Institute training on the job.
7. Adopt and institute leadership.
8. Drive out fear.
9. Break down barriers between staff areas.
10. Eliminate slogans, exhortations, and targets for the work force.
11. Eliminate numerical quotas for the work force and numerical goals for management.
12. Remove barriers that rob people of pride of workmanship. Eliminate the annual rating or merit system.
13. Institute a vigorous program of education and self-improvement for everyone.
14. Put everybody in the company to work to accomplish the transformation.

like commonsense management advice, echoing such clichés as "The customer is always right," and "If a job is worth doing, it's worth doing well." McCune points out that TQM espouses some of the oldest principles of management, and that some American companies, such as L.L. Bean in Freeport, Maine, have been obsessed with quality since the turn of the century. In addition, McCune questions whether TQM is as significant to architects as it is to manufacturers. "Architecture is a service business, and therefore more inclined to respond to client needs than the car companies were," notes McCune.

The movement toward TQM began in earnest in this country in the early 1980s, when the automotive industry began losing a dramatic portion of its market to Japanese competition. Desperately searching for an answer to their problems, auto-industry leaders turned to the management style that had helped postwar Japan recover from the devastation of World War II. Ironically, Japanese manufacturers learned these methods from an American statistician, Washington, D.C.-based W. Edwards Deming, who stressed the importance of statistical quality controls. Essentially, he demonstrated that any system—from a manufacturing process to the route taken to work each morning—can be mathematically analyzed to determine where most failures or slowdowns occur. With that insight, a manager can make adjustments to improve the process. Proponents argue that the methods can be applied to any process, industry, or profession.

Although critical to Deming's teachings, these statistical tools constitute only one aspect of his management philosophy. Less quantifiable elements, such as the importance of communication, education, and respect for

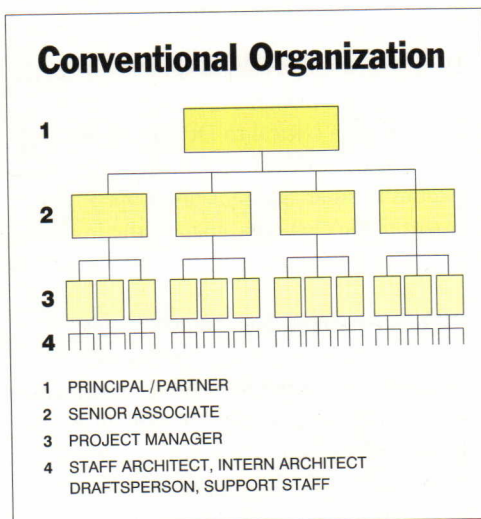
TQM encourages management to respect staff, develop long-term relationships with suppliers, and keep abreast of technology to meet client expectations (top left), as illustrated by Bob Bosshart of Construction Quality Management. W. Edwards Deming's 14 Points (left) sum up his prescription for quality.

workers at all levels, are included in his set of management principles, known as the "14 Points" (previous page). Unlike Americans, who rejected Deming's approach in the post-war heyday of American industry, the Japanese enthusiastically applied his concepts.

Other proponents of similar quality methodologies include Joseph M. Juran, who also lectured on the subject in postwar Japan and who founded the Juran Institute in Wilton, Connecticut, in 1979, and Philip B. Crosby, author of *Quality is Free* (McGraw-Hill, 1979). Crosby left his position as vice president of quality at International Telephone & Telegraph in 1979 to begin the Winter Park, Florida-based firm Philip Crosby Associates, which specializes in education and implementation of TQM.

According to a May 1991 report by the U.S. General Accounting Office entitled "Management Practices: U.S. Companies Improve Performance Through Quality Efforts," all successful TQM programs share certain common attributes: customer-driven quality; strong leadership; continuous improvement; action based on facts, data, and analysis; and employee participation. Each year, as many as six businesses that demonstrate these characteristics can receive the Malcolm Baldrige National Quality Award, established in 1987 by the U.S. Congress to recognize companies' successful implementation of Total Quality Management.

A conventional organizational structure (below), emphasizes a hierarchy of staff and authoritative control. TQM proposes a more holistic and dynamic model (below right), which focuses on every team member's relationship to the processes of production. Clients—from code officials to owners—figure prominently in this alternative paradigm.



Client-driven quality

QUALITY, ACCORDING TO TQM, IS DEFINED by the customer. For architects, developing a quality project means paying close attention to client services too often seen as secondary to design, such as proposals, contracts, finance, risk management, bidding, negotiation, building codes, and field management.

TQM proponents such as Dennis M. King, president of the 84-year-old, 150-person architecture firm Harley Ellington Pierce Yee Associates (HEPY) in Southfield, Michigan, argue that clients interested in quality are willing to pay for it. King believes that architects must resist the constant pressure, especially in this sluggish economic climate, to lower fees. Maintains King, "We want to be the type of firm that people seek out, rely on, and are willing to pay a little more for because of the consistent quality we offer."

But quality is not necessarily expensive. One basic tenet of TQM is that time and money are actually saved by doing a job correctly the first time, instead of having to make amends later. And if a mistake is made, the sooner it is corrected—in schematic design, for instance, rather than during construction—the less costly it becomes.

Often an architecture firm's motivation to begin a TQM program is triggered by working for companies such as Ford, Federal Express, and Xerox, which have implemented TQM themselves. Some clients include extensive quality-oriented questionnaires as part of their requests for proposals, while others require their consultants to participate in in-house quality seminars. Askew Nixon Ferguson & Wolfe (ANFW), a 35-person architecture firm in Memphis, Tennessee, embraced TQM while designing a facility for Baldrige Award-winner Federal Express. "FedEx tells its consultants and suppliers that it cannot

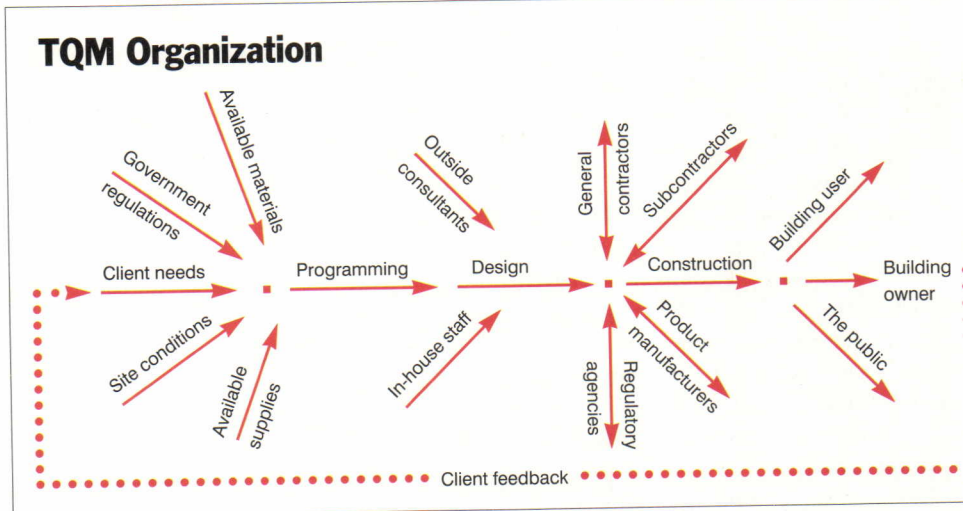
provide a quality service to clients unless those companies provide a quality product to FedEx," explains principal Lee Askew. "We then tell the same story to our suppliers. The news spreads like ripples on a pond."

Under TQM, the ripples of quality fan out in all directions. Explains Robert C. Workman, principal of BSW in Tulsa, Oklahoma, "The way to ultimately serve your client is to serve all those clients in between." Those other "clients"—the ones not responsible for paying the bills—include public agencies, building code officials, consultants, and other staff members whom the architect must satisfy in the course of getting the job done.

Many design and construction professionals are beginning to develop this cooperative, rather than adversarial, atmosphere through a team-building process called partnering. All project participants—owners, architects, engineers, contractors, and consultants—come together before any work begins to discuss anticipated problems and potential solutions, thereby promoting a better method of resolving conflicts before they escalate.

Strong leadership

SUCH A PERVASIVE PROGRAM AS TQM CANNOT be implemented without the full commitment of senior management: principals must set an example for their staff. The firm must also be prepared to allocate financial resources to develop the program over a long period of time before seeing measurable results. HEPY now spends much more time and money recruiting staff. The company has also increased its financial investment in training technology, employee awards, and communications. Implementing a quality program takes a minimum of three to five years, according to William M. Hayden, Jr., a design and construction quality consultant based in



Jacksonville, Florida. King, for example, estimates that it will take 10 years to know if his firm's program really works.

Senior management must also be able to accept another basic tenet of TQM: that most problems lie fundamentally with management, not staff. "Quality is a management function, not a technical responsibility," warns Hayden. He points out that more than 85 percent of project failures can be traced to organizational problems, while 90 percent of the solutions come from the employees.

To improve a system, management must be able to look critically at the processes currently in place. "You have to be able to kill the sacred cows," asserts King. Many office procedures eventually outlive their usefulness. If monthly reports, standard memorandums, or required approval processes are not periodically reviewed, for example, they are often retained out of habit to the detriment of larger goals. This critical review and inquiry must be continuous.

Management tools

ONE MAJOR DIFFERENCE BETWEEN TQM AND other management techniques is that TQM looks at an entire process over time, rather than trying to repair a particular product or solve an isolated problem as it appears. This evaluation is accomplished by collecting data and then analyzing it through flow charts, bar charts, pareto charts, control charts, histograms, scatter diagrams, and cause-and-effect diagrams. Some architects argue that because their firms tend to be small, their projects long in duration, and each building unique to its location and program needs, the design profession cannot apply these statistical tools as easily as manufacturers can to repetitive processes. But Craig M. Tickel of Compass Consulting Group in Dayton, Ohio,

disagrees, "We want to standardize processes, not buildings," he says. "Though each product may be different, you use the same process and the same people day after day."

Not every organization needs to use every measurement technique. Tickel finds that once practitioners see applications for specific tools, they have no difficulty implementing them. Bill Hayden agrees: "These are basic processes that help you prioritize. At least half the tools are familiar to design and construction professionals—they have always used programming and diagramming in their work. But few have applied them to the management process."

Most organizations that venture into TQM begin with the administrative procedures that support the particular business. Then they try to apply it to more specialized processes. Every week, for example, ANFW tracks both budgeted and actual hours spent on a project and develops a utilization ratio chart that compares billable to nonbillable hours for each staff member. Every Monday morning, this data is reviewed by all project managers so that they can determine whether their teams need to adjust their tasks to stay on schedule.

BSW monitors, among other project data, initial costs, construction time, and the number, costs, and causes of change orders. The firm also utilizes TQM diagrams to organize and schedule its work. For each project, a cause-and-effect diagram is developed so that all team members can see how their tasks relate to the entire project. Referred to as a "fishbone" because of its shape, this chart illustrates which person supplies information to whom in the course of getting a job done. Flow charts are also developed to clarify the steps necessary to accomplish a task.

Sequencing and time duration are super-

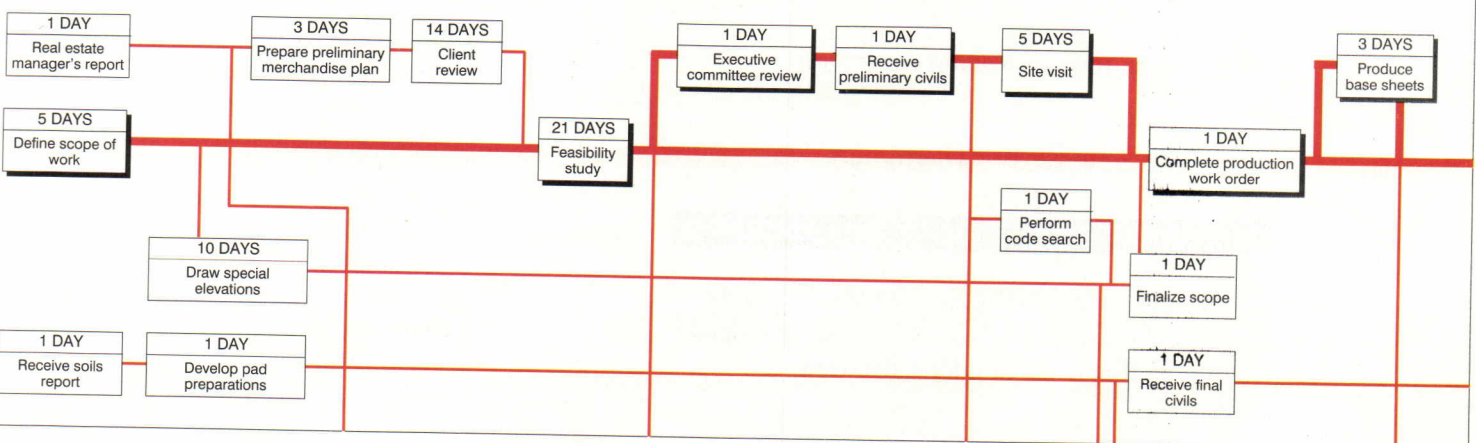
imposed on the flow chart to develop a schedule. "With that you have a real management tool," says Workman. "You can see overall direction, critical path, and manpower and other resources required. Once you get all of that in place, you add client feedback to continually improve the system." By monitoring the processes with statistical controls, an organization can, over time, generate an accurate picture of the system's performance range—the lowest and highest numbers that can be expected to result from a specific process—and the causes of these deviations. "That's where the real fun begins," exclaims Workman, "because the causes are not obvious at all. Common causes are, in fact, driven by policy." As he points out, management policy is often miscommunicated, misperceived, or generated by historical events that people have forgotten. "More than likely, it is management's own paradigms and actions that have caused the problems," notes Workman, "yet it's tough for them to admit it and make the commitment to improve."

Employee participation

WHILE SENIOR MANAGEMENT MUST BE COMMITTED to implementing TQM, everyone on staff needs to get involved to improve the system. "It does no good to have people who don't do the task make decisions about it," notes Hayden. "Management must develop a strategy to help release workers' knowledge,

Committed to quality, architects at BSW in Tulsa, Oklahoma, utilize several analytic tools in their day-to-day work. The firm develops a network diagram, or flow chart, for every project, noting the number of days allotted to each activity. Wider lines and raised boxes indicate the critical path, as seen in a simplified segment of a BSW diagram (below).

Network Diagram



rather than continue to follow a restricted system." Project managers at ANFW, for instance, now help set a project's schedule and fee. In doing so, Askew finds, "It's almost a sure bet that they will stick with the agreed-upon timetable."

BSW is currently developing career descriptions for its professional staff, which will define responsibilities, compensation, continuing education programs, and opportunities for advancement. HEPY has instituted a mentor-

ing program for new employees and formal recognition programs to reward staff for jobs well done. *Angles*, a monthly newsletter, keeps HEPY's staff up-to-date on clients, projects, colleagues, awards, and firm events.

Quality management, quality design

"TQM IS NOT INSTANT PUDDING," ADMONISHES Hayden, who suggests firms must proceed cautiously and methodically to find the techniques that work best for them. But ar-

chitecture firms that have implemented a quality program point to tangible results. Despite the recession, BSW has grown from 60 people in 1989 to 185 this year, and ANFW's profits have increased by 5 percent since 1990. Other promising signs, notes Askew, include better office morale, jobs completed under budget, and positive feedback from clients.

Listening to a TQM discussion on statistics and efficiency, the uninitiated architect can only wonder if it will hamper design. But those sold on the program disagree. "A quality approach breeds better architectural design," insists King. "We are given the opportunity to achieve a greater degree of quality because we are doing more work for quality who want to pay for quality." Lee Askew argues that designers perform better when they have a clear and realistic idea of how much time they have to complete a task. "We all need a framework to work within," says Askew. "What is important is that management understands the scope of the project to make a reasonable contract with a client."

Though leery of statistics when taken to the extreme, AIA Resident Fellow James R. Franklin views TQM as an opportunity for architects to convey to clients the value of good design. He finds that many of the critical issues facing architectural practice today—such as education, innovation, and teamwork—are also contained in Deming's 14 points. By redefining the architectural processes of research, planning, design, development, and implementation in terms of TQM, architects may be in a better position to communicate to TQM-savvy clients the importance of their services and the appropriateness of their decisions. But Franklin fears a too literal interpretation of Deming and his statistical tools could result in standardized, mediocre buildings divorced from context and regionalism. Architects should develop their own definition and program for quality, he maintains. "If we do it right, TQM can have profound effect, improving not only profits but design," Franklin argues. "What we do want is a bunch of quantitative engineers applying their statistical processes to a creative endeavor—and stifling it."

The AIA is currently conducting a series of roundtable discussions on the subject and preparing related programs for the fall. For more information on TQM, contact AIA's Information Delivery Specialists at (800) 368-ARCH, or the Design and Construction Quality Institute at (202) 347-7474.

—NANCY B. SOLOMON



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CADD Consequences

Now that computers are widely accepted, how are they changing architectural practice?

IN THE LAST FIVE TO 10 YEARS, EVERY ASPECT of practice has undergone a radical transformation. Architects with computers now draw and evaluate more design options, present photorealistic images to clients, create construction documents more efficiently, and streamline office and project management. During a decade of growing pains, the technology has increased in speed, power, and "friendliness" while decreasing dramatically in size and cost (see charts below).

Two studies conducted in 1991 by the AIA and the *Professional Services Management Journal* indicate that computer ownership in firms is high and growing. Eighty percent of AIA-member firms now own computers, and 80

the performance-per-price ratio of computers has doubled every two years for the last 10 to 30 years. This rapid improvement is reflected in size of the central processor, price, memory and disk capacity, and software sophistication of two Intergraph workstations (below).

percent of those practices report that CADD is profitable. Nearly 60 percent plan to expand, even in a recessionary year, and more consider CADD experience an important criterion for hiring staff (see charts, following pages).

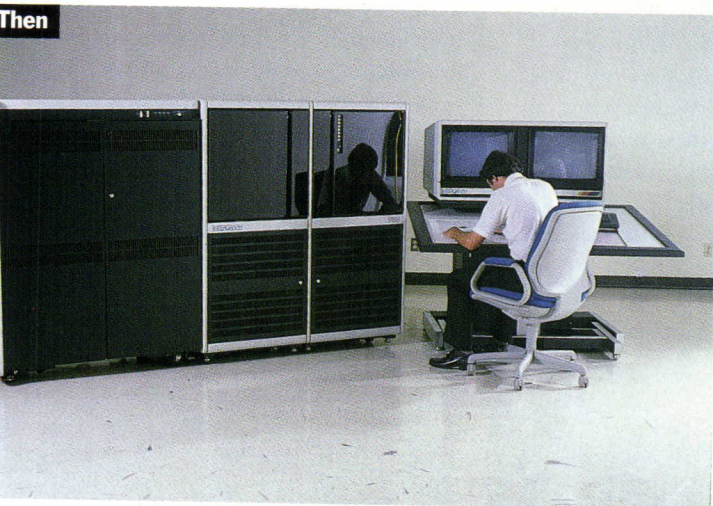
These statistics shed some light on a long-standing debate that has pitted vendors' glowing productivity claims against architects' complaints that computers actually hamper productivity. The surveys indicate that efficiency may be low during a firm's first year with a new system; it then steadily increases year after year as the firm becomes accustomed to the tool.

The professional surveys also indicate changes in how computers are applied. CADD ranks fourth in applications found in firms with computers, but plans for future purchases indicate this area will increase faster than others. The larger the firm, the more likely it is that its computers will be applied to CADD. But small firms are closing the gap and, notably, are more likely than large firms to use computers for conceptual design.

Machines for designing

UNTIL RECENTLY, IT WAS COMMON TO ISOLATE computer operators from the rest of the firm, both physically and socially. Today, computers are more often distributed throughout the studio and given to designers and managers. This distribution consolidates a design team's resources, facilitates communication, demystifies the technology, and reduces apparent status differences between those with and without CADD experience.

John Forney, a project architect with Venturi, Scott Brown and Associates (VSBA) in Philadelphia, believes that locating the computers within a design team's area is essential because CADD is central to their iterative design processes. "With the computer," he explains, "we can change the window scale or pane pattern in subtle ways, and see that change across an elevation very rapidly." After establishing the design, those CADD elevations are developed into construction documents. However, VSBA still draws details manually, requiring proximity between ma-



YEAR	1981 (approximate)
MODEL	VAX 780
CPU FOOTPRINT	30" x 120"
PRICE	\$250,000-\$300,000
MEMORY	1 megabyte
DISK CAPACITY	80-640 megabytes

YEAR	1990
MODEL	INTERPRO 2020
CPU FOOTPRINT	20" x 20"
PRICE	\$15,000
MEMORY	16-48 megabyte
DISK CAPACITY	200 megabytes-8 gigabytes

Computers in Practice

Of all architectural firms:

Percent of firms with computers: 80¹

Percent of sole practitioners with computers: 63¹

Percent of firms with computers on a principal's desk: 43²

Of architectural firms with computers:³

Percent of firms that believe CADD has been profitable: 80

Percent of firms planning to expand their CADD hardware or software in the coming year: 59

Average estimated percent of productivity gain*: 44

Percent of a firm's computers that are used for CADD: 51

Average percent of technical staff trained in CADD: 61

Average number of CADD training days: 15

Percent of firms that require CADD experience in new hires: 25

Percent of firms that prefer CADD experience in new hires: 61

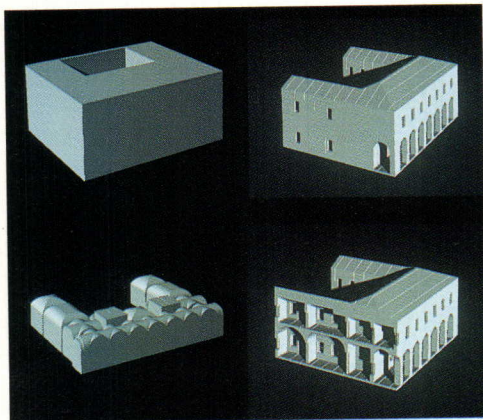
1. Source: 1991 AIA Firm Survey Report

2. Source: 1991 Mark Zweig & Associates' "Principal's Survey of A/E/P & Environmental Service Firms"

3. Source: 1991 FSMJ CADD Application and User Survey, *Professional Services Management Journal*

* Productivity gain is the increase in revenue from the same amount of labor or the reduced time to perform a task with CADD assistance.

A solid model of Palladio's Palazzo Civena in Vicenza (below), completed by students at Harvard University, shows nontraditional views of space and structure. They subtracted interior volumes from a simple mass and then sectioned the resulting shell. Computers assisted Venturi, Scott Brown and Associates in creating an accurate cardboard model (below center) of the Clinical Research Building at the University of Pennsylvania (below, right).



chines and traditional drawing boards.

Over the past several years, William Mitchell, professor of architecture at Harvard's Graduate School of Design, has observed how putting computers in the hands of designers affects design quality. Now that CADD systems have improved, there is no need for an intermediary between the designer and the machine. "My students design directly and fluidly with 3D models," Mitchell claims. "It's an unconventional design process, without established cultural traditions, so designers take risks and come up with exciting, innovative work."

Making the transition

Many architects eager to take advantage of these capabilities were educated before CADD was commonplace in schools. Some may take courses on their own time, often with financial support from their firms. At VSBA, firm-supported training begins with outside courses and continues on real projects. As Forney points out, "No matter how much outside training you get, the only way to make it stick is to produce drawings in the office."

Employees who have learned CADD in school require less computer training. But, like any interns, they must learn about office practice. In a departure from tradition, however, friction may result when CADD-experienced apprentices disagree with less-experienced managers about where and how to apply computers. According to Michael Fraser, an architect with Baxter Hodell Donnelly Preston in Cincinnati, "A firm may have people who are fast in drawing details, but if management doesn't give them time to create a detail library, those people will keep drawing details fast again and again."

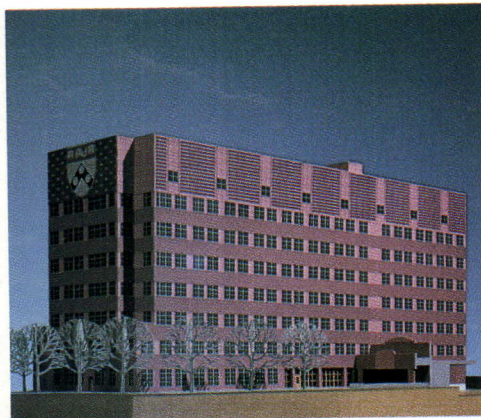
Robert Johnson, professor of architecture at the University of Michigan, has examined such organizational effects of computers in design firms. He describes problems that arise because drafting software emphasizes logical,

well-defined processes and ignores the tacit, subtle design knowledge learned through experience. As a result, managers may limit the computer's role and ignore its potential for design. "This conflict," Johnson contends, "is an ongoing struggle between those who represent the emerging ideas of a new culture and those who currently hold authority."

The conflict will lessen as CADD literacy increases and as the younger, CADD-confident generation grows into management roles. In the meantime, observers of state-of-the-art technology are shifting their attention from drafting to electronic databases. Johnson believes the key to integrating technology is recognizing the growing importance of electronic information. Design not only creates a new building, but also generates new knowledge about the building, including data that can't be represented geometrically. He explains, "The architect becomes a manipulator and synthesizer of information in addition to a manipulator of physical objects. And the more information is recycled, the more efficient the next design process." Electronic databases improve productivity by supplementing the knowledge a designer carries to the next project, and by improving the transfer of information between team members.

Sharing with clients

WHEN THE TRANSFER OF ELECTRONIC INFORMATION extends to clients, unexpected problems may emerge. For example, architects may manually draft on printed computer documents to make last-minute changes quickly. As a result, when the paper drawings are complete, the electronic ones are not. For the recipients of the paper sets, such as contractors, this discrepancy makes no difference. But if clients request completed drawings on disk, additional work is required, and the client should expect to pay more for it. Other problems may arise when electronic



drawings are converted to the client's CADD format, because conversion procedures are not yet completely reliable.

Virginia Rocha, CADD administrator at Esherick Homsey Dodge and Davis in San Francisco, recommends that each firm set a policy about which service requests to accept and how to bill for them. The firm should help the client distinguish between normal and additional services and apply appropriate disclaimers to electronic files. She also suggests that services to be performed at the end of a project, such as conversion to client standards, not be negotiated with the initial contract because of unforeseeable technology advances during the project's life. "I advise caution on releasing CADD documents to clients without charge," she concludes. "They may expect such free services from you and other design professionals in the future."

The AIA Task Force on Computerized Practice, chaired by Michael Schley, president of M:Systems in Raleigh, North Carolina, has been grappling with questions of data exchange. The AIA will hold a symposium on the topic at the A/E/C Systems Show in Dallas in June. "Owners will expect electronic data," notes Schley, "and we want to make sure architects see this not as a burden, but as an opportunity to do more for their clients."

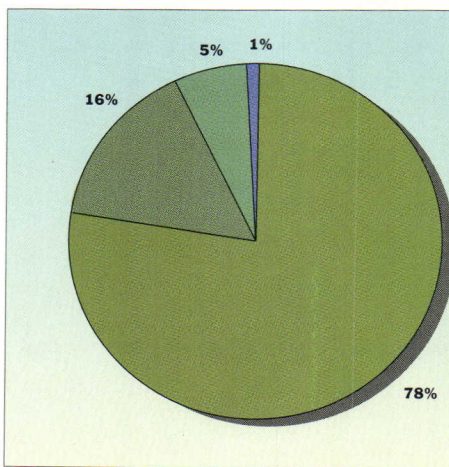
One leading opportunity is in computerized facility management (CFM). With electronic drawings and data, building managers track changes in tenants, inventories, personnel, and interior design. Consultant Eric Teicholz, president of Cambridge, Massachusetts-based Graphics Systems, cautions that CFM means more than simply giving clients CADD disks. Building owners do not need to track the detailed data provided in construction documents. "They mostly want electronic databases for inventories," he asserts, "and as-built drawings that provide room numbers and department zones." According to Teicholz, sophisticated clients may give architects a 200-page specification for their electronic facility databases. "Architects most valued," he predicts, "will be those who learn the skills their clients need."

Opting an automation strategy

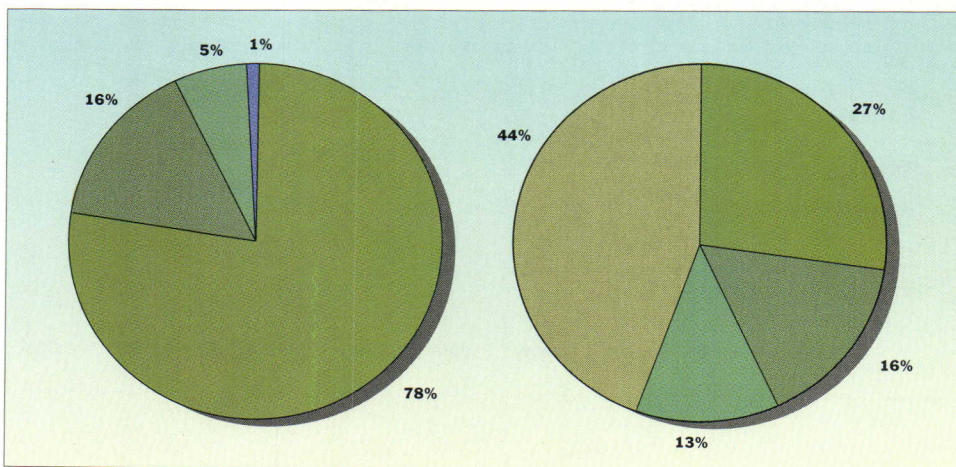
HELPING ARCHITECTS ADJUST TO CHANGING times is David Jordani, president of the Minneapolis-based Jordani Consulting Group. He observes that firms that originally delegated responsibility for computers to lower-level staff are now reassessing this strategy. "Firms discover they need to shed the mystique around the technology," Jordani ex-

Costs and Productivity of CADD

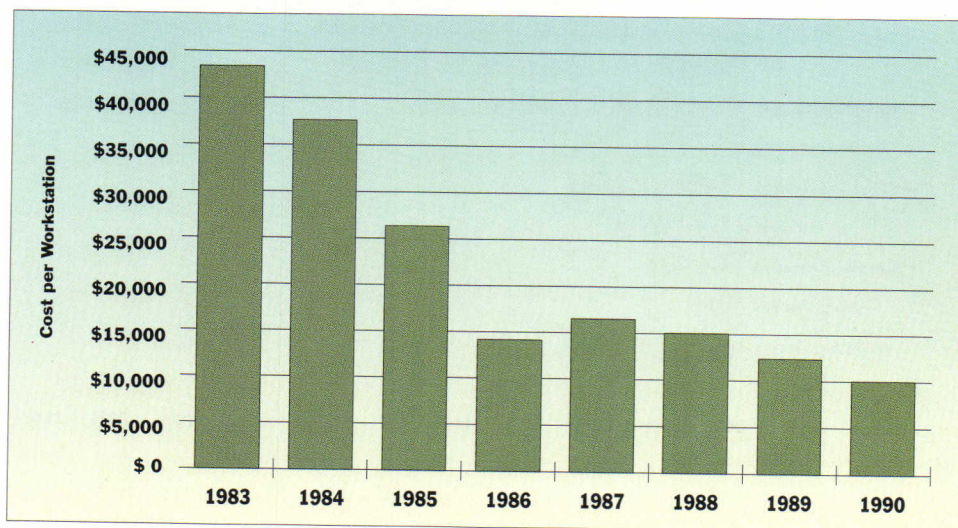
Initial Cost



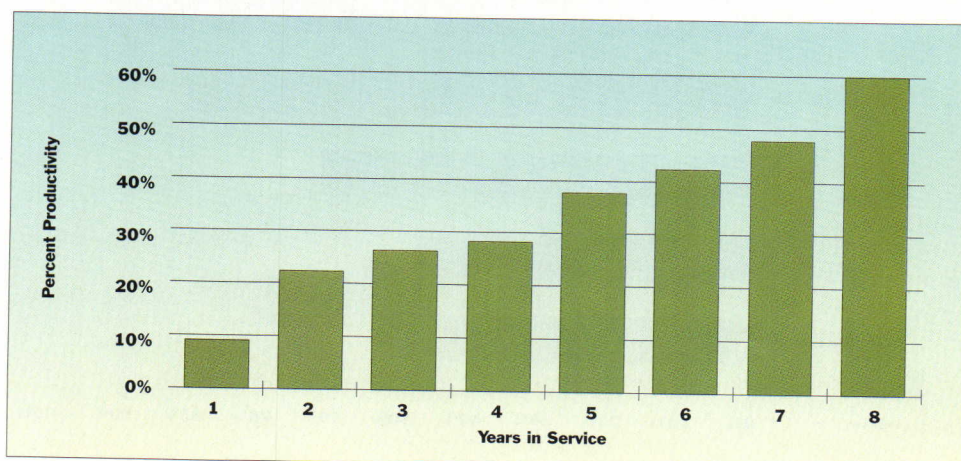
Annual Operating Cost



Hardware and Software Cost per Workstation by Year Acquired



Productivity by System's Years in Service

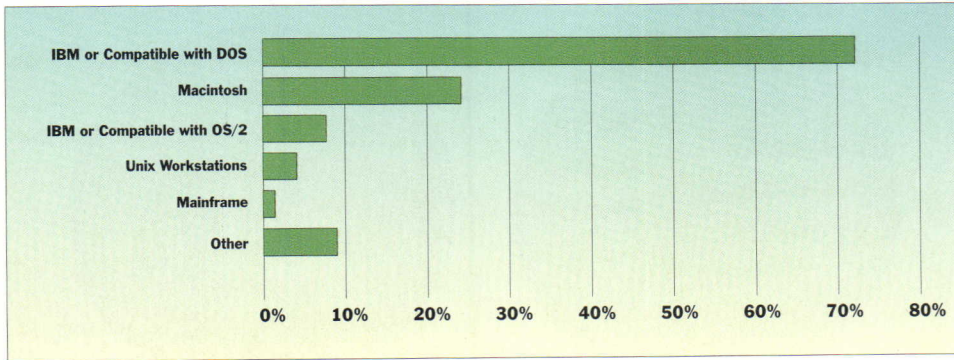


SOURCE: 1991 FSI/CADD APPLICATION AND USER SURVEY

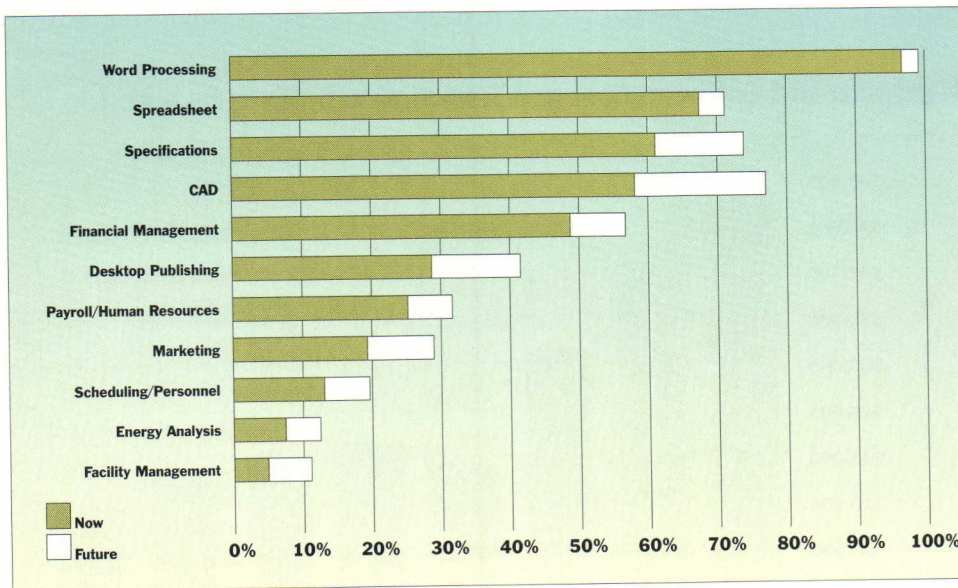
Common Computer Systems and Applications

(100 percent equals all architecture firms with computers)

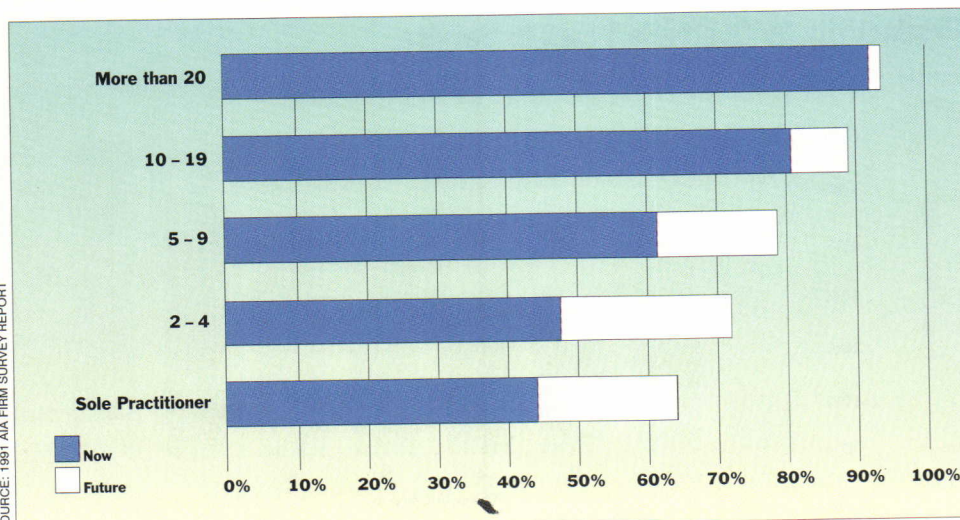
Type of Systems Owned



Applications Used



CADD Use by Firm Size



SOURCE: 1991 AIA FIRM SURVEY REPORT

plains, "and manage it as they manage their other important resources." This process may mean shifting planning responsibility from a technician to a higher-level manager with a strategic vision of how the technology will benefit the firm. If a business goal is to improve design quality, for example, a firm should look for a system that supports design and analysis as well as drafting, and staff accordingly. "These firms have faith," claims Jordani, "that after the recession they'll be poised to be more productive and aggressive with help from computers. The successful ones recognize that they're in the business of information management."

Computers for the future

HARVARD'S MITCHELL SEES DRAMATIC changes ahead. "In the long term," he maintains, "as computing permeates practice more seriously, firms will change from a labor-intensive to a capital-intensive structure. There will be fewer people with higher skills and more technology."

Ronald Wooldridge, president of The Locke Group, publishers of CD-ROM discs for the design and construction industry, has already observed a new breed of young firms. With a balance of technical and design talents, their staffs are smaller, relative to the size of their projects, than they would be without the technology. "Sole practitioners," Wooldridge predicts, "will be able to do an astonishing amount of work without a support staff."

According to Eric Martin, director of the Macintosh Lab at the California Institute of the Arts in Valencia, one outcome of the profession's higher "information quotient" is that design will be more integrated with the building trades when all professions share a common electronic building database. "The computer enables us to interact creatively with all that information," he asserts. "Think of the architect as a composer designing interactively with information, instead of delegating to consultants."

Experts may differ over how the architect's role will change in the next few years. Some emphasize knowledge management; others look forward to designing with walk-through visualizations. Most experts foresee day when powerful, low-cost machines will sit on every architect's desk. Some believe that, as machines get smarter, the profession will grow smaller. But one thing is indisputable. For better or worse, the practice of architecture will never be the same again.

—B.J. NOVITS

Natural Lighting

Skylights offer thermal efficiency and formal diversity.



1. Kalwall Corporation manufactures insulated fiberglass roofing panels that transmit diffuse light. Circle 401 on information card.

2. Bristolite Skylights are designed according to three structural systems. Circle 402 on information card.

3. Polygal USA produces a lightweight polycarbonate skylighting for sports

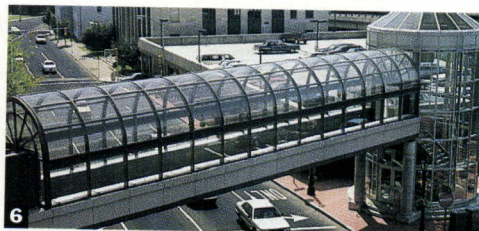


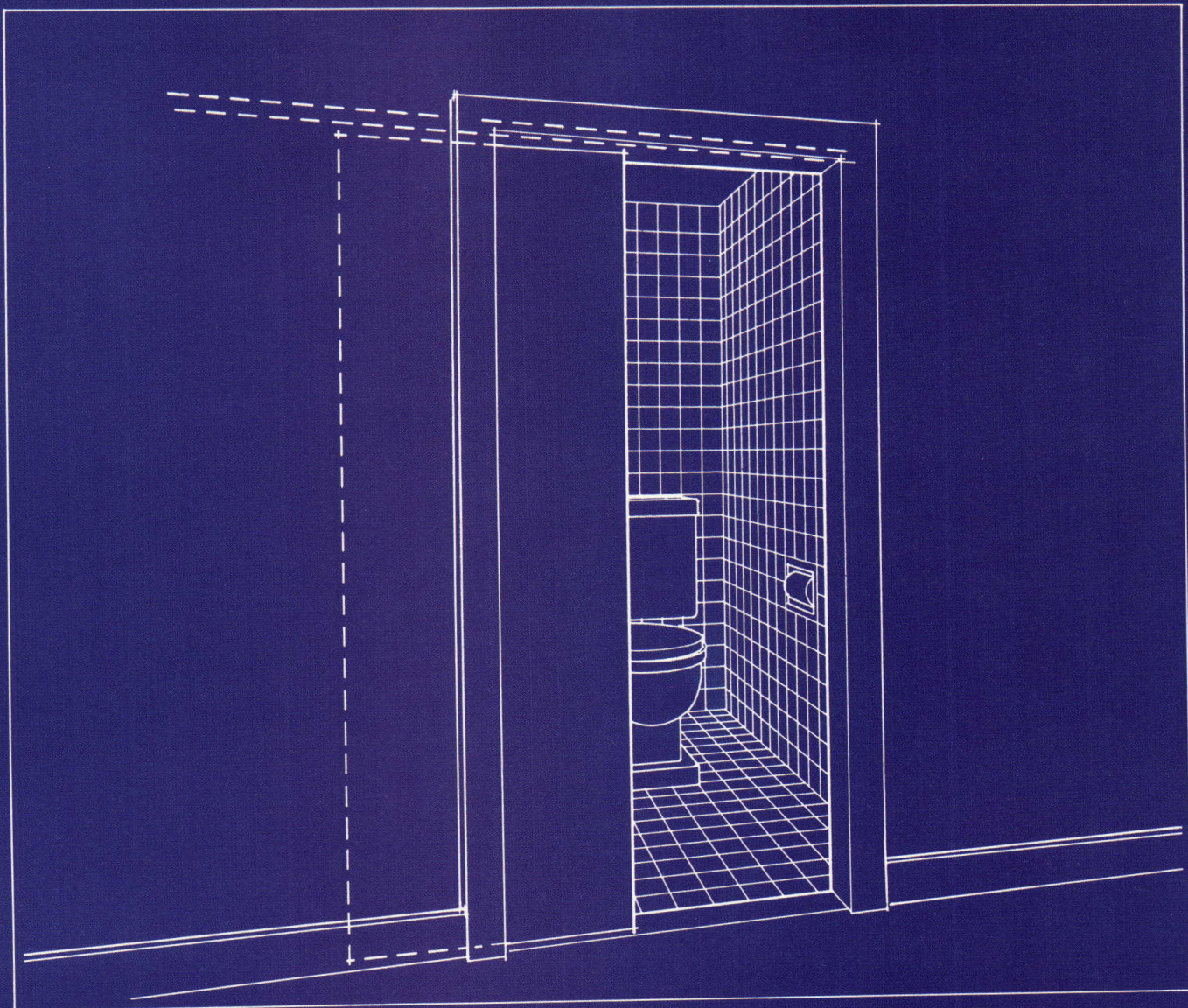
halls, industrial plants, pool enclosures, and atriums. Circle 403 on information card.

4. Classic 2000, a pool and leisure pavilion designed by Clear Plastics International, features Danpalon interlocking panels. Circle 404 on information card.

5. Sun-Tek offers a range of skylights and accessories for residential applications. Circle 405 on information card.

6. Lin-El fabricates custom polycarbonate roof forms. Circle 406 on information card.





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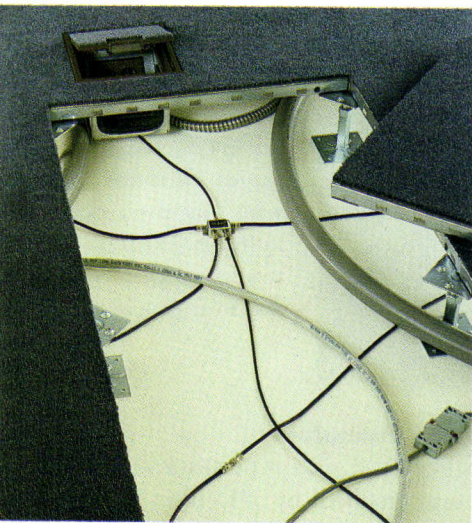
SO GO AHEAD, CALL HÄFELE FOR INFORMATION OR A QUOTE. FULL-SCALE STANDARD DRAWINGS ARE PROVIDED FREE OF CHARGE. THEN USE HAWA JUNIOR ANYWHERE YOU LIKE. JUST BECAUSE WE'VE DONE SOME OF OUR BEST THINKING IN BATHROOMS DOESN'T MEAN YOU HAVE TO.

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Circle 76 on information card



Access flooring

C-TEC COMBINES STEEL AND HIGH-STRENGTH concrete to create its Tec-Crete access flooring panels (above), available in two thicknesses. The company also manufactures Tec-Cor, a steel-clad, wood core flooring panel; and Tec-Cor II, a steel and composite flooring panel that demonstrates low heat and sound transmission, making it appropriate for electronic environments. Steel flooring supports in four designs and a range of accessories are also available. C-Tec.

Circle 407 on information card.

Fiberglass doors

SPECIAL-LITE HAS INTRODUCED THE SL-18 Colonial-style door designed for universities and other institutional buildings. SL-18 is constructed from molded fiberglass and manufactured in standard or custom colors. Because the color is not applied to the surface but actually penetrates the material, SL-18 requires less maintenance than painted wood doors. Special-Lite, Inc.

Circle 408 on information card.

Steel roofing "tile"

THE METAL SALES MANUFACTURING CORPORATION produces Stile, a pre-painted steel roofing system intended to emulate clay roofing tile. Available in 3- to 10-foot-long panels and six colors, the system offers a Class A fire-rating and is suitable for residential, mansard, and storefront applications. The 26-gauge steel is manufactured with a galvanized zinc coating to protect against corrosion. The Metal Sales Manufacturing Corp.

Circle 409 on information card.

Cool air

TITUS HAS INTRODUCED A LINE OF LOW-temperature air diffusers, which provide air between 38 and 44 degrees Fahrenheit to occupied spaces. The design is intended to improve cooling-system efficiency by maximizing induction and providing a thermal barrier to prevent condensation. The company has produced an air-distribution products catalog that includes energy and acoustical considerations, application information, and research results.

Circle 410 on information card.

Solid surfaces

GIBRALTAR SOLID SURFACING, PRODUCED BY the Ralph Wilson Plastics Company, is a solid, nonporous material fabricated from acrylic and polyester resins for use in building interiors. Available in sheets or vanity bowls, Gibraltar is appropriate for countertops, tabletops, shower walls, vanities, window sills, and tub surrounds. Commercial uses include restroom partitions, bars, and work surfaces. The surfacing resists heat, stains, and scratches, and is available in matte or gloss finishes and a variety of colors with matching adhesives and sealants. Because color penetrates the material, Gibraltar offers custom capabilities. The Ralph Wilson Plastics Company.

Circle 411 on information card.



Graphics software

INTERGRAPH'S MICROSTATION SPARC IS CAD software for the generation, display, manipulation, and output of graphic information. The system, which runs on Sun Microsystems' SPARC line of RISC-based personal graphics workstations and compatible systems, has the capability to support multiple windows (above) that are simultaneously active. Users can manipulate views and menu palettes to create individualized work environments. Intergraph.

Circle 412 on information card.



Metal-clad exteriors

IN ADDITION TO WALL-PANEL SYSTEMS FABRICATED FROM stainless steel, copper, and insulated aluminum, Alply manufactures Tech Wall (above), an uninsulated aluminum-wall-panel system with track mounting. The panels are made of solid, 1/8-inch-thick aluminum. Alply, Incorporated.

Circle 413 on information card.

Tough tile

AMERICAN OLEAN HAS INTRODUCED TRIAD, a glazed commercial tile for high-traffic floors, available in a variety of geometric designs and solid colors. Produced in 8- or 12-inch-square sizes, the tiles feature two types of surfaces: a textured, granitelike glaze and a veined, marblelike finish. In addition to shopping malls, office buildings, and hotel lobbies, the product is suitable for residential foyers, kitchens, patios, walls, and countertops. American Olean.

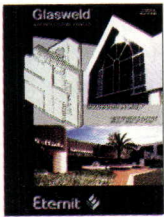
Circle 414 on information card.

Brass faucets

THE ILLUSIONS COLLECTION OF BATHROOM fixtures, manufactured by Chicago Faucets, is constructed of solid brass available in three finishes: nonlacquered brass, polished chrome, and white enamel. The line is offered in two distinct styles. The company also produces faucets and fittings for kitchens and bars. The Chicago Faucet Company.

Circle 415 on information card.

PRODUCTS



Cement cladding

GLASWELD PANELS CAN BE used as cladding over exterior insulation and finish systems that have deteriorated. Eternit also manufactures fiber-reinforced

cement slates. Designed to emulate the texture and colors of natural slate, Eternit Slates are available in two sizes and three colors. In addition to residential and commercial roofing applications, the slates are used for mansards, fascias, and curved surfaces.

Circle 416 on information card.

Bird deflectors

NIXALITE OF AMERICA MANUFACTURES STAINLESS steel bird-control devices in five models. The devices can be used in a variety of applications, including bridges, ledges, atriums, curtain walls, parapets, globes and lighting fixtures, cooling towers, signs, skylights, and solar panels.



Circle 417 on information card.

Office illumination

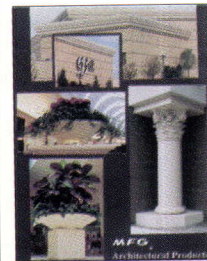
SILVERLUX PLUS FLUORESCENT LIGHT FIXTURES produced by 3M reflect 95 percent of source light. The fixtures are available in 60 different styles and are guaranteed under a five-year warranty. 3M.

Circle 418 on information card.

Fiberglass ornament

MOLDED FIBER GLASS/UNION CITY, A DIVISION of the Molded Fiber Glass Companies produces custom plastic and composite architectural elements such as fascias, arches, cupolas, cornices, rails, balusters, moldings, column covers, roof panels, simulated brick planters, and beam enclosures. According

to the manufacturer, molded fiberglass offers a corrosion-resistant alternative to wood, aluminum, and wrought iron. Molded Fiber Glass/Union City

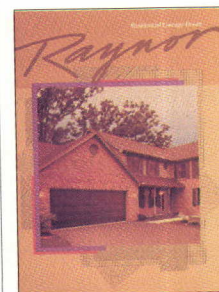


Circle 419 on information card.

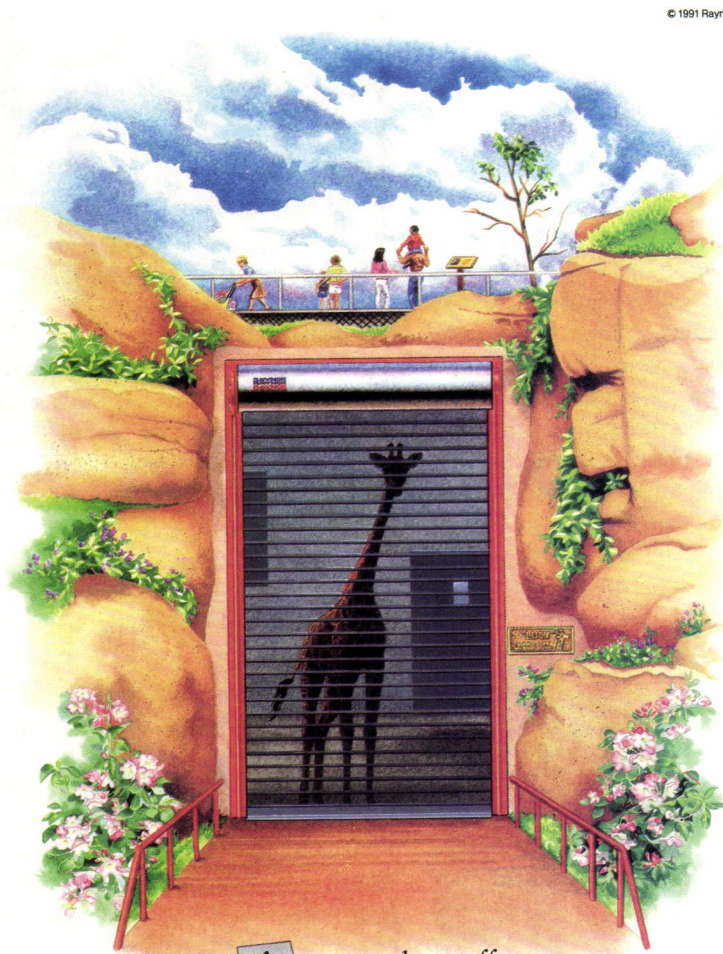
Automated security

RAYNOR GARAGE DOORS MANUFACTURES a range of electrically operated rolling steel doors that include perforated slat and security doors, fire doors, service doors, grilles, and counter shutters. Decade III is a residential

garage door with a polystyrene insulating core and optional vinyl seal. The company's product line also includes garage doors for commercial and industrial buildings. Circle 420



information card.



© 1991 Raynor Garage Doors

1 year, eight giraffes,

one Raynor Perforated Slat Service Door,

one Raynor Distributor.

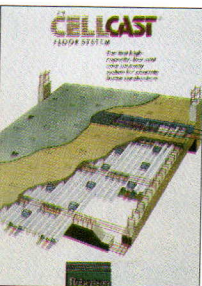
RAYNOR PERFORATED ROLLING DOORS

There's no way to predict what unusual things will go behind a perforated rolling slat door. So it's smart to specify Raynor...because nothing stands as tall behind a Raynor Door as a Raynor Distributor. To locate the one nearest you, call 1-800-545-0455.

Circle 64 on information card

Cellular flooring

THE H.H. ROBERTSON COMPANY'S CELLCAST floors provide an accessible wire and cable distribution system for cast-in-place concrete structures, eliminating core drilling to reach electrical services. The system features a built-in wire raceway system while eliminating concrete slab forming, shoring, and form removal. The system also provides steel floor units that carry all dead and live loads. In

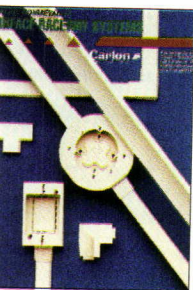


addition to cellular floors, The H.H. Robertson Company also manufactures wall and roof systems for a variety of commercial, industrial, and institutional buildings.

Circle 421 on information card.

Plastic raceways

CARLON PRODUCES THE EGALINE SURFACE Raceway System, a nonmetallic raceway that manages power, data, and communications wires. Manufactured from PVC, the system is lightweight and does not require bonding or grounding. Available in 5- and 10-foot lengths, the raceway includes a variety of profiles, boxes, fittings, and accessories. A cover prevents wire contact with live conductors. The 16-page brochure includes information



on channel styles and system features. Carlon is a division of the Lamson & Sessions Company, which also fabricates utility ducts, drain pipes, and lighting controls.

Circle 422 on information card.

Emergency lighting

TELEDYNE BIG BEAM MANUFACTURES EMERGENCY lighting equipment for commercial and industrial facilities. The 64-page catalog includes excerpts from the National Electric Code and Life Safety Code, battery information, and technical data.



Circle 423 on information card.

Durable tile

BUCHTAL MANUFACTURES GLAZED AND unglazed ceramic tiles, including the Aurum Metalloid series featuring a silver or gold reflective surface; the Marathon series with a thick glaze for heavy traffic areas; and Quantum II, an unglazed tile for indoor and out-

door applications. The 20-page brochure includes detail drawings and information on building facade and pool applications. ■

Circle 424 on information card.



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*See Koch's limited warranty for specific coverage and limitations.

Circle 78 on information card

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Architectural Metals Division, PPG Industries, Inc.

Circle 80 on information card



KIRKLIN CLINIC **BIRMINGHAM, ALABAMA** (pages 38-41)

CLIENT: University of Alabama Health Services Foundation, Birmingham
DEVELOPER: Johnson-Rast & Hays Company
ARCHITECTS: Pei Cobb Freed & Partners, New York City; TRO/The Richie Organization, Birmingham, Alabama; Garikes Wilson Atkinson, Birmingham, Alabama
LANDSCAPE ARCHITECT: Nimrod Long & Associates
ENGINEERS: Lane Bishop York Delahay (structural); Newcomb & Boyd (mechanical/electrical)
INTERIOR DESIGN: Mitchell International
CONSULTANTS: Earl Meyer Associates (equipment planners)
GENERAL CONTRACTOR: Brasfield & Gorrie General Contractor/BRIC, Inc.
COST: \$125 million—\$290/square foot

FEDERAL CORRECTION INSTITUTION **THREE RIVERS, TEXAS** (pages 46-47)

CLIENT: U.S. Department of Justice, Federal Bureau of Prisons
ARCHITECT: Hellmuth, Obata & Kassabaum, Dallas, Texas—Daniel Jeakins (principal-in-charge); Jess Williams (project manager); Gordon Gilmore (project designer); Jamie Smith (project architect); Joe Scolaro (MEP engineering principal); Don Elliott, Roberta Swatek (electrical engineers); Bob Nachtrieb, Chandler Woods (mechanical engineers); Terry Kingston (plumbing); Mike Preston, Mark Bowers (landscape architecture); Brigitte Preston, David Botello (interior design); Dan Rothe (construction administration)
ENGINEERS: Walter P. Moore & Associates (structural, civil); HOK (mechanical/electrical)
CONSULTANTS: Hanscomb Associates (cost estimating); H.G. Rice & Company (food service/laundry); Rolf Jensen & Associates (life safety); Carl J. Erickson (communication/security); Fluor Daniel (construction administration); INSPEC (specifications)
GENERAL CONTRACTOR: H.B. Zachry Company
COST: \$49 million—\$102/square foot

FEDERAL CORRECTIOAL COMPLEX **FLORENCE, COLORADO** (pages 44-45)

CLIENT: Department of Justice, Federal Bureau of Prisons
ARCHITECTS: LKA Partners/Lescher and Mahoney/DLR Group, Colorado Springs, Colorado—Bryce Pearsall (principal-in-charge); John Quest (project manager); Pat Ziuchovski (associate project manager)
LANDSCAPE ARCHITECTS: Lescher and Mahoney/DLR Group
ENGINEERS: Lescher and Mahoney/DLR Group and Martin/Martin Consulting Engineers (structural); Lescher and Mahoney/DLR Group and RMH Group (mechanical/electrical); Martin/Martin Consulting Engineers (civil)
GENERAL CONTRACTORS: Hensel Phelps Construction Company; PCL Construction Services; Blount, Inc.
COST: \$182 million—\$133/square foot

DISNEY VACATION CLUB RESORT **WALT DISNEY WORLD, ORLANDO, FLORIDA** (pages 50-51)

CLIENT: Disney Development Company
DESIGN ARCHITECT, GUEST VILLAS: Bassenian/Lagoni Architects, Santa Ana Heights, California—Aram Bassenian (principal-in-charge) Carl W. Lagoni (consulting principal); Jeffrey A. Lake, James Lind, John W. Lazootin (design team)
DESIGN ARCHITECT, MASTER PLAN, SALES CENTER & CLUBHOUSE: Richardson Nagy Martin, Newport Beach, California—Walter Richardson (partner-in-charge); Allen Hill (senior project director); Steve McCormick, Ravi Varma, Paul Anderson (design team)
ARCHITECT OF RECORD: Fugleberg Koch Architects, Winter Park, Florida—Lyle P. Fugleberg (partner-in-charge); Bob Koch (design partner); Joe Davis (senior architect); Diana Ibarra (project architect)
INTERIOR DESIGNER: Design 1 Interiors
LANDSCAPE ARCHITECT: EDSA
ENGINEERS: O.E. Olsen & Associates (structural); Kaiser-Taulbee Associates (mechanical/electrical) Boyle Engineering (civil)
CONSULTANTS: Cox Associates (roofing); Robert J. Laughline & Associates (lighting); Ricca Associates (kitchen)
CONTRACTOR: MW Builders
COST: Withheld at owner's request

BONNET CREEK GOLF CLUBHOUSE **WALT DISNEY WORLD, ORLANDO, FLORIDA** (pages 52-53)

CLIENT: Disney Development Company
ARCHITECT: Gwathmey Siegel & Associates, New York City—Charles Gwathmey, Robert Siegel (principals); Joseph Ruocco (associate-in-charge); Edward Arcari (project architect); Joseph Baker (site architect); Peter Guggenheimer, Loretta Leung, Rob Luntz (project team)
LANDSCAPE ARCHITECT: HOH Associates
ENGINEERS: Tilden, Lobnitz & Cooper (structural); Grant Engineering (mechanical/electrical); Post, Buckley Schuh & Jernigan (civil)
CONSULTANTS: Hilliker Associates (food service); Richardson & Richardson (graphics/signage); Carl Hillmann Associates (lighting)
CONTRACTOR: Jack Jennings & Sons
COST: Withheld at owner's request

DISNEY'S CONTEMPORARY RESORT HOTEL LOBBY **WALT DISNEY WORLD, ORLANDO, FLORIDA** (pages 54-55)

CLIENT: Disney Development Company
ARCHITECT: DDI Architects, Philadelphia, Pennsylvania—Karen Daroff (principal-in-charge of design); Martin Komitzky (design director); John Borne (project manager); Robert Hilton (project architect); Richard Marencic (project designer)
INTERIOR DESIGNERS: Daroff Design
INTERIOR SIGNAGE: DDI Graphics
ENGINEER: Mattern Engineering/H.C. Yu Associates
CONSULTANTS: Walt Disney World Co. (audio-visual); C.M. Kling & Associates (lighting); Cerami & Associates (acoustics)
COST: Withheld at owner's request

PLAYA VISTA **LOS ANGELES, CALIFORNIA** (pages 56-57)

CLIENT: Maguire Thomas & Partners
MASTER PLANNING TEAM: Moule & Polyzoides Architects and Urbanists, Los Angeles, California; Duany & Plater-Zyberk Architects, Miami, Florida; Hanna/Olin Land-

scape Architects, Philadelphia, Pennsylvania; Legoretta Arquitectos, Mexico City, Mexico; Moore Ruble Yudell Architects, Santa Monica, California
CIVIL ENGINEER: Psomas & Associates
CONSULTANTS: Bill Jordan, June Kailes (disability design); Camp Dresser & McKee (environmental); Barton-Aschman Associates, White Mountain Survey Co. (transportation)

BIG CEDAR LODGE
RIDGEDALE, MISSOURI (pages 58-61)

CLIENT: Bass Pro Shops
ARCHITECT: Bass Pro Shops Corporate Architects, Springfield, Missouri—Thomas W. Jewett, Donald G. Briggs (architectural designers); Rene Wade, Jeff T. Masters (architectural staff); Jan Burch, Maggie Throgmorton (support staff)
CONSULTANTS: Bruce Downing, Mark Viets (master plan); Guy Essary (construction manager); Russ Halley (interiors); Bill Eddie, Malone Finkle & Associates (mechanical); Bill Bergman, Albert Kerr (structural); Craig Roeder & Associates (lighting); Gary Gillum (public address)
CONTRACTORS: Waters & France; Mecos Systems
COST: Withheld at owner's request

SCIENCE LIBRARY
UNIVERSITY OF CALIFORNIA, SANTA CRUZ (pages 62-65)

ARCHITECT: Esherick Homsey Dodge and Davis, San Francisco, California—Charles Davis (principal-in-charge); Todd Sklar (project designer and manager); Pierre Zetterberg (job captain); Kenneth Hammons (construction administration)
LANDSCAPE ARCHITECT: Nishita & Carter
ENGINEERS: Rutherford & Chekene (structural); Guttman & MacRitchie (mechanical); Cammisa & Wipf (electri-

cal); Bestor Engineers (civil)
CONSULTANTS: Wilson Ihrig (acoustics); IDP (interiors); Architectural Lighting Design (lighting)
GENERAL CONTRACTOR: S.J. Amoroso Construction
COST: \$11.8 million—\$151/square foot

CAMPUS SERVICES COMPLEX/BIOLOGY FIELD STATION
UNIVERSITY OF CALIFORNIA, SAN DIEGO (pages 66-69)

ARCHITECT: Anshen + Allen, Los Angeles, California—Peter Stazicker (managing principal); David Rinehart (design principal); Dennis McFadden (project architect/senior designer); Kelly Locke (project architect); Alek Zarifian, Dave McCarroll, Martha Tardencia, Geoffrey Siebens (project team)
LANDSCAPE ARCHITECT: Wimmer Yamada Associates
ENGINEERS: Blaylock-Willis (structural); Sveven Associates (mechanical); Randall Lamb (electrical); Barrett Consulting Group (civil)
CONSULTANTS: Stuart Hemstreet (greenhouse); Paul Moore (agricultural fields); Hanscomb Associates (cost estimating)
CONTRACTORS: Kvaas Construction Company (campus services complex); Frank Stahl Construction (biology field station)
COST: \$3.4 million—\$104/square foot (campus services complex); \$1.5 million—\$128/square foot (biology field station)

NORTHWEST HOUSING
UNIVERSITY OF CALIFORNIA, LOS ANGELES (pages 72-73)

ARCHITECTS: Barton Myers Associates, Los Angeles, California; Antoine Predock Architects, Los Angeles, California; Esherick, Homsey, Dodge and Davis, San Francisco, California; Gensler and Associates, Los Angeles, California (executive architect)

LANDSCAPE ARCHITECT: Burton & Spitz
ENGINEERS: Syska and Hennessy (mechanical/electrical); John A. Martin (structural); Paller-Roberts Engineering (civil)
CONSULTANTS: Smith Fause and Associates (acoustical); Hanscomb Associates (cost estimating); Marshall Associates (food services)
COST: Withheld at owner's request

GORDON AND VIRGINIA MACDONALD
MEDICAL RESEARCH LABORATORIES
UNIVERSITY OF CALIFORNIA, LOS ANGELES (pages 74-75)

ARCHITECT: Venturi, Scott Brown and Associates, Philadelphia, Pennsylvania—Robert Venturi (partner-in-charge); Ronald Evitts, James F. Williamson (project managers); Denise Scott Brown, Jeffrey F. Krieger, Steven Wiesenthal, Kairos Chen, Catherine M. Cosentino, Susan N. Hoadley, Steve Izenour, Don M. Jones, Joan Pierpoline, John Rauch, Charles Renfro, Scott Osbourne, Miles Ritter, Garreth Schuh, Eric Thompson, Matt Wargo (design team)
ASSOCIATE ARCHITECT: Payette Associates, Boston, Massachusetts—Thomas M. Payette (partner-in-charge); Giles Carter, Vance Hosford (project manager); Victor DeSantis, Doran Abel, Janet Baum, Paula Byers, Ed Fowler, Jon Romig, Terry Shinninger (design team)
ASSOCIATE ARCHITECT: Ronald McCoy Architect, Los Angeles, California
LANDSCAPE ARCHITECT: Emmet L. Wemple and Associates
ENGINEERS: Hayakawa Associates (mechanical/electrical); John A. Martin and Associates (structural); Rogoway/Borkovetz Associates (civil)
CONSULTANTS: Grenald Associates (lighting); Heitmann and Associates (curtain wall)
GENERAL CONTRACTOR: Robert E. McKee
COST: \$38 million—\$226/square foot

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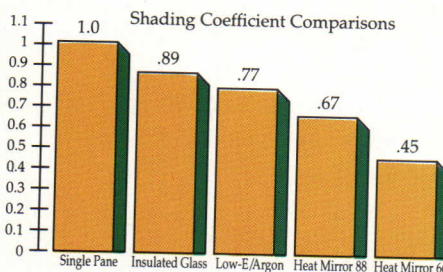
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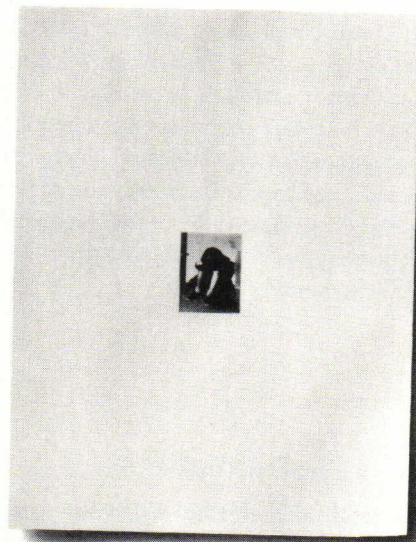
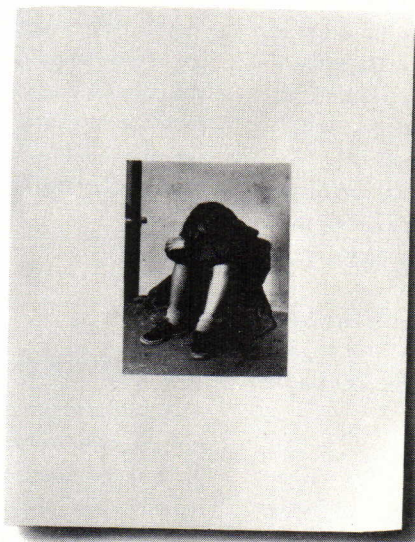
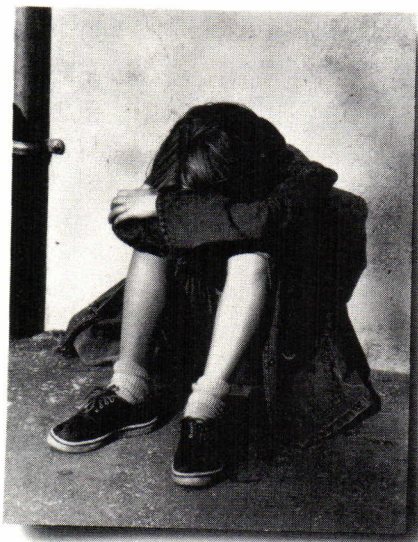
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tant perhaps, is the impact their time and effort has on the battered children problem as a whole.

That's what Xerox Chief Executive Officer and President Paul Allaire had in mind when he helped pioneer Xerox's Community Involvement Program (XCIP) in 1974. XCIP provides a means to channel funds to employees for community projects.

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This is the kind of corporate activism that the Points of Light Foundation is hoping to promote.

Participation of people such as Xerox's President and CEO, Paul Allaire, programs like these would never be possible. It takes the power only our nation's business leaders can provide to solve their communities' problems.

For more information on corporate involvement in community service, contact the Points of Light Foundation at 1-800-888-7700.

But please call us soon. Because although a program like Xerox's may be very difficult to duplicate, we would really like to help you try.



POINTS OF LIGHT
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Neat file

ARCHITECTURE'S "No Excuses After This" information exchange

Vapor Barriers and Retarders CSI Division 07190

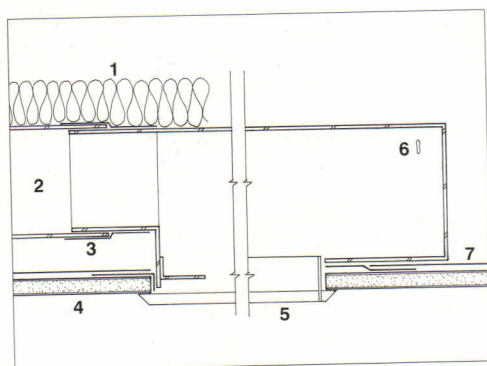
Barrier Location

Vapor barriers limit the passage of water vapor through walls, roofs, and floors. Without the barriers, water vapor will migrate from areas of higher moisture to those with lower moisture. When the vapor hits an area with a temperature lower than the air's dew point, it condenses into liquid. If this process takes place within a wall, floor, or roof, serious damage to the building can occur. "The vapor barrier goes on the warm side of the wall" is a rule of thumb that is not applicable everywhere. In air-conditioned buildings located in southern regions, humid air from the outside may condense when it hits the cool, inner surface of an air-conditioned wall. ASHRAE recommends installing vapor barriers on the interior side of the wall, roof, or floor except in Florida, Hawaii, Puerto Rico, most of Louisiana, south and east Texas, southern Alabama, southern Mississippi, southern Georgia, and the coastal areas of North and South Carolina. These regions require vapor barriers be placed on the exterior side of walls, roofs, or floors.

*Greg Van Deusen
BVH Engineers
Bloomfield, Connecticut*

Convective Vapor Penetration

Convective penetration of water vapor can negate the goal of the vapor retarder: to keep moisture out of exterior wall, floor, and roof construction. Vapor retarders are often inadequately installed in the field, particularly in such building locations as through-wall exhaust fans.



VERTICAL SECTION THROUGH COMPOSITE EXHAUST FAN

- | | |
|------------------------|------------------|
| 1 INSULATION | 5 GRILL |
| 2 DUCT (NON-FERROUS) | 6 PERFORATION |
| 3 VAPOR-RETARDING TAPE | 7 VAPOR RETARDER |
| 4 DRY-WALL FINISH | |

The vapor barrier should be extended to the rough opening and taped to the duct or the flange of the fan housing with vapor-resistant sheathing tape (left). All perforations of the housing should also be taped on the outside of the housing.

*Kenneth Kruger, AIA
Kruger Kruger
Albenberg, Architects
Cambridge, Mass.*

Practice Standards CSI Division 01150

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*Albert W. Rubeling, Jr., AIA
Rubeling & Associates, Architect
Towson, Maryland*

Pro Bono Work

In a soft economy, many architects may find greater opportunity for pro bono work. "Pro bono" means "for the public good," so architects should carefully select organizations such as charitable agencies and health facilities that deserve their service. Pro bono projects might include making a church accessible to the handicapped, bringing a local adoption society's converted residence into code compliance, or designing an exterior stair as a second means of egress from a nursing home. Our office recently converted a house into a treatment facility for babies with AIDS. In addition to providing a public service, architects can gain professionally through such projects. Presentations to a charity's building committee are often seen by local business leaders and company executives who sit on such committees. Good work generates good contacts, while providing a needed service.

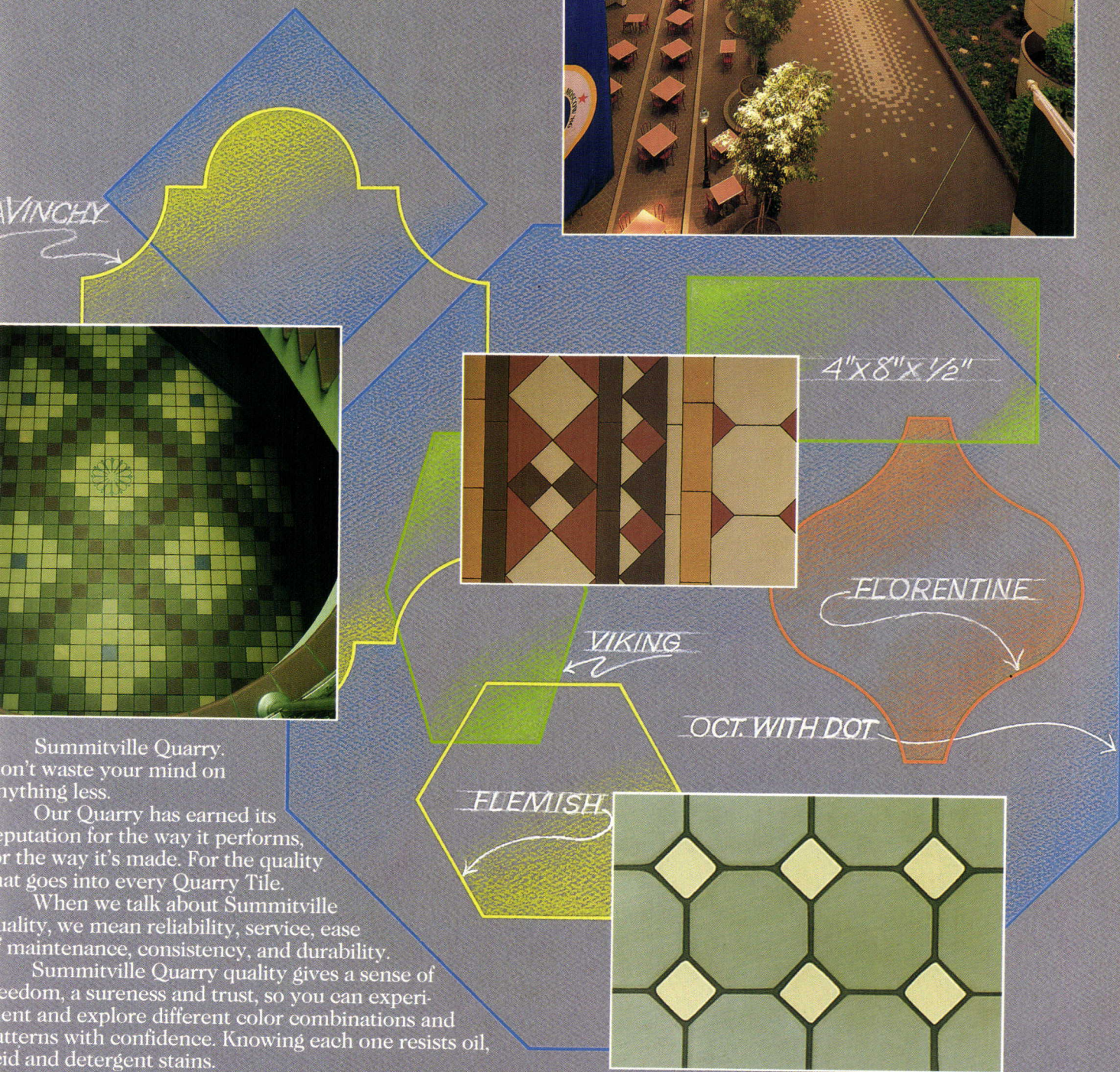
*Susanne DiGeronimo, AIA
Architects DiGeronimo
Paramus, New Jersey*

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Architects are encouraged to contribute their Neat ideas, including drawings, sketches, and photographs, for publication. Send the submissions to NEAT File, Michael J. Crosbie, 47 Grandview Terrace, Essex, Connecticut 06426, or by fax (202)828-0825.

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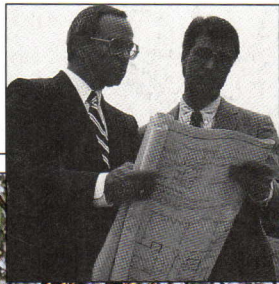


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