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Circle 1 on inquiry card
Letters/calendar, 4
Editorial: The best way to get fees (and salaries) up, 9

Business
News, 51
Computers: Another view on desirable size, 33
Round Table: The fast-growing role of the corporate architect, 35
Education: The design studio—Another opinion, 49

Design
News, 57
Design awards/competitions, 66
Observations, 73

Building Types Study 609: Low-rise office buildings, 97
The Purdue Frederick Headquarters, Norwalk, Connecticut, 98
By Gage Papachristou Smith/ASE Furno, joint-venture architects
Westinghouse World Headquarters Steam Turbine-Generator
Division, Orlando, Florida, 100
By William Morgan Architects
Erie Insurance Group, Erie, Pennsylvania, 104
By The Stubbs Associates, Inc., Architects
Design Professionals Insurance Company, Monterey, California, 108
By Marquis Associates, Architects
Mount Pleasant Corporate Center, Valhalla, New York, 110
By Renato Severino Associates, Architects

Aerospace Museum, Los Angeles, California, 114
By Frank O. Gehry and Associates, Architects

Westway State Park, New York City, 124
By Venturi, Rauch and Scott Brown, Clarke + Rappuano, and
Salmon Associates, Designers

Bar for a house, in Boston, 132
By Peter Forbes and Associates, Architects

Low-income housing: A lesson from Amsterdam, 134
Awarding the Amsterdam Housing Prize

Engineering
William J. LeMessurier’s super-tall structures, 144
A search for the ideal

New products, 152
Product literature, 161
Computer directory, 165
Manufacturer sources, 190
Classified advertising, 208
Advertising index, 212
Reader service card, 215

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October 1984), in which they debated the validity of the studio in architectural education. I feel a need to voice my opinions as a student representing the heart of the debate: the success or failure of our educational system.

In a studio, as Mr. Beckley describes in his article, a student is exposed to an interactive process via drawing and speaking. This creates a conversation not only between the student and professor but also between peers. The vastly varied backgrounds of students make up a studio allow for an incredible amount of insight into a given problem. The wise student will weed out what he is inappropriate and harvest what is good. In the other form of educating students, namely lectures, the students listen to the beliefs and findings of mainly one professor and then disperse to be a part of the campus when the bell rings.

The studio acts as a home base, where students are able to converse about architecture. In addition to personal conversation, the studio is exposed to many professors in different studios during the course of his education. This exposure allows the student to evaluate the opinions of many professors on the same subject, thus allowing him to form a base strong for his own values and beliefs. It is important to establish these values, as it will help the future professional make sound decisions in everyday practice.

Wishing to become a licensed professional, I for one find it most beneficial to be instructed by a professor who has had actual experience in the profession, and in most cases such a professor is a licensed professional. I would suggest that most of these professors better serve the studios and not in the lecture halls. But often the ones found in the lecture halls are the best lecturers.

Mr. Rapoport states we should only teach topics which the results of the teachings can be measured with concrete data, thus proving whether or not something is successful. He states that design and/or creativity thus are not suitable topics to be taught at the university since they are strictly subjective. But pragmatic issues can be measured in a studio, ranging anywhere from structural systems to accessibility for the handicapped. Might I ask how one measures his love for another, or the feeling one gets in a place? Is it not the role of the studio, and the architect, to create special feelings within one’s heart?

If not, aren’t we all engineers solving problems with cut-and-dried answers? The studio is the place Continued on page 34.
The best way to get fees (and salaries) up is to keep talking about it—and working at it.

One simple fact is that income and profitability in the architectural profession is distressingly low, and certainly not commensurate with the responsibilities accepted by architects and the education and skills required to be an architect. Another simple fact is that we have only ourselves to blame.

Happily, after a long period of inactivity following the Justice Department’s shutdown of large-established, gentlemanly, and generally-agreed-upon fee schedules, the profession is talking about the problem. In 1988, the board of the AIA appointed an Architects’ Economic & Compensation Task Force to review the growing mass of statistical material being developed around the country indicating that architects are the lowest-paid segment of the construction industry—lagging, for example, contractors, engineers, and design-builders. At the 1984 convention in Phoenix, the New York Chapter offered a resolution, passed virtually unanimously, proposing that “the establishment of a fair return on architects’ investments in their practice and the establishment of fair compensation for employees be a major AIA issue for the 1980s.” More specifically, the resolution called on the AIA to address the reasons for declining profitability among architectural practices nationwide and suggest steps to remedy the causes. This resolution was an outgrowth of the New York Chapter’s pioneering study of salaries, which indicated among other things shockingly low starting salaries for graduates (below $15,000), and its pioneering executive-committee resolution calling on members to raise starting level salaries by 20 percent per year over three years (a goal which is being met in a considerable percentage of the firms, including firms with less than 10 employees). The Chicago Chapter recently completed a salary survey of its own, producing similar dismal numbers, and its board of directors followed up with a “compensation and fee policy statement,” now out for comment and criticism, “the intent of which is to strengthen the architectural profession and its individual members. It is our intent to make a cohesive statement that will bind the profession more closely together without interfering with individual ideas, styles, or fair competition among architects.” Specifically, the Chicago chapter states, in part: “Architects shall not provide architectural services without compensation. . . . An architect shall not participate in any client request for a proposal where fee is the sole basis of selection. . . . Competition among architects which is based on the quality, nature, and type of services rendered is indicative of professional conduct and shall be encouraged. . . . Pursuit of a commission shall be limited to the fair presentation of the architect’s professional experience, services, and capabilities. . . . Architects shall not lead clients to believe that price is the dominant factor in the architect selection process. The fees charged by architects shall be based on the costs incurred to provide those services. . . . Employees of architectural firms should be compensated at a rate that reflects their educational and professional investment and that is comparable to starting salaries in other professions. . . . Architectural firms should immediately establish fees which will enable an entry level salary of $22,000 for an architectural graduate with a professional degree.”

That statement, it seems to me, is a good one and thoughtful one. It’s idealistic, and heaven knows we need more idealism in our increasingly materialistic world. And three cheers for the Chicago chapter, a big tough chapter with some very talented members, for issuing it.

How do we get everyone to agree not to “provide professional services without compensation,” or agree not to “participate in any client request for a proposal where fee is the sole basis for selection,” or to base their fees “on the costs incurred to provide those services?” In short, how do we get everyone to agree not to do work on speculation, or engage in fee-bidding, or in low-balling to “keep the office going”? You can’t, of course. Any client can always find someone to do it cheaper.

What you’ve got to do is persuade/argue/negotiate with the client about the importance of doing it right, doing it better—and being paid to take the time to do it right and do it better. To the client who insists on free service or fee-bidding, or who demands a fee that makes it impossible to function properly or profitably, there is only one suitable answer, and the answer is “No.” We will never solve the problem of too-low fees and too-low salaries unless enough architects start saying “No!” to enough clients. Those architects who find they can only get work by fee-bidding and low-balling might well consider, and I mean it, whether they are in the right business—whether they are good enough at their work—as professionals in business and as designers—to command decent compensation for their work. For the rest, the answer has to be thoughtful and forceful negotiation.

The Round Table that begins on page 35 of this issue is full of indications that most good clients want good design at a fair price and on time and are willing to pay for it. And what they expect should be a sufficient opening for most good architects to make the case for being hired on a professional basis to do professional work.

To the client who won’t pay a proper fee, say “No!” and say why. W. W.
Poured slab floors have been doing a great job for a long time. They’re strong and feel solid underfoot. But, the “eighties office” imposes new demands. Changing computer terminals, open plans and their need to be easily re-configured often exceed the scope of traditional slab floors. And, raceways, flat wire systems and the like are partial solutions at best. You just can’t hide air handling ducts or pipe conduits under a carpet!

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where creative minds are allowed to soar, yet they should be controlled by some of the constraints of the "real world."

The studio also provides students with the closest simulation of the architect/client relationship found anywhere in architectural education. The professor, in Mr. Beckley's term, "acts as surrogate client to the student." This is an important relationship, as it develops that interactive process in which key questions are or should be asked by both parties. I think the best architects will be those who learn to ask the questions that truly find the clients' needs.

Another positive attribute of the studio experience is the testing of one's ability to manage time appropriately. Usually, incremental time periods are set up in which certain things have to be accomplished. This has direct correlation to architectural practice: the best firms set up detailed deadlines for larger, more complex projects.

Another quality the studio offers students is the development of graphic skills. Architects communicate their product through drawings and models that must be understood by the client in order for the two to have a successful relationship. These skills cannot possibly be learned in the lecture hall by listening or by watching.

The student must do it! Studies also help the profession by producing a few quality students who will end up doing the majority of the best work in the future.

There are a lot of students who can read assigned chapters, attend lectures, take good notes, review them, and get good grades in almost any lecture class. It is a rare student who knows how to think.

The majority of students rely on some programmable solution, which doesn't exist in the studio. These students often reach quick design solutions and end up with pretty drawings come presentation time. But the substance of the true solution lies under that rendered facade.

This leads to a few problems suffered in the studio. It is too bad that so many students think that they will get out of school and change the world of architecture, only to be crushed when reality hits and they have to get that first job.

Most new graduates will start detailing connections and producing contract documents that they really don't understand. The student is usually ill prepared in these areas, and that's where a problem comes to light.

There are many students who love for studio. They don't go to their lectures. They get old tests from their buddies and get good grades. But what are grades? These students will hit the fan when it comes time to take the NCARB exam. All they will remember about acoustics is that it had something to do with noise. It is here where they will pay the price—out of school, and too late.

Another problem I have noticed in the succession of studios I have taken is that there doesn't seem to be an increased awareness on the part of students as to what

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All entries become the property of DuPont Company and may be used in advertising, brochures, and publicly released.
Foreign work by U.S. firms could be encouraged by Feds

A proposed bill in Congress would give teeth to a bill already authorized by Congress to encourage U.S. work abroad by reducing interest rates paid by U.S. firms competing on construction projects with firms based "over there." It would give up to $500 million in loan leverage to the Export-Import Bank for the use of mixed credits—or combined funds from various sources that lower loan interest rates. The previous bill authorized mixed credit use by both the Export-Import Bank and the Agency for International Development, but the latter group has failed to use them at all and would be excluded from the current funding. The announcement of the new bill was made by Erland Heginbotham of the Senate Foreign Relations Committee to a meeting of the American Consulting Engineers Council.

Tall buildings to spread?

The Council on Tall Buildings and Urban Habitat, an international organization of planners, designers, architects and engineers concerned with the development of the high-rise, hosted their 45th gathering in New Orleans late last year. The sessions attracted professionals from the United States and as far away as Zimbabwe, Australia, New Zealand, Hong Kong, Saudi Arabia and Canada. The sessions covered a wide variety of topics about the design, construction and operation of tall buildings—from the philosophy of their existence to technical developments, such as semi-rigid connections in steel construction. In discussing the future direction of tall buildings, council director Lynn S. Beedle said: "We live in the age of telecommunications and computers; will 'telework' and 'telecommuting' make the tall office building obsolete? Researchers are finding out just the opposite. People are social beings, and still need office environments. The rise of muti-use skyscrapers will give people even more options in today's urban complexes."

Private spending outstripping Federal urban renewal

The sessions covered a wide variety of topics about the design, construction and operation of tall buildings—from the philosophy of their existence to technical developments, such as semi-rigid connections in steel construction. In discussing the future direction of tall buildings, council director Lynn S. Beedle said: "We live in the age of telecommunications and computers; will 'telework' and 'telecommuting' make the tall office building obsolete? Researchers are finding out just the opposite. People are social beings, and still need office environments. The rise of muti-use skyscrapers will give people even more options in today's urban complexes."

Estimated private-sector spending on building rehabilitation under the tax-incentive provisions of the 1981 Economic Recovery Act will have reached $6 billion dollars by the end of 1984. This is an amount equal to that spent under the entire Federal urban renewal program, which lasted nine years. The gains were acknowledged by President Reagan during a national conference on Downtown Revitalization.

Architects and engineers join other groups to beat indoor air pollution

Architects and engineers recently joined attorneys, industrial hygienists, chemists and other professionals in San Francisco to learn more about responsibilities, research and solutions regarding indoor pollution. Experts told them that it is often difficult to pinpoint the causes of indoor pollution, which is occurring with increasing frequency in new, tightly constructed buildings. However, speakers warned, designers who don't do their utmost to prevent its occurrence may bear the brunt of future blame.

AIA president George M. Notter said, "People expect—and have a right to expect—that the structures we design are safe and healthful. Without the public's confidence, the critical support provided by the public for architecture and architects will evaporate." Notter called for "intensified" research efforts and "a central information source" for the building industry. While acknowledging "there is still a lot of work to be done before truly meaningful standards can be written," he warned that "the public is not likely to wait around patiently while we debate air-exchange rates."

Gerald Weibach, an architect and practicing attorney in San Francisco, urged architects to spell out in any contracts "if you are responsible for air quality or not, and provide complete services. Regardless of what your fee is, the law will hold you accountable for complete services."

To minimize liability for air quality problems on any job, Weibach suggested that architects "hire adequate consultants—your liability is directly related to the quality of the people working for you." He also advised architects to document projects well, to use proven technology, and to use proven materials. "The spinoff space-age materials (used in construction) have not been adequately tested," he said.

Other speakers outlined steps designers could take to fend off air quality problems by more carefully controlling hvac construction and use. Barry L. Wasserman, director of the Institute for Environmental Design, California State Polytechnic University, suggested that architects set performance specifications for ventilation systems. This is currently not a common practice, he said.

After a building is completed, he added, designers should make sure the system performs as specified. And during the design process, involve building engineers if possible, the actual people who will be running the building, to make sure the systems will be run as the designers expect.

During construction, buildings are not always put together as designers specify due to variations in construction procedures, noted Hal Levin, president of the California State Board of Architectural Examiners. Monitor construction, he advised, and after construction, "do some baseline testing" with tracer gases to verify air-exchange rates.

Some speakers even called for sacrificing fuel savings at first in the interest of cleaner air. "I would throw away the energy efficiency of a building for a year" by increasing ventilation, said scientist John R. Girman of Lawrence Berkeley Laboratory. Levin agreed, noting "A large portion of the (building materials') outgassing (emission of fumes) occurs in the first few weeks, or at most, months."}

Atlanta's Presidential Parkway under fire

Numerous groups and individuals, including the National Trust for Historic Preservation, have filed suit against a proposed highway that would provide easy access to an Atlanta library that would honor former President Jimmy Carter. Affected historic sites include the Olmsted-designed Druid Hills residential district, the Martin Luther King, Jr. District and the General Sherman Campsite.
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Computers:  Another view on desirable size

By Jon H. Pittman, Nathan D. Huenber, and Charles L. Atwood

The advent of the personal microcomputer has provided a new dimension to computer use in architectural practice. Personal computers are inexpensive, portable, easy to use and don’t require someone else to operate them on a set schedule, so they appeal to many architects. But do PCs make sense for large architectural practices?

Because each practice is unique, there is no single solution to computer use in architectural practice any more than there is a single appropriate management style. But here the authors argue for the larger minicomputer.

The term “minicomputers” is somewhat deceptive. Today minis have as much storage capacity and speed as the mainframes of the early 1970s. And they have a clear advantage over PCs in storage capacity and speed.

The PCs limitations may not be a problem for the small architectural firm. Those firms employing ten or fewer persons are usually in the same physical location and work on projects of modest scale and complexity. Thus, there is less need for sharing critical information because one person is responsible for all phases and aspects of a given design. Since the organization is small, it is easier to ensure communications. For large, diverse architectural practices, however, the limitations imposed by PCs are significant.

Larger computers’ integration of service and capability is germane to what a large firm is about:

• The ability to deal with projects in many different locations.
• The ability to share data between many different disciplines.
• The ability to share data between many individuals within disciplines.
• The ability to manage information inherent in complex projects over long spans of time.
• The ability to get expediens-answers to major-size problems.

While personal computers can do some of this, their state of art does not allow them to provide fully all of the capabilities necessary to serve a large architectural practice in the most effective way. A larger minicomputer-based system can provide these capabilities while still maintaining some of the advantages of personal computers.

Why is full efficiency important? Large architectural firms with complex projects, design processes and working procedures must be well defined and organized with not only good communications between members of a project team but within the firm as a whole. When computers are used to do this, it is important that computer applications (programs that perform tasks) and computer databases (collections of information) be well organized and able to communicate with each other. Integration, in this sense, is their unification.

The methods of integration that can be addressed by a computer system in a large firm are:

• Integration between phases.

A design and construction project exists over a fairly long span of time and progresses through many phases. Information is continually refined and augmented from the general to the specific. Information developed in the pre-design phase is used in subsequent phases, including the construction drawings. A minicomputer-based system allows larger databases to store the necessary data and can support more sophisticated applications than the PCs, which are insufficient to allow this.

• Integration between disciplines.

If a firm is organized into disciplines such as architecture, engineering, planning, etc., it is important that data be capable of being shared between them and that one can take advantage of data developed by another. Personal computers, for the most part, are discrete individual units and do not commonly provide the data management or communications capabilities necessary to effectively support this sharing.

• Integration between different people working on a project.

Data must be shared in such a way as to eliminate conflicts and updating anomalies. Again, personal computers do not allow effective sharing; a minicomputer-based system can provide an integrated database, which allows multiple users to share information.

• Integration between applications.

Many different software applications may be used to assist in facilities programming; the generation of schematic design alternatives; the evaluation of design alternatives; analysis of the structural and mechanical systems; preparation of working drawings, specifications, and presentations; and construction administration. It is important that the data developed for one task be accessible to the other tasks and the applications that support them. Although a lot of software is available on personal computers, it is rare to find a high degree of integration in software packages because, by the very nature of personal computer software development and marketing, the applications are developed as small, discrete units. Broad application is simply met best with the larger systems.

Integration between architects and outside consultants. Besides working with engineers and other consultants from outside their firm, architects frequently enter joint ventures with other architects. Furthermore, many of these other parties may acquire CAD capability, it is increasingly important to be able to exchange data between computer systems using data exchange standards such as ISO or IS0. Such integration will probably require more computing power than most personal computers can deliver.

• Integration between geographic locations.

Design projects are often developed by participants in diverse geographic locations. The ability of a computer in one location to access data in another location through telecommunications capability lets such participants keep current on the status of the project. Although some personal computers have rudimentary telecommunications capabilities, they are limited, while a minicomputer system can competently link geographic locations.

• Integration over time.

Although each project is unique, there can be similarities. As standard details are developed for one project, for example, it is helpful to be able to reuse them on another. Integration over time allows the architect to store reusable data for other projects.

Again, the quantity of information that may be stored in a computer is the issue here. In a personal computer, most of the storage is used for the operating system, the application program, and the information with which one is currently working. There is little extra space for archival libraries with details and layers from past projects.

When information for a project exists in a powerful central database that is efficient yet flexible, these types of integration are possible. Such a database is usually managed by a database management system. Although versions are beginning to appear on personal computers, those that can perform sufficiently to provide a reasonable degree of integration and multi-user access must run on larger computers.

Graphics with high resolution, a sophisticated palette of colors, and smooth interaction as well as other means of communicating with users are important too. One personal computer manufacturer in particular has pioneered user interaction and graphics techniques, but those familiar with such techniques will find their implementation slow and restricted.

Part 2 of this article will include a discussion of software and a case study of a project.
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The Round Table began with this question to the corporate architect: Over the past five years or so, in what ways have your responsibilities changed, have the demands of your top management changed, have the building projects for which you are responsible changed?

Victoria Kahn, vice president of real estate/construction projects of American Express began: "I think the most significant change is that senior management has become much more involved in the decision-making process. The buildings we are building, improving, expanding, or renovating represent a major capital investment, and interest rates are still very high. A great deal of money is at stake, and senior management is aware of that and anxious to make the best possible investment. They are participating more in the decisions, and I think that contributes to better projects, better design, more satisfaction for the employees, and greater productivity."

Said Bill Quixicke, vice president of real estate and general services of McGraw-Hill: "Change itself is what has been most important in the last five years. New technology is causing a tremendous number of changes in the way we manage our facilities, in the way our businesses are structured, and in the speed at which we need to respond. In our company, the environment in which we are operating is constantly changing, the business structures within which we operate are constantly being re-aligned, and the need to adapt this kind of change to the new technologies is imposing some considerable responsibilities on the corporate facilities group.

The changes imposed by the computer are the most important, but close behind are concerns about the telecommunications, controllable lighting systems, building-control systems, and all of the other new tools that are available to us."

Ed Rosen, now a construction manager but until recently project manager for General Foods: "I see more and more realization of the importance of architecture—what good design can do for the corporation and the end users—for the employees. Five years ago I would not have described General Foods as an enlightened client. But today, in part because of the process of building our new headquarters building [designed by I. M. Pei], I would say sure has been an enormous change in attitude at the top."

Russell Jordan, vice president in the architecture and construction division of Marriott Corp., said: "Over the past five years, the difficulty in finding funds, and the tremendous increase in competition in the hotel business, has caused far more scrutiny to go into the whole development process. All of the work we do has to be looked at far more carefully, studied in more detail by more people—and that's been a good thing."

Corwin Frost, director of planning and design for CBS: "Our projects have become much more varied and much more complex—both in business terms and technical terms. But I think the biggest change is the realization by corporate management that it takes professionals to manage this kind of operation."

At that point, three of the panelists in private practice commented on the role of the corporate architect, and the changes as they saw them from "the other side of the fence."

Said Gene Kohn, of Kohn Pedersen Fox: "As with all things in life, it depends on the people involved. Some corporations are very well organized, well structured; so that everyone you deal with knows his or her responsibilities and the results tend to be good. Other companies are not as effective in dealing with architects, and somehow the process of building gets more complicated. In general, I would say that the increasing numbers of corporations that have corporate building departments has been good for us in private practice, and surely has increased awareness of architecture within the corporations."

Carolyn Greenwood, of SOM: "We encounter more and more architects working for the corporations, and that is good and bad. It's good because they are architecturally trained and understand the process of being an architect and the frustrations of being an architect. It can be bad if they really want to design the project themselves..."
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“How has the role of the corporate architect changed? Not long ago the concern over energy conservation and other technologies became of prime importance, sometimes at the expense of esthetics. Today, we see a re-emphasis on the fact that buildings are for people—that design, architecture, interiors, every facet of a building should be geared to the quality of the spaces for people. The right technology is not being de-emphasized; it is being treated as a given.”

Eric DeVaris, senior architect at AT&T: “I agree that human resources have become more vital in our decision-making than ever before. Believe it or not, it is because of the computer; because the computer is putting more emphasis on office work at the expense of manufacturing work….”

Said Leon Brand of Professional Design Incorporated: “Another change in role for the corporate architect grows out of the corporation’s need to get projects built much more quickly, in order to respond to market forces and minimize the penalties of high interest rates. I felt that pressure when I was a corporate architect, and I feel it now from my clients in private practice.” But, cautioned construction manager Ed Rosen, “There is a real danger in the emphasis on hurry-up building. What it tends to do is reduce the amount of design time—thinking time—the architect has, and if we shorten the thinking time we build in a ticking bomb that often doesn’t explode until the very end. There are other ways to save time on a project—construction management is one—but when I was a corporate architect I resisted as much as I could speeding up the design, because I felt we needed to give the architect enough time to consider our needs and look for the best solutions.”

Robert Engel, long in private practice and now project director, facilities design and construction, for McGraw-Hill, Inc.: “Yet another change in the role of the corporate architect is the change from being a fireman, a caretaker, a reactor to emergency situations into a person responsible for anticipating what the corporation is likely to need, an advocate for building the right thing at the right time. Instead of just building what the corporation says it needs, we are being asked to look at the potential, where new or improved facilities can make the operation more efficient, improve the quality of life for employees, improve the organization’s financial structure.”

Question: To what extent are corporate architects brought into the business-planning process? The answer seems, in general, to be not as much as our panelists would like or hope for.

Said Peter El-Gindi, project architect for the U.S. Navy Resale Office: “I’d say what usually happens is that the corporate architect is called on to give the feasibility of a project that is part of top management’s business planning. We may, for example, have 50 retail outlets on the boards; our job is to advise on which ones are feasible for next year.”

Lenore Lacey, project director for AT&T’s real estate and construction division, outlined a broader role: “We have become more of a participant in the justification process, working with our line groups in developing the business rationale and justification for new facilities. Five years ago, management would come down the line and tell us they needed 9,000 square feet and needed it yesterday, and we’d zip out and get an architect and get it done. Today, we are going through much more involved processes with the financial officers deciding whether a new facility is really justifiable not only from the corporation’s point of view, but from a business point of view. So we are now involved in the financial planning—with tremendous responsibility for capital planning from the business-planning end, not just the real-estate end.”

Said Russell Jordan of Marriott: “In the business we are in, food and lodging, the building along with the service is the product we sell. So the building is of great importance to the success of our business and all of the senior management is deeply involved in the development of design, the character of the building, the total process from site selection and conceptual drawings through completion—and our business couldn’t be successful without that involvement.”

Victoria Kahn of American Express: “While I can’t say that the role of the corporate architect in long-range business planning now is affected as much by developers as it is by corporations they work in. Years ago, the corporation was the big builder and the image maker; the corporations were greatly responsible for much of what happened in America in terms of quality environment and the quality of buildings. With a few major exceptions, including companies represented at this Round Table, I think the developer has taken over the role of major image maker. If you look around our cities, more and more of the important buildings are developer’s projects, though a corporation may be the lead tenant or partner that helped make the project real.”

“This trend to developer involvement of course drastically affects the role of the corporate architect vis-a-vis business planning. The developers’ business plans are seldom long-range, and always are subject to change and adjustment and realignments all along the way. From the point of view of business planning and building planning, the new ball game is a far cry from the days when the big corporations like AT&T had long-range plans that they worked to with great dependability.”

Victoria Kahn of American Express: “While I agree about the increasing role of developers in planning and initiating projects, I would argue that American Express and many of the other corporations are continuing to carry on what you call the grand tradition of corporate building. For example, we are building two million square feet in Battery Park City. We are in joint venture with Olympia & York, but we are our own developers. We took a significant step in this direction a couple of years ago by acquiring a construction company that is now a

William A. Cusick
Vice president,
Corporate real estate,
McGraw-Hill, Inc.

Eric DeVaris, AIA
Senior architect
AT&T Technologies, Inc.
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If we shorten the architect's thinking time we build a ticking bomb that often doesn't explode until the very end.” Ed Rosen

wholly owned subsidiary, and the president of that company sits in corporate senior management and participates in the business planning activities. This helps us understand what business our company can plan for—how it can accommodate growth short-term and long-term. And I think that is a trend by the corporations that you are going to see repeated across the country.

Lauren Askew, who is a vice president and director of design for The Rouse Company, made a similar point to that made by Russell Jordan of Marriott:

“Architecture and design is an integral part of our business—we are really a retail business, we are research-oriented in terms of finding locations, and the people who work with me are integrated into the process from the beginning.

As a corporate architect, I am one of the few people in our corporation who follows a project from its inception until it is up and operating. So our role is absolutely integral to the corporation's business planning. I think that is a different role—and necessarily a different role—from that of most architects in industry.

Leon Brand: “I agree that architects who work in companies where design and architecture and building are the business of the business—such as Marriott and Rouse—are much more involved in the development of business plans.”

Bob Engel of McGraw-Hill: “I believe that it is part of our responsibility as corporate architects to find ways to get involved in our corporations' business planning.

There are organizations that do business planning by the intuitive feel of the chairman of the board, and there are organizations that do business planning as a logical outgrowth of statistical analysis. In either case, if we as corporate architects we should search out opportunities to intersect with the business planners. We should seek out ways in which new or renovated facilities will support any potential business plan. We can challenge the current methods of operating the business, we can offer alternative recommendations on how the business could be improved by better facility support. We can make it our business to study alternative solutions to problems of growth and change, and present these ideas to senior management.

Catalyzing action through your own initiative is far better than waiting for management to push the 'we're out of space' panic button. That's one of the most important ways that facilities planning can be made a part of business planning—not that we are planning what business we are in, but helping to improve the quality of the way that our organization manages the business that it is in.”

Russell Jordan of Marriott: “Even in our company, where architecture and building are the business of the business, the corporate architectural people don't get involved in the top-level corporate planning, but they are an essential and very large part of the planning. Our company has maintained a 20 percent growth rate each year, doubling our sales every five years. That quickly generated enormous volume—and took extremely careful planning from a financial standpoint, a marketing standpoint, and a facilities standpoint. Our company's most limiting factor, other than the availability of financing, is to actually get the new hotels built. At our volume, that takes very careful planning, lots of information, lots of work.”

Chip Harkness of TAC: “I don't pretend to know much about corporate planning, but it's my observation that it often involves potential alternatives. In architectural terms, for example, the corporation decides that it needs to expand, but the question is open whether it will expand by building a lot of small buildings in the suburbs, or a big building in the city, or next to its existing building, or by remodeling an old building. In my view it should be the corporate architect who should give those answers. If there is not enough stuff to actually study those kinds of decisions, then it is the corporate architect who is in the best position to recommend and bring in an outside architect to study those questions, come up with the broad-based answers to the physical

alternatives and the costs involved. You have to know what the alternatives are before you can make decisions based on a corporate plan—and studying those alternatives and making recommendations should be the corporate architect's responsibility.”

Said McGraw-Hill's Bill Cusick: “Being involved in business planning is one of the most essential things for a corporate architect or facilities group. But I am also convinced that it is one of the most difficult things to do effectively. Ms. Kahn mentioned that American Express has gone from a five-year planning cycle to a three-year cycle; and I think you are lucky if you can really look out that far with any degree of certainty. Because of that, I think what we have to do is flexibility—having offices and environments and strategies that are flexible enough to react to any kind of direction the corporation needs to take. But to do that, you must be involved in the planning process.”

Malcolm Whyte spoke of the need for flexibility: "Not long ago, mechanical typewriters were one of the mainstays of our business. We don't make them anymore, but the building where they were made still exists and is still manufacturing products—different products. We did a survey last year among architects, asking basically: 'How are we doing, what could we be doing better, what could we do differently?' And despite the fact that our top executives have been about design for 25 years, with what I think is considered as some success in architecture, the perception of the architects we surveyed was that we don't know what we want. Traditionally, when we as a client went to an architect, we had a complete statement of requirements, a detailed program. But now, despite the fact that we've been involved and concerned about

architecture for years, we're forced to go to architects saying that we want a roof—because we're not sure what we're going to make in the building, and whatever it is we plan to make in that building, we don't know what we'll be making there five years from now.

"We see our role in overall corporate planning as looking at buildings as living objects that change year after year, that will never be finished. And that is not a traditional attitude for us, or, I think, many companies. Neither is the thought of going into partnership with a developer to create a building. Today we are doing that with many buildings, and in certain cases it's the appropriate and right way to get a building. Right now, we are working with developers mostly for large office buildings in major cities. We've known for years that when we sign a lease with a developer, he takes the lease to the bank and gets 150 per cent financing and all kinds of other goodies based on our lease and our name. Now we are asking for, and getting, a piece of the action. This system also gives us the flexibility we need. If we see a current need for 200,000 square feet and a future need for perhaps 500,000 more, in partnership with a developer we can build the 800,000 square feet. We lease some of it out on a basis that lets us take over the extra space when and if we need it. That kind of flexibility gives us flexibility of occupancy at a very low cost.”

Bill Cusick of McGraw-Hill suggested that the pendulum might swing back: "A kind of partnership with developers began four or five years ago when interest rates increased dramatically, and developers were having trouble financing their projects. Conversely, with interest rates at 21 per cent and construction financing what it was, many corporations needed that marriage with the developer to get out with the building projects they needed. Now that interest rates have started to go down, most of the financial analyses will show that it is cheaper to build your own building. At any rate, that kind of analysis is increasingly important in business planning and facilities planning, for the reason that housing costs' are becoming a bigger and bigger component of the total costs of doing business.”

Peter El-Giysi
Project architect,
U.S. Navy Resale Systems Office

Jack Dollard, architect

Architectural Record January 1985 39
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What do the corporations with staff professionals look for in retaining an outside architect?

Lenore Lucey of ABC volunteered: "In general terms we look for a firm that has an appropriate size for the project we're doing, has some knowledge or history of similar kinds of work, and in some instances a track record of working with us and knowledge of the team in our office. That means we use the bigger firms for our big jobs, but are similarly committed to using one-, two-, three- or four-person firms for smaller jobs. We don't do any work in-house now, but we're investigating the potential of hiring people to handle the constant and ongoing partition changes and office-rearrangement work. We think that might be easier to do in-house, by people who know the organization and people involved. But I don't think we will ever do a major image facility in-house."

Said Leon Brand: "When I was in corporate work, we looked for experience, we looked for track record and reputation. But the most important and difficult to assess is the personal chemistry between the consulting architect and the corporate people. That's never on the list of criteria, and it's never on the rating scale, but it certainly is a major factor. The corporate architect or facilities group needs to have a sense of compatibility, a sense that it's going to be a pleasure to work with this firm, a sense that the individuals who are going to represent the outside architect are reliable, are significant people in the firm who can be relied on to make the decisions, can be called at night when the executive has the cold sweats, who is someone they will enjoy going to dinner with or just plain socializing with over the two or three or four years of the project. All that is an important but sometimes subtler factor in architect selection."

Laurin Askew: "It's the most important factor, frankly."

Bob Engel of McGraw-Hill: "We have a traditional system: big projects, architectural firms; small projects, small firms; medium-size projects, anybody's game. Overruling all of the factors in selection that have been mentioned is the avoidance of unnecessary risk, since every project has an enormous amount of risk for everyone involved and the objective is success of the project. I think selection sometimes depends on what is driving the project: long-range plans, emergency reaction, or something else. I think selection criteria are different for a project away from your home base, for a high-visibility marketing center as compared with an operations center which could be underground. . . . Selection also depends on the champion of the project and his strengths and personal experience—and every project has a champion, whether it is the chairman of the board or the corporate architect or a developer or the mayor of a town or the head of a division. These are the champions who go after and seek out and push through and grab the flag and attract the team to assemble the project—and their attitudes affect selection."

Malcolm Whyte: "Our primary criterion is design, design. All of the other stuff about whether they have telephones or computers or a history of similar buildings is nice; it helps support the issue. But the key decision has always been based on design—and I should use the words 'appropriate design for the image of IBM' instead of 'good design.' There is a lot of good design out there that's not appropriate for IBM. I think we have enough experts in the company to make sure that the building is functionally correct, that it gets built on time and within the budget, that the pipes and ducts all work. But when it comes down to the decision of which architect to use, it's a matter of design."

Russell Jordan of Marriott: "Given the volume of building we do, the number of different projects, we just can't afford to sit around and do a lot of brooding about whom we should retain. So a long time ago we established what we hope are objective criteria, just almost by the numbers. We score firms by points, on a weight basis. We are first interested in the design ability of the firm. We are just as interested in how they manage themselves, because that has an impact on the economics of the whole project. We score their experience, their experience in working with contractors, their experience in dealing with similar owners; their track record in is the creative talents of people. In our firm, like most and especially most bigger firms, we are making more and more use of the computer. But to clients we stress people and design—we just want to stay good at what we do and not try to be all things to all people. We should be damn good designers, relate well to our clients but fight for what we believe in, and assemble the best team of engineers and other consultants to create the project."

Question: How important are fees? The answers varied widely

Russell Jordan of Marriott started a discussion of fees by telling the Round Table that "we build a hotel based on a prediction of how much income that building is going to produce and how much building that income can support. Part of the building cost is professional fees; so if we are going to build a hotel in El Paso, where the income will be lower than a building in San Francisco, the amount that is allotted to fees is less because the amount that’s allotted to every other cost in that building is less."

Said Bill Cusick of McGraw-Hill: "From my standpoint, professional fees are just one of a number of costs of a project that have to be controlled—and in the last couple of years I’ve seen a tendency for outside architectural firms to become more competitive in structuring their fees." Asked if they are more competitive in a low-bid sense or in negotiating, Mr. Cusick said, "Both. But we do want to negotiate with the firm that is our first choice."

Corwin Frost: "Fee is a criterion, working with government officials; their history of meeting budgets and time schedules. We try not to have more than three or four proposals on any one project, but evidently hotels are popular with architects, so we have sometimes listened to as many as a dozen proposals. Size is not a criterion in itself."

Corwin Frost of CBS: "We have no formal procedure for architect selection. We build such a tremendous variety of buildings—ranging from broadcasting facilities to a publishing distribution center to editorial offices to record factories—that it is hard to develop a specific rationale that applies to all. So what we do in the department is to try and establish special criteria for each and every project that comes along. We tend to look first in the locales where the project will be built and then try to find the best firm of an appropriate size—and with the appropriate chemistry—for the project in question. We usually go through the interview process with a short list of two, three, or four firms. We try to represent the actual user—to have someone on the selection panel representing the people in the division that will be using the building, so it's not just our facilities people who are involved. Sometimes higher management gets involved, but usually not."

Gene Kohn, speaking from the point of view of a consulting architect: "I was glad to hear Malcolm Whyte emphasizing design and not technology, though he represents probably the major computer firm. I visualize in the future that all architects and engineers will have the same (or at least compatible) hardware, so what's going to make the difference is the creative talents of people. In our firm, like most and especially most bigger firms, we are making more and more use of the computer. But to clients we stress people and design—we just want to stay good at what we do and not try to be all things to all people. We should be damn good designers, relate well to our clients but fight for what we believe in, and assemble the best team of engineers and other consultants to create the project."

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"The biggest change is the realization by management that it takes professionals to manage the facilities planning operation."

Corwin Frost

but only one of many to look at during the selection process. One
part of the fee negotiation
sometimes first revealing: has the
architect properly understood the
project? We have found cases where the fee seems too low, which
tends to indicate they have not
really understood what we are
looking for. That is as much as
a danger sign as too much fee."

Harry Culpen, director of design for HOK's New York office: "On just
that score, I think the corporate
architects could be very helpful to
their companies in defining the
scope of work very clearly before
asking for proposals from
architects. We know that we have to
be competitive and that we are
going to be evaluated on the bottom
line. Many things go into a proposal,
and we don't like to ask for extras
when we come across something
that wasn't properly described.

Some clients seem to be just looking
at the back page to see what it adds
up to. We're anxious to do the best
possible job, but we have to make
depends on it. That's the way it's
supposed to be. I don't know of any
architects who are making
exorbitant profits. A little more
thought put into defining the scope of
the work would make the quotes
a lot easier to come up with."";

Peter El-Gindi: "The fee is a
factor, but I don't think it is as
important as having qualified
architects think it is. Indeed, I have helped
architects negotiate a better fee
because they didn't understand
the scope of the work. I think the
biggest missed revelation is in
trying to sell us on what they have
done for other clients rather than
what they can do for us...."

Eric DeVaris of AT&T: My
feeling is that architectural fees are
very low—that what our
organizations get from the architect
is worth much more money. And I
think that we architects in industry
have a responsibility for these fees.
I've calculated that $35 billion a
year of construction is built by U.S.
organizations who employ staff
architects. If you assume four per
cent architectural fees on this $15
billion of work, some $600 million a
year in architectural fees is
influenced by corporate architects.
That's a tremendous responsibility
that we have to be aware of."

Leon Brand: "The problem is that you
assume fees at four per cent."
DeVaris: "That is the current
reality."

Gene Kohn suggested that
complex corporate jobs a whole new
kind of fee structure was needed:

"If I had my 'druthers,' fees would
not be negotiated at the outset
of the project. I would like to see
architects work through
schematics
with an hourly rate until the full
scope of the project is understood
by both architect and client. Even
with well organized firms and well
organized clients, the scope is never
clear when you start—In New
York for instance, it can take two
years to get approvals, while our
costs and salaries go up. It's also a
bad time for architects to negotiate on
a psychological basis. We're all run a
race to get the job; the client is in a
tizzy, not sure of his return and
anxious to minimize costs, and
saying to himself, 'My gosh, we just
gave you the job, what more do you
want?' And that's a bad time to
negotiate. I don't think any of us
stresses fees, but we do need fair
to do the work. That's why I
try to delay negotiations as long as
time-and-materiales basis through
the feasibility stage—concept,
diagrams, drawings and so forth.
At that point we know our costs,
and if it becomes a real project with
us we sit down with the architect
to negotiate the fee."

Harry Culpen of HOK: "I agree
totally with Gene Kohn about what
architects are worth. I really think
our ideas are worth a lot of money
and we should get what's fair. We
don't. As to those front-end studies
before either of us really
understands the scope of the work:
I'd prefer a small lump sum for a
defined scope of front-end work.
Something there's less incentive to
do your best on a time-card job. But
a lump sum lets us give the client
good ideas that we have developed
eround the years and still show a
profit on it. We can give the client
something very appropriate for a
small front-end cost and both know
what the job really is...."

Question to the Round Table:
To what extent do corporate
clients have standard specs... . . .
for selection of furniture,
materials, finishes, office sizes,
quality levels?
Russell Jordan of Marriott:
"We couldn't survive without standards.
Or without a process to establish
them. First, when we open a hotel,
the whole team of people who
worked on that building—the
architects, the interior designers,
the engineers, the contractors,
the kitchen consultants—everyone
who worked on the job, whether
consultants or in-house people—
meet and go through a very formal
agenda of problems and concerns
and suggestions that will bear on
the future jobs. Two: During every job,
the technical people in our
architecture and construction
division have daily contact with
their operational counterparts, so
we have direct feedback as to what
works and what doesn't, what we
should never use again or should
use again, what is expensive to
operate and what is inexpensive.
Through that process we develop
and maintain up-to-date on the
computer a list of standards. The
standards are in three parts: One is
plug and play—things like the
dimensions and clearance for service
corridors, and the like. The
second part of the standards is
written criteria; the third part is
technical specifications—and that
book we supply to every architect
we hire, and every owner who is
going to build a hotel for us. And
we assign a staff person to ensure
that the information is interpreted
correctly and that the drawings and
specs (indeed the building as built)
corporate these guidelines. And
mind you they are guidelines for an
architect or engineer wants to make
a change, we want to hear the
reason and consider it. There is an
appeal mechanism for the outside
professional."

Bill Tabler: "All of the major
hotel chains have this 'bible' or list of
criteria—about the size of a
Manhattan telephone directory. The
trouble is that some hotel chains do
not have the appeal mechanism that
Russell described, and some of the
'bibles' are out of date when they
printed. When we have a hotel
commission, the first thing we do is
define all the things that we want to
appeal. And happily, several of the
chains have retained us to update
their standards."

In contrast, said Corwin Frost of
Cass: "We've found it next to
impossible to develop across-the-
board standards that supply all of
the varied kinds of buildings we
build. There have been two
exceptions: our headquarters
building designed by Saarinen and
Roche, Dinkeloo with interiors by
Knoll Associates, and our broadcast
center here in New York where we
are halfway through a 10-year
update program involving an
enormous number of individual
projects and many different
architects and engineers. If we
didn't have some form of standards
for that, we would have absolute
chaos. So we did establish a design
vocabulary for the building—
covering light fixtures, ceiling
types, doors, wood and metal
designs and where they should be,
standards for carpet in office areas
and technical areas. If an architect
doesn't do one part of the project it
has a good reason to depart from the
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standard—either esthetic or technical, we can usually solve the problem in discussion.”

Lenore Lucey of ABC: “Our standards are not as elaborate as Marriott’s, but we do have a fairly comprehensive set of standards that combine space standards—sizes and types of offices according to corporate ranking with materials standards and construction standards. We have standards for lighting, furniture, acceptable colors, carpet, lighting. We have standard materials and construction methods, standard doors, locks and hardware…”

Victoria Kahn of American Express: “We have very little in the way of published standards. But we have taken great pains in our newest projects to plan the offices very carefully, the furnishings that will go into individual offices, the office sizes and modules as they agreed upon in advance—for both cost control and future maintenance. But standards must change continuously, you must upgrade them all the time.”

Bill Casick of McGraw-Hill: “It’s going to be a monumental effort I know, but we’re beginning to look at functional standards as opposed to standards based on grade level or personnel classifications. That change is being driven partly out of a need to control housing costs and move people instead of space, but also the need to have space that is flexible and can adapt to the requirements of the new technologies.”

Jack Dole, a private architect who works full-time with Aetna: “This idea of standards is one of the toughest things to deal with in a corporation. What starts out as a guideline becomes a standard brutally adhered to, and a standard brutally adhered to creates a corporate environment that is really boring. We offer a number of different work environments—a high-rise in the city and a rambling office in the country and some well-renovated old mill buildings and a high-tech education center—a conscious corporate effort by Aetna to create different kinds of environments where employees can work. Then what starts is the fight among the different divisions and these different environments—what they want is parly…”

Kathleen Kelly of New York City’s Environmental Management Division: “I worry a lot about corporate standardization of the environment. The new Union Carbide building in Danbury—designed so that everyone has exactly the same size office and in fact an almost identical view of the forest outside, and much talked about in the magazines (including RECORD, October 1983) worries me. As opposed to it being boring, I found that kind of standardization depressing. I wonder about the philosophical and managerial implications of so standardizing spaces…”

Commented Ed Rosen, who was working with architect Kevin Roche at the time the Union Carbide building was going ahead: “The intent of the decision to standardize office size was not at all to dehumanize the office environment, but rather to humanize it by eliminating the kinds of jealousies that result from the corporate pecking order—I’ve got three windows and you only have two.’ There was also an economic judgment based on the enormous cost of moving to movable partitions and distributing the space. At General Foods, after we saw what Kevin had done at Union Carbide, we went at least part of the way down that road and eliminated the division between the two most prevalent salary grades

Eugene Kohn Kohn Pedersen Fox Conway

that caused the most partion moving. When you pass from one grade to another you can get new upholstery or some adjustment of furniture, but most of our employees have simply foregone that corporate perk. So it was not an effort to overstandardize—it was a programmatic issue to try and cut down one of the problems of the pecking order that all corporations live with.”

Bob Engel of McGraw-Hill: “Most of us have standards or at least an awareness of standards. We have the management discipline to apply those standards, to use them as a tool. What we don’t have is the feedback mechanism to evaluate those tools, those standards, to see whether they are serving the purpose for which they were established.…”

Gene Kohn: “We all know the feeling of going to an airport that looks like every other airport and flying on a plane that looks like any other plane and arriving at an airport that looks the same as the one you just left and renting a car from a girl who is dressed the same as the girl in the airport you left and driving to a hotel that looks a lot like the last one you stayed in and is furnished exactly like the last hotel and go downstairs and get the same food. If we take that kind of thinking to the workplace, it’s frightening. It’s frightening in an age where the machine is already frightening. I think standards need to permit diversity and choices of materials and color and furnishings, and reflect personal and regional differences. We all have personalities, and our buildings need personality.”

The related question of specifications was raised:

Said Victoria Kahn of American Express: “I think the corporations, and specifically corporate architects, are taking a more active role in the specification process. They have very clear ideas as to what they want to achieve in terms of image, quality, life cycle—and they are telling both architects and manufacturers that this is what we want to see, this is when we need it.”

Carolina Woo of SOM: “I find that more and more we are not specifying any one single product. The corporate architect and we both have a responsibility to the corporation for competitiveness; so you are going to see specifications of a lot of things based on performance criteria.”

Chip Harkness: “We have what I believe is a very good specification department in the office. Not long ago we called for a certain roof spec and the client said he wanted a cheaper roof than that. We finally had to write the owner and say if you want to use that cheaper roof, you are doing it at your risk and we cannot take responsibility for it. Obviously, if that becomes a standard gambit for architects, we are all in trouble because taking responsibility for specs is an important part of our professional responsibility.”

Eric Devaris of A+T: “We need to remember that corporate work is very unlike the work by a

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consulting architect for a client who may be inexperienced in building. The corporate architect has to live with his company's buildings, and he does gain experience in the performance of materials. If our experience conflicts with the specifications of the outside architect, we are not going to listen to that architect. But we then need to share the responsibility."

Edward Rosen: "Under certain circumstances it seems to me that the architect working with his corporate client will accept a spec that is not the one that he would have preferred, because he figures that if he saves the owner money, he may be able to get his first choice on another spec that may be more important to him. But, in my experience, most owners will accede to an architect's wishes if the architect really feels strongly about the choice."

Question: Are changing employee attitudes and expectations affecting corporate design?
Victoria Kahn: "I have found employees very vocal about the need for more amenities—more elaborate and extensive cafeterias, health clubs, possibilities for socializing after work, something about their environment, care more and more about architecture and interiors. In Scandinavia, by law, no employee may work in any occupation without a view to the outside—and as a result a major new headquarters building for IBM Sweden is very long and skinny. People have to walk long distances to get from office to office, but they love it because of all those windows."

"People worry about computers generating sterile offices—no paper, no plants, no pictures. I have to say that in our research and development departments, our employees (all PhDs) have offices full of paper and stuff pinned on the walls, and in one case a parrot. Our standard on what you can do in your own office is exactly the same as our dress code, though we will probably never get rid of the blue suit, white shirt, school tie image: If it's appropriate, and if you are comfortable, it's OK."

Kathleen Kelly: "The issue that we are not treating explicitly is the effect that architecture and interior design have on the way people behave and the way they think of themselves. If you are sitting in your office and you go to have a meeting with someone else whose office is exactly the same as yours, you think in certain patterns that you would not think in if the office had a whole different personality. My division offices are in left-over space at the top of an old city building, and you have to walk up two flights to get to it. I have 12 individuals working for me, who wear weird things to work and all work in their own way, but who work very hard and are very good. I am worried about our move to newly renovated offices on the same floor as the chairman with the newest ergonomics work spaces. The issue is not total freedom of design by every employee, which could result in a kind of esthetic anarchy; the issue is that the way an employee's space is designed and controlled does affect the way a person behaves and works."

Leon Brand: "This subject, perhaps more than any other we have discussed today involves issues of corporate culture. The kinds of companies that operate in Silicon Valley and on Route 128 around Boston need to attract those kinds of people with a creative spirit, who need to work in a relatively free environment where they can adapt their work area to the needs of their job and the needs of their own personality. The companies with more rigid corporate cultures produce the exact opposite of environment and tend to attract very different kinds of employees. There is also a difference in the preference of people who were born in different decades—children of the '30s tend toward more secure environments, children of the '60s are looking for different kinds of corporate culture, maybe even different kinds of jobs, and will gravitate toward those environments."

A final thought from all: We are all architects, and we are all in this together
Said Carolina Woo: "Corporate architect or consulting architect, our goal is the same: To create something that will satisfy the needs of the corporation, as well as meet the needs of the people who are going to use the building. It's for us to work together to create the best possible buildings, using both time and money as efficiently as possible."

Ed Rosen: "The key role of the corporate architect is to make it possible for the outside architect to do his thing properly, and do it well."

Lenore Lucey: "As architects in corporate practice, we are no more a monolithic group than are architects in private practice. We are all individual representatives of our own corporate cultures, which are very different from each other. We need a team effort and support from our outside consultants to produce a building that is an aesthetic and financial success for the corporation. We also need the support and hard work of the consulting architect to help the corporation understand what our responsibility is, and how we can develop a quality design atmosphere."

And, with a last word, Leon Brand: "My experience on both sides of the table—10 years as a corporate architect and a lot of other years in private practice—has shown me that the interface, how we communicate with each other, is the critical factor. Each plays a separate but very important role.
The corporate architect has a very significant responsibility to be the interpreter for the company of its requirements, all its priorities, all its sensitivities... On the other side, I think the consulting architect has a very significant obligation and responsibility to try to document and develop the corporation's requirements in a very precise way and develop and feed them back so there is a mutual understanding before too much time and money is invested.
"Finally, as a representative of important clients, the corporate architect has both an opportunity and, in a societal sense, a responsibility to be a leader, an interpreter, an advocate for the kinds of values that our education and experience have given us all—whether we are corporate architects or consulting architects." —W. W.
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Architectural education: The design studio—Another opinion in defense of the obvious and not so obvious

By Steven Hurttt

I read with interest, and with a mounting sense of rage, the two articles reflecting pop and con attitudes toward design studio teaching by Robert Beckley and Amos Rapoport (Record, October 1984). Beckley did a credible job of expecting for the studio, but he tends to accept Rapoport’s characterization of all architectural educators as either academicians or designers who are apparently not academicians but are “personal, subjective” and operating on nothing more substantial than their likes and dislikes.

As an architect, a designer, a professor, and a critic, and most of all a teacher (specifically a teacher of architecture and architectural students), I take umbrage at Rapoport’s characterization of studios and design criticism—a characterization that is anything but an academic and objective evaluation.

I have, and am now, working both sides of the academic/designer fence, and belong to both camps. I have taught both lecture and studio courses—and also feel the pressure to do scholarly work, or at least achieve peer recognition in some way so that my PhD faculty colleagues can be assured of my worthiness in their company.

The two October articles raise serious questions about the studio and I, too, like most anyone who has been involved with studio education, can find plenty of fault and room for improvement. However...

Architecture is architecture

The first thing we ought to get straight is that architecture is not something else. As Susanne Langer pointed out long ago with reference to painting, if whatever a painting is could be described with words, there wouldn’t be painting or a need for painting.

Secondly, exactly what architecture is, is elusive and difficult to describe or define. It embraces and impinges on many things. It can be partially described with reference to many bodies of knowledge and understanding—scientific, technical, social, political, artistic, symbolic, and so on. But it is not any of these, or completely described by them. They may aid us in understanding architecture, even help us do it, but they are not architecture. And architecture is not design, problem solving, or even creative behavior; although again, what we know of these things may help us understand the mental process we utilize to do architecture.

Next, we ought to recognize that the architectural design studio is where a student tries to learn about architecture and how to do architecture. It is the place where one teaches architecture, including what one knows about creative behavior, design process, and design theory—all in relation to the necessary levels of consideration and decision-making required to do architecture.

By equating architecture (which is substantive and existing in reality, history, and practice), with design (which is an act, an intellectual product of the complex working of the human brain), Rapoport implies that architecture itself, like design, does not have a theory “worthy of that name.” He concludes that studio teaching is without a theory and knowledge base and therefore must be “personal, subjective, illogical and not cumulative.”

However, because I presume that the student of architecture wants to learn about it and how to do it, I also presume that one of my roles as a studio critic is to refer him to that corpus of architecture as built reality, documented, historical, interpreted, and theoretical discourse, which he can find in the library or in the field. And I presume he will bring that knowledge back with him to the studio, making it part of his knowledge about architecture (academic), and the doing of architecture (practice).

The nature of criticism

This is hardly the subjective and personal phenomenon that Rapoport finds it to be. Many critics are guilty of saying “I do/don’t like.” It should read “I do/don’t like, because...” of an objective body of knowledge. That knowledge may be specifically architectural, fit into one of Beckley’s categories, such as “professional or cultural,” or may belong to an impinging and enlightening field of study such as Rapoport’s anthropology. But it is not personal or subjective except to the extent that it is known by the teacher and possibly as yet unknown to the student. The critic is obliged to place his criticism within the framework of a knowledge base available to the student. Vehiling that knowledge base is anti-academic and less than honest.

Person, personality and design studio

Rapoport uncritically connects the personal, i.e., the person, ego, in one’s representations and says that he might understand an individual, with the “subjective and illogical... do like/ don’t like” criticism.

Rapoport confuses the role of ego in architecture and studio but seems uncomfortable with it. First, he explains it as the imprint that any individual, professional or craftsman makes on his work, the “style of the man” that finds its way into his work. Secondly, the personality of the critic is accepted either as a variation within a “programmed” or “tight” curriculum, or in association with a “comfortable” attitude in which students select faculty who represent various points of view.

Of interest here is that these “personal” points of view are what we can easily understand as theories of architectural inquiry, emphasis, and expression, and as such transcend the personal into the realm of architectural theory.

He concludes, however, he accepts the idea that architecture and theory at least change, if not advance, then one might also presume that there will occasionally arise a person (architect or teacher, or both) who has a theoretical point of view that he is advancing and making part of the corpus of architecture. This idea, this theory, in its early stages is personal and may be original, and is quite likely to be worth sharing with others.

Within architecture and theory there must be room for these people and their contributions. The guest critic, super-star, visiting professor slot so often made available to both architects and professors is one means by which architectural education accommodates these people and their ideas.

The mistake is for every architect and teacher to presume that he is that person, and that his ideas, just because they are his, have some world-shaking validity.

But ego and altruism play many roles

People are drawn to architecture for both egotistic and altruistic reasons. Some see architecture as a means of expression of self to the world. Others see architecture as a means to better the world or at least understand the world. Probably about equal numbers of each type are assimilated into practice and architectural education. And probably both orientations are modified along the way, each learning to channel his dreams and aspirations.

The egotist, as teacher, is possibly more inclined to define architectural projects that enhance personal statement. The altruist, as teacher, is more likely to design projects that support personal statement. The egotist may be more likely to use competitive strategies as motivational tools, and the altruist to use service to others as a motivational strategy.

The egotist is more likely to encourage dramatic contrast between individual design solutions to achieve clarity of theory, ideas, and issues. The altruist may force...
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continuous sharing and exchange of ideas in order to clarify the same theories, ideas, and issues, along the way—ending with projects that contrast less dramatically, but which have taught the same lessons.

Young students are especially susceptible to the notion that architecture is a form of self-expression. The knowledgeable teacher may utilize that susceptibility as a motivational device, or as easily refute it. The refutation can be a series of simple questions: Who designed this or that famous building? Do you know; do you care? If you don’t care, who do you think does? What kind of immortality is it that nobody remembers? Aren’t you confusing personal satisfaction with expression, ego, and immortality?

I don’t know how person got so enmeshed with architecture; I think the threads or roots of it are in both classical and romantic thought, hero and anti-hero, ego and alter ego, and the cult of the dramatic individual who is sometimes a social hero and other times an antisocial hero.

The roles of both artist and social critic belong to men of special vision, seeing things that others do not. Architects have often played both roles. This, too, leads to an emphasis on the individual and the personality.

Er Corbusier and Frank Lloyd Wright might be seen as two men who had an equal and generous dose of altruism and egoism. Their care and concern for man, for people, for society, for architecture, knew no bounds. Their efforts were prodigious. Yet their egoism, and the little incidents that prove that egoism, are more remembered by biographical histories than the numerous, socially directed work that these two men sustained throughout their adult lives.

In Beckley’s defense of ego, he follows Arthur Danto’s argument that “style is the man, comprising qualities that are essentially his.” Beckley then asks: “How do we ascertain if an individual’s style is essentially his?” Why is this an important question and why ask it at all? Is it an art history question, a question of comparative individuality, uniqueness among peers? It seems to me to presume all the wrong things. Is the development of a personal architectural style a litmus test for architectural quality?

The question itself dangerously entwines the individual with architecture for no necessary reason. Is it the psychological study of artists in history, for psychological purposes, that has produced this attitude? Don’t art history definitions of time, place, influence, and person, encourage this type of thought? Doesn’t this encourage novelty and superficial stylistic variation for its own sake, rather than architectural quality?

When I see the artifacts of a culture, I can admire their beauty, their exceptional craftsmanship, and be awed by them without knowing who made them, or anything about the artist-craftsmen, his family relations, his life, his problems, his knowledge or scholarship, it may occasionally enrich my knowledge of the artifact. But it confuses whether the work is great with whether the individual was great, and in what sphere he was great. Churchill’s paintings are of interest because he was a great person, not the other way around. Van Gogh’s life is interesting because his art was great. But architecture school should scarcely be focused on the individual’s style—which no doubt is reflected only superficially anyway.

I prefer J. T. Eliot’s view of the role of the personality, the “individual talent” he called it, in relation to his work. Eliot believed that the artist or poet, no matter what he did, could not help but have his personality show in his work. Not that was the problem. The problem was to do work that was genuinely new and not merely novel. To do that he must have imbedded himself in the very tradition within which his work would be judged. He had to work as hard as possible to attain that tradition, something that could “not be inherited,” but only attained with great labor.

At least Rapoport regards the studio as a place in which one learns a “craft” of skills and knowledge assumed to be necessary for design, sketching, drawing, construction, planning, detailing, and model making.” But he sees the studio as wedded to and perpetrating the “archaic master-apprentice system no matter how disguised.” He goes on to assert that in the studio there is no way to define who is “master” or what constitutes “mastery.”

Don’t confuse learning with teaching

Rapoport says the studio’s effectiveness as a learning mode remains untested. He prefers the efficiency of lecture format or “academic teaching.” Beckley regards the split between “students” and “lecturers” (or “lecturers and studio critics”) as a long-standing tradition. I have trouble with all of these assertions. Architectural education of some sort is apparently as old as architecture itself, craft or otherwise. Architectural education in its present form (the U.S. academic model) is scarcely one hundred years old. Given the comparative quality of the results of the architecture produced throughout history under the various systems of education that prevailed, there is absolutely nothing that I can see that establishes the superiority of the system we now use—which is not dominated by studio, but by lecture format.

Lecture format teaching in architectural education didn’t begin until the early 1800s, as addenda to the century-and-a-half-old studio structure of the École des Beaux Arts. The École studies were presumably an idealization of the master apprentice system that preceded and paralleled it. Both systems were Walsh without lecture format teaching.

What might have been the benefits of this archaic mode of learning? I can think of many. The student was put in a learn-by-doing situation. The initial demands on his intellectual performance were low, but he was surrounded by peers and mentors operating at a higher level. Thus he learned by watching, listening, participating. He had clear role models whom he watched do what he wanted to learn to do. The master didn’t have to teach him “trivia,” or teach it redundantly. He did not feel the burden of a need for either quality or originality or personal style. His performance criteria were clear: do it as well as the master, the way the master did it—with a comparable result.

Because his subject matter, architecture, was not divided up into theoretical distinctions of (how, what (science) or what (social propriety), he learned all three integrally. Because history, sociology, anthropology, and even engineering had not yet been split from theory and practice, these too were integral to architecture.

But as these discoveries, events, and methods (that we have called progress) have produced areas of specialization severed from architecture (with their own practitioners, culture, methods, and other esoterica), fields of adjacent knowledge necessary to the doing of architecture have grown up. The architect must know something about them. And because these fields do not teach architecture per se, architects are lectured about a subject that is not architecture, and often not an architectural point of view. But most endure, and even show some mastery of these adjacent fields.

In the United States, this characterization has been especially true. Architecture was assimilated into an existing university structure that stressed a lecture format of teaching. University education was not begun until the late 1800s. Approximately half the schools were located as appendages to engineering programs, the other half to fine arts, such as painting and sculpture—in either case, a horizontal model, dominated by a lecture-teaching format.

Today the student and his studio instructors are expected to “generalize” into architecture the diverse esoterica purposed from the impinging fields of specialization—with little help, one might add, from those fields themselves.

Rapoport’s frustration is that he sees very little evidence of students carrying information from these other fields to the studio, and using that knowledge for the why, what, and how decisions he must make. He argues that in an increasingly specialized age we need architects who have knowledge of a whole range of new disciplines. Later in his essay, he states: “It also can no longer be assumed that the goal of architectural education is a Renaissance man—a single designer/architect. We need a whole range of people with different skills—hypothetical architects, as it were: architect-programmers, architect-evaluators, architect-researchers, architect-theoracists.”

The hypotenent architect, Renaissance man or average Joe?

But do we need to drastically change education to assume professional registration, to require hypotenesis as a requirement of both study and practice? Even the most casual look at the range of activities that architects have historically addressed reveals that the conditions we currently face are at least five centuries old. Architects of the Renaissance were also civil and military engineers, city planners, painters, sculptors, and occasionally even writers of poetry, journalism, and history.

We are still discovering the extraordinary range of their activities and interests. We are also discovering the limits of their training and knowledge. In fact, at least since the Renaissance, architects have been prone to address a range of problems far beyond the scope of their knowledge and abilities. They have said we ought to do this, and tried to do it—often for a people of like interest, but different training. Architecture has mated with numerous new fields of discovery and inquiry, and has spawned landscape architecture, engineering (or at least the civil, structural, and military varieties); archaeology;
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architectural history and what, in its vernacular form, is being called
material culture; city, urban, and regional planning; and, most
currently, the various forms of
environmental studies.
So we ought to recognize that it is
in the nature of architects and
architecture to see themselves and
itself in holistic terms and to strive
to embrace as broad a spectrum of
impinging and influencing fields of
study and thought as possible.
Our very mode of operation
almost always has been to operate
deliberately on an inadequate and
incomplete body of knowledge and
theory. The most recent self
awareness crisis produced by this
fact has happened to correspond
with a parallel crisis in the academic
world that has sponsored an attack
on our lack of “standard” academic
credentials and credibility, i.e.,
Ph.D. and specialization.
Perhaps, unfortunately, instead of
looking at architecture and
defining it in terms of greater depth
of study, we have been prone to let
those people rule the roost who
sought a sufficient theoretical basis
outside architecture in an impinging
field—not architects per se, but
hypothetical architects, and not
architecture per se, but something
else.
We ought to recognize that we
architects are now and always have
been a bunch of average Joes of
varying ability and training. We
have had to attempt to address a wide
range of problems and do
something called architecture of
various scales—from painting and
furniture, through building and
landscape to urban scale. We are
now and always will be, insufficient
to the task and in need of the help
of others—both generalist and
specialist, professional or non-
professional, and usually not
academically trained. Is that such an asporation
the human condition?

The centrality of the design studio
Rapport's main gripe with architectural studio education seem to be the inefficiency it imposes on the
teacher; the intrusion it makes on his time for scholarship and
writing; and the dominance that the
student allows the studio in
comparison to other courses, thus
interfering with library research
and the development of design skills.
In reviewing our own curriculum
several years ago, the same
question arose. One of my auburn faculty colleagues took to
t Sheltered in credit in each of
three areas of study (essentially
following the Vitruvian triad of
 commodity, firmness, and delight:
history, goal, and environmental,
technology, and design. The credit
was about equal.

Moreover, know that in studio I
as I teach more than design. I teach
building technology, architectural
history and theory, socio-political
and cultural history, esthetics, etc.
In studio, one expects the student to
bring knowledge from other areas and
apply it. How many other
courses can say that?
Does studio keep students out of
the library? I constantly send
students to the library to search out
books, articles, and design projects
that address or represent issues
they are facing, both individually
and as a group. Thus, I apparently
believe that there is a useful body
of knowledge to draw upon. When I
meet resistance to a suggestion to
seek such material, I know that
the student has encountered a series
of teachers who do not make reference
to the available knowledge, regard
it as non-existent, or worse yet have
defined architecture for themselves
in such a manner that they find that
knowledge “trivial”—a tragedy for
both teacher and student.
Granted, students waste time in
studio. Why? Many faculty do little
to help them develop good work
habits, the necessary skills to work
effectively and efficiently, and a
self-conscious knowledge of
creative behavior in relation to
design-process work habits.

In a learn-by-doing situation, the
learner has little idea of what or
how to do what needs to be done. A
student describes this by saying: “I
don’t know where to start.” He has
little idea of what to do next at any
given point in his work (design)
processes. So one of the major tasks
of a studio critic is to get the
student to start, and then to
help him keep going. The critic uses
his own work experience (how)
and knowledge base (why and what)
to tell or suggest to the student
what might or must be done to
solve the various lists of problems
that must be solved. The critic must
simultaneously instigate two
opposed processes: one that is
decisive and productive, the
other questioning and reflective.

One basic assumption of studio
learning is that the redundant
experience of this work will make
the student conscious of what he
must do to make architecture.

If studio has a central role in
the student’s mind—and it does—
perhaps one should reconstitute some
of the following assumptions about
the functions of studio:
• Most approximate to what I want
to do in the rest of my life.
• Open-ended and broad projects
whose scope encourages more than
a minimal effort for homework type
assignments.
• Projects that allow me to explore
things I’m really interested in, but
for which no courses per se exist,
or even academic requirements
prevent me from pursuing.
• Regular and personal
interaction with a teacher who is
curious about my personal
development as well as subject
matter mastery.
• My skills and knowledge are not
what they should be at this point,
so I have to spend more time to
catch up and do work that is
acceptable. This is both my fault
for not challenging and
pressuring myself, the fault of my
former teachers who let me get
away with it, and a cultural
educational system that regards
visualisation skills as messy
play—in comparison to language
and math skills.

Visualisation skills and
architectural learning
A complaint is that studio detracts
from students’ needs to develop
new skills, especially writing.
If students can’t write, one might
logically find fault with courses that
have taught reading, writing,
graham, and literature. If a
student doesn’t know how to write
enough, he hasn’t been required to write? I think it was
Hemingway who said if you want
to learn to write, you have to write.
Isn’t this the essence of
architectural studio?
Architecture is a visual, spatial,
and physical form. In order to
imagine it, one must “imagine” such
form. In order to explore it,
one must represent it to oneself
in its literature, one must learn not
to read what is written about it,
but also to “read” the visual documents
that represent it. Therefore, the
studio “how” of architectural
design utilizes “modeling”
techniques, as do many fields
of inquiry. Would one refute
modeling in math, physics, biology, medicine,
even in all of the liberal arts? Should one want architectural
and art education to eliminate the
learning of the very tools that make
it learnable and teachable.

Our culture already deviates
visualisation and how-to skills. The
split between academic and
vocational subjects, fine arts and
craft, profession and trade are all
manifestations of class distinction,
not subject matter distinctions.

Alternately, these faculty may
know each other’s objectives, goals,
and differences (theoretical and
methodological) well enough to
build into a single project the
ingredients to satisfy both their
common and their individual
pedagogical goals.
Such is not my idea of an ideal
studio teaching-learning
environment, but it does have
a structure, and a pedagogy. John
McDermott, now chairman of the
department of architecture at the
University of Texas at Arlington,
suggested to me that “designers” ought to be able to “design” a
curriculum that had goals, methods,
and means of evaluation, and in fact
he has done considerable work in
that area.
The studio is an integrating
and synthesizing area of thought.
Whether one is learning fact or
theory, what, why, or how is often
included. McDermott’s approach to
studio is to make those distinctions
and to utilize different teaching
means for the many kinds of information and their application
that the student is learning.
It is also clear that one can lay
out a whole set of pedagogical
objectives and distinct studio
projects, and sub-projects and tasks
that maximize student learning.
Rapport characterizes the studio
as a place where he is required
to “sit around the table, write, do
crits, repeat the same thing to
each student, go through project
after project in juries, again repeating
the same thing and deal with
trivial, subject matter matters that cannot be
judged.”

This statement suggests that he
accepts only crit and review
methods in design studio. But any
and all teaching-learning techniques
are available, including lectures,
whether formal or informal.

Where a pedagogy is outlined,
lectures that address those
pedagogical points, issues, and
lessons within a studio project may
defined and described. A student
can run into a “problem,” i.e., a gap
in his knowledge base that is
showing his progress. Such
problems are usually redundant.
But the professor, recognizing it as
such, can immediately call the
studio together and externally deal
with the subject matter.

Apparently, Rapport does not
use the students’ work as a basis
for mutual learning and teaching.
The purpose of studio review or
jury is just that.

My rules for reviews are that all
projects are due a maximum of 12
hours prior to review. This assures
an awake class at which attendance
is mandatory! A student explains
his project to the entire class, not
just the reviewers. The reviewers
Architectural Record January 1985 59
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must address their points to the entire class, i.e., use the students’ projects as examples on which to teach architecture to the class, not just the individual.

And in terms of developing a knowledge base, I also ask students to research various topics (practical, theoretical, historical, architectural, and so forth), and present that material to the class in studio. Thus each makes a contribution to the whole, often more efficiently than could the teacher. This knowledge is usually of the “normative” and “professional/cultural” type that Becker describes and is not truly “scholarly.” But what undergraduate or even masters-level work is truly “scholarly”? This technique, however, expands the normative knowledge base for the student, while allowing the teacher greater time for more truly scholarly endeavor without sacrificing the student’s education.

The ideal studio
A studio should be made up of a number of things: a clear, complexly related set of pedagogical objectives; objectives which touch on the broadest range of architectural concerns—social, historical, technical, symbolic, expressive; and major studio projects structured to aid the student in attaining these objectives. Projects should include what, why, and how questions—and lectures and readings that are the base materials from which a “reflective dialogue” can occur on an ever-increasing knowledge and skill basis.

Ideally, I know both the general and detailed objectives of each studio session. The student is not left to drift in an intellectual vacuum, but rather is exposed to the heady currents and winds of architectural theory and practice.

He is also coached and guided toward a clearer understanding of creative behavior—and those work habits, visualization skills and tools, enhance it.

So, for me, architectural design studio puts no restrictions on the type of learning or teaching available. Its intent is as broad as I can make it and still have it be architecture. In other words, architecture is a means not just to an educational architecture, but to a “liberal” education. It has a focus and asks—molds other disciplines in university education—the student to do something, as Becker wisely observes.

Moreover, what it asks him to do is nothing less than to grapple with the major intellectual, social, and ethical themes that are the history and nature of man’s existence on earth and to make value judgments on a knowledge base that is, and will forever be, inadequate to that task. Ultimately, this is to practice how he might act in the future, not just as an architect but as a responsible citizen, a goal that classical education clearly had—and that modern “scholarship” may well have forgotten.
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At the core of sound ideas
Redefining the Manhattan skyline: Three new projects by Murphy/Jahn

If there is one architect who can reconcile the philosophical differences between New York and Chicago in skyscraper design, it is probably Helmut Jahn, whose idiosyncratic buildings seem a conscious marriage of the stylistic romanticism of New York with the technological considerations that over the years have preoccupied practitioners in Chicago. Three projects by Murphy/Jahn planned for midtown Manhattan exemplify the "high-tech historicist" quality of the Chicago firm's work and are the latest manifestation of the continuing architectural interaction between the two cities.

The most striking of the three proposals—and the most controversial from an urbanistic point of view—is City Center Tower, a mixed-use commercial/residential structure whose 880-foot height is made possible by the utilization of air rights above the landmark City Center Theater (domed building in large photo right). Conceived as "a return to the romantic image of the skyscraper," the design comprises a six-story base intended to fit in with the low-rise scale of West 55th Street, a stone-clad octagonal shaft rising in three setbacks with lateral glass wings projecting east and west, and a domed tower that recalls Bertram Goodhue's 1922 design for the Nebraska State Capitol. While the structure's tripartite configuration has numerous historic progenitors and was in part dictated by new midtown zoning ordinances, many question the appropriateness of a 70-story building—no matter how well-designed—on an 80-foot-wide midblock Manhattan site.

Jahn's two other proposals for New York are more obvious adaptations of specific past architectural typologies. For an East 55th Street site near Park Avenue, Jahn has designed a 36-story, granite-and-glass office tower that slopes inwardly on two sides to form a contemporary interpretation of a classical obelisk (photo near right). The continuous upward sweep of chamfered end walls incorporate traditional New York-style setbacks, while an open pyramid atop the building "evokes an archetypal image of structure, form, and symbol," according to the architect. Another office structure planned for Lexington Avenue (photo far right) will represent what Jahn calls an abstracted version of "architectural history's most ideal tower-and-base configuration"—i.e., Adolf Loos's design for the 1982 Chicago Tribune Competition. In this case, the imagery of the column is startlingly reinforced by a crown that flares outward in deference to the tapering spire of the Chrysler Building across the street. F. M. S.
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Light at the end of the tunnel:
Final redevelopment project for Pennsylvania Avenue is unveiled

The Pennsylvania Avenue Development Corporation has selected the design proposal submitted by Hartman-Cox Architects for Market Square, an elaborate mixed-use project planned for the last major tract on Pennsylvania Avenue that had not been assigned development rights during Washington's 20-year effort to upgrade the famous thoroughfare. Strategically situated midway between the Capitol and the White House, the limestone-and-brick complex will comprise twin 13-story buildings with broad semicircular colonnades ringing a proposed Navy Memorial. Plans call for 225 condominium units on four terraced upper floors, 579,000 square feet of office space, and 70,000 square feet of street-level stores and restaurants. The Navy Memorial will consist of a 100-foot-wide flat disk, paved with a stone map of the world that centers on Washington, D.C. Although the height and massing of the complex are rather typical of recent architecture in the city (exemplified by the FNI Building shown at the left in the model photo above), a lavish classical vocabulary of pediments, columns, and rusticated bases should result in a dramatic urban stage setting appropriate for the nation's capital. In another obvious reference to Washington's Beaux-Arts architectural tradition, Hartman-Cox has designed the center to form a neat frame for the axial vista between the neo-classical National Archives and National Portrait Gallery buildings—a sympathetic late-Modern addition to Pierre L'Enfant's 18th-century city plan. Completion of the project is scheduled for early 1988.

Who's hot?
Seven architects, says Esquire

Anyone who still questions architecture's increasing visibility among the general public needs only to page through the first annual Esquire Register, which names seven architects among the 272 men and women under forty who, according to the magazine, represent "the best of the new generation." The culmination of an elaborate selection process that began with a pool of 5,000 nominees, the list of winners includes architects Andrew Batey, Laurinda Spear, Rob Quigley, John G. Lewis, and the Taft triumvirate of John Casbarian, Danny Samuels, and Robert Timme. The purpose of the compendium? To show that "there are new ideas in these times, there are American heroes, [and] there is more to this generation than narcissism and self-interest," explains Esquire editor Lee Eisenberg.

Competition calendar

- Fuller International, a supplier of equipment for the cement industry, seeks entries to a competition calling for new uses of cement that "represent a departure from or improvement upon current technology or practice." Two cash prizes of $10,000 each will be awarded. Entry deadline is May 15. For information write Fuller International, 2040 Avenue C, P.O. Box 2040, Bethlehem, Pa. 18017.
- Kallista, Inc. has announced a national bathroom design competition, open to architects and interior designers, for projects completed between January 1984 and June 1985. Three top winners will receive cash prizes totaling $10,000, along with round-trip flights to San Francisco. Entry deadline is June 1. For information contact Kallista, 200 Kansas St., Showplace Square, San Francisco, Calif. 94103 (415/353-2900).
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New Jersey builds a temple of science

Planned for a prominent site overlooking New York harbor, the New Jersey Science and Technology Center is the latest phase in the development of Liberty State Park on the Jersey City waterfront. The building is organized around a 400-foot-long, four-story-high science gallery that frames carefully composed views of the Statue of Liberty. Another major element of the 450,000-square-foot facility is a glass observation tower housing a giant Foucault pendulum and a built-in laser that will focus its beam on the Statue’s torch. The complex will also have the world’s largest OmniMax theater within a 90-foot-diameter dome. According to architects E. Verner Johnson and Associates, the center’s flamboyant design is meant to attract the attention of motorists whizzing by on the nearby New Jersey Turnpike. It will.

Founded on compromise:
A prison in New York’s Chinatown

The J. Paul Getty Trust has concluded a highly publicized, 18-month architectural search by selecting Richard Meier to design a new fine arts center in Los Angeles. One of the most sought-after commissions in recent memory, the complex comprises a new museum, the Getty Center for the History of Art and the Humanities, and the Getty Conservation Institute—all to occupy 24 acres of a prime 742-acre hilltop site north of Sunset Boulevard and west of the San Diego Freeway. In naming Meier, the Getty Trust culminated an elaborate selection process that began with 11 foreign and 22 American firms submitting their credentials to a seven-person committee chaired by Bill Lacy, president of The Cooper Union. The project, conservatively estimated to cost $100 million, was awarded to Meier over finalists Fumihiko Maki of Japan and James Stirling of Great Britain. Calling the commission “the single most important thing to happen to me,” the Pritzker Prize-winning architect has announced that he will move his home and office from New York to Los Angeles in order to devote full attention to the project, which is scheduled for completion in 1991.

Few residential communities are particularly pleased at the prospect of a new jail within their midst. So it was hardly surprising that the residents of New York’s densely populated Chinatown were less than enthusiastic when the city announced its intention to build a 500-bed maximum-security facility on the edge of the neighborhood. Loud protests led to a series of review meetings among city officials, community leaders, and the architects. The result: a 237,000-square-foot building combining a 16-level “new generation” prison (open floors, decentralized program areas) with street-level retail space. The complex will include such unusual (for a prison) amenities as a brick pedestrian plaza and a vaguely Art Deco street clock that stylistically echoes the existing Manhattan House of Detention across the street. Clad in precast concrete panels with a granite-sheathed ground floor, the facility will occupy only two-thirds of the building site; the community will supervise the construction of its own building—an 88-unit apartment tower for the elderly with 29,000 square feet of commercial space—on the remaining parcel. Joint project architects are Urbahn Associates and Litchfield Grosfeld Associates.
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Speculative housing, Texas style

Although Fort Worth's traditional role as a cattle marketing center has given rise to the sobriquet "Cowtown" (much to the delight of some local boosters who want nothing to do with the glitz of neighboring Dallas), the Texas metropolis is beginning to exhibit a bit of flash all its own. Want proof? Then head over to the city's prestigious estate neighborhood of Westover Hills, where developer Haydn Cutler Company has hired four major young architectural firms to complete designs for four adjacent speculative houses—the first phase of a larger residential project known as Westover Square. Faced with steep, narrow lots and required to work within strict design guidelines drawn up by architect David Schwarz that mandated, among other things, sloping roofs and facades mainly of brick (in deference to eight previously built "traditional" houses in the development), the four firms have come up with the intriguing mix of residential typologies shown here. A linear gallery, punctuated by a series of lanterns, organizes the program elements of a house by Tar. Architects (top), while a residence by Casa & Pinnell (middle) responds to its ambivalent setting—"too dense to be rural; too separated to be traditionally urban"—with a pair of open and closed courtyards. Andres Duany and Elizabeth Plater-Zyberk have designed a house that exhibits the cool classicism typical of the Miami firm's work, a striking contrast to the horizontal, almost Wrightian quality that characterizes the proposal by Tod Williams & Associates (below). Proof positive that architectural distinction does not come cheap, the houses will be available for prices starting at $725,000.
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Design awards/competitions:
Portland Cement Association
1984 Concrete Building Awards

1. Van Ness Plaza, San Francisco, California; Kaplan/McLaughlin/Dias, Architects (Award of Excellence). In order to convert an automobile show room into an office and retail facility, the architects added two floors to the existing three-story, reinforced concrete structure. A barrel-vaulted glazed atrium at the roof line introduces natural lighting into the interior while providing a focal point for the entrance and office space. The building has been sheathed in alternating bands of concrete and green granite panels, and, at the upper levels, a new glass curtain wall. “An excellent transformation of a prosaic footprint into a poetic multipurpose structure,” observed the jury.

2. The Vintage Club, Indian Wells, California; Fisher-Friedman Associates, Architects (Award of Excellence). The faceted mountains surrounding Palm Springs inspired the pyramidal geometry of an 84,000-square-foot clubhouse (Record, February 1984, pages 128-135). Organized on a 24-foot grid, the entire structure is constructed of exposed, cast-in-place reinforced concrete, a material that was also used for planter walls, fountains, bridges, paving surfaces, and lighting fixtures. Complementary Italian travertine infill walls, sun-bleached wood trellises, and plum-colored ceramic tile roofs were selected to harmonize with the surrounding desert landscape. The jury admired the “elegant serenity” of the pyramids and the way light filters through latticework roofs.

3. The Monterey Bay Aquarium, Monterey, California; Esherick Homsey Dodge and Davis, Architects (Award of Excellence). Located on the Monterey Bay shorefront, the nation’s largest aquarium was designed in an industrial vernacular style—reinforced concrete framing, corrugated walls, high boiler smokestacks—to blend in with existing buildings on adjacent Cannery Row. In addition to its contextual qualities, cast-in-place architectural concrete was chosen for its ability to withstand the effects of waves acting on the exterior structure, as well as its resistance to corrosion on supporting elements. The jury praised the aquarium as “a strong, harmonious design . . . that continues the silhouette and profile of Cannery Row.”

4. Queen’s Quay Terminal, Toronto, Ontario; Zeidler Roberts Partnership, Architects (Award of Merit). An unused 1920s-vintage warehouse on the Toronto waterfront was converted into a mixed-use office, retail, and residential center. Early in the design phase, the reinforced concrete structure was determined sound enough to bear the weight of four added stories housing 72 balconied condominium units grouped around roof gardens. For the interior, the architects created two large skylighted atriums by cutting out portions of the structure—a decision that the jury praised as “a thoughtful subtraction from an existing grid that emphasizes the structure and creates wonderful spaces.”
Robertson Fowler Associates; Herbert S. Newey of Herbert S. Newey Associates; and Walter F. Wagner, Jr., editor of ARCHITECTURAL RECORD.

Awards news continues on pages 88-91 with reports on projects honored by the New Jersey Society of Architects and the Prestressed Concrete Institute.

5. Gallatin County Detention Center, Bozeman, Montana; BGS Architects (Award of Merit). The program called for a new 43-bed correctional facility (RECORD, March 1988, pages 96-99) to replace an outmoded jail built in the late 19th century. A low-profile scheme was developed for the 12,426-square-foot prison, which has cell blocks arranged along a linear service core with access to an outdoor recreation yard. Cell walls are constructed of reinforced concrete sheathed in split-face concrete block, while the roof is a combination of flat slab units and precast vaults over public areas. On the exterior, alternating bands of light and dark concrete block suggest sturdy rustication—and enhance the architects’ desired image of security. The jury characterized the design as “strong, bold, humane.”

6. Emery Building Addition, University of Utah, Salt Lake City, Brixen & Christopher, Architects (Award of Merit). A new entrance and service core for an existing early-20th-century classroom building exhibits a combination of sandblasted, cast-in-place concrete—selected to harmonize with the gray brick sheathing of nearby campus buildings—and a reflective glass curtain wall. Arched openings surrounded by cast drip moldings are intended to echo similar architectural forms on the older structure. The jury called the relationship between the original building and its new L-shaped addition “ingenious.”

7. One Warren Place Parking Garage and Canopy, Tulsa, Oklahoma; Thompson, Ventulett, Stainback & Associates, Architects (Award of Merit). The jury praised a 1,900-car parking garage for its “excellent proportions and detailing,” and cited the architects “for paying careful attention to a humble building type and [avoiding] gimmickry.” The garage has cast-in-place concrete framing with slabs that are post-tensioned in both directions to improve the serviceability and life-cycle of the structure. Cantilevered triangular stair towers feature glass-enclosed walls that echo the pitched roof of a canopy connecting the garage to an existing office building.

8. Seeley G. Mudd Library, Yale University, New Haven, Connecticut; Roth and Moore, Architects (Award of Merit). A poured-in-place reinforced concrete frame with sandblasted finish was specified for a 2.8-million-square-foot library and government documents center (RECORD, August 1988, pages 88-90). Exterior infill walls consist of waterstruck brick, laid in Flemish bond, with limestone bull-nosed trim at each floor level set into exposed concrete columns and spandrel beams—a “typical combination of materials,” in the jury’s words, that is repeated in the lobby areas. The 70,000-square-foot building was designed to relate in height, detailing, and color to an adjacent Beaux-Arts structure.
New Jersey Society of Architects
1984 Architectural Awards

of its Victorian neighborhood,” commented the jury. “If you drive along Main Street and think about what could have gone there, this building is a triumph.”

2. Corporate Office Building, Piscataway, New Jersey; Barrett Allen Ginsberg, AIA, Architect (Award of Excellence). The jury called this 2 1/2-story, 65,000-square-foot headquarters for an investment corporation “a high-tech building of absolutely the highest quality…. We looked at a great number of similar projects and thought that this one was head and shoulders above the rest.” The jury was particularly impressed with the way the architect incorporated energy-saving features into the design of the building’s dark aluminum-sheathed facade. On the north, for example, there are protective balconies and a clear glass overhang that permits light to enter; an opaque south-facing skylight, by contrast, shades the interior from heat gain during the summer while allowing the sun’s penetration in winter. Other energy-saving devices include above-standard insulation and an earth berm that shields the structure from the winter’s prevailing winds.

3. J. B. Speed Art Museum Addition, Louisville, Kentucky; Geddes Brecher Qualls Cunningham, Architects (Award of Excellence). The jury praised the architects of this expansion project for reconciling the Beaux-Arts classicism of the original museum with a later International Style addition. The new limestone-and-slate wing contains 14 upper-level cabinet galleries, designed for the display of Old Master paintings and illuminated by natural light filtering through a system of vaulted skylights that the jury called “innovative.” Characterizing the structure as “complete architecture,” the jurors admired the way the design returns the museum’s main entrance to the original building and provides a logical progression of flowing interior space. They added that “all materials seem to have been selected with thought and detailed with skill…. It feels like a tremendous place to be and a great place to experience art.”
At its 84th annual convention in Atlantic City, the New Jersey Society of Architects announced the winning entries to its 1984 architectural awards program. Six preeminent designs in the categories of completed and proposed projects were chosen from 70 submissions by jurors Richard Green, FAIA, president/director of The Stubbins Associates in Cambridge, Massachusetts; Arthur Cotton Moore, FAIA, of Arthur Cotton Moore Associates in Washington, D.C.; and Thomas A. Todd, FAIA, partner of Wallace Roberts & Todd in Philadelphia.

4. Corporate Office Facility, Florham Park, New Jersey; RotheJohnson Associates, Architects (Award of Merit). The jury was particularly impressed by the way the architects of this 140,000-square-foot speculative office building "used a bit of flash and a bit of design ingenuity to take what could have been an undifferentiated container and create real architecture." The primary building materials employed are white precast concrete panels for exterior walls and columns, clear anodized aluminum for window frames, and dark bands of gray insulated glass. Cranberry-colored tiles lining a colonnade and clear glass utilized at the main entrance are contrasting elements. "Some conscious thought was put into the detailing," noted the jury, which added that "the selection of materials, the scale, and the transition from one size grid to another work extremely well."

5. Engine Company No. 3 and Ladder Company No. 2, Trenton, New Jersey; Clarke & Caton, Architects (Award of Merit). As part of a program to unify two separate firefighting companies, the city of Trenton decided to expand and upgrade an existing late-19th-century firehouse. The architects elected to replicate the formal composition and some of the details of the original structure, and they sheathed the new building (left in photo) with red-painted exterior insulation molded into shapes that roughly match the brick architectural elements of the existing firehouse. A second band of cream-colored insulation visually unifies the two structures, which are physically joined by a new central watch station and a wing containing the facility's firepole. The jury noted that "the use of a symmetrical scheme lends power and impact to a very successful project."

6. Mixed-Use Redevelopment Plan for Blocks 8 and 9, Stamford, Connecticut; Michael Graves, Architect (Commendation for a Proposed Project). The intention of this master plan for a site in downtown Stamford is to re-establish the urban character of the city by massing traditional building types along a reinforced street edge and organizing pedestrian routes through open public spaces. The building program calls for 700,000 square feet of rental office space, 70,000 square feet for retail use, 150 apartments, a 160,000-square-foot municipal office building, and parking for 1,900 cars both below and above grade. A skylighted internal pedestrian street will connect twin 15-story office towers with a large circular outdoor plaza. The jury admired the "clear infusion of classical forms and planning into an American city" and felt that the scheme would "impose a new sense of form and order" on the center of Stamford.
1. New Center One, Detroit, Michigan; Skidmore Owings & Merrill, Architects. A new eight-story office building adjoining the General Motors corporate headquarters in Detroit was designed to harmonize with its surrounding neighbors, all stone commercial structures erected during the 1920s. In addition to the exterior application of precast concrete, the material was also used on a series of second-story pedestrian bridges. "The architects have visually related the new building to adjacent structures quite effectively," noted the jury.  
2. Justice Center, Portland, Oregon; Zimmer Gunsul Frasca Partnership, Architects (Record, June 1984, pages 126-128). A programmatically complex, mixed-use government center is characterized by a generous use of precast concrete elements. The exterior is clad in concrete panels, similar in color and finish to the granite of older landmarks nearby. Inside, public areas, courtrooms, and detention cells all have smoothly finished concrete walls. "There is a richness in the detailing," noted the jury. "The contrasts at different levels create a unique artistic effect that is unusual in a public building."

3. One Civic Center Plaza, Denver, Colorado; Hellmuth Obata & Kassabaum, Architects. The architects chose V-shaped precast concrete panels to clad a 22-story office complex located on a prominent triangular site at the end of Denver's downtown pedestrian mall. The building's stepped configuration was devised to take advantage of views of the Colorado State Capitol and surrounding mountains. The jury lauded the structure for its "striking use of color and shapes. The vertical articulations and changing angles are most impressive."

4. 8000 Regency Parkway, Cary, North Carolina; Thompson, Ventulet, Strainback & Associates, Architects. Horizontal bands of custom rose-colored precast concrete panels were selected to minimize on-site construction time and to project a strong corporate image for a speculative office building. South-oriented windows are recessed, allowing the concrete spandrels to provide summer shading. The jury liked the "cleanness and simplicity of the building. The uninterrupted bands stretched across the entrance are an elegant statement."

5. Christiansa Corporate Office Building, Tarrytown, New York; Matthew J. Warshauer, Architects. Long horizontal bands of earth-toned precast concrete and reflective glass articulate the first four floors of a suburban office building. The top stories step back and have terraces that are protected from the sun by sloping beams. The jury called the structure "a pleasing statement" and added that the precast spandrels "appear to be floating in the landscape."

6. Goldome Bank for Savings Headquarters, Buffalo, New York; Kohn Pedersen Fox Associates, Architects. The architects' challenge was to integrate a new corporate headquarters structure with the client's existing Beaux-Arts building. The solution was a four-story frontispiece whose precast concrete rustication and cornice echo granite details on the original bank—"a successful architectural abstraction of the existing building," in the jury's words. Concrete was also used as the exterior core wall for the glass...
Architects and engineers of nine buildings and three bridges received recognition for their esthetic, functional, and economical use of precast, prestressed concrete in the 22nd annual PCI awards program. We illustrate the 18 winning structures, chosen by jurors George M. Notter, Jr., FAIA, president of the American Institute of Architects and principal of Anderson Notter Finegold; W. Kirk Bunadyga, FAIA, president of the Royal Architectural Institute of Canada; Patrick Shaw, principal of Shaw and Associates; Clellon L. Loveall, engineering director for the Tennessee Department of Transportation; and S. Russell Stearns, president of the American Society of Civil Engineers and professor of engineering at Dartmouth College.

7. Ramp for the Intersection of Interstate 75 and the Florida Turnpike, Dade County, Florida; Beilwenger, Hoch and Associates, Structural Engineers. Beveled corners and rustication adorn the piers of an 11-span, box girder bridge that forms the third level of a major highway interchange. The jury complimented the engineers "for adding beauty to a typical segmental bridge design. The simplicity of the sweeping curves creates an elegant statement."

8. Highway 406 Bridges over the Twelve Mile Creek, St. Catherines, Ontario; Ontario Ministry of Transportation and Communication, Structural Engineers. The jurors were impressed by the excellent workmanship and extremely shallow construction depth of dual precast concrete, segmental box girder bridges built by the balanced cantilever method over a fast-moving stream. "It appears as a beautiful ribbon floating on the water," they observed.

9. Bridges for State Routes 111 and 42, Putnam County, Tennessee; Tennessee Department of Transportation, Structural Engineers. Dual bridges feature precast spread box beams and cast-in-place concrete box sections cantilevered from the abutments and center piers. The jury called the bridges "well-engineered and at the same time esthetically pleasing to approaching motorists."

10. Philip Morris USA Manufacturing Facility, Cabarrus County, North Carolina; Herbert Beckhard and Frank Richman, Architects. In order to reduce the apparent bulk of a two-million-square-foot manufacturing plant, the architects created a patterned facade that comprises horizontal bands of precast concrete panels with alternating exposed aggregate and naked finishes. Smooth concrete panels articulate corners, doors, and windows. The jury called the structure "a good solution in massing for a large-scale industrial plant. The detail and changes in texture are interesting and effective. It really doesn't look like a manufacturing facility."

11. Maryland Concert Center Parking Garage, Baltimore, Maryland; Cochran, Stephenson & Donkervoort, Architects. The sculptural qualities of precast concrete construction are revealed in a four-story parking garage. The jury called the building "a very classy-looking parking structure ... and an impressive architectural statement not usually seen in structures of this type. The designer's discipline and attention to detail are reflected in the handling of the curves and reveals."

12. Tracey Office Building, Rockville, Maryland; Benjamin E. Brewer, Jr., Architect. Located on a steeply sloping wooded site, a low-rise commercial building exhibits exposed column brackets on two levels of parking that initiate the stepped patterning of a glass-sheathed office block above. The jurors praised the transition between the garage and offices, and noted that the structure represented an effective combination of precast concrete and glass. "A very interesting solution using a simple structural system," they observed.
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Reviewed by William Hubbard

Discount, if you will, the last half of Architect: The Life and Work of Charles W. Moore, in which David Littlejohn writes an appreciation of a sizable portion of all the houses Moore has built. With few photographs and no plans, it reads like the wine column of a food magazine: "Take my word as a connoisseur—this is how these houses rate. . . ."

Focus instead on the chapters in the front, where Littlejohn presents one of the most perceptive analyses ever made of the unique contribution of Charles Moore's design. "Surplus overhead space" is one concept Littlejohn names that contains part of the essence of Moore's houses. The feel of the body moving through space is the other key to understanding what Moore has given us. Littlejohn describes both of these ideas with a verve and lyricism that matches and captures the feelings one does indeed get when moving through the best of Moore's houses.

Give yourself the pleasure of Littlejohn's depiction of how Moore designs. The author presents a seductive vignette of a design session—the last weekend at Moore's Sea Ranch condominium during which Moore, Bill Turnbull, and a cast of associates, marooned by a Pacific storm that had washed out the access road, "conceived out" the plan for the New Orleans World's Fair. The scene seduces you because it is so redolent of the delicious all-nighters we have all spent en charité: the witty banter, the tension when the design was stuck, the glorious release when a single conception made it come right. You will say to yourself: "Yes, that is how buildings happen!"

Learn from what Littlejohn is attempting here. He is trying to show us the manner in which architecture is actually created. He has scrupulously avoided the structuralist, architectural approach that explains the generation of form by recourse to some elegant but simplistic system. He has shown us instead the concrete acts by which the shape got imagined, drawn, and then melded into a design. That effort deserves the praise of us all, just as it merits emulation by architectural historians. For it imprints on us (indelibly, one hopes) the image of architecture as a collaborative effort, which we all know architecture to be. Moreover, it asserts that the character of architecture is largely a function of the spirit with which the master orchestrates the talents of his collaborators.

But be wary of the manner in which Littlejohn presents to us the nature of that collaboration. For to the extent that its nature is distorted, we misunderstand the true manner in which Charles Moore's buildings get created. Look carefully at the other scenes Littlejohn describes. In them you will hear the master evaluating the relative abilities of his associates, and you will hear the associates lamenting the vagaries of the master. Is this not, really, the plague of a moment's duration, here given the appearance of long standing by a commitment to print? You know the answer from your own collaborations. Such moments of discontent are, in fact, the precise analogue of our yellow-trace sketches: they will soon be superseded by a resolution and so forgotten. The truth of professional collaborations, and therefore the truth of the creative process that Littlejohn hopes to describe, lies not in the frozen moment but in the long-term resolution.

So caveat lector. Buy this book, read this book for the rare truths about the design process that it does contain. But for the places where it misrepresents that process, trust your own knowledge of people. Littlejohn himself tells you a lot about "Charles Moore people" (his phrase). He tells of his own pleasure from their open-handed hospitality—the meals spread before him, the drinks and conversation freely offered. You know such people, the ones who put you at your ease, who take a genuine interest in what you have to say, who show their affection by small but telling gestures. To imagine such people designing together is to come close to an understanding of Charles Moore's design process, and of the particular and personal magic of his buildings.

William Hubbard has been the past year director of architecture of the Urban Innovations Group in Los Angeles and assistant professor of architecture at UCLA. His most recent article, "A Meaning for Monuments," appeared in the Winter 1984 issue of The Public Interest.

"My wife just had a great idea: Why don't we build up there instead, so we can catch the morning sun?"
Take one exceptionally creative architect from Vermont, send him to Rome on a six-month fellowship at the American Academy, and watch what happens. In the case of Turner Brooks, the result is Il Risorgimento, a movable monument of wood, canvas, and steel cable that was inspired by both the images of the architect’s native New England and the icons of The Eternal City. After completing a set of pastels that show Il Risorgimento in various guises, Brooks took his creation on a tour of Rome. Why Il Risorgimento? Brooks’s commentary, drawings, and photographs speak for themselves.

Initially conceived as a 25-foot-high construction, this monument, a sort of cross between an obelisk and a pyramid translated into wood, suddenly shrank to human size and simultaneously sprouted wings. These last not only gave it mobility, but also lent an angelic, Christian element to its pagan origins. To commemorate this small miracle, its original Etruscan name—Grotto Ferroco Tuscolus—was changed, and it was baptized and christened Il Risorgimento.

As construction progressed, I began to realize that this shape was one that derived from countless important objects I have known all my life. It is the shape of a stone tower marking the entrance to a harbor in Maine; it is the clapboard top to the firehouse in Starksboro, Vermont. It is the tiny electric engine that pushed the great hot cars at the coke factory in New Haven; it is the bell buoy off the New England coast that I have sailed by numerous times in the fog.

The drawings show various derivations and reincarnations of Il Risorgimento. Among the first completed were those that depict the monument responding to calls of distress—acting as a buoy, contemplating its own suicidal demise on a bridge, and hovering over a bleak suburban streetscape. Another documents its important trip to the pyramids. Finally, there are those where, in a fit of inflamed egotism, I saw it not only in heaven with Borromini’s Sant’Ivo, but also happily spawning its own progeny.

Later during my summer in Rome the monument made a series of appearances around the city. There was a dawn visit to the Piazza del Popolo where, with nothing but pigeons as spectators, it confronted a real obelisk. At midday it mounted the steps of the Campidoglio where it addressed the maquette of Marcus Aurelius. It went on to look at Bramante’s Tempietto, continued up the Gianicolo to pay its respects to Garibaldi, and glided through the Piazza Navona.

Although Il Risorgimento is currently residing in the parking lot at the American Academy, a final, more appropriate resting spot will be sought. I imagine this will be on a rocky outcropping of one of the Alban hills that looks out over a large slice of landscape with Rome in the distance. Here the elements will go to work, peeling the paint, warping the slats, stripping off the wings. Perhaps there will be a time, before it vanishes off the face of the earth altogether, when, the wood bleached, weathered and dried like old bones, its pagan origins may claim it again, and Il Risorgimento will be more like a monument than ever before.
Il Risorgimento in drawings:
1. "Serving as a Buoy"
2. "Contemplating Suicide"
3. "Crisis in the Suburbs"
4. "An Important Visit"
5. "Meeting SantTrevi in Heaven"
6. "Spawning Progeny in Heaven"

Il Risorgimento in Rome:
7. Touring Bernini’s colonnade at St. Peter’s
8. Scaling the Campidoglio
9. Taking a dip in the Acqua Paola
10. Paying homage to Bramante’s Tempietto
11. Greeting visitors at the American Academy
12. Touring the town

Turner-Brooks photos
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The International Style in Israel: From Europe’s utopian dreams to the pragmatism of Palestine

Reviewed by Sarah Williams

Currently on exhibit through February 17 at the Jewish Museum in New York, “White City: International Style Architecture in Israel” reviews its subject through a number of black-and-white photographs (including a separate section of works by photographer Judith Turner), plans, two models, and a lengthy text. “White City” refers to Tel Aviv, probably “the first city in the world to be constructed almost entirely in the International Style,” according to exhibition curator Michael Levin, who organized the show for the Tel Aviv Museum to commemorate the city’s 75th anniversary.

Levin explains that like Gropius, Le Corbusier, and other Europeans, the Jews who settled in Palestine during the 1920s and ’30s were working toward a socialist-based utopia. Hence, they adopted the stylistic idiom of their European mentors, adapted it to vetoes of climate and economy, and produced a national version of the International Style. Levin states that the details of Israeli I. S. include white reinforced-concrete planes, flat roofs, asymmetrical arrangements, modified band windows, and plenty of piloted. Economic conditions precluded a European devotion to steel, climatic ones a Corbusian passion for light. Moreover, the influence of Erich Mendelsohn, who settled there in 1934, smoothed many of the Israeli style’s hard edges into expressionist curves.

All this seems true enough, and the viewer dutifully nods. However, it should be noted that if we were to analyze this work from a formal point of view, we would see a lot of pretty uninspired architecture. Why? Because for all their superficial sympathy with the International Style, these architects did not share the dreams that fired their European counterparts. They had visions, and needs, of their own.

There are ways, to be sure, in which this analysis is unfair. From 1914 to 1939 Tel Aviv’s population jumped from 2,000 to 150,000, and one could say that the city was too busy to concern itself with art. Much of what Levin shows is really building, not architecture, and to his credit he never claims that he is championing unsung gems. But these buildings aspire to artistry, and asking why such aspirations are not often fulfilled reveals that the Western European compulsion to create a new architecture was dissimilar indeed from the project of building a home in Palestine. Transporting the International Style dissipated its ideological fervor. Much of the dynamism of European architecture derived from its architects’ repudiation of late 19th-century eclectic excesses:

Rietveld’s Schröder House is powerful in part because of the defiant pose it strikes as it clutches to the side elevation of a traditional Dutch apartment block. Not only do I. S. buildings in tabula rasa Tel Aviv lose the power of contrast, but their architects, physically removed from Europe’s more conventional contemporary buildings, must have lost some of their passion for rebellion. Moreover, the foundation on which I. S. architects in Europe built their social vision was a symbolic and physical celebration of the machine—a celebration in which architects in Israel could not and did not participate. Palestine was proudly agricultural: it had no steel industry and used reinforced concrete mostly because it was cheap. Allusions to the machine appear only rarely, and while Levin stretches hard to find one—writing that the rounded balconies which appear so often in these buildings are “apparently designed according to aerodynamic principles”—his argument is unconvincing.

In short, settlers in Palestine designing I. S. buildings were not heated by the twin flames that ignited their European counterparts—i.e., the flush of rebellion and faith in the redemptive power of the machine. Although this in part explains why much of Israel’s modern architecture seems flat, there is another reason. As pioneers on a lonely desert, the architects’ mandate was to help create a sense of rootedness, of place. Even on piloted, their buildings weigh heavily on the ground. Persistently deflecting Hitchcock’s and Johnson’s dictum to conceive of architecture “as volume rather than mass,” Israeli architects devote little attention to orchestrating spatial “experiences” and constantly refocus the viewer’s eye on physical presence. For example, Dov Karmi, in a wonderfully paradoxical inversion, uses Corbu’s band windows to accentuate bulk by carving deep porches from a solid block.

The most successful buildings in the show resolve these tensions by stepping slightly outside the classic I. S. mode. Some of the expressionistic or proto-Brutalist buildings are quite dynamic. In the former mode, Rubin & Friedman’s Hamaalot House and Mendelsohn’s Schocken Library are best; of the latter, Ze’ev Rechter’s Raab House is a quiet (and alas, demolished) gem. And for the record, there is one superb private dwelling, Shmuel Barkai’s Lubin House.

In the end, what this exhibition shows is just how parochial Hitchcock’s and Johnson’s notion of an “international style” really was. It is in local transfigurations that character, and artistry, reside.
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Big scope for smaller scale

Apparently, to the astonishment of many economists, the boom in office building construction is continuing—and seemingly will continue a while longer. During all this rush of construction, the big high-rises have generally seized the most attention. No doubt, this is partly because of their undeniable impact on the skylines and urban-core density of many cities, partly because of their sheer volume of space, and partly because of the eclectic high-jinks that some have affected.

But in the midst of these much-publicized and perhaps titilating towers, there is a vast quantity of smaller, more modest low-rise office structures that—each in its own way—contribute much to the current mainstream of architectural thinking. At their best, they demonstrate strong concern with appropriate regionalism, suitable materials for their locales, and rational and human planning for the needs of the particular occupants. Thus they form a varied lot of designs. If there is possibly one consistent element, it is that most have jumped on the bandwagon of the new “atrium age”—that expansive, glazed-roofed, 19th-century idea that lay fallow for so long, but whose revival is being used just about everywhere to add a dramatic, “contemporary” fillip, even at small scale.

The five low-rise office buildings selected for this study form a small cross section of some of the many design directions and concerns that are being expressed across the country. One, by Papachristou’s group, is a white brick retrofit of factory office that adds a somewhat postmodern freshness to its Connecticut town. Morgan makes a strong statement of Floridian concrete and sunshades for a rural divisional headquarters. Stubbs enhances a Pennsylvania insurance complex by a highly sympathetic major addition. For a California company’s move from town to country, Marquis interprets a woody regionalism in a new way. And, for a rental structure, Severino attracts notice with suave aluminum shapes. Diverse, yes. But what they have in common is a group of happy clients. 

*Herbert L. Smith, Jr.*
The new building hollows out irregular spaces (see plan right) from the original big, square factory, to create park-like courts (photo top right) and lots of peripheral offices. Colonnades and a vaulted entrance (above) create a somewhat postmodern metamorphosis for the original industrial structure. A central factory monitor was used to form tall, atrium-like entrance and library spaces (bottom right).
A lot of ingenuity, and the simplest of means, have been used here by the architects to transform a big, four-square, and aging factory into a delightful, campus-like headquarters building for an international pharmaceutical firm.

The original, 50-year-old fire-alarm factory was a pedestrian, but stolid, 124,000 square-foot, steel-trussed loft. It was lighted principally from above by five clerestory monitors. Office space was in a typical colonnialish “hustle” flanking the street. The location was in a not-too-dense area in Norwalk’s city limits.

In addition to the obvious need for a fresh image, the new owner’s foreseeable area requirements (including a little expansion space) was only 90,000 square feet. There was also a heavy demand for outside perimeter space with windows. In addition, a stringent budget was mandated by the Industrial Revenue Bonds under which the project was financed.

To achieve all these goals, the architects carved two generous landscaped courtyards from the original square plan, and created quite special entances for visitors on one side, employees on the other. Inside, the entrances use the full height of the central monitor and its clerestory windows to achieve an atrium-like openness. A central library between them is set off by glass partitions with glass mullions—continuing the visual space. Carving into the structure left a considerable number of previously internal columns with shallow foundations exposed to the elements. To correct this, the designers fashioned three-foot earth berms, set at 45-degree angles along the now exterior column bases to protect them from frost. Concrete was used to clad the columns, non-structural ones were added to create a colonnade around three sides of the main court. The exterior was faced in brick, and all painted white, except for the natural gray of the concrete lintel over the covered walk. Dark aluminum frames on windows under the overhang create a shadowed plane and emphasize the white columns.

Inside, the plan was divided into four main sections: executive offices; accounting and computer areas; sales and medical research areas; and storage and support spaces. A portion of the latter is for future development into research labs. Each divisional area is differentiated by its own palette of soft colors. Plasterboard is used throughout for partitions and dropped ceilings.

The executive offices are given a slightly special focus by using a curving sweep of the colonnade, which also serves as a terminal motif for the front courtyard. The building’s aplomb won it a recent Excellence in Design award from the New York State Association of Architects.

Purdue Frederick Headquarters Norwalk, Connecticut
Owner: The Purdue Frederick Company
Architect: Gatje Papchristou Smith/ASE Furno (a joint venture)—Tician Papchristou and Robert Furno, design principals; Mark Atwood and Stephen Diederman, project architects
Engineers: Werner-Jensen & Adams (mechanical/electrical); Albertson Sharp Ewing (structural/civil)
Landscape architect: Peter G. Rolland & Associates
Construction manager: The E&F Construction Company
"Work together as a team: systematically encourage and support one another." These words are among those inscribed on the cornerstone of this new divisional headquarters for Westinghouse, 10 miles east of Orlando. Thus, a major design criterion for the architects inevitably became that of "openness"—in plan, in general ambiance, in ease of personal communication.

The building houses design, research, marketing and corporate administration for Westinghouse's steam turbine and power generation divisions—with about 900 employees currently. It is a highly technical business, and uses all the latest developments in computers and communications, including CAD, word processing, electronic mail, and a video information network linking its own factories and power plants all over.

Using some of architecture's own technics—unified design expression of mechanical, structural, lighting and building systems—plus his own well-known penchant for concrete, berms and shielding against the hot Florida sun, William Morgan has created a very flexible building with a strong, sculptural impact.

The project is the initial phase of a 400-acre corporate development in a wooded rural area dotted with several small lakes. Although the curving, fan-shaped plan was reportedly designed to "recall the radial arrangements of turbine blades," it also serves to reduce the visual bulk of the 257,500 square-foot structure, shorten horizontal circulation distances, and focus interiors on nearby Lake Eby. The building steps up from two floors at its extremities to four at the center, with top management on the uppermost level.

The main, visitors' entrance lobby is at the second level, and overlooks a big, four-story atrium. Each of six service towers have employee entrances near the various workstations. Berms around the circular entry drive screen parking areas and truck docks at the base of the central service towers. The layouts of the work floors are simple and straightforward, with a central service spine flanked by open-plan offices created by the owner's own low-partitioned workstation system, and which is a basis for structural bay sizes.

The structure is poured-in-place concrete, with columns in pairs and post-tensioned beams and slabs. Exposed pairs of beams form distribution chases for mechanical and electrical systems. Cantilevers and reflectors are designed to enhance daylighting and sun control around the periphery and over the atrium. General office lighting is provided by continuous strip fluorescent fixtures, with a low-voltage microcomputer controller. All are deviously integrated into a spirited, organized building.
A curving drive leads to a formal circle and the main entrance of this new headquarters building (bottom photo, far left). This facade has six service towers with employee entrances off the parking lots. On the plot at left, an additional bay is shown at each end for future expansion. The rear facade curves to focus on a nearby lake (top photo, left). Strong expression of its details (above) creates a rhythmic design.
The interiors are dominated by a big four-story atrium (right) which is top-lighted by a clerestory and reflective panels for diffused daylight. The high-ceileded visitors' lobby (top left) is entered at the second level (see section) and overlooks the atrium. Each of the four floors steps out to provide sun protection for the continuous bands of windows. The first two floors each have five functional bays, expressed on the exterior by service and stair towers. As a counterpart, circular lake-viewing pergolas are planned to be added in the future on the rear facade, as shown on the plans. The two upper floors step back one bay at each end, with three bays on the third level, and a single bay for top administration on the fourth. All general offices are open-plan, with service facilities ranging the center and flanking the atrium in the middle with its freestanding, glass-fronted elevator shafts.

Architects:
William Morgan Architects—Thomas A. McGary, project architect

Engineers:
Tilden, Lobitz, Cooper (structural); Roy Turknett Engineering (mechanical/electrical); Richard Carlson (civil); William Lam (lighting);
Jaffe Acoustics (acoustical)

Interior design:
Interspace

Interior layout:
Sal Brunello, Westinghouse

Landscape architect:
Herbert/Halback

General contractor:
Scandia, Inc.
Faced with the pressing need for more office space, the Erie Insurance Group found itself confronted with a dilemma common to many expanding companies. Their existing facilities were located on the edge of downtown Erie, Pennsylvania, in an area that had deteriorated to the point of being known locally as the “combat zone.” But, unlike some other companies, in other cities, that have simply relocated, they boldly opted to remain and spearhead a revitalization of the entire area.

To lead the rest of the downtown areas, the company, together with The Stubbins Associates, Inc., prepared a long-range master plan for the development of a six-block area surrounding the original neo-Georgian headquarters building, with its annex and a nearby education building. The site contained some older, “historic” housing that was worth saving, and several severely run-down structures that were not. The latter were razed for the new addition. According to Thomas Hagen, president of the Erie Insurance Group, the company originally wanted a high-rise for the new quarters, but was persuaded by the architects to maintain the four-story scale and materials of the neighborhood and to rehabilitate the best of the existing buildings—as well as develop a park-like landscape for the entire site.

Concurrent with their own building program, the company helped found the “Erie Tomorrow Corporation” to study and spur the entire downtown area. At this stage, Hagen reports that “a bunch of things are happening”—from storm sewers to improved pedestrian and vehicular circulation, refurbished parks and playgrounds, and restoration of some of the older buildings, including a big empty department store that is operating again.

The new 48,000-square-foot company addition abuts the existing education building and uses a two-story link to the older headquarters to form a landscaped courtyard off a new 400-seat cafeteria. It is a quietly handsome contemporary structure of brick, granite and limestone that deftly achieves the dual purpose of “setting off” the older headquarters and having an assured assertiveness of its own. The plan centers on a four-story, skylighted atrium which serves as the main circulation and reception area. This space, along with an adjoining auditorium, is also used for public functions, hearings, concerts, conventions and the like. The upper floors provide office and conference room spaces and have smoking lounges sprinkled through the balcony levels. A full basement containing printing and mailing facilities, storage and mechanical equipment rooms is linked via an underground tunnel to all buildings.

Company president Hagen—now an ebullient architecture buff—comments with some pride, “It’s a masterful job.”
The new building added to the insurance company complex (above) respects and complements its environs. As can be seen in the rendering of the entire six-block redevelopment site (bottom, far left), it serves as an anchor for the existing buildings, facilities for parking and storage, and both restored and new housing. The addition connects with the old headquarters by a new employee entrance link (left), which also helps form an attractive courtyard between the buildings (top photos, far left). The main entrance to the new building is marked by cast-iron columns from the razed "Crazy Horse Saloon" which formerly stood on the site. Other architectural elements from the same structure are used as decorative artifacts throughout the building.
Hub of the new addition (shaded area on plan below) is the big four-story skylighted atrium, which serves as a year-round landscaped court for reception, circulation and lounge spaces, as well as acting as a passive solar collector. A visual highlight of the space is a series of 12 elevator doors (three to a floor) by the artist Vera Ronnen-Wall. They use a vitreous enameling technique usually reserved for small objects, with the enamel fired directly to the metal doors. Horizontal color transitions range from vivid reds on the first floor to blues, greens and purples on the upper floors (photo far right). The office areas largely use an open-plan furniture system, with walls and carpets in neutral colors with accents of red and yellow.
Erie Insurance Group
Erie, Pennsylvania
Owner:
Erie Insurance Group
Architects:
The Stubbins Associates, Inc.—Merle T. Westlake, principal-in-charge; Richard Green, principal-in-charge of design; Michael Gilligan, landscape designer; P. Lawrence Mackenzie, project manager; Peter J. Scott, interior designer
Engineers:
LeMessurier Associates (structural);
Joseph R. Loring and Associates, Inc.
(mechanical/electrical)
Consultants:
Barton-Ashman Associates, Inc.
traffic; Cini Grissom and Associates, Inc. (food service); Vera Ronnen-Wall (elevator doors)
Construction manager:
Turner Construction Company
When the Design Professionals Insurance Company decided to move its corporate headquarters from San Francisco to Monterey, California, a major concern was that the new building have a quiet, but appropriately strong, appeal for its professional liability insurance clients—architects and engineers.

This relatively modest building certainly has that appeal—with its respect for the wooded and gently sloping site, fresh interpretation of the soft-spoken regional style, and unassuming stress on well-executed, exposed structural and mechanical systems.

In designing the 70,000-square-foot, basically two-story structure, a sort of pinwheel plan radiating from a skylighted atrium was adopted to minimize its visual bulk (and, not incidentally, to increase light and views for the interiors). The natural state of the site was further preserved by using basement parking, supplemented by outdoor spaces dispersed through the trees. Existing grades and vegetation were protected by low retaining walls.

The big, light-filled central atrium serves as major entry and circulation space. Additional stairs are set in little skylighted wells at the extremities of each wing. Office layouts combine large open-plan areas with peripheral private offices. With the future in view, the building is somewhat larger than necessary for DPIC’s current needs; tenants occupy the excess space on an interim basis. Common spaces occupy an area close to the atrium. The second floor layout is very similar to the first, and includes a lunch room, a library, and a second conference room. The slope of the land permits a direct terrace entrance near those areas.

The “Monterey peninsula style” is expressed in the building’s use of simple, natural materials, exterior balconies and sloping roofs. The structure has 20-foot bays of exposed post-and-beam, glue-laminated timber, with perimeter shear walls and cedar siding. Flooring is quarry tile in public spaces, carpet in office areas.

The hvac system is of the low-velocity, variable-air-volume type, with a plenum for return air. Most components are finished in soft-gray and left exposed. There is a basement mechanical area of 2,850 square feet. Louvered lighting “boxes” and other fixtures are simply and frankly suspended from tall ceilings.

Because the site is located near an airport and a major highway, the building shell has been specially designed and insulated to reduce sound transmission from the outside.

Interior furnishings are in natural woods and muted colors to complete a headquarters which (especially considering that insuring liability is their business) conveys quiet security—and pleasure.
Sinuous sculpture on spec

Located in the verdant heart of New York’s Westchester County, a burgeoning suburban “corporate area,” this eye-catching office building is low-rise, low-cost, low-maintenance—and low-rent for multi-tenant occupancy. Basically a loft building with mechanical and circulation core, plus an elegant little entrance atrium, the sinuous structure was specifically designed to appeal to expanding high-technology companies. “Soft modern for the software industry,” comments architect Renato Severino.

The program set out by the developer was relatively simple: “something one can use within a budget,” an identity that would be liked by the nearby residential communities, and flexibility for partitioning and furnishing by the individual tenants.

Severino’s response is a free-flowing piece of architectural sculpture—a purely arbitrary composition of off-white aluminum panels and glass that seize the eye and reflect the trees, and with a “little ambiguity in the shadows” of the overhanging curves. Severino adds, “It is not all rational—that can be a little boring. It's a link between technology and art.”

The building contains 130,000 square feet of enclosed space on four floors, and for all its flowing shapes is constructed on a simple, regular, structural-bay system. The central, L-shaped mechanical core contains three elevators, toilets, two stairs, and janitors’ closets. Lighting and wiring are very flexible to adapt to tenants’ needs and today’s omnipresent computer invasion. Costs were kept down (about $37.50 per square foot) by using “the best of ordinary” materials and equipment—in other words, standard items of quality.

As added amenities for the tenants, the building was developed with a restaurant-cafe and a fully equipped health center and spa. Outdoors, in its park setting, are ponds, jogging paths, benches, and ample covered parking spaces.

All this has certainly given the building a stylish appeal seldom found in relatively small, speculative rental offices. The considerable care in design and detailing—the interplay of forms, massed and banded fenestration, the welcoming, almost ceremonial entrance and atrium (see overleaf)—have brought positive response.

The client and the community like it, and the real estate agent considers the approach very successful: the building is currently occupied by AT&T, New York Telephone, and Nynex marketing units. And Severino notes that it has led to more developer clients: “Even the very conservative development firms in the area are now looking to construct ‘designed’ buildings, and hiring the firms that can produce this kind of architecture—a very encouraging message!”
With much more style and character than most suburban office buildings, this rented structure has a high-tech sleekness, fitting for the New York suburbs, and more than keeps its identity in the midst of a lot of relatively new corporate buildings (for example, a Pepsi-Cola research center is across the street). From the main road, and through the sweep of an impressive entrance drive, the main facade (below) presents a composed glitter of reflections. This is enhanced by a stepped panel of mirrors attached as a fin to the tall column supporting the roof overhang (top left). All this is emphasized by special lighting at night. The main entrance (bottom left) is at the second level, up a short sweep of steps.
Just inside the main, second-level entrance is a trim lobby (photo below), dramatized by a three-floor circular atrium. This is topped by an aluminum-framed glass dome (bottom photo). On the middle level (below right), the atrium is glassed-in and the area around it is developed as a lounge. All this is linked by a tall, fairly exuberant tree. The basic structure is steel frame, with concrete floor slabs. With the exception of the lobby, most interior finishes and fittings are provided by the respective tenants. The white aluminum cladding for the exterior is formed of four-foot panels, which were selected, according to Severino, "because they can be curved at no extra cost." In spite of the over-all sinuous appearance of the building, only three corners and the overhangs are actually curved—the rest of the structure has straight, standard
walls. Off to one side of the building, at the back of the lot, is a covered garage structure clad in similar aluminum panels. Two lower floors are for tenant parking, topped with two added floors for extra rental space. Opposite this is a small dock-loading area for the main building.

Mount Pleasant Corporate Center
Valhalla, New York

Architects:
Renato Severino Associates—Renato Severino, partner-in-charge; Daniel Davis, assistant designer and project manager

Developer:
Cappelli Development Company

Engineers:
Arne Thune Associates (structural);
Michael Dalton Associates (mechanical/electrical)

General contractor:
Saturn Construction Company
Aerospace Museum
Los Angeles, California
Frank O. Gehry and Associates, Architects

The right stuff
Frank Gehry is generally regarded as a regional architect—an idiosyncrasy peculiar to the helter-skelter culture of southern California. Though few would contest his place in the contemporary pantheon of architectural luminaries, Gehry has the dubious reputation of the promising but prodigal son who died west after Harvard and got caught up in all kinds of bizarre shenanigans. The perception is based on the past decade of Gehry’s practice, which dutifully followed a straight and narrow path charted by developers and department stores until the exigencies of construction (money, materials, craftsmanship) and a sensitivity to socio-political events conspired with a growing interest in contemporary art to push his work...well, left. The juncture came in 1976 when, after completing a very straight and narrow corporate headquarters for The Rouse Corporation, Gehry unleashed a portfolio of projects and buildings he dubbed “chapscape architecture” (RECORD, July 1976). He referred to an “invisible architecture...that doesn’t shout ‘Look at me, I’m an Architect!’” and, what was deemed worse, he claimed to be “confused as to what’s ugly and what’s pretty.” Others, not at all confused on the ugly/prett question, called it “junkitecture.” Three years later, when Gehry renovated a modest, pink shingle house for his family, they called it avant-garde but decidedly out of bounds. Though the instantly infamous Gehry House was conceived as an “experiment,” i.e., it was “deliberately overdue,” the architect’s iconoclastic reputation was nonetheless galvanized. If there were rules in architecture—and there were—this didn’t abide by any of them. The image of unpainted plywood, chain link fencing, corrugated metal, and exposed studs playing hide-and-seek—if not juggle—with the little house on the corner lot in a once-quiet Santa Monica neighborhood was hard to forget; the aqua concrete block wall in the yard and the black asphalt floor in the kitchen were hard to forgive. Though Gehry picked up a National AIA Honor Award for the project, (the jury comments were carefully qualified), he paid for it with innumerable colleagues and nervous clients who, six years ago, were having trouble digesting cardboard columns and gypboard keystones.

But things are now looking up for Frank Gehry’s reputation. Or, as they say in L.A., Gehry’s “star” is in the ascendant. His $15,000 to $40,000 Colorcore fish lamps are selling briskly in East and West Coast art galleries, a Rizzoli monograph will soon ensnare the first 25 years of his career, a much-publicized joint venture with Klaus Oldenburg on a summer camp for terminally ill children promises to expand our current understanding of architect/artist collaborations, and the firm’s drawing boards are humming with an enviable variety of perfectly respectable projects. (A parenthetical note re-affirming Gehry’s current célèbre status is supplied by the constantly-on-the-cutting-edge executives at Sunar/Hauerman, who chose Gehry to design a new contract furniture show room in Dallas.) But what’s more to the architectural point is the work now emerging from Gehry’s Venice office. First seen in model form 19 months ago (RECORD, June 1982), the Loyola Law School, the Norton House, the Beverly Hills Apartment, and the Aerospace Museum are fulfilling at full-scale the exhilarating promise they held at one-eighth scale. Gehry’s alleged “favorite” of the group (a prejudice that admittedly changes from day to day) is the last, which, coincidentally, was finished first.

Completed last July—just in time for the summer Olympics—the Aerospace Museum is but the first phase of a two-phase plan that calls for the eventual annexation of the 60,000-square-foot armory lurking behind it (site plan page 119). Though the sturdy but unremarkable armory was initially considered as the obvious site for the museum, the state legislature’s non-expansible, $3.4-million budget was hopelessly inadequate to the task of transforming the aging behemoth into a showcase for jet age technology (the money would merely bring the building up to code). With an eye toward the ultimate goal of expanding into the armory, architect and museum officials opted for a more patient, long-term approach to their goal: they decided that a dramatic initial statement could better introduce the museum and its theme, better excite the public’s interest, and better garner the necessary support for the future expansion. Gehry’s task then, as it evolved, was not so much to build a museum as to build a museum “starter kit”—a starter kit, not incidentally, upon which the ambitious future plans hinged. Gehry did not take the responsibility lightly: the Aerospace Museum got its dramatic initial statement.

Although the Lockheed F-104 Starfighter impaled on the cruciform strut above the 40-foot hangar door is surely the most sensational aspect of the museum’s design—an aspect that can alternately be a source of delight and foreboding—the giant, thematically appropriate gargoyles does not upstage the structure it adorns. Which, considering the drama of the plane, is no small feat. The F-104 Starfighter is simply very bold ornament applied to a very bold building which, according to the architect, began life as a big dumb box. Although Gehry patiently outlines how he shifted and molded that box to accommodate entrances and exits, building lines and light, he also acknowledges that there is a point in any design—after all the functional requirements and constraints have been acknowledged, after all the massing forms are essentially in place—when the architect is “free to fly...to soar.” That point came early at Aerospace since the programmatic requirements, as presented to the architect, were minimal: “I thought they were going to hang 10 planes in there and that was it.” Working not unlike a sculptor, Gehry refined the established elements—pushing them and pulling them, collaging them and colliding them into what may most accurately be termed a volumetric assemblage. The resultant three-part building is composed of a leaping, metal-skinned polygon divided from a comparably scaled but clearly “background” stucco box by a giant central window. For those with a penchant for references and allusions, the giant central window is capped with a triangular “tent” (or could it be a cockpit?) complete with multi-panel window which frames a metallic sphere (is it the sun, the moon, the earth...a weather balloon?). Though some have compared the tripotch-like building to a three-dimensional constructivist billboard, less-sophisticated visitors have merely commented that it reminds them of an airplane hangar or, no less appropriately, an aircraft carrier. Whether hangar or carrier, the message the building conveys is clear—through its forms, materials, and scale it evokes at least the spirit, if not the letter, of the industry and technology it houses.

There is, however, another message that the Aerospace Museum conveys—one that can be gleaned even from a distance. And that is that while the building and the plane are hard to miss, as they say, they’re not so hard to miss as to steal the cacophonous visual show that is Los Angeles. They are but one more rich layer in the very densely layered urban fabric, which is neither pretty nor ugly. And while the building is dramatic, to be sure, it nonetheless looks right at home amid that erratic patchwork quilt of flashy fast-food restaurants and tacky used-car lots, of grand turn-of-the-century museums and formal rose gardens that comprises its context. What the Aerospace Museum reveals is that Gehry has not only not abandoned his love of unorthodox materials, of agglomerating disparate forms and finishes, of awkward connections and collisions, but pursued that love even further. The juxtaposition of disparate forms, materials, and textures not only acknowledges but responds to the ad hoc character of the American city—the real, not the ideal, American city. What Gehry’s work suggests is an alternative route in the search for an architecture that is appropriate and relevant to its time and place—an alternative that is neither nostalgic nor grandiose. It is a welcome message, and a timely one. One hopes the students who thronged into the lecture hall at Harvard’s Graduate School of Design last November, when the 55-year-old architect returned to his alma mater as the Eliot Noyes Design Critic in Architecture, understood what they heard: “Looking back is depressing,” opined Gehry, who isn’t a bit. Charles K. Gandee
For sheer architectural thrill, the polygon forming the west wing of the new Aerospace Museum is hard to beat. Shimmering dramatically under the California sun, the multi-faceted metallic form works not only as a three-dimensional anchor for the very high but very shallow museum, but also as a visual foil to the Lockheed F-104 looming around the corner (facing page). The polygon is a by-product of an oblique circulation route that leads both general and handicapped visitors up a 20-foot ramp from the street to the museum entrance at the rear (below left). Gehry deflected that corner of his building to create a more generous, funnel-like entry sequence (plan below). The “back-door” entrance—situated as it is in the 10-foot-wide “alley” separating Gehry’s building from the red-brick armory it adjoins—acknowledges the museum’s ultimate plan to incorporate the armory; when that happens, visitors will have the option of entering either Gehry’s building or the armory building. (Also, not incidentally, retaining the existing armory entrance satisfied the State of California, which required it as a fire exit for the armory; similarly, the 10-foot “alley” is a response to a California law that says when you attach a new building to an old building you inherit all the code problems—of which the armory has an abundance.) The metallic sphere perched atop the yellow stucco entry structure may be regarded as a nose cone—but only if you’re willing to regard the stepped entrance structure as a belly-up cubist airplane. The terrace along the west of the armory replaces formal steps that previously led to the Rose Garden below (above). The terrace is currently, and regrettably, bedecked in lattice work and bunting donated by Anheuser-Busch for the Olympics.
The east wing of the Aerospace Museum (facing page) is bland when compared to the dramatic west wing (previous spread) and the variegated south facade (page 114), because the $8.4 million budget could stretch only so far. Gehry originally intended the non-uniform box to take the shape of a fan, but sacrificed the amphitheater form when the choice came down between it and the costly polygon. The original design would have been better, but the built design is not tragic: the museum is sufficiently rich in forms, materials, and textures that it can comfortably accommodate a “background” element. Building that element is the fire stair (facing page) spilling out to the plaza in front of an octagonal IMAX theater (not shown). While it—and its companion piece on the polygon side—may look something like children's slides, the two fire stairs might also recall flying buttresses supporting the museum's almost unwieldy dimensions. Gehry never mentions it, but it's a thought. Gehry does, however, mention the possibility of throwing both fire exit doors open, as well as the monumental hangar doors, so that the museum would be more "porous," and visitors and views could wander in and out. The simplicity of the Aerospace Museum plan (left) is not surprising, considering that the building was intended to introduce visitors to the history of flight through hanging displays. And what better way to present the wonder of flight than with a lofty, open plan? The yellow entrance structure, visible in the crevice between museum and armory, emerges intact inside the museum as a building-within-a-building (section below). It houses the elevators and stairs, but, also (as more than one visitor has been heard to complain), no lavatories!
If the exterior of the Aerospace Museum can be termed riveting—and it can—the interior can be termed exhilarating. Those unorthodox Gehry forms and collisions create spaces whose complexity and scale defy the photographer’s art. In Aerospace, Gehry outsides himself with the bulging leaning polygon hinged to the big dumb box by the 45-foot-high window. The resultant spaces go a long way toward creating the perfect vantage point from which to ponder the wonder of space. The ability to manipulate light has always been a Gehry trademark—something he learned in the early days designing department store—with at Aerospace we see that talent in full sway. Natural light streams in from a range of sometimes-hidden, sometimes-visible sources: from the 18-foot-high diamond-shaped skylight capping the polygon, from the 18-foot-high crowned skylight capping the big box, and from the “window” in the triangular “tent” capping the central window. The effect of the spatial and lighting gymnastics can best be appreciated at ground level, peering up through the maze of planes and satellites veering to and fro. A welcome viewing platform from which to assay the passing scene—as well as gain access to the maze of ramps, stairs, and bridges weaving around and about the installations—may be found in the three-story, gyprock-facade structure (facing page). (Gehry intended the gyprock to be tile, but the budget dictated otherwise.) A sad note. The exhibit designers felt strongly that a theater be located in the polygon; despite Gehry’s protest, “You’re ruining my building,” a space frame filled in with blackout panels was inserted (facing page). Gehry was right; the polygon’s impact is all but lost.

Aerospace Museum
Los Angeles, California
Owner:
California Museum of Science and Industry, California Museum Foundation
Architect:
Frank O. Gehry and Associates—Frank O. Gehry, principal-in-charge; John Clugett, co-designer; Rene Ilustre, project architect; Greg Walsh, Ron Johnson, Patricia Owen, Sharon Williams, Josh Chaiken, Dean Perton, Yuk Chan, Adolph Ortega, David Kellen, design team
Engineers:
Kurtly & Szymanski (structural); Puller-Roberts (civil); Athens Enterprises (electrical); Store, Matakovich and Wolfberg (mechanical)
Exhibit designers:
Joseph A. Wetzal Associates—Joseph A. Wetzal, principal; Howard Litweak, project manager; Eileen Zelisk, programmer; Bill Ruggieri, Cia Mooney, Mary Auffsmith, Penny Perez, designers; Harlan Hadley, associated architect
Consultants:
Edgeware Systems (software); Dave Kastle, Richard Maurer (graphic design); Pat Gallegos (lighting); Bob Lambton (special effects); Ray Bradbury (script); Image Stream (theatrical production); Chedd-Angier Production Company (video); Terry LeBlanc (technical illustration)
General contractor:
Chartered Construction Corporation
Big park for the Big Apple

For the last ten years and more, the papers and television have bombarded New York City with news of and opinions on Westway, a projected underground interstate highway to run in landfill along the Hudson River. Controversy about the project has seethed to a degree exceptional even for contentious New Yorkers. But one positive factor on the proponent’s side is the proposal for Westway State Park, a green strip on top of the roadway that would recapture three and a half miles of waterfront for the use and pleasure of pedestrians.

The Westway site extends nearly four miles to connect Pelli’s Battery Park City at the southern end with Pelli’s convention center at 34th Street. It will be about 400 feet wide, with a little less than half the width dedicated to the park, the rest reserved for residential and commercial development between the park and existing neighborhoods. Moreover, the design required three park enclaves—one each at Chelsea, Greenwich Village and TriBeCa—to satisfy the Federal highway law that requires mitigation to communities who lose existing parks to interstate roads. Added to these design constraints are protective structures for the Holland Tunnel, which carries automobiles, the PATH railroad tubes and the Amtrak tunnel, as well as ventilation structures for all tunnels, including a new one for the highway. Not to mention highway exits at 25th, 14th and Canal Streets.

Architect Robert Venturi reports that when his firm and landscape architects Clarke + Rapuano were commissioned to design the park they of course looked at important parks around the world. In the end, though, New York City itself provided the lessons they sought, lessons taught by the august Central Park and by three riverside parks built over transportation—Clarke + Rapuano’s own Riverside Park, Carl Schurz Park and the Brooklyn Heights Esplanade. From these parks came back basic information about the relationship of size to scale, and at this point in his narrative Venturi is quick to bring in architect Craig Whitaker, who with a variety of city agencies has seen and thought about Westway through many metamorphoses in the last dozen years.

The first thing to confront the designers of the 97-acre Westway park was sheer size—3.5 miles require a different order of conceptualization than architects generally have to deal with. Venturi and Whitaker agreed that for a large park, which qualifies as civic design rather than landscaped garden, scale should include only large and small, ignoring middle scale altogether. “No piazzification,” says Venturi.

The most commanding element setting a scale for the park is the Hudson River, the majesty of which would make any adjacent smallness look exceedingly silly. For a strong design that can hold its own against such competition, the designers bounded the park with a no-nonsense esplanade that runs the entire length of Westway and allows no spatial intrusion whatever. The establishment of this unyielding edge demonstrates a lesson learned from Olmsted at Central Park, where a continuous stone wall opens only at carefully selected points for entry, and cleanly separates sylvan park from large apartment houses fronting streets on all four sides.

Three other circulation routes traverse the length of the park to bind it as a single entity. Nearest the river is a promenade next to the esplanade but separated from it by a “seating” wall. The wall and the change in ground level differentiate the tranquil tree-lined promenade and its strollers from what Whitaker calls “the spartan territory of joggers” at the water’s edge. Down the center, a more sinuous path will accommodate bicycles along a route intended mainly for sunshine, though from time to time cyclists will duck under trees. Finally, at the city edge of the park, the designers established another strong border of walls and trees. In the interest of hospitality, however, this edge does not convey the sense of power perceived at the river. This boundary will parallel a new city street to run the length of the landfill.

Coming to the concept of small scale at Westway Park, one must remember that scale is a relative: areas making up small scale in a 97-acre park are bigger than a backyard, let alone a breadbox. The small-scale elements encompass, in Venturi’s catalog, “rich varieties of paving patterns and materials, niches and steps, ramps and sculpture, lighting standards, railings, interrupted patterns of trees—all elements you see close up as you move around them.” Most important, the strength of the large-scale boundaries will allow a great variety of internal small-scale development without diminishing the park’s character as users find they want a playground here or checker tables there. Such additions would simply add grace notes to the composition.

At this writing, after 10 years of studies and hearings, the construction of Westway remains problematic. Though the state has approved provisions for air and water quality and for tidal wetlands, and though the Federal government has approved the design and location of the highway, the Army Corps of Engineers still has under advisement the necessary permit for dredge and fill. The stumbling block for this decision is the fate of the striped bass, a commercially valuable migratory fish whose young winter in the shelter of the decaying wharves that would be demolished for Westway.

Meanwhile, Governor Mario Cuomo and Mayor Edward Koch, who both endorse the project, have used the park’s “truly extraordinary design” (the Governor’s words) as ammunition in their battle for the realization of Westway. Grace Anderson
The designers' strategy for the 3 1/2-mile-long Westway State Park called for the containment of small-scale elements within simple but strong and unmistakable edges (site plan at bottom). The strongest border, at the river's edge, consists of a 24-foot-wide esplanade stretching the entire length of the park, unadorned except for benches, bollards and lamp posts. At one side, the esplanade has a 4 1/2-foot-high wall that becomes only 2 feet high along a parallel promenade so that it can be used as a bench (see rendering directly below). The promenade, shaded by an allée of trees, will accommodate pedestrians whom Venturi sees as "ladies with parasols," a laughing but not wholly jocular view. Inside the promenade, a meandering lawn contains a winding bicycle path that also unites the park longitudinally; the designers see the variable depth and curvature of the lawn as a major source of spatial rhythm within the park. At Park Street, a new thoroughfare on the east side of the park separating park from new residential and commercial development, walls and plantations of trees will establish another strong edge. Small-scale entries will open on transverse paths that extend the city grid to the river, where from time to time "get-downs" provide steps and ramps for pedestrian access to water level. The road will enter its tunnel at 25th Street, emerge to run at grade at Houston Street, reenter at Laight Street and finish at Battery Park City. Another exit will occur at 14th Street; this interchange will create the only hill in the flat park, as the layer of earth rises to cover prominent trapezoidal ventilation structures on either side of the road.
Toward the water, Westway Park will present a long, unbroken front, an esplanade backed by trees and punctuated by clusters of obelisks and the like marking entrances to the park from the esplanade (directly below). The lawns and playing fields in the park will consist of 4 feet of earth overlying the highway tunnel, itself a concrete box supported by piles (section at bottom). (The road was proposed to replace the elevated West Side Highway, which collapsed in 1973 and has since been razed.) Low seating walls separate the green park from the esplanade on one side and from the city street on the other, and at the same time signalize the dimensions of the underlying tunnel. The park’s attachment to the river will be further intensified by the addition of wharves and piers along the esplanade. Because of the compositional strength created by the undeviating esplanade and the precast concrete bulkhead below it, the wharves can be constructed anywhere along the water as need or desire suggests without diminishing the park’s presence.
Clusters of decorative elements are intended to designate openings from the esplanade to the promenade and lawns. The smaller of these clusters will contain only two ornaments (see axonometric rendering on opening pages), but more important entries will have larger clusters of four ornaments. Venturi's design interpretation of these elements embraced classical forms like obelisks and globes, forms that can easily accept such playful variations as castles, miniature Empire State Buildings and apposite apples. The small-scale elements within the large-scale park would also provide users with familiar landmarks. Three parks within the park will extend greenery past the new Park Street to the extant West Street. The small parks include one at 23rd Street for the Chelsea community (bottom left) and another at
have adjacent "get-arounds," horseshoe-shaped plantations that surround tunnel entrances when the highway emerges to run at grade. The devices enclose the entrances on three sides with pedestrian walkways that constitute the only exception in the esplanade's firm edge, which in these cases is carried out over the water. Distance protects pedestrians against noxious automobile fumes, and the trees screen views of traffic.
The corner of the large park-within-a-park at South Meadow, which will serve TriBeCa (rendering directly below and site plan on opening pages), will be the only section in the park with conventional playing facilities like tennis courts and a small softball field. South Meadow will also have the largest open lawn at Westway. The park parcel at Christopher Street (axonometric rendering opposite) illustrates one of Venturi's favorite juxtapositions: formal French against easy English. The asymmetric plan reflects the convergence of axes from the street grid outside the park, and Venturi allows that the Campidoglio was much on his mind as he designed. The pavilion perched on the deck over the river makes a virtue of necessity: the deck roofs a protective structure that keeps the weight of landfill off the PATH tubes. The esplanade (at bottom across page) will be 34 feet wide, a comfortable dimension borrowed without apology, like the benches, from Carl Schurz Park on the Manhattan side of the East River.
Westway State Park
New York City

Clients:
New York State Department of Transportation, New York State Office of Parks, Recreation and Historic Preservation, New York City Department of Parks and Recreation, and Federal Highway Administration.

Design team:
Venturi, Rauch and Scott Brown,


Engineers:
Parsons, Brinckerhoff, Quade & Douglas, Inc. (civil and transportation).

Leonard Testillo, illustrator
The use of illusion, the transformation of what is real into what is believed to be real, has been a standard architectural technique since the Renaissance. The question in using illusion has always been: Can it be used to produce something more than a clever architectural one-liner; can it be used to produce design of genuine substance?

For a house on Louisburg Square, the center of Beacon Hill and the embodiment of Bostonian substance, architect Peter Forbes was presented with the modest problem of converting an unused 8-by 12-foot room into a useful adjunct to the grand, floor-through living room. The solution was to create an illusion—but of such rigorous order, fine materials, and craftsmanship that the result is an object of quality and importance comparable to the rest of the house—a trompe l'oeil executed in marquetry, and perhaps the most elegant little bar in Boston. Essential to both the quality of the object and the success of the illusion was the consummate craftsmanship of the builder. Jamie Robertson is a gazetteer of woods—he produced an initial selection of 140 from which twelve were ultimately chosen; a mathematician who calculated the shape of each piece; and an encyclopedia of the technical and esthetic qualities of woods. For this project he developed an entire structural vocabulary within a dimension of 5/8 of an inch—a 3/8-inch clear maple core is veneered front and back to minimize stresses and movement. The pediment is two inches deep, the bullnose at counter level an inch and a half, the sink, drawers and shelves are two feet deep, reducing the 8-foot depth of the room to six feet.

Though the notions of illusion, marquetry, and artisanship are almost inherently historical, any reproduction of purely historical detail would have overwhelmed the scale of the room, and Forbes wisely chose a simplification, so that the metaphoric structure—pilasters, beams, and vaulting—amplified the space rather than filling it up, and the richness of the marquetry is both controlled and enhanced. The owners are delighted by this stunning solution to a modest problem—despite the number of guests who have broken glasses by putting them “down” on vertical surfaces. W. W.

Owner:
Mr. and Mrs. Emery Rice

Architects:
Peter Forbes and Associates—
Peter Forbes and Patrick Hickox

Builder:
Jamie Robertson

General contractor:
John Benjamin
Low-income housing: A lesson from Amsterdam

Not so long ago, American and European architects and planners engaged in large-scale housing projects at the behest of their governments. An older generation will remember the most famous of the once admired master plans: Le Corbusier’s Villa Contemporaine (1922), and his Unité d’Habitation Marseille (1946-52); Mies van der Rohe’s Ludwig Hilberberger’s Lafayette Park, Detroit (1956); Ernest May’s Riedhof, Frankfurt (1927-30); O. M. Ungers’ Berlin Lichterfeld (1975); Leon Krier’s Quartier de la Villette, Paris (1976); and others. During the 1970s in the United States, construction of such large projects gradually came to a halt in response to strong counter forces. Government and public had become aware of the failures of public housing, most notably the destruction of existing communities and other forms of social displacement as well as vandalism and crime within the projects. Excessive construction and maintenance costs made low-income housing even more unpopular.

These social and functional deficiencies somehow became mixed up with matters of architectural style, becoming symptomatic in the minds of postmodemists polemics of what they chose to call The Failure of the Modern Movement. Then Pruitt-Igoe was dynamited and we all know what Charles Jencks made of that.

Responsible criticism of public housing’s practical failures might have led to their eventual eradication, had the United States continued to build significant numbers of units for low-income people.

Unfortunately, postmodernist aesthetic criticism played directly into the hands of political conservatives who under President Reagan are at least succeeding in phasing out all housing subsidies. Today, architects who remain interested in what has become a virtually abandoned architectural and planning task must look to Europe in search of progress there, at least until the hoped for (but not soon expected) turnaround comes.

It is not the same in Holland. The Dutch Ministry of Housing is now completing 120,000 units of housing per year. Ninety per cent of these are funded by the Netherlands government, the rest are free market. Of the government subsidized houses, most are being built with direct government loans (so-called Housing-Act houses). The remainder are constructed with government assistance under a subsidy scheme for private building projects. The government itself builds only a small number of houses. The total number of dwellings built in the Netherlands in 1981 was 2.1 (finished) per thousand inhabitants. By contrast, the United States in 1982 produced 4.5 per thousand. Taken together, Boston, Philadelphia, Cleveland, Detroit and Milwaukee produce less than 40,000 housing units per year. Many built in the United States are for people of lower-to-middle incomes, a category that has been priced out of the new-home market for years.

Amsterdam, unlike New York City, does not have a conspicuous number of homeless people camping out on the streets. There are now said to be 40,000 single homeless people and 11,000 homeless families in New York City as the supply of housing continues to shrink, in part because of tax incentives to developers to gentrify aging buildings after evicting their low-rent-paying occupants. (The New York City Housing Authority has 176,000 families on the waiting list. If people thought it would do any good to get listed, there would be twice this number.)

Furthermore, the small quantity of federally- or state-supported housing for people of limited means now being finished has been drastically reduced in unit size, simplified by type and stripped of even the most modest architectural amenities. The Dutch, in spite of the extraordinary volume of their housing construction, have not found it necessary to similarly pare dimensions or amenities. It is clear that they regard social housing differently from us. For them it is an essential.

Nieuwmarkt: a community victory

By Tracy Meta

It was all-out war. The riot police approached the narrow bridge from one side, the squatters and activists from the other. They clashed in the middle. For a few minutes it was man-to-man combat, although the activists knew they stood little chance, up as they were against police armed with clubs, helmets, gas masks, billy clubs and dogs. Suddenly a deep rumble was heard close by. The mob turned to look and could not believe its eyes: a water tower grinding its way through the narrow street, and it was not a police vehicle. It drove right up to the bridge and left off a salvo of tear gas powder and tear gas. FACT being stranger than fiction, this really did happen, in one of the most turbulent years in Amsterdam’s history, 1975. In that year, the conflict centering around the construction of Amsterdam’s first subway line reached its climax. Hundreds of old houses were razed, there were casualties among both; the rioters and the police, and—inevitably—construction of the subway began.

The Nieuwmarkt neighborhood is one of Amsterdam’s oldest. It would seem to have made a tradition out of making trouble for the authorities. As far back as the Middle Ages, when the Nieuwmarkt was on the edge of the city, the inhabitants were protesting against the ban on driving the swamp outside the city walls and on building houses of anything but wood. (The swamp was one of the city’s natural defenses in wartime, and the houses had to be able to be dismantled quickly.)

In 1580 the swamp was reclaimed, and the Nieuwmarkt attracted several shipyards. The shipping activities later moved to the west of town but the Nieuwmarkt survived as a residential area. It became one of Amsterdam’s densest—and intensely—inhabited neighborhoods. There has always been a strong sense of belonging among the people who live there. The Nieuwmarkt has not the first “war” the Nieuwmarkt had experienced. But the one that just preceded it was infinitely more tragic. From the sixteenth century on, the Jewish population of the city was concentrated in this quarter, called the Jodenhoek. Most of the Jews lived in stark poverty, eking out a living by trading in rags and lump metal. It was not uncommon for families of ten or twelve to live in one room. Moreover, the houses were in poor condition; there was little if any incentive for the landlords to invest in maintenance.

Still, the neighborhood was famed for its character and, above all, its sense of humor. Ever since the seventeenth century there had been a market on the square around the Waag, the old weighing hall and erstwhile city gate. It is now the home of the Jewish Historical Museum. The Waag is in urgent need of restoration, its walls have served as a public urinal for so many centuries that the bricks are eaten away.) In the twenties and thirties there was also a famous market in the Jewish quarter. It was a nationwide attraction—the national railways even had a special train going there. One legendary figure was "Kokador," the professional pseudonym of Miler Linnemiel, a pitchman who claimed to be “the confidant of the great” and the Queen’s own supplier of sponges and sprogs.

When the Nazis invaded Holland in 1940, they quickly earmarked the Nieuwmarkt as a Judenviertel, a Jewish ghetto, and as the war progressed Jews from all over the country were forced to move there. The underground toilets were pressed into service as bomb shelters and later as prison for Jewish children. In 1942 and 1943 the mass deportations of the Dutch Jews began. Thousands upon thousands were rounded up in the
The jury for the Amsterdam Housing Prize were Geert Bekaert, Ioneel Schelin, Mildred P Schnearts and Francesco Dal Co.

The jury was allotted two days to visit 29 pre-selected projects and one day to think them over before meeting to award the prize. The site visits revealed to us that the Amsterdam housing bureaus exercise many options. We were shown housing on medium-to-large, formerly industrial plots in or near the central city, and were taken to vast developments on outlying sites in former rural areas. We saw a lot of infill projects on medium-to-small, old-shaped plots in older neighborhoods. Aging or dilapidated units within Amsterdam’s great rectangular housing blocks dating from the period of Berlage are being rehabilitated in a manner that conforms to existing street patterns and adjoining building heights. A total of 22 projects comprising either new construction or rehab are being completed within the perimeter of Central Amsterdam on choice sites near public services and transit. Instead of segregating new housing from old, Amsterdam is fitting its new housing into existing communities. It is clear that the city authorities, at least for the present, are not allowing “higher economic uses” to displace buildings, hotels, and new luxury apartments—to replace low-to-moderate-income residential uses in the older city districts.

Sins it seemed to me that Amsterdam’s three-pronged attack on its low-income housing shortage—the provision of in-town infill, the use of nearby abandoned industrial sites for medium-to-large-scale construction, and the development of the largest estates in nearby rural areas—is admirably well balanced, I believe that the jury should not have been required to give an award chosen from one single category in this careful mix. Ideally, there could have been the choice of awarding three prizes for the best architectural design and site planning in each classification. As it happened, none of the jurors wished to argue very hard in behalf of the master planning and housing design of the large outlying estates. The Dutch have given up building multi-story elevated slabs of housing on these sites and have instituted urban streets or dragged out of hiding and carted off to elimination camps. When the war ended in 1945, the Nieuwmarkt was virtually empty. More than half of the inhabitants had been annihilated. The severe fuel shortage had driven many to tear out all the wood from the empty houses—even the synagogue was plundered in this manner—and a large number of houses simply collapsed. The inhabitants who had known the “good old days” were keen on finding a place to live with fewer painful memories attached, and many moved out to Amsterdam’s old harbor. In 1930, 22,000 people lived in the Nieuwmarkt by 1940, the number had dropped to 17,500; and in 1976, there were a mere 7,000 inhabitants. For years the Nieuwmarkt suffered the deepest neglect.

In the late sixties, however, the area started becoming fashionable among students, squatters, young people in search of an alternative lifestyle and cheap housing. In the beginning there was considerable tension between them and the original inhabitants, but as it became apparent that the young people were intent on improving the neighborhood, relations improved.

Meanwhile the subway had come into the picture. The city council approved a detailed plan, 35 votes to three. At that stage the plan envisaged a network of subway lines that would service the entire city. This fact was to have far-reaching consequences for the Nieuwmarkt, for it meant that the subway would have to go right through it. That, combined with the fact that Amsterdam’s swampy ground makes it impossible to construct a subway underground existing buildings, could only mean one thing: a swath of demolition.

The Nieuwmarkt activists were on their own. In the seven years that the city council spent discussing the subway, they never heard from the authorities who had built up the best-organized citizens’ action group the Netherlands have ever known. They had their own radio stations ("Molotov" in the olden language for Amsterdam, and "Siren," later used to call for help), newspaper, printing shop, finance and defense groups, and a "subway museum." They even offered guided tours through the neighborhood. A special committee was set up to select candidates from the many who wanted to live there. A candidate had to be dedicated and willing to fight to defend his home—and willing to pay the mandatory 135 guilders to the communal house repair fund. Activist Steef Davidson said in 1974: "We need people who are disinterested, who are capable of using their own minds."

The first encounter with the police was on December 12, 1974, and involved one house. When the activists saw the police coming, several climbed up into the belfry of the Zuiderkerk—coincidentally, the first church built in Amsterdam for Protestants—and warned their allies by ringing the bells. Apparently the police still underestimated their adversaries, for they didn’t withdraw until the activists started pelting them with roof tiles. The inhabitants who had built up the best-organized citizens’ action group the Netherlands have ever known. They had their own radio stations ("Molotov" in the olden language for Amsterdam, and "Siren," later used to call for help), newspaper, printing shop, finance and defense groups, and a "subway museum." They even offered guided tours through the neighborhood. A special committee was set up to select candidates from the many who wanted to live there. A candidate had to be dedicated and willing to fight to defend his house—and willing to pay the mandatory 135 guilders to the communal house repair fund. Activist Steef Davidson said in 1974: "We need people who are disinterested, who are capable of using their own minds."

The third pitched battle was on April 8, this time with no fewer than a thousand police. The last riot took place on June 2. By the time the tear gas had lifted, 541 people had registered complaints about physical mishandling.

All along, the city government had assumed an attitude of inflexibility. Hadn’t the city council voted for the subway plan, making it a democratic decision? The activists, on the other hand, said: how democratic is a decision that has to be implemented with tanks and tear gas?
Actually, the Nieuwmarkt had long bowed to the inevitable subway construction and was concentrating on ways to rehabilitate the neighborhood as quickly as possible. One concession the activists had managed to wring from the authorities was the opportunity to choose their own architects. A team of twelve, headed by Theo Bosch, was designated to resurrect the quarter. They had to swear to side with the inhabitants should a conflict with the city arise. The architects were to confirm the philosophy that one of them captured in the words: “The essential thing is to bring the entire neighborhood back to life, not just to fill the holes.”

On paper, that had been the city government’s main aim too: as early as 1973, it had proclaimed that an active policy would be pursued with regard to housing construction. But nothing had happened. The infatuated inhabitants drew attention to the fact that between the end of the war in 1945 and 1971 a grand total of six dwellings had been built. In 1976, a similar statement by the city appeared, reassuring the inhabitants that they need have no fear of speculation and big development, that they would not be sacrificed to the interests of big money. But that was evidently what was happening, while the authorities looked the other way. Investors with foresight were already buying up old houses that they planned to restore and lease for huge sums.

The city’s commitment to rehabilitation meant giving priority to the former inhabitants in the new housing. By 1976, Amsterdam finally met its moral obligation to bring back low- and middle-income houses for the people whom the subway had driven out. Construction began and will not be finished until 1987. But building on top of the subway tube, and along the old street pattern, involved tremendous extra costs. (Architect Guido van Overbeek, who has built housing in the Nieuwmarkt, says: “It costs more to build third-floor dwellings here than it does to build five hundred in “a tower in the park at the edge of the city.”) In fact the city was having to fight just as hard with the Ministry of Housing for extra subsidy as the activists were fighting with the city. Ultimately, the city did win its subsidy. That made it possible to keep the rents for dwellings right on top of the subway tube at the same level as that of low- and middle-income housing elsewhere in Amsterdam. The unusual location demanded the utmost of the architects’ creativity. Architect Hans Borkent’s building, shaped like a piece of pie, has the most remarkable foundation in the Netherlands: corrugations on rubber blocks above the subway, the others are supported by long piles driven deep into the ground, and for convenience sake, two old restored buildings with weak foundations have been attached to the new structure. Theo Bosch built the remarkable five-sided building called the Pentagon (a name that the communists in Amsterdam’s government objected to, for obvious reasons).

Now most Amsterdammers are enthusiastic about the subway extension, but Theo Bosch is still not convinced. “The city built a subway no one asked for. It is foolish to tear down neighborhoods for the sake of building transportation to them.” It would seem that the local government now agrees, at least for the time being, that subway construction in Amsterdam is too expensive and too destructive. In 1976, the city council withdrew the plan for continuing the subway network beyond what had been already begun. Theo Bosch continues: “I think it’s only just to demand that the neighborhood’s old climate be the starting point for the renewal. This part of town has a very complex character, it is by definition chaotic.”

The Nieuwmarkt is well on its way to regaining its former architectural and urban character, but social problems remain. One of the most serious now is heroin. The inhabitants feel unsafe because of drug-related crimes, the children play with discarded syringes and make a game of finding packets of heroin the junkies have stashed away. To the dismay of the architects and the community, many of the pleasant areas in and around the houses that were intended to be accessible for everyone have had to be fenced off. But the Nieuwmarkt can be proud of what its inhabitants have accomplished and what it has become. Theo Bosch sees the course of events as a major breakthrough: “It was the trend all over Europe—tear it down, build wide streets, huge complexes. The Nieuwmarkt was the turning point.” Adds his colleague Hans Hagebeek: “If the subway had not been built, the new housing would not have been of such high quality. You can see the neighborhood’s fighting spirit in its houses.”
Ten years ago, the Nieuwmarkt district was inhabited by squatters and urban poor who demonstrated (left) and fought hand to hand with riot police against the evictions resulting from the subway construction that was to turn their neighborhood into a wasteland (above). They lost their battle against the subway, but won the war to get demolished housing replaced.
Amsterdam Housing Prize:
IJ-plein master plan
Office for Metropolitan Architecture, Architects

Planned by Rem Koolhaas and the late Jan Voorberg with Herman de Kovel, Kees Christiaans, Ruurd Roorda, Gerard Comella and Willem-Jan Neutelings, IJ-plein will eventually have 1,375 housing units. It is located on the northern shore of the so-called 11, the former harbor which divides Amsterdam-North from the center city. Amsterdam-North includes an older residential district (shown in foreground of axonometric above) adjacent to IJ-plein. This community consists of small-scaled turn-of-the-century row housing forming garden courts. It is surprisingly village-like in character—a Dutch version of Ebenezer Howard’s garden city ideal. Formerly, this community was insulated from the water by a belt of docks and shipyards. The removal of the latter westward toward the sea allowed the belt to become a new housing site. Complicating the master plan were two given: an underwater tunnel connecting the two halves of Amsterdam, which passes directly through the western end of the site, and a large area of landfill replacing a former dock. It was economically unfeasible to construct housing in either of these locations. The OMA solution was to pinpoint twelve small five-story blocks (perspective opposite) and two linear five-story slabs in a manner that misses the tunnel, while converting the landfill area into a generous park with playgrounds.

Amsterdam Housing Prize
Honorable Mention:
Nieuwmarkt master plan
and infill housing
Theo Bosch, Architect

Seventy percent of all the land within the city limits of Amsterdam is owned by the city, which leases it to non-profit housing societies to construct the various projects. Several of these organizations are involved in the Nieuwmarkt infill. The dwellings will remain the property of the housing societies. Occupants, mostly working class, young people, or elderly, pay rent subsidized in part by the government. The site plan above comprises the entire Nieuwmarkt district. As master planner, Bosch established the mix of housing, social, and commercial facilities in consultation with other infill architects, the existing community, and those who, having lost their homes, had priority to move back.
This park divides the site into two halves, affording a view from the older neighborhood across the IJ towards the center of Amsterdam. To the east of this park are rows of single-family units, with multifamily units at the eastern edge and around a triangular court. The streets are perpendicular to the water. Between the rows of housing are green zones that consist of partly private and partly collective gardens. A promenade for cyclists and pedestrians links both halves of the project and connects to the ferry that crosses to Amsterdam's central station. The waterfront (perspective top right) will be hard-edged suggesting the formal typology of Dutch dams, dikes and polders. It will serve as the principal promenade offering magnificent views. U-plan has easy access to shopping in the adjoining older community (the focal point in the perspective top left). Soon it will have a supermarket and a neighborhood center at the east end of the village, as well as a health clinic and other community facilities. These are to be included in a complex under design by OMA, their only actual building commission on the site. (It should be noted that OMA won the Amsterdam Housing Prize for the site planning and massing of U-plan, not for the architecture of the housing per se, which was carried out by others.)

Théo Bosch's own infill project (axonometric and plan above) is known as the "Pentagon," as it is five-sided in plan. Because it straddles the subway, it was complex and expensive to construct. The unit plans are ingeniously shaped to follow the street and canal pattern, while functioning efficiently as living spaces. Corners are well turned and entrances and balconies successfully articulated.
The location plan and sectional configurations, proportions, massing, and colors of the JJ-plein housing were determined by OMA and carried out by other architects. The architect for the five-story blocks in the photos above was Hein van Meer. Group 69 were the architects for the slabs. Rem Koolhaas’s first proposal was to combine high- and low-rise.

Maintenance costs of elevators, mechanical equipment, and public spaces of high-rise buildings proved too high if social housing rent ceilings were to be maintained, so the tower concept was abandoned. Said Koolhaas: “We studied housing typology. Take the slab. We use slabs because slabs are inevitable in this economy. But what is wrong with the slab and how can we correct it? Most slabs have only one entrance, so there is no activity on the perimeter. The typical slab cannot create a street. We compensated by having a kind of mutant slab with entrances every so many feet [photo for right] interconnected by stairway four stories of apartments on either side of each stair hall.” Penthouse apartments and dwellings in other segments of the slab are reached by a more typical stairway and gallery system. The freestanding five-story blocks also contribute to the collective space, forming in combination with their landscaping, walls that contribute to the definition of the street. OMA has fashioned an exacting site plan for

The Nieuwmarkt housing in the photo above is by Hans Haugebeek and Hans Borkent. Bosch’s master plan determined the heights and massing of the infill units and the landscaping of the streets and canal banks. When housing is constructed on the empty lot to the right in the photo above, this street will have the scale and character that Bosch’s scheme calls for.
LJ-plein that focuses upon vistas, plantings, street definitions, pedestrian and cycling networks, outdoor recreational facilities, and a repertoire of water-edge conditions. It is all currently being put in place. Rem Koolhaas is proud of LJ-plein. "It is interesting to do something sober, rational and normal. To the extent that this master plan has a virtue, it is that you can be in these streets without sensing an overwhelming architectural ambition, or the dream of a social utopia. It is all fairly straight."

Bosch's Pentagon forms a curved edge to one courtyard and the complete perimeter of another. The courtyard (above left) is completed by the nave wall of a landmark church (not shown), now used as community center. Bosch's housing appears to the right and Hagenbeek's to the left in the photo. The courtyard (above right) is completely surrounded by the Pentagon. The courtyards were originally intended for public recreational use and share six passageways interconnecting with the street and canal network. Unfortunately, heroin addicts find the courtyards to their liking, as well as adjoining building entrances and open stairways, so all such spaces will soon be fenced off by locked gates with access by tenants only.
The single-family row housing (above left) was designed by De Kat and Peck as was the multifamily unit (above right). In this part of the site, all the units are lined up in rows marching toward the water's edge, opening up a series of vistas for the inhabitants of JJ-plein and their neighbors in the adjoining village to the north. The development appears raw, in part because it is far from finished. The landscaping should relieve the starkness. At present, this portion of the master plan appears less than successful, but one needs to remember what a difference a few years of gardening can make.

The infill in the photos above is the work of architects Guido van Overbeek (far left and above), Theo Bosch and Hans Hagebeek (left), and Bosch (right). The care with which the new housing is scaled to the old can be seen by comparing van Overbeek's housing with its 19th-century neighbor opposite. And Bosch's master plan creates or accentuates vistas, particularly of Nieuwmarkt's landmark church.
Public lobbies (above left) are simple, if not austere. Apartment sizes are very generous by low-income housing standards, as the photo of a typical living-dining area (above right) indicates. This appears to be true of most of the social housing being built in Amsterdam today.

Individual rooms in Nieuwmarkt apartments, like the kitchen (left) are comfortably sized. Many infill projects have shops at the ground floor level (above). This shop interior was designed by van Overbeek.
William J. LeMessurier’s super-tall structures: A search for the ideal

“I get very excited about the ideal. Underlying my search for the ideal is the pursuit of elegance. Who am I designing for in the end? For my own soul.”

These words by William J. LeMessurier express both his fundamental intellectual interest in engineering, and his creative motivation for design. In the distinguished career he has forged, LeMessurier has been a champion of innovative forms, and an unwavering proponent of a structural aesthetic based on simplicity, grace, and economy. In recent years he has focused his attention on the problems posed by very tall, very slender structures. The following article is the first of two that will explore the formation of LeMessurier’s paradigm for such structures, and examine that paradigm’s application in a series of skyscraper designs.

Super-tall buildings are generally defined in architectural terms as skyscrapers with a silhouette whose proportion in height to width is at least 5:1. To an engineer, a super-tall building is one in which the response to the dynamics of wind is the dominant factor in structural design. Wind-tunnel tests indicate that this will happen when the slenderness of the load-carrying structure reaches a proportion somewhere between 5:1 and 7:1. At that point, the engineering demands posed by lateral loads exceed those of gravity. (Interestingly, it is possible for a 40-story building that appears squat to be a super-tall structure in engineering terms if it has a slender core taking all lateral loads.)

The laterally directed force of wind blowing against a building tends to both push it over (bending), and snap it (shear). In the structure’s resistance to failure, a tug-of-war ensues that sets the building in motion, thus creating a third engineering problem—vibration. If the building sways too much, human comfort is sacrificed. LeMessurier contends that the ideal structural form to resist the effects of bending, shear, and vibration is a system possessing vertical continuity in a continuous partition located at the farthest extremity from the horizontal center. He identifies a masonry chimney form as a perfect super-tall structure.

The chimney may be a rational if not inspired engineering model—its form offers height possibilities that are virtually unlimited—but, LeMessurier would be the first to point out that a windowless structure is inadequate as an architectural model. In translating the ideal form of a chimney into a more practical skeletal structure, LeMessurier thinks of a skyscraper in terms of a beam cantilevered from the earth.

Continued on page 148
On shear stresses

The effectiveness to resist shearing strain is measured by its Shear Rigidity Index, or SRI. For any system, if shear is $S$, height is $H$, deflection is $\Delta$, volume of material is $V$, and modulus of Elasticity is $E$, the Shear Rigidity Index is defined as:

$$SRI = \frac{250 \cdot S \cdot H^2}{E \cdot V \cdot \Delta}$$

For a pure plate or wall, the SRI is set at 100.

In the drawings at right:
A. The ideal system is a plate or wall without openings. B. The second-best shear system is a web of diagonals at 45-deg angles. (The verticals or columns belong to the bending system and are not counted in the material volume.) For this system, $SRI = 5/5 \times 100 = 62.5$. This system is used in the Brewhon Half-Mile Center to be shown next month.
C. Another bracing system combines diagonals and horizontals. It uses more material but is easier to build. If the slope of the diagonals is $\sqrt{2}/2$, the SRI is $5/16 \times 100 = 31.3$. This system is used at Otisco Center and the Bank of the Southwest (page 148).

The most common shear systems are rigidly joined frames. The efficiency of a frame as measured by its SRI depends on the proportions of members’ lengths and depths. The key proportion is:

$$P = \frac{H + L}{D}$$

The set of four frames labeled D, E, F, G all have the same value of

$$P = \frac{H + L}{D} = 12$$

They therefore have the same SRI. For frames built from steel, wide-flange sections:

$$SRI = \frac{500}{P^2 + 4 + 4}$$

All four frames have the same SRI:

$$SRI = \frac{500}{144 + 12 + 4} = 8.1$$

Frames (H through K) have the same member depth $D$ and varying values of $P$. With 86-in. steel sections, all four frames have essentially the identical total weight of material, but the fourth frame is more than four times as rigid as the first. A frame like the fourth used in all four exterior walls of a square building has high shear rigidity and also uses two-thirds of its material in columns, which are available to do double duty as a good bending system. The resulting configuration is properly called a "tube" and is the basis for the world’s two tallest buildings: the Sears Tower and the World Trade Center.
On bending stresses

Tall buildings must have a system to resist bending which satisfies three needs: 1. The building must not overturn from the combined forces of wind and gravity. 2. The building must not break. 3. The building must not be strained beyond the limit of elastic recovery.

The resistance to strain from bending is powerfully affected by the way columns or walls carrying gravity are arranged in plan (see drawings at right).

A. For a square building, the ideal plan for maximum bending rigidity concentrates gravity loads on four corner columns. This plan has maximum bending strength, rigidity, and overturning resistance and therefore has been assigned the ideal Bending Rigidity Index of 100. The Bending Rigidity Index (BRI) is the total moment of inertia of all the columns of a building plan participating as an integrated bending system. (For the examples given below, it is assumed that the total column cross section is the same for each plan.)

B. The traditional tall building of the past, such as the Empire State Building, used all columns as part of the wind-bending system. For columns arranged with regular bays, the BRI is 93.

C. A modern tall building of the 1960s and 70s had closely spaced exterior columns and long clear spans to the elevator core—an arrangement called a “tube.” If only the perimeter columns are used in the wind-bending system, the Bending Rigidity Index is 82. An example of this plan type is the World Trade Center in New York City.

D. The world’s tallest building is the Sears Tower in Chicago. It uses all of its columns as part of the wind-bending system in a configuration called a “bundled tube,” but also has a Bending Rigidity Index of 83.

E. The Citicorp Tower uses all of its columns as part of its wind-bending system, but because columns could not be placed in the corners, its Bending Rigidity Index is reduced to 81.

F. If the columns were moved to the corners, the Bending Rigidity Index would be increased to 93. Because there are eight columns in the core supporting loads, the BRI falls short of 100.

G. The plan of the Bank of the Southwest in Houston (see page 148) approaches the realistic ideal for bending rigidity with a BRI of 83. The columns were split and displaced from the corners to allow generous views from office interiors.
Continued from page 145

This concept of building-as-cantilevered-beam has been in development by LeMessurier since he participated in a 1967 research project funded by the United States Steel Corporation. The project, conducted at MIT, investigated economical ways to build tall, thin apartment and hotel buildings and resulted in the “staggered truss” system (Record, June 1966). Like a chimney, the “staggered truss” system gathers gravity loads at its edges. But really more akin to an I-beam turned on end, this system uses its trusses, like a beam’s web, to resist shear. In his more recent super-tall projects, LeMessurier has continued to concentrate gravity loads at or near the building periphery. Design for shear has been accommodated with either diagonal bracing or a frame with rigid joints connecting floors with columns. The two projects shown in this article—the Bank of the Southwest Tower to be built in Houston (see right) and the InterFirst Plaza Tower of the Dallas Main Center (pages 150-151)—differ in their response to shear. The Dallas building uses a rigid frame; the Houston building, a network of diagonals. In studying the sections of these buildings, one is reminded that skyscrapers are very much structural configurations, and, apart from the expression of the facades, are greatly indebted to the engineers’ art. (One almost regrets that these pristine armatures by LeMessurier are eventually hidden behind a building envelope.)

Like all ideals, LeMessurier’s paradigm for his recent super-tall projects is disarmingly simple: a chimney form is opened by dissolving the wall into columns, and the columns are stabilized by a network of cross braces and/or rigidly joined frames. In applying the ideal to specific commissions, the engineer has steadfastly brought general design criteria to bear that, though not ideals, are certainly guidelines to idealization. For LeMessurier, a design is complete when there isn’t anything that you would want or need to change by adding elements or taking them away. The design should depend on no quirks or tricks. The solution should result in a structural diagram that is immaculately clean in concept and as fundamental as the diagrams you would put on a blackboard for an engineering student in his first year. The structure should relate to the plan, playing a direct role in the partitioning of space to maximize utility and the appreciation of the interiors. Structures should be easy to construct. And they should be economical in their use of resources, relying upon the power of geometry rather than a muscle-bound flex of material for their strength.

The challenge of designing super-tall structures requires the engineer to set aside the common wisdom experience has taught for conventional tall buildings and return to basic principles. This is precisely what LeMessurier has done. And his process has led to ideal forms that are opening up an exciting realm of possibilities—possibilities that may reach beyond mere height. For, as much as there’s a thrill in pushing at the boundary of space, LeMessurier does not fail to recognize that there is a need to respect the breadth of concerns encompassed by architecture. As he stated in a symposium on super-tall buildings, in response to the challenge of building higher for height’s sake (Engineering News-Record, November 3, 1983):

“There is more fun than anything else in doing a more elegant solution for an ordinary 75-story building. We have a long way to go to make the skyscraper what it really can be, and it doesn’t have to be super-tall to do this. There are ways to open up space, to make it more economical and to face the problems of fire and transportation and pedestrian joy at the bottom. These are much more interesting problems.”

As with his creative endeavors in structural form, these concerns too are very much in keeping with LeMessurier’s intelligent, honest search for ideals. Who is he designing for in the end? There is no conflict between the user and William J. LeMessurier’s own soul.

Darl Rastorfer
The structural section of the Bank of the Southwest is a clear diagram of forces (below left). The reinforced concrete corner columns gather all gravity loads. As forces steadily increase toward the ground, the profiles of the columns respond by widening. The chevron configuration of steel wind bracing is organized in nine-story modules. The bracing crosses in plan to define the building's core (see typical floor plan, opposite page). The gravity load of each floor is collected by the bracing and eventually conveyed to the columns at the base of each module. The model at right shows the primary structure of each nine-story module. Below right: Rendered elevation of proposed tower projected within the existing context of downtown Houston.
The Dallas Main Center has a plan which maximizes the number of corner offices. The owner and the architect, Jarvis Putty Jarvis, both desired a structure which would not spill the perimeter with the closely spaced columns typical of most very tall buildings. The solution was a six-sided, 18-cornered outline with column centers located 20 feet inside the glass line. The dimension between the columns and perimeter glass allows a continuous band of offices with uninterrupted views. To compensate for the loss of bending rigidity, no other interior columns were used.

To connect the columns across the building, two-way rigid frames acting as Vierendeel trusses were used as the wind-shear system. These frames double as the gravity system to span between the columns. No loads are transferred to the ground by the core. To guarantee that gravity loads are carried by the outer columns, the core of the building is made to hang from the interior steel frame rather than to rest on a foundation. As a result, the core transfers its wind shear to the exterior columns through the grade and concourse-level floors.

Having concentrated all gravity forces on the 16 columns, more than $10 million was saved by building the columns with high-strength concrete. Light steel cores inside the concrete allowed the steel erection to advance nine stories ahead of the concrete placement.

When the building was topped, it gained the distinction of being Dallas's tallest tower and one of its most slender. The ratio of height to structural width of the InterFirst tower is 12:1. By comparison, the structure of the World Trade Center towers has a slenderness ratio of 6:1.

Structural engineer LaMessier Associates/SCI, Cambridge, in joint venture with Brockett Davis Drake, Dallas

Architect: Jarvis Putty Jarvis, Dallas
Owner: Bramalea Texas, Dallas
Stories: 73
Height: 920 ft above grade

In the InterFirst Plaza of the Dallas Main Center, gravity and bending stresses are taken by 16 columns circling the building interior at 20 ft from the glass curtain wall (see typical floor plan at lower left). Shear is engineered with a two-way rigid frame acting as Vierendeel trusses (see the building's structural section, below right; and model, opposite page, top). The 10-in.-deep steel sections needed for these members were not available from U.S. steel makers. They were therefore rolled in Luxembourg. The corner setbacks illustrated by the elevation (below left) contribute to the "sparkle" of the tower when sheathed with a reflective glass curtain wall. Opposite page: topping out ceremony, 7 July, 1994.
New products

Loosely woven wool sweaters and long skirts with rolling hems are only part of Japanese designer’s Rei Kawakubo’s oeuvre. During the past several years she has been expanding her horizons. In addition to designing the interiors of her boutiques herself—an international assortment that numbers over 40, including a one-year-old 7,000-square-foot space in New York City’s SoHo and a brand new shop in San Francisco—Kawakubo has added several pieces of furniture to her company’s line.

Although her company, Comme des Garçons, gained notoriety in 1983 when the fashion vanguard turned toward the Orient for the newest wave of design inspiration, Kawakubo’s methods represent anything but a passing fancy. Rather, the design philosophy that motivates all of her work approaches a manifesto—one that opposes conventional fashion or design strategies. As a part of this philosophy, Kawakubo forbids advertising of her company’s line. Such promotion, in her view, only reinforces furious but short-lived “in” then “out” cycles. Kawakubo aspires to timelessness, and she rejects the fashion consumer’s hankering for the latest, greatest, sexiest thing around. Instead she strives to portray permanence, stability, and self-confidence in both her clothing and her furniture collections—concerns that, for the time being, are receiving widespread acceptance.

The furniture collection, initially for in-house use only in the offices of Kawakubo’s Tokyo-based operations, is now available in the United States through Furniture of the Twentieth Century. The shapes of the pieces are at the same time primitive and futuristic and, like the clothing she designs, combine materials that originate primarily in the quarry (or on the loom) and not in a chemical lab. The triangular tops of the tables (photos above), made from slabs of polished and semi-polished granite joined by a jagged edge, rest, on steel legs with casters. Resurrecting the old claim that “less is more,” the table’s stone is excised, not embellished, in the same manner that her clothing’s fabrics are dissected and not decorated. Two tables of the same height may be rolled together to form a rectangle or the 26-in.-high table can be pushed underneath the 29-in.-high model.

The collection also includes a box-shaped tempered steel chair with a mesh seat (photo right). While the granite and steel are a departure from bamboo, wood, and other indigenous materials, they are manipulated with a familiar Japanese rigor. Some concessions, however, must be made for Westerners: seat cushions for the steel chair are available for those with more delicate bottoms. After all, Comme des Garçons does not work with sugar and spice...K.D.S.

Furniture of the Twentieth Century, New York City.
Circle 300 on reader service card
Swinging-door installation
An 8-page brochure reviews the installation of exterior wood swinging door systems. Installation procedures that improve the thermal effectiveness and reduce air and water infiltration are discussed. A glossary of related terms is included. National Woodwork Manufacturing Association, Park Ridge, Ill. Circle 400 on reader service card.

Ceramic tile
A 16-page color brochure reviews the manufacturer's line of ceramic tile intended for interior and exterior, commercial or residential applications. Tile and trim colors for several product lines are shown in the literature. Capital Architectural Ceramics, Tustin, Calif. Circle 406 on reader service card.

Concrete and masonry sealers
The manufacturer's concrete and masonry sealers, designed to prevent de-icing salt penetration and moisture damage, are featured in a 4-page brochure. A selection chart describes each product's characteristics, uses, coverage, and installation methods. Sink Corp., San Diego. Circle 401 on reader service card.

Glass coatings
Three new reflective glass coatings, each available with light transmissions of 8, 14, or 20 percent, are reviewed in a 4-page color brochure. The thermal and solar performance of the coatings are discussed. The proprietary vacuum-sputtering production process is described. Guardian Industries Corp., Carleton, Mich. Circle 407 on reader service card.

Fireproofing and insulation
The manufacturer's line of semirigid products for fireproofing, insulation, and acoustical control is featured in an 8-page color brochure. The performance characteristics of Blute-Shield, Heat-Shield, and Sound-Shield, all sold to be asbestos-free, are reviewed. United States Mineral Products Co., Stanhope, N.J. Circle 408 on reader service card.

Skylight system
A cross-arched skylight system that uses Vesta-r-fabric is featured in a 4-page color brochure. Single- and multiple-module plans and sections are shown, along with steel- and concrete-edge curb details. The transmittance, energy efficiency, and cost of the system are discussed. ODC Inc., Div. of Dow Corning Corp., Norcross, Ga. Circle 409 on reader service card.

Office furniture
A 43-page color brochure reviews the manufacturer's Round Office furniture line. The literature includes photos of the Swedish-designed workstation components that can accommodate electronic equipment. Screen and upholstery fabrics and tabletop finishes are shown. Round Office Inc., San Francisco. Circle 408 on reader service card.

Precast tile and slabs
Margherione, an Italian-made precast material composed of marble chips bonded together with resin, is featured in a 6-page color brochure. Slabs for floors and walls, is featured in a 6-page color brochure. Installation, using adhesive or cement with sand bedding, is reviewed. Photos show available colors. Verona Marble Co., Inc., Dallas. Circle 409 on reader service card.

Sealant systems
The performance of the manufacturer's insulating glass sealant systems is reviewed in a 6-page brochure. Moisture transmission, fogging, and adhesion characteristics of the single- and dual-seal systems are discussed in the literature. Sealants for perimeter caulking are described. Tremco, Cleveland. Circle 410 on reader service card.

Doors
A 26-page guide reviews the manufacturer's line of wood and plastic-clad doors. Solid or hollow-core doors, fire doors, sound-repellent doors, and moldings and louvered doors are shown in the literature. Standard product specifications are included. Weyerhaeuser Co., Tacoma, Wash. Circle 410 on reader service card.

Lecterns
A 24-page brochure reviews a line of lecterns. Models with high-power amplifiers, speaker systems, and microphones are shown in color photographs. The dimensions, reading surface heights, and finishes of each model are listed in the literature. Gravina Co., Inc., Div. of Heritage Communications Co., St. Petersburg, Fla. Circle 411 on reader service card.

Security systems
A 12-page color brochure reviews the manufacturer's security systems for personal and property protection. System components, including access control units, closed-circuit television, desktop printers, alarm systems, and police monitors, are described in the literature. Morley, Hamilton, Ohio. Circle 412 on reader service card. More literature on page 183.
Introducing the 100 Watt Metalarc® lamp.

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Emergency lighting
A 12-page brochure reviews a line of emergency and exit lighting fixtures. Features of each model, including solid-state electronic design, 1 1/2 hours of illumination for emergency flood heads, and vinyl-coated steel housings are described in the literature. Elco Emergency Lighting Div. of Albus Corp., San Jose, Calif. Circle 418 on reader service card

Industrial skylights
A 12-page catalog reviews the manufacturer’s line of automatic fire vents, explosion-relief vents, and industrial skylights. The Daylighter series of vents, designed to shrink out during a fire and provide ventilation, are featured in the literature. The illumination benefits of the vents are discussed. APC Corp., Hawthorne, N.J. Circle 419 on reader service card

Play centers
Playscapes play centers, designed for installation in waiting areas of clinics and hospitals or in day care centers, are shown in a 6-page brochure. The laminate exterior and carpeted interior walls are described. Diagrams and floor plans of the different configurations are included in the literature. Children’s Environments, Madison, Wis. Circle 420 on reader service card

Re-roofing
An 8-page color brochure describes the installation of the manufacturer’s roofing system over an existing structural system. The weathertightness of the system’s flat Steelor roof panels is discussed. Insulation values achieved by using fiberglass batts or rigid insulation over an existing roof are reviewed. Armco Building Systems, Boston. Circle 416 on reader service card

Fiberglass insulation
Fiberglass batts and rolls, Insul-Safe II blown-in insulation, and additional insulation products for residential and light-commercial use, are reviewed in a 12-page color brochure. Charts indicating product availability by size, R-value, and sound and fire ratings are included. CertainTeed Corp., Valley Forge, Pa. Circle 416 on reader service card

Limestone panels
A 12-page color brochure reviews five types of modular or custom-fabricated limestone panels that are available in a selection of six textures. Typical wall and spandrel details and installation photographs are included in the literature. Cutting, setting, and fitting information is given. Harding & Cogswell Corp., Bedford, Ind. Circle 417 on reader service card

Light panel
A 4-page color brochure features the Astra Lite single-unit light panel. The light spread provided by the panel—ranging from a broad wash to a down-directed spotlight—is described in the literature. The six available finishes, including three that are reflective, are shown. Chicago Metallic Corp., Chicago. Circle 418 on reader service card

Office lighting
Light fixtures designed specifically for the illumination of CAD and CRT workstations and for drafting and design areas are shown in a 4-page color brochure. The parabolic louver of the adjustable Waldman 801 model, for computer areas, and the fluorescent tube of the tabletop TL 105/24 is described. Waldman Lighting Co., Wheeling, Ill. Circle 419 on reader service card

Pocket extrusions
A line of self-contained pocket extrusion systems designed to support and conceal drapery tracks, vertical blind tracks, and mini-blind headrails is reviewed in an 8-page brochure. Shows the construction and installation of the extrusions. Dimensions of each product are given. Apex Systems, Framingham, Mass. Circle 420 on reader service card

Transportation system
The Tramex overhead system, which transports loads through a production cycle in individually programmable carriers, is reviewed in a 12-page color brochure. Features of the system, including its modular construction and operation speed of 300 ft per minute between stations, are discussed. Linton UHS, Florence, Ky. Circle 421 on reader service card

Roofing
A 12-page directory reviews available publications and audio-visuals on steep and built-up roofing. Included in the literature are summaries of manuals on such subjects as residential asphalt roofing, application of asphalt strip shingles, and steel-deck deflection. Asphalt Roofing Manufacturers Association, Rockville, Md. Circle 422 on reader service card

Roof edge products
A 12-page color brochure reviews the manufacturer’s line of roof edge products, including molded roof edgings, framing systems, downsputs and gutters, fascia panels, and reglets. Diagrams of each product are accompanied by listings of specifications and dimensions. W. P. Hickman Co., Asheville, N. C. Circle 423 on reader service card
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With acknowledgement to Reed L. Jones, 1975
Software update

Our October 1984 issue contained a Guide to Computer Software for Architects and Engineers that we promised to update from time to time as we located new sources of architect-specific software. Herewith the first update.

301 INTEGRATED FINANCIAL MANAGEMENT/GENERAL ACCOUNTING SYSTEM

Micro Mode, Inc., 4006 Mt. Laurel, San Antonio, Texas 78240—William Henderson, 512-341-2230 • For use with IBM PC/XT/AT, Apple II, DEC Rainbow and compatible hardware running CP/M or MS-DOS; requires 64k RAM and 10mb disk storage • Price: $6,250; Updates: published semi-annually at $150 each • Training: on-site (travel plus $50/hour).

Integrated Financial Management/General Accounting System is a series of integrated programs designed to meet the needs of A/E firms for control and audit of costs and revenues. Emulates features of the AIA standardized accounting system and ACEC Guidelines to Practice. Entry of time sheets and expense data updates all project files and all related files such as payroll, accounts payable, accounts receivable and general ledger. This software package is currently used by more than 300 A/E firms throughout the U.S. and Canada.

302 STEEL-3D

Auto-trol Technology, 12500 N. Washington St., P.O. Box 38815, Denver, Colo. 80234—Tom Gortz, 303-452-4919 • For use with Auto-trol Advanced Graphics Workstation System, which is based on 32-bit Apollo monochrome or color computers • Price: $20,000 each for first two workstations; $5,500 thereafter; Updates: included with service/maintenance agreement • Training: on-site, in-house, manual and seminars.

Steel-3D enables designers to model basic structural concepts on a screen, develop these concepts into steel framing schemes and then analyze and refine them with respect to safety, function, feasibility, and esthetics using information from the program’s database. Among design analyses performed are forces, deflections and code-check reports. Outputs include pen plots of the geometry, deflected shapes and shear and moment diagrams. Steel-3D interfaces with A-Frame (see listing below) to produce finished steel framing drawings.

303 A-FRAME

Auto-trol Technology, 12500 N. Washington St., P.O. Box 38815, Denver, Colo. 80234—Tom Gortz, 303-452-4919 • For use with Auto-trol Advanced Graphics Workstation System, which is based on 32-bit Apollo monochrome or color computers • Price: $8,000 each for first two workstations; $1,000 thereafter; Updates: included with service/maintenance agreement • Training: on-site, in-house, manual and seminars.

A-Frame drafting software generates framing-plan drawings, elevations and column schedules for structural steel buildings either from information in the database of Steel-3D, a graphics design and modeling system (see listing below), or by defining the member endpoints and selecting the member designations from a menu. A full catalog of rolled shapes from the AISI Manual of Steel Construction is included.

304 DOUCRAFT

DocuGraphix, Inc., 1340 Saratoga/Sunnyvale Rd., San Jose, Calif. 95129—Donald E. Block, 408-446-9700 • Turnkey system is based on Motorola 68010 workstation and includes 17-in. high-resolution monochrome display, single-button mouse, detachable keyboard, expandable 15mb Winchester hard disk drive, 2mb RAM and dot-matrix printer. Multiple-plot plotters or laser printer are optional • Price: $35,900 for base system; Updates: included with service/maintenance contract • Training: on-site, in-house, seminars, on-screen-help and manual.

DocuCraft enables users to generate, store, access, and amend two-dimensional drawings and all text associated with these drawings and accompanying specifications, project manuals, or other documents. The software supports symbols and parts libraries and has a relational database and multiple windowing with zoom, pan and scroll, which permits simultaneous access to, and development of, several parts of a project’s construction documents. DocuCraft operates with or without user prompts and help screens.

305 VERSACAD

T&W Systems, Inc., 7372 Prince Dr., Suite 106, Huntington Beach, Calif. 92647—Bob Murphy, 714-847-9960 • For use with IBM PC, PC XT or compatible computers; version also available for 200-series Hewlett-Packard computers with a hard disk; IBM version requires two floppy disk drives or one drive and a hard disk; uses HiPad, Summagraphics, Kurta or VersaCad digitizer and Houston Instruments or Hewlett-Packard plotter; Hewlett-Packard version supports HP digitizer and plotter • Price: $1,995 for IBM version; $4,995 for HP version; Updates: billable • Training: seminar, in-house, on-site, manual and videotapes.

Versacad is a two-dimensional design and drafting system that permits users to assemble drawings.

Continued on page 166
using nine primitives contained in
memory: lines, arcs, circles, rectangles, ellipses, regular
polygons, Bezier curves, fillets, and text. These primitives may be
created, scaled, and located along user-selectable coordinates in
different ways. Other features are automatically
dimensioning, symbols libraries, windows and snap modes. A bill-of-
materials feature is optional.

306 CADAPPLE
T&W Systems, Inc., 7372 Prince
Dr., Suite 106, Huntington Beach,
Calif. 92647—Bob Murphy, 714-847-
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Apple IIe or Franklin 48K or
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4,000-object drawing. Options
include network-capability and high-
resolution color with the addition of
a graphics board and Princeton SR-
12 color monitor.

307 PRIME MEDUSA AEC
- ARCHITECTURAL DESIGN
Prime Computer Inc., Prime Park,
Natick, Mass. 01760—Mark Pipas,
617-878-3361 • For use with IBM
300-stand-alone workstation, all Prime
50-series 16-bit virtual-memory CPUs
with 16MB or Texas Instruments 4109 or
4113B terminals • Price: $6,000-
$12,000 for software; turnkey
packages available to suit a variety
of budgets; Updates: free •

Prime Medusa AEC
Architectural Design is a two- and
three-dimensional graphics package
for solids-modeling, schematics,
working drawings, bills of
materials, and reporting. Some of
its features are variable-boundary
structural grid, multi-line wall
placement, automatic scheduling
and standard symbols and details
libraries. Additional software
modules are available for program
development, database
administration and system
interfacing.

308 DRAFT/NET
Graphic Horizons, Inc., 60 State St.,
Suite 3030, Boston, Mass. 02109—
Mary Cancian, 617-936-0076 •
Graph/Net client turnkey system
consists of PERQ super-mini
computer, 1MB memory, portrait
screen, 35mb Winchester disk drive,
floppy disk drive, workstation with
built-in digitizing tablet and dot-
matrix printer/plotters; hardware
options include wide-screen
upgrade, 2MB memory, Ethernet
sub-system, 1/4-in. streaming tape
card, color monitor subsystem,
photo-digitizing subsystem, Canon
laser printer, Houston Instruments
pen plotters, Versatec electrostatic
printer/plotters and Benson
electrostatic plotters • Price:
$46,000-$55,000 depending on
thereafter • Training: manual
and three days on-site training included
with purchase price.

Vu/Net is a three-dimensional
perspective simulation program
that enables a designer to examine
interior or exterior perspective
views from specific viewpoints or in
a sequence. Viewpoints may include
those for perspective, plan or
elevation views, all at various
scales. Displays may contain hidden
lines or facing walls only, with or
without toning. The software also
deployed on a fully toned
showcase project for any
location and time of day, month
and year.

Continued on page 189
Continued from page 160

310 COMPUTER DATA BASE FOR STRUCTURAL SHAPES


These databases are available in card deck, 9-track magnetic tape or 8-in. diskettes suitable for IBM 3741-compatible computers. Price: $40 each; Updates: none planned.

Training: Explanations of the variables specified in each of the data fields is provided.

These databases correspond to information published in Part I of the 8th edition, AISC Manual of Steel Construction, for the properties and dimensions of the following structural shapes: W, M, S, HP, C, MC and WT. Included are database formats, explanations of variables and listing of a read/write Fortran program and complete database images.

311 KOALACAD

Zercon Inc., 1100 S. Main St., Racine, Wise. 53403—Dave Zimmerman, 414-633-7381

For use with IBM PC or PC XT with 128K memory, color adapter and two disk drives or Apple II+ or IIe with 128-192K RAM and two disk drives; supports Hewlett-Packard, Houston Instruments or EnterGraphics plotters. Price: $285 introductory—includes KT2010 precision Koala digitizing tablet; Updates: $50 with return of old disk. Training: seminars, in-house, on-site, manual and application hotline.

Koalacad is a two-dimensional drafting package. Its capabilities include dual dimensioning in English, metric, fractional or decimal units, 250 registered overlays, variable text parameters, grids, symbols libraries, cartesian, polar, local, or relative-coordinates, and 12-decimal-place accuracy. The software permits automatic measurement of distance, length and angular relationships. Among commands are stretch, mirror, rotate, fillet, blends and chamfers.

312 FACILITY MANAGEMENT SYSTEM

The Computer-Aided Design Group, 2407 Main St., Santa Monica, Calif. 90405—Don Carter, 213-392-4181

For use with IBM 370, 30X and 43XX series running MVS/TSO or VM/CMS and 3270-series terminals (3279 for viewing graphic output); DEC/VAX models running VAX/VMS using VT100- or VT200-series terminals (VT125, 240 or 241 required for viewing graphic output). Price: approximately $25,000 per software module; Updated annually with service/maintenance agreement. Training: computer-aided-instruction on IBM PC and manual.

Facility Management System is a computer-based management tool intended for users or managers of facilities comprising a half-million or more sq ft. The program integrates stand-alone computer-aided drafting (not included) and database management with separate software modules, each designed to help facilities managers make informed decisions. Among the 17 separate modules available are space programming, cost estimating and budgeting, move coordination, master planning, and real-estate management.

313 ACOUSTICOMP-RT


For use with IBM PC and Osborne and TRS-80; requires 64K RAM; program written in Basic source code. Price: $295; Updates: none available. Training: manual.

Acousticomp-RT is used to compute and optimize the reverberation time of a room at each of six frequency bands, given the volume and finish materials. The variables may be altered at any time to test alternatives and optimize the design. Finish materials' absorption coefficients may be input automatically by selecting materials from a pre-programmed list or entered manually from manufacturer's literature. The program suggests optimum reverberation times for comparison with calculated results.

314 E2000

Carrier Corp., P.O. Box 4088, Syracuse, N.Y. 13221—Christopher Jones, 315-432-6888

For use with Hewlett-Packard Model 15 or Model 36 under the Series 200 computers and compatible HP peripherals, including monochrome or color high-resolution displays, printers, plotters, digitizers, cables and data storage units. Price: Turnkey systems from $21,000 to $49,000; leases from $450 to $1,050 per month; additional workstations from $14,500 to $26,000 ($310 to $550 per month on lease); Updates: annual update fee is $1,200.

Training: seminars, in-house, on-site, manual, computer-aided instruction and hotline.

E2000 is a general-purpose design and drafting package that can generate multicolor presentation drawings and half-tone blueprints as well. It is equally suited to the needs of architectural, civil, electrical, industrial, mechanical, and structural-engineering disciplines, and offers several applications packages tailored to specific tasks: computer-aided drafting and bill of materials, specifications writing, financial management, word processing, HVAC and sheet metal. A scaled-down, less expensive version, called E2000 Jr., is available for the IBM PC.

Continued on page 175
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Circle 71 on inquiry card
Continued from page 169

315 RISK ANALYSIS
J & S Associates, 13407 Quapaw Rd., Apple Valley, Calif. 92307—Jon Prescott, 619-247-7219 • For use with IBM 360/370, DEC-VAX/VMS, VAX/780, IBM PC and DEC Rainbow • Price: $5,000 - $7,000 one-time license fee, depending on options; Updates: free • Training: manual; additional training negotiable.

Risk Analysis is a planning tool designed for general business applications where management wishes to assess, with as much certainty as possible, the specific risk of a new business venture.

316 EASYTHREE
BruningCad, 611 E. Skelly Dr., Tulsa, Okla. 74135—William F. Albu, 918-633-5291 • For use with Easydraft/2 turnkey system which consists of an m68000-based processor, 1.9mb RAM, 14.5mb Winchester hard disk drive, dual 3 1/2-in. floppy disk drives, 1024 by 768 16-color monitor mounted on an articulating arm, 3-button optical mouse and full modular keyboard; printer not included • Price: $2,500 for software only; Updates: offered as part of comprehensive support package for one per cent of system price per month • Training: on-site.

Easythree is a three-dimensional add-on modeling package to Easydraft/2 (for drafting) intended to assist architects and clients with massing studies, functional relationship studies, interference checking and schematic presentation drawings. Up to nine active display windows permit simultaneous design, alteration and evaluation in the frame of reference most convenient to a user. Drawings may later be incorporated in Easydraft/2.

317 TQ CONTINUUM CAD
TeQuipment Inc., P.O. Box 1074, Acton, Mass. 01720—Andrew Spencer, 617-263-1767 • Turnkey system consists of m68000-based CPU with 320k RAM, 12-in. monochromatic monitor, dual 8-in. disk drives, keyboard, Houston Instruments DMP-29 8-pen plotter and Houston Instruments DFT-11 digitizer • Price: $15,000 for basic system; Updates: free • Training: on-site, in-house, seminars, manual and help-routines.

TQ Continuum CAD assembles three-dimensional wire-frame drawings from two-dimensional data (including primitives and symbols from libraries) input to a database via keyboard and digitizer. Drawings may be viewed, edited or plotted from any viewing position. Applications include solar views for landscape or solar heating plans, exterior and interior eye-level views and tomographic projections for multi-structure relationships. Add-on word-processing and graphics software modules permit text and drawings to be integrated. Spreadsheet and database programs are available as well.

318 PRODUCTION LINES
LCE Corp., 155 E. Campbell Ave., Suite 203, Campbell, Calif. 95008—George MacDonald, 408-374-7568 • Turnkey system consists of IBM PC with 512k RAM, 5 1/4-in. floppy disk drive, 30mb Winchester hard disk drive, keyboard, color monitor, joystick, Calcomp 1043 8-pen, E-size plotter, and workstation furniture • Price: $34,000; Updates: free during first year; $600 per year thereafter • Training: on-site installation and training included.

Production Lines is a two-dimensional electronic overlay drafting system for architecture and surveying. Images are entered into the program’s database using coordinates based on real numbers; line lengths are entered in feet and inches, eliminating the need for scaling factors or user-defined units. Other features include interactive prompts, a multi-level command structure and built-in word processing with note-libraries for creating, storing and editing notes.

319 ADP ARCHITECTURAL DESIGN PACKAGE
CalComp, 2411 W. La Palma Ave., Anaheim, Calif. 92801—Diana Harrelson, 714-821-3289 • Turnkey system consists of 32-bit CPU with dual m68000 processors, 20/65/143mb Winchester disk drive and two-display design station with keyboard and digitizing tablet/stylus; 1/4-in. or 1/2-in. streamer tapes available • Price: $5,000 for software; $65,000 for hardware; Updates: provided as part of service/maintenance contract • Training: seminars, manual and in-house or on-site instruction for operators and systems managers.

ADP Architectural Design Package comprises a set of general-purpose design tools that enable users to create and revise plans, elevations and sections and generate isometric and perspective views automatically. Macro commands simplify the editing of wall lines where two walls cross or partially intersect. Available symbols libraries include doors, windows, plumbing fixtures, electrical symbols, appliances and cabinets. Non-graphic attributes libraries enable finish schedules to be generated from optional Report Writer Application.

320 SOLIDS MODELING
CalComp, 2411 W. La Palma Ave., Anaheim, Calif. 92801—Diana Harrelson, 714-821-3289 • Turnkey system consists of 32-bit CPU with dual m68000 processors, 20/65/143mb Winchester disk drive and two-display design station with keyboard and digitizing tablet/stylus; 1/4-in. or 1/2-in. streamer tapes available • Price: $8,500 for software; $65,000 for hardware; Continued on page 201
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Manufacturer sources

For your convenience in locating building materials and other products shown in this month’s feature articles, RECORD has asked the architects to identify the products specified.

Pages 98-99

The Purdue Frederick Headquarters by Gatje Papachristou Smith


Pages 100-102

Westinghouse World Headquarters

Steam Turbine-Generator Division by William Morgan Architects


Page 102—Elevator: Westinghouse.

Pages 104-107

Erie Insurance Group Home Office by The Rubini Associates, Inc.


Pages 108-109

Monterey Insurance & Financial Center by Marquis Associates


Pages 110-113

Mount Pleasant Corporate Center by Renato Severino Associates


Pages 114-123

Aerospace Museum

by Frank O. Gehry and Associates


Page 118—Metal door: Security Metal Products Co.


Syracuse University School of Architecture has junior full-time faculty positions open in the architectural design sequence, beginning in the fall of 1985. These are tenure-track appointments and are available at the rank of Assistant Professor. Applicants must have a Ph.D. in Architecture and be engaged in scholarly research in the field. Applications are due by March 1, 1985.

The University of Virginia is seeking qualified candidates for the position of Assistant or Associate Professor. The position is available immediately and will be filled as early as December 15, 1985. Applicants should have a Ph.D. in Architecture and a strong record of research and publication. Applications are due by March 1, 1985.

The University of Illinois at Urbana-Champaign, School of Architecture, is seeking qualified candidates for the position of Assistant Professor in 1985. Applicants should have a Ph.D. in Architecture and a strong record of research and publication. Applications are due by March 1, 1985.

Cornell University - Hotel Planning and Interior Design. The Department of Architecture at the School of Hotel Administration is seeking a faculty member to teach a required course in hotel development, planning, and interior design. Applicants should have a Ph.D. in Architecture and a strong record of research and publication. Applications are due by March 1, 1985.

The School of Architecture at Oklahoma State University is seeking qualified candidates for the position of Assistant or Associate Professor. The appointment will be a tenured-track appointment. Applicants should have a Ph.D. in Architecture and a strong record of research and publication. Applications are due by March 1, 1985.
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