



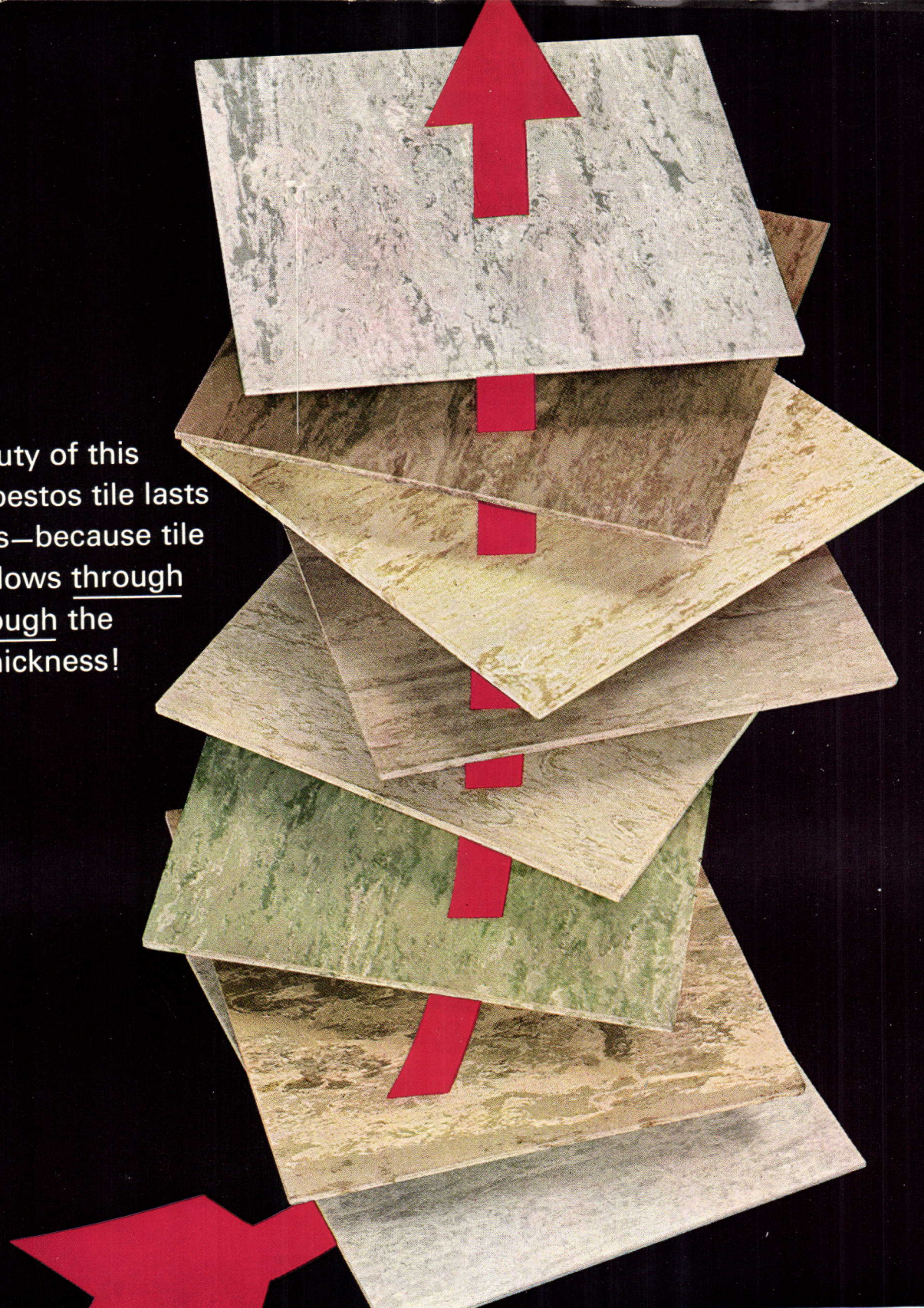
A · I · A

Journal

December 1963



THE REMARKABLE CRUISE OF THE NEW HELLAS · J. ROY CARROLL ON CRAFTSMANSHIP
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Journal

DECEMBER 1963

VOLUME XL, NO. 6

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COVER: Mykonos, a stop on the *New Hellas* cruise (p 27). Photo by Herbert A. Lattes



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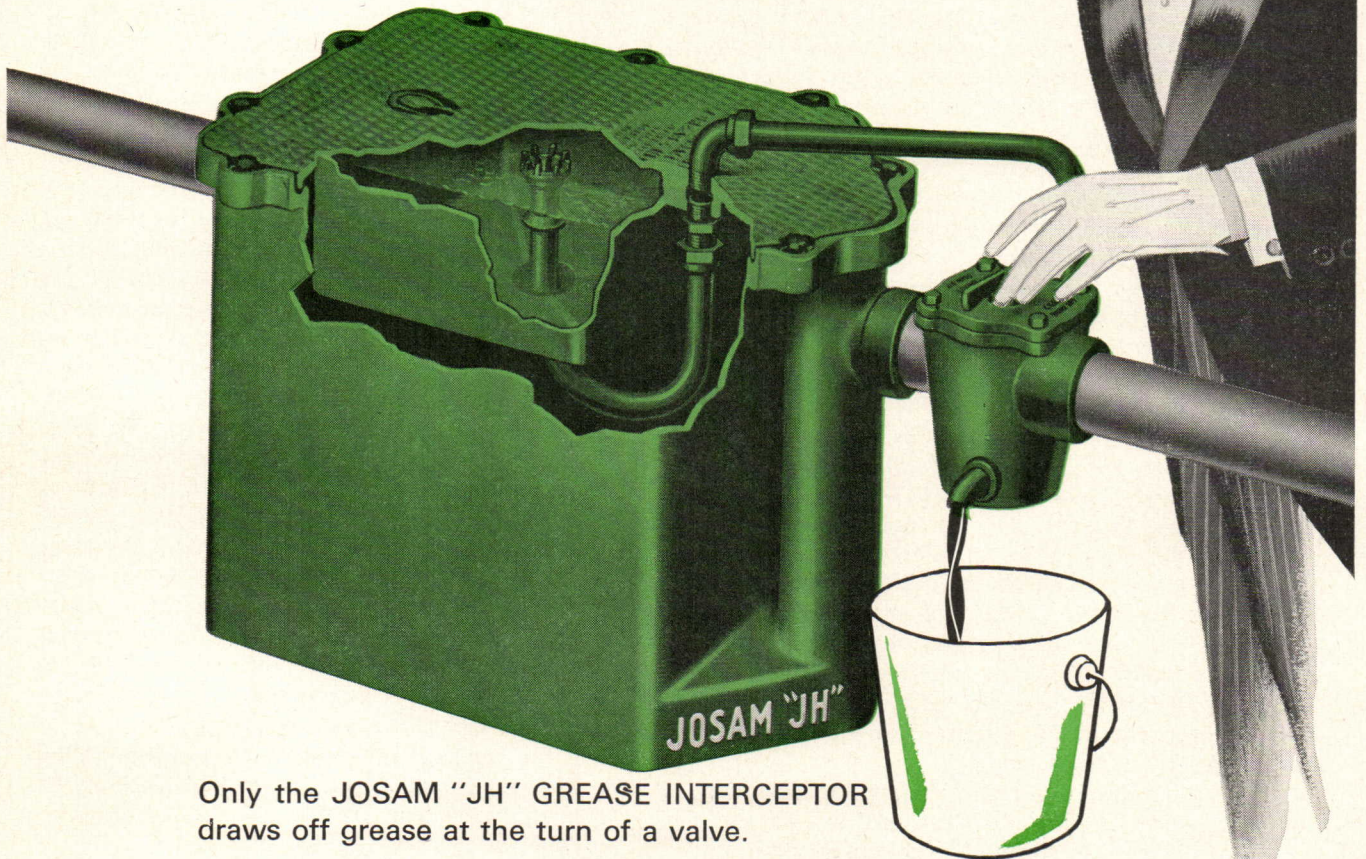
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The Editor's Page

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A Review of a Book—and of a Man

The man behind the “lead story” in this issue of the *Journal*, “The Remarkable Voyage of the *New Hellas*,” is not, of course, its genial author, but the, to many people, shadowy figure of Constantinos A. Doxiades. There is nothing “shadowy” about Mr Doxiades—in fact, some of his contemporaries consider him a consummate showman. That, however, is inaccurate. I would say that he has developed the highly desirable skill of bringing his ideas to the foreground while keeping himself in the background. And ideas are the salt of this life.

As a means of discussing Mr Doxiades, I thought I might briefly review here his current book “Architecture in Transition” (New York, Oxford University Press, 1963. 199 pp illus 5¾" x 9" \$7.50). We all realize that architecture is in a state of transition, and we know *from* what, but few of us have any idea *to* what. To begin with, Mr D points out that every city-dweller bears the weight of his surroundings. “Taking 100-120 years as the average life of buildings in the city, anyone reaching adulthood opens his eyes every day on a city created by the four previous generations. He lives in a city which often does not correspond to its present needs.” That we need new cities and that our old cities need surgery, all will agree. But “The advent of motorboats, for example, has not yet been able to change the structure of the city of Venice; fortunately, nobody has so far thought of widening its canals to allow for more motorboat traffic, though this is no more absurd than allowing a proliferation of cars to force us to a last-minute readjustment of our major cities and even minor towns by road-widening.”

Doxiades is not really interested in buildings as such—not, at least, buildings isolated from their environment. To him, that is no longer architecture. Furthermore, his interest is in architecture as it affects great masses of people—and his cry is that, taking the entire world into consideration (and that is *people*), architects do not design over 2% of all buildings created all over the world. The rest of the buildings are created, as they always have been, by the inhabitants themselves, or their masons. “The conclusion is that, irrespective of the good quality of a small proportion of architecture, the over-all result is that we have a very bad architectural output.” The profession has influenced very little of the total output, and contributed little to the betterment of living conditions for humanity. “How can we justify our existence to the average man if . . . we don't serve him directly, or even indirectly . . . ?”

Throughout history, the architect was a natural leader, says Doxiades, not only because he was better than others in his craft but because he was the best

among all those dedicated to building. Thus he was not just the designer of buildings, but the leader of the building industry. His failure coincides with the era in which he has been produced by schools. (Mr D does not make that direct reference to the schools, but the implication is clear.) He makes two highly quotable observations: “First, that the architect of today has been set right at the top, so that he must step down again if he wishes to exercise his influence; and, second, that he has been banished from the building site and so has lost contact with the actual construction. Once the architect was first a mason and then a master builder. Now he is named a master builder at a university, but must descend to become a mason.”

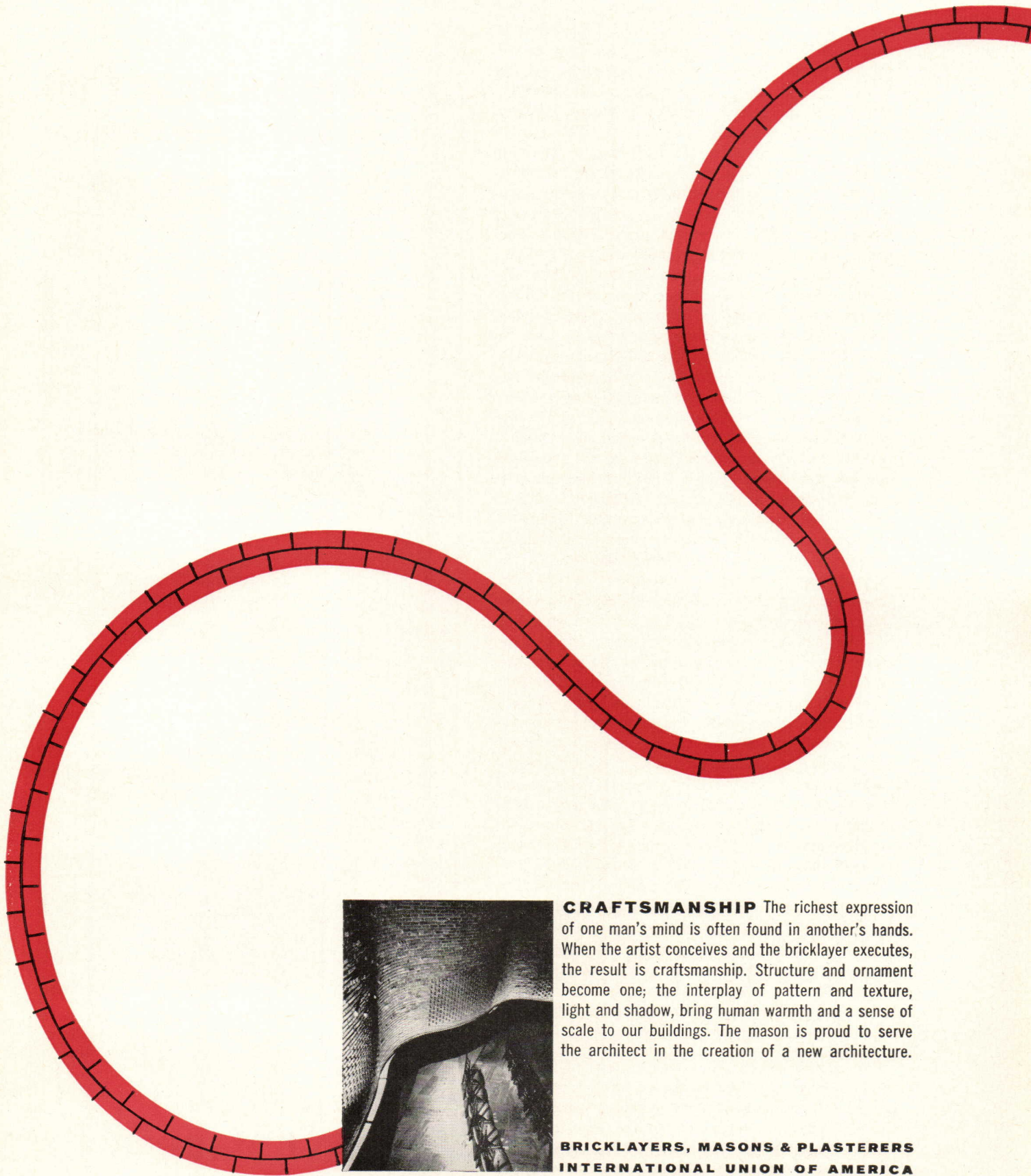
He says that “visiting time is over” for our profession. “We must look on architectural creations as objects not merely to be visited but to be lived in. Not only our houses and buildings but also our squares and roads, indeed the whole space surrounding us must be moulded architecturally.”

In reading and evaluating Doxiades, we must remember that the great bulk of his experience has been with the needs and problems of Eastern and African peoples, so some of his dicta will sound a bit strange to Western ears—but this should not close our ears to the keen truth and the broad implications of what he is saying. He preaches total architecture. “In normal periods of evolution architecture was always total. We can and must return to a total architecture whose geographic extent is going to be even larger than in the past . . . and tend towards the ecumenopolis or universal city. . . .” He believes that there has always been an ecumenical, a truly universal, architecture. It existed at an early stage of man's civilization and, in fact, “it still exists throughout the countryside of many, if not all, countries.” Perhaps what we would call indigenous architecture. “Architecture cannot be the brainchild of the few. It will have to be, indeed it must again become, the child of humanity as a whole.”

The Doxiades prose style is dry, often dull, but it is clear. The thinking is sharp and incisive. His detractors will point out that many of the ideas expressed are not new—whose are? Knowledge is a cumulative thing. However, many ideas *are* new, and the application of many old ideas is new; so the book is powerful and convincing. As to its physical aspect, it is disappointing for a book carrying a message from a designer. The typography and layout are routine and unimaginative, and the high-gloss paper offends the eyes.

So much for the book; what about the man? If you saw the “Profile” of him in *The New Yorker* for May 11, 1963, you need read no further, for that is the source of much of the following. There are those who question his qualifications as a “true professional.” Let them rest assured. Mr Doxiades graduated in architecture in 1935 from the National Metsovion Technical University in Athens, and took his doctorate in city-planning at the Berlin-Charlottenburg Technical University. His thesis was an effort

Cont'd on p 8



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Editor's Page *Cont'd*

to show a conscious order in the planning of ancient Greek religious communities. He entered the service of the Greek government as a town planner and by the outbreak of the war he was chief of the Regional and Town Planning Department in the Ministry of Public Works. During the war he fought on the Albanian front, and after the Greek surrender he returned to the Ministry of Public Works, covertly working with the underground.

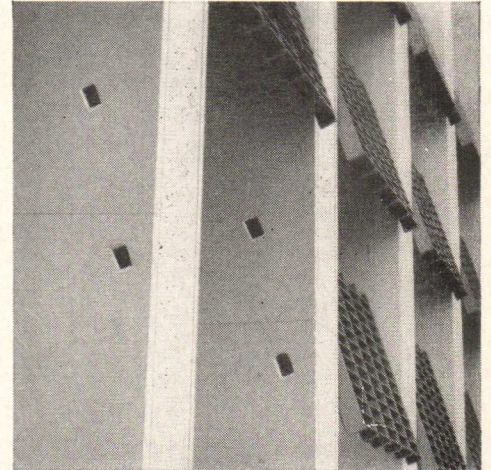
It was during these years, during the German occupation, that he laid the groundwork for his future success, for due to his surveys for the government of the housing needs and living conditions of the Greek people, he became the one individual who knew practically everything about the actual needs of the country. So it was inevitable that "For the next five years he was a prime mover in the Greek government's recovery and rebuilding efforts, holding various jobs of Cabinet rank or just below," and in 1948 he became the chief official handling Marshall Plan aid to Greece. A "driver and a go-getter, opposed to graft and impatient of politicians," it was inevitable that he make enemies as well as friends, so when he collapsed from ulcers and sheer fatigue in 1950 and was hospitalized, his political adversaries had his cabinet post abolished and left him out of a job—ostracized, in the ancient Athenian tradition. He and his family moved to Australia, where he anticipated a position helping to house the thousands of immigrants that were expected. But the government reversed its immigration policy, so Doxiades bought a farm and raised the first thing he could think of, tomatoes—but still doing a lot of thinking.

Back in Greece in 1953, he went to work at his trade, city planning and housing for the masses, and in ten years he has built up a fabulous practice. That his name has only in very recent years become known here is due to the fact that his work has been for the governments of Ethiopia, Ghana, India, Iran, Pakistan, Syria and other, to us, far-away countries. Only recently has he done work in Venezuela, Canada and the US (Eastwick, in Philadelphia). His present state is that of a wealthy and successful practitioner, with projects and offices all over the world. His main office is an eight-story building in Athens, with a five-story wing which houses the Athens Technological Institute, which he founded. Still only forty-nine, his influence on Eastern and African nations is already pronounced. His experience and his philosophy equip him particularly well to cope with their problems. However, his is the type of mind that invites tough assignments and it is flexible. A study of the plan of Eastwick will indicate that he has not taken the same approach that he did in Karachi, although it gives the Eastwick-dweller the same pedestrian freedom that his plan gives the citizen of Pakistan's capital.

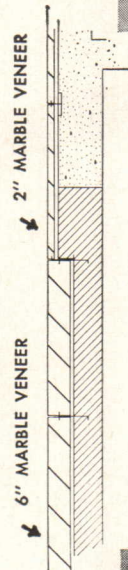
Constantinos Doxiades is both a dreamer and a man of action; he has a definite and positive philosophy of planning; he is a master of organization and operation; he is young, yet he has a considerable accomplishment behind him. A man like that just must have an important future.



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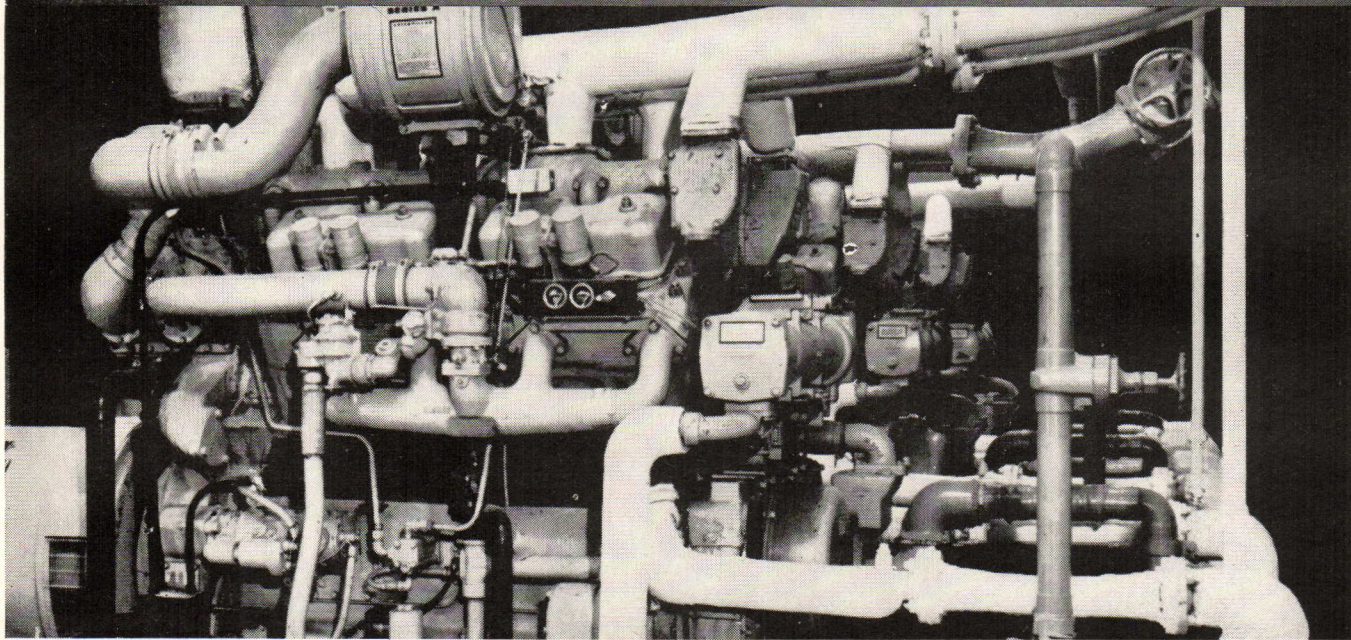
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Letters

October: "A Breath of Fresh Air"

EDITOR, *Journal of the AIA*:

We in our office wish to commend you for the cover and subject matter of the October *Journal*. To those of us who have not succumbed to the impoverished, "contemporary fad" in architecture, your cover design comes as a breath of fresh air.

Judging from the public comments on every hand, the time seems propitious to relegate Contemporary Architecture to the confines of futility along with the mission furniture of the early 'nineties, which was its prototype.

Let us get back to the architecture that stood the test of centuries and was intended to provide something pleasing to the eye.

BENJ. FRANKLIN OLSON
Architect-Engineer
Chicago, Ill

EDITOR, *Journal of the AIA*:

Sincere congratulations on the masterful "Pen Drawings of Florence." The cover is truly magnificent and, as usual, the entire contents are most interesting and informative.

EDWARD L. SPENCER
Editor, *The Catholic Market*
New York, NY

EDITOR, *Journal of the AIA*:

Perhaps because his talk at Sarah Lawrence College was directed to a group of lay persons (although I like to think not) Mr Barnes' unpretentious treatment of some of the more basic issues in architecture is both informative and enlightening. At the level to which he addressed his remarks the temptation to double-talk is enormous and he resisted it totally.

Particularly refreshing in these times is his reaffirmation of the importance of use as a potent cause of architectural form. Summerson clearly defined functionalism as that first principle of rational architecture which seeks to fulfill certain specifiable functions with the nearest approximation to absolute efficiency and economy. So far as I am concerned, most attempts to broaden this precept to include "esthetic function" and other such matters quickly diminishes its force and value.

But Mr Barnes correctly notes that expression is an outgrowth of function. Suzanne Langer, in her book "Feeling and Form," makes the observation that "In architecture purely as an art, we are not so much concerned with the space in which we live and act, which is actual and physical and has to do with a system of functional relationships related to *things to do*, as we are with expressive environment, which

is psychological in nature and is, rather, symbolic of functional existence embodying the *feeling with which things are done*." (The italics are mine.) Miss Langer made the distinction; Mr Barnes unifies the interrelation between formal expression and function as the distinctive feature of architecture.

CHARLES B. LOOKER
Professor of Architecture
University of Illinois, Urbana

EDITOR, *Journal of the AIA*:

Congratulations on the fine article about the Schenectady Stockade. It was an interesting story that contains important lessons for other communities.

BERND FOERSTER
Associate Professor of Architecture
Rensselaer Polytechnic Institute
Troy, NY

Geographic Error

EDITOR, *Journal of the AIA*:

"Urban Design: The Architecture of Towns and Cities" in the October *Journal* is informative and interesting. However, I must report a slight error in geography made in the second paragraph on page 64.

The "hill" in Rio de Janeiro which is accented with an enormous crucifix is called *Corcovado* (hunchback).

Pao de Acucar or the Sugarloaf, on the other hand, is the "mountain" shown in the sketch on page 64. It has a cable car running to its top, on which sits a restaurant as I remember it.

WILLIAM J. CASAGRANDA AIA
Beltsville, Md

UD Well Defined

GARRETT ECKBO FASLA:

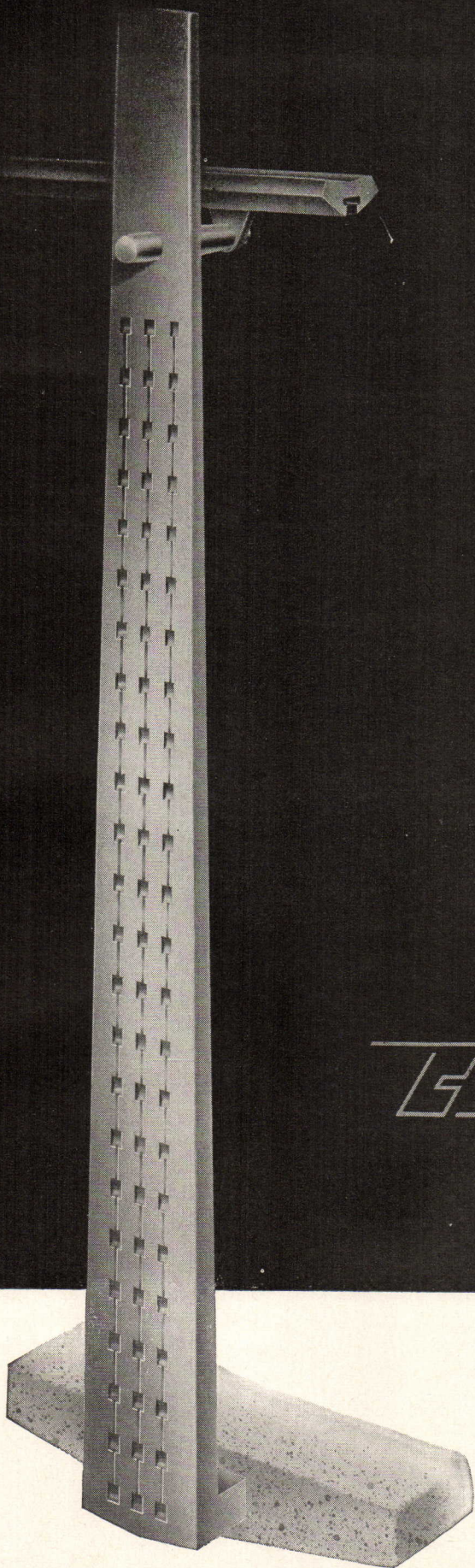
I want to tell you how much I enjoyed your article "Urban Design—A Definition" in the September *Journal*.

Urban design is not an easy term to define but I think you have done it well. I thought that your statement that urban design is not a new field which might preempt the scope of any existing design profession was particularly good. It is new because the problems are new. Urban design was not invented by anybody. It was created by real problems and recognized for what those problems are. That, I feel, you have said very well.

It was quite timely that your article came in the *Journal* when it did—just about the half-way mark in our series on urban design. I also felt that it was good that a landscape architect was the one to say what you did. The somewhat different perspective of your profession throws a light on this subject that architects do not often see.

PAUL D. SPREIREGEN
AIA Project Head, Urban Design

Cont'd on p 14



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Letters Cont'd

Cover Gal—Finis!

EDITOR: *Journal of the AIA*:

Re the reaction of your "Cover Gal" of August: he who thinks a thing of beauty must be in a bunny uniform should concern himself only with gossip columns and calendar art; nuts to Varga's girls—they are boring.

Let's have more of the artistic capabilities of future architectural leaders. Mr Thompson richly deserves the Rome Prize, and you should have been his first alternate for delineating our fine monthly.

RONN GINN
Albuquerque, NM

EDITOR: *Journal of the AIA*:

The October issue brought me a tremendous surprise. I had not anticipated such a treatment of my irascible note about the August cover. Nevertheless, I am delighted to learn that persons like Charles C. Platt and Richard W. Alger agreed with my viewpoint. (Incidentally, I also agree with Jan Reiner in his kudos!)

Milo H. Thompson, on the basis of his published Rome Prize work in the *Journal*, is a very talented architect and sculptor, deserving of the honor accorded him by the Rome Prize judges. My sole quarrel with him is this: with his talent, why didn't he create a BEAUTIFUL AND GRACEFUL FEMALE instead of the freak that won him his honors?

Winning the Rome Prize should be a boon to him, apart from the financial and honor aspects attendant thereto; I feel that when he has steeped himself in the spirit and the artistic influence of the Eternal City, he will disassociate himself from the influences that inspired him to sculpt the awkward female that graced the October *Journal*—and that he will carry on the great tradition of Michelangelo and his contemporaries in depicting the human form in its finest aspects. That is my hope.

In 1937, one of my office boys won a scholarship to the Rochester School of Music, and several years later he won the Rome Prize for music. His name was Frederick Woltmann. He composed a one-act opera based on "Ethan Frome." I have photographs of him taken at my piano, by me, working on his score. Fred returned from Rome and conducted the New York Philharmonic Orchestra in some of his compositions at Carnegie Hall. The program featured the works of Bach, Richard Strauss—and Frederick Woltmann.

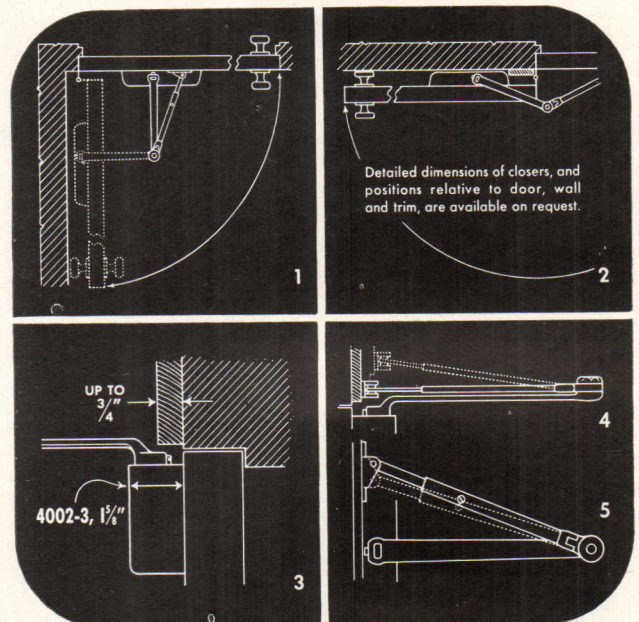
I cite these to indicate that I am not an ignoramus or a rough-neck; that I have long been immersed in matters intellectual; and that my criticism of Thompson's sculpture is based on more than whimsy—I know what I'm talking about.

ALOYSIUS SCHUSZLER AIA
Cleveland Heights, Ohio

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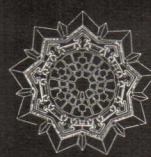
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URBANISMS

*A regular column by our specialist
on Urban Programs, Robert J. Piper AIA*

Community Goals and Choice

Most disappointments in community planning activities can be attributed to a failure to determine community goals. To plan presupposes goals; setting goals requires that a choice be made from an assessment of facts and aspirations. This is a tenet of the planning process, yet it is surprising how often community plans are formulated without a struggle with a determination of community goals.

But there is a stirring in the land. In May of this year the Detroit Chapter AIA joined with other local groups to sponsor a symposium on "Our Metropolitan Community—What Goals and Guidelines?" A review of the program report reveals it as an outstanding meeting. Mayor Cavanagh, in opening the Conference, placed the challenge of goal selection squarely before the participants:

"We must know where we want to go, and we must prepare for the best way to arrive there. But I am a little concerned lest we here today extend our vision so far into the future that we blind ourselves to the goals and guidelines for next week, next month, and next year. The test of cooperation and the test of true community spirit lies not only in the discussion of how we shall all work together come the year 2000, as important as that will be, but the immediate test of course is what we are going to do now."

And HHFA Administrator Weaver advised:

"Planning can be ridiculous when it loses touch with reality. It can arouse deep-seated anger and hostility when it loses its flexibility. It can become an excuse for avoiding decision if it dawdles too long over details. In setting its goals for the future a community needs to take an objective look at its resources, and limit its aspirations to what those resources dictate. But it must also be imaginative in assessing its resources and it has to be creative in determining its aspirations."

Participants at the October 1963 convention of the American Institute of Planners were repeatedly reminded of the necessity to *make a choice, to determine community goals*. Recent issues of the *AIP Journal* have discussed the "choice" theory of planning; that planning is a process for determining appropriate future action through a sequence of choices; that judgment permeates planning; that the *exercise of choice* is planning's characteristic intellectual act.

From still another source, the Department of Public Instruction of the Commonwealth of Pennsylvania, comes a directive to local school boards applying for state aid to coordinate local educational facilities with the projected pattern of future community development. A community's educational objectives are part and parcel of the community's

over-all goals, and the Bureau requires that the local authority's "master plan for school buildings should begin with a general statement of . . . the nature and objectives of its educational program."

In New York, the Regional Plan Association has recently completed an extensive program to develop "Goals for the Region." Many hours of educational and instructive area-wide TV programs, as well as local presentations of facts and discussions of aspirations, concluded with a month-long program attempting to define the region's objectives.

In Georgia the AIA chapter joined with the American Society of Landscape Architects and the American Institute of Planners to develop the report "Improving the Mess We Live in." Implicit in this title and in the presentation is the concept that urban esthetics must be a community goal. In commenting on this report M. L. Rockwell AIA, AIP, Deputy Director of the Northeastern Illinois Metropolitan Area Planning Commission, stated "Here we have a direct statement that it is not enough to call merely for an improvement—we must also be willing to pay the increased cost for having it. Throughout this report runs a concept that the creators of offensive environment will improve their part just as soon as the public demands it."

A round-table entitled "Schools and Urban Growth," sponsored by the National Association of Homebuilders last November heard panel members call upon homebuilders to deeply involve themselves—sociologically, professionally, culturally—in the determination of housing goals for their communities. It is not enough for the homebuilder to make surveys for customer preference; he must present the community with the alternatives of housing types and costs instead of merely subdividing his tract according to the findings of his most recent "market analysis." His concern should not be the development of the acreage he controls but rather balancing the adequacy and suitability of the community's housing supply against its housing goals.

In San Francisco a concern for metropolitan transportation goals has resulted in the temporary halting and re-evaluation of a major highway program, while at the same time authorizing an unprecedented expenditure for a metropolitan rail transit system. Washington, DC, is also presently involved in a discussion over its transportation goals.

The June 1964 AIA Convention to be held in St Louis will illumine the matrix of forces that contribute to the character and culture of the community—forces which the architect must be aware of and respond to in developing man's physical environment. Upon understanding these forces the architect and others in the community can determine the community aspirations these forces address themselves to.

These stirrings reveal a dissatisfaction with planning decisions based alone on cold facts. Judgment and choice are the essence of planning decisions—judgment that will result in the *choice* of community goals and thus development of community plans that demand appreciation, respect and dedication. ◀

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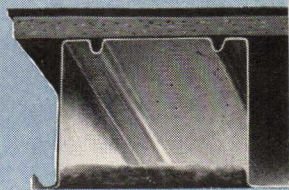
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The remarkable cruise of the
NEW HELLAS

JAMES E. CLAYTON

During the second week of July, the Greek cruise ship New Hellas sailed from Piraeus with what was undoubtedly the strangest—and certainly the most distinguished—passenger list it had ever carried. American newspapers ran scattered accounts of the cruise, but it received only passing attention. We think it should be brought more directly to the attention of the profession.

This is a layman's account of the trip, written for the Journal by the only working journalist aboard, who, with his wife, was invited to join the group. When he isn't cruising with his head in the clouds, Jim Clayton is a reporter for the Washington Post. He took the pictures too

IN THE RUINS OF an ancient amphitheater at Delos one day last July, a handful of spectators, including some bemused Greek boatmen, several goats and one mule, looked on as thirty men and two women solemnly signed a document calling for a basic change in the profession we call "city planning."

The ceremony, which took place by torchlight as darkness fell over the Aegean, concluded the Delos Symposium. It had been a unique conference—in its purpose, its participants, and its setting. Whether it and the Declaration of Delos will have any significant impact on the world in which we live may depend on whether the glow of enthusiasm that burned so brightly that night on Apollo's island is fanned into action.

The tone of the Declaration and of the entire conference was expressed in that document's first paragraph:

"The city throughout history has been the cradle of human civilization and progress. Today, like every human institution, it is profoundly involved in the deepest and widest revolution ever to overtake mankind."

A common interest in the problems inherent in these two sentences had brought together an uncommon collection of people. Thirty-four participants—professional planners, architects, sociologists, anthropologists, geographers, lawyers, economists, geneticists—had come from fifteen countries. (Two were forced to leave before the session at Delos.) Their purpose was to see whether academic disciplines normally regarded as far removed from city planning



Barbara Ward: danced

*Gorynski, Ostrowski and daughter:
mindful of what modern wars
have done to Poland's historic past*

could produce material that would be helpful to the planner and the architect. Their conclusion was that the planner and architect would benefit if only he would, and could, draw upon the resources of the other professions.

The symposium was the idea, and the dream, of Constantinos Doxiadis, the Greek architect and town planner. His Athens Technological Institute issued the invitations and paid the expenses of the week-long cruise, although not the transportation costs to Athens of all the participants. The idea had been in Doxiadis's mind for years and was a logical outgrowth of his "science of ekistics." Both represent his view that the world needs a new academic discipline of "human settlements" because the problems of planning a city have grown too large for a man trained in one discipline, either architecture or engineering, to meet.

During the cruise, Doxiadis explained his views this way: In earlier times, a builder or an architect had all the knowledge he needed when he set to work. Whether he was building a house or planning a town, he knew the relevant facts of what we now call economics, sociology, psy-

chology and politics. He knew the financial strain his client (individual or community) could stand, the standard of living the community considered appropriate, the kind of surroundings each person desired, and the men whose decisions were critical to his plans. But in the modern world, where the relevant facts have multiplied, the task of the planner is immense. Because he can no longer know all the relevant facts from his earlier experiences, he must know what is available to him in other disciplines and how to find it.

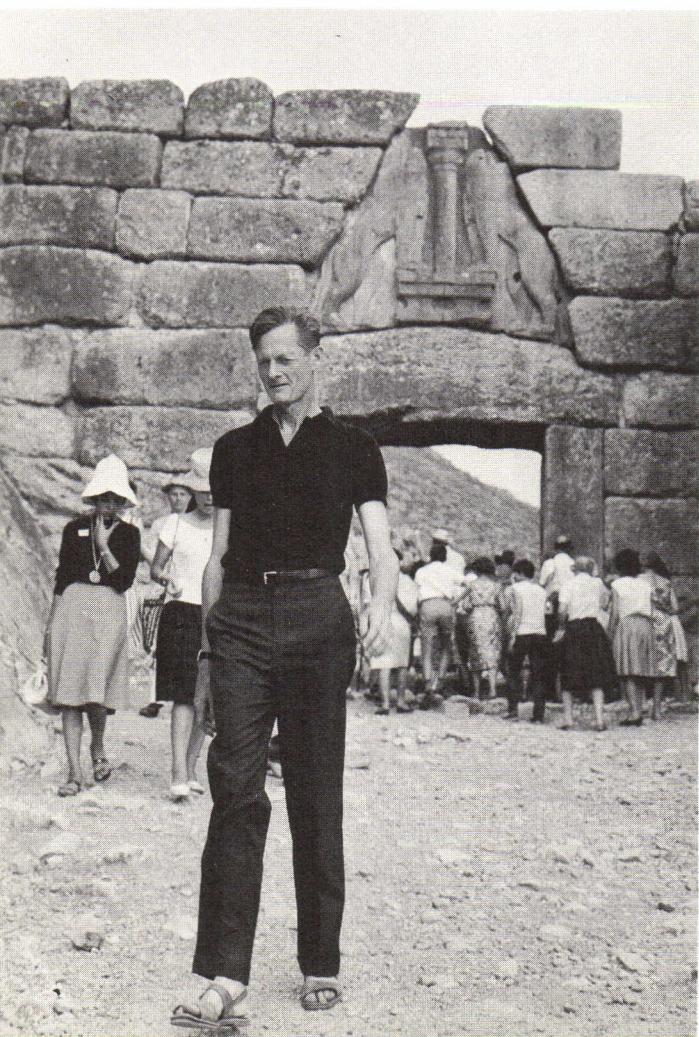
It was clear by the time this floating conference got to Delos to draft its Declaration that those on board basically agreed with Doxiadis. They did not use his word—ekistics—in their declaration but the meaning of it was most obviously there.

One could argue that the symposium participants were carefully selected by Doxiadis so that its result would justify his work and become a tool in his constantly expanding influence. I considered this, noting that some participants were committed to the Doxiadis approach before the meetings began, but dismissed it on the grounds



all night but worked all day to draft the declaration

Ed Bacon at Mycenae: "What kind of a world are we living in?"



that independent thinkers of this quality were unlikely to be swept up by another's ideas.

Doxiadis, of course, is a remarkable man, a superb host and a congenial companion. His twin establishments in Athens, the Institute and Doxiadis Associates, are impressive, both in the design of their own plants and in the design work that is going on inside them. One cannot help but be impressed by what Doxiadis has accomplished, from his role in the reconstruction of Greece after the war, through his episode as a tomato farmer in Australia, to his present-day business of planning cities on five of the six habitable continents.*

But the accomplishments and personal characteristics of many of the other participants in this conference were just as impressive.

There was Barbara Ward, one of the best-known writers on economics in the Western world, who frolicked with local dancers in a Cretan village square late one night and worked all the next day drafting the final statement of principles.

There was Sir Robert Watson-Watt, the British inventor of radar, who announced suddenly one day that he was totally at sea after hearing Marshall McLuhan, a Canadian professor, expound on what modern communications are doing to individual life.

There was Margaret Mead, whose writings are known to every first-year sociology student, climbing doggedly over the ruins of ancient cities and then denouncing modern cities for the destruction they bring to families and children.

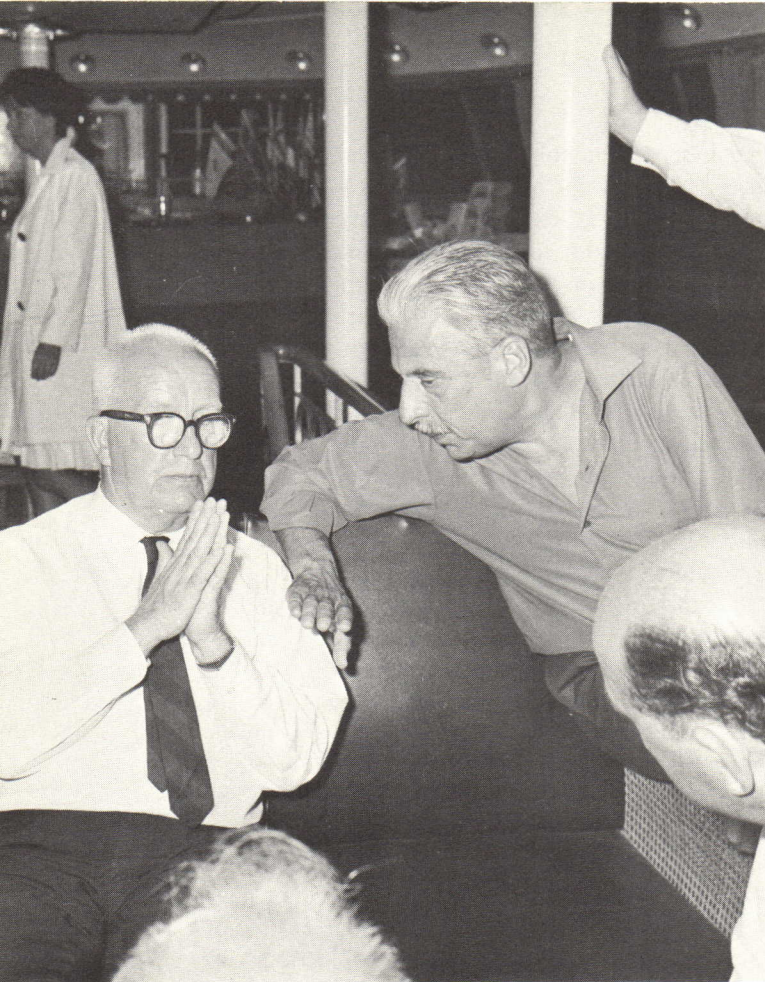
There was Juliusz Gorynski, Poland's Under-Secretary of Housing, looking at the historical remnants scattered all over the Grecian Island and wistfully pointing out that Poland lost almost all its historic buildings in modern wars.

There was R. Buckminster Fuller, keeping a part of this distinguished audience up until two am with one of his marathon lectures on architecture and engineering and life.

From the day the *New Hellas*, a typical cruise ship, left Piraeus until it returned a week later to that Athens seaport, the conference was a mixture of work and play. There were daily meetings, small discussion groups, trips to historic spots and parties of all kinds. The combination of talk and play seemed more productive than talk alone.

Some of the side-trips had an effect on the conference. We saw Mycenae and Epidaurus, Hydra and Mykonos, Rhodes and Lindos, Priene and Miletus. It was no wonder that the participants found something wrong with modern cities and their sterile, artless, sprawling form after they looked over the pastoral countryside and at the ruins of these once great civilizations.

* For more on Doxiadis, see the Editor's Page, p. 6.



Bucky Fuller and Doxiadis: marathon lectures in the ship's lounge until two am

The trip to Priene was particularly impressive. That Ionian city, now several miles from the Turkish coast, once stood on a crag overlooking the sea. It and nearby Miletus were among the earliest "planned" cities in the world. The ruins of both are reached after a long drive over rough roads. The path up the thousand-foot high hill to Priene begins at a small village where life goes on much the way it must have at the time St Paul visited nearby shores.

We ate lunch in the square of that village near two small camel caravans that had paused to rest and several stone houses that were brightened only by the storks that nested on their roofs. One member of the party, who had forgotten his box lunch, tried to buy food only to discover that the village had to be searched before the local cafe could produce its best—bread, cheese and olives.

The climb to the ruins was exhausting but as we slumped down in the shade of a 2200-year-old outdoor theater to rest, Sigfried Giedion, the seventy-year-old Swiss art historian, began to talk about the city and its planning by Hippodamos. The story he told came back before the conference again and again. Although Priene probably never had more than five hundred houses, its theater seated six thousand and there was a sta-

dium and an athletic area in addition to the customary temples and market place. What American city of perhaps three thousand can claim the kind of cultural life that must have existed at Priene?

The presence of Dr Giedion, of course, gave this symposium a tie with the old CIAM and it was clear he hoped this group would have an impact on planning as that one had on architecture.

But the crucial difference, which he pointed out again and again, was that these participants were not young dreamers removed from the power structure of their homelands. The men he had worked with in CIAM when the Charte d'Athenes was drawn thirty years earlier—Le Corbusier, Léger, Moholy Nagy, van Eesteren—never thought of sitting down with high government officials to talk of their ideas. The officials then, Giedion said, were part of a world "whose main function was to hamper new trends and make any new realizations impossible."

As one listened to him and looked at the people who had gathered to talk about urban planning, his point was clear. Here were men in key government posts whose daily task it is to revamp the world: Stewart Bates, President of Canada's Central Mortgage and Housing Corp.; A. K. Brohi, once Pakistan's Ambassador to India and long influential in his country's affairs; C. S. Chandrasekhara, Chief Town and City Planner in India's Ministry of Health; Shafik El-Sadr, Under-Secretary of State for the Ministry of Housing and Public Utilities in the United Arab Republic; O. E. Fischnich, Assistant Director-General of the Technical Department of the Food and Agriculture Organization of the United Nations; Petro Bidagor Lasarte, Director General of Urbanism in Spain; David Owen, Executive Chairman of the United Nations Technical Assistance Board; Alfred Otoo, Director of Planning in Ghana.

One morning as the cruise ship sailed into the harbor at Rhodes, the non-planners in the group asked the city planners and the architects and the officials on board to present the questions about modern cities to which answers are most urgently needed.

Sir Robert Matthew, president of both the UIA and the RIBA and creator of some of the "new towns" in England, asked:

"Is the idea of planning neighborhoods in modern cities a necessary one in terms of social welfare and individual development?"

"What are the demands of the automobile in modern cities and how should they be met?"

"What is the function of a town center?"

"Should the trend toward continued expansion of cities be accepted as inevitable or should an effort be made to reverse it?" Two days before, Sir Robert had said, "Everyone says New York and London are too large but no one says why."



Jacob Crane, Mrs David Owen and guide (Clayton in striped shirt) lead way to Priene, a proud city which left behind only five hundred houses but six thousand outdoor theater seats

Edmund Bacon, Director of Philadelphia's City Planning Commission, asked what future changes in life he should consider in planning re-development. "What kind of a world will we be living in?"

A few days earlier, Bates had said the basic question facing him was that of the optimum size for cities. Canada has no large cities between Toronto and Winnipeg. Since its housing needs will double in the next twenty years, should planners and government try to channel new housing into existing cities and let Toronto grow like New York, or should they try to encourage more and smaller cities?

Edward Mason, Professor of Economics at Harvard, pointed out that it is possible in economic terms to establish an optimum size based on the cost of providing city services or on the cost of getting merchandise to consumers. But this leaves out other factors. Then, Lyle Fitch, President of the Institute of Public Administration of New York City, asked "What really *is* a city? Is it Manhattan? New York? The New York area?"

No one could answer those questions, and therein lay the reason for the two generalizations on which all the participants could agree. One of these was that the revolution brought by technology and expanding population is about to overwhelm customary ways of life throughout the world. The other was that few people are concerned about the problems this revolution raises and that even fewer are making any effort to find the right solutions.

Four factors in that revolution stood out in the week-long discussions.

One is the great growth of population and the movement of people to cities. Total population is going up about two per cent a year but urban population by more than four per cent.

The second is the larger number of older, retired persons, a direct result of advances in medicine.

A third is the change in transportation. Instead of living, working and dying within a few miles of his birthplace, modern man now travels as far for a weekend holiday as his parents thought of traveling in a lifetime.

The fourth is the advances in communications. Not only are individuals more aware of the outside world but they stay home rather than gathering in groups for social activities.

After talking about these changes and others, the conference decided that the failure of the world to adapt cities to them "may soon outstrip even disease and starvation as the gravest risk, short of war, facing the human species."

The Declaration of Delos put part of the blame for this crisis on the institutions of higher learning.

"In the universities," the Declaration said, "the application of the basic sciences to human welfare has been fragmented. They have dealt with parts of man—his health, his nutrition, his education—not with the whole man, not with man in community."

All universities, the group said, should:

- Establish a new discipline of human settlements
- Initiate basic research into the problems of and the effects of scientific developments upon this field of human settlements

- Bring together specialists from other academic disciplines to work on major research projects
- Work out new methods of training would-be city planners
- Attract first-rate students into the practice of or research about this new discipline

What kind of questions are there to which such research could be applied? Some of the comments made during the cruise indicated what the participants had in mind.



Margaret Mead at Lindos: from the ruins a denouncement of modern cities

C. H. Waddington of the University of Edinburgh, one of the world's foremost experts on genetics, was on board because there may be some relationships between the structure and evolution of cells and the structure and development of community life.

Walter Christaller, a German geographer, pointed out the physical factors that have gone into and will go into the building of cities.

Clifford C. Furnas, a scientist who is president of the State University of New York at Buffalo, talked about the changes that science may make in the face of the earth.

After Furnas spoke, Miss Ward and Professor Mason noted that the developed nations now have the economic resources to do what they wish in making the world a better place in which to live.

Eiichi Isomura, Executive Director of the Japan Sociological Society, kept recalling Hiroshima and comparing the destruction of atomic power with its potential power for reconstruction.

Marshall McLuhan, perhaps more than any other participant, set off new trains of thought

with his comments on communications and transportation. Developments in these fields have made the world into one small, global village, he said. Radio and television are but electric extensions of man's own senses. For ages past, man could see and hear only what went on in his own community; now he sees and hears and participates vicariously in events all over the world. What effect does this have on the political processes involved in urban planning and on the needs of individuals that planners must consider?

Dr. Leonard Duhl, a young social psychiatrist at the National Institutes of Health in Washington, raised questions about the mental effects on people of various kinds of environments. "What are the priorities in planning?" he asked, "Should they be for buildings or for problems of community living?"

Charles Page, Head of the Sociology Department at Princeton, asked about the effects on older people of placing them in separate communities. Did they enjoy life more in balanced communities where youth was near?

Miss Mead said that one of the things that always bothered her is that too many planners talk about designing cities without expressing concern about what people want in their daily lives. How do you get people to participate in planning their own future? Do you plan for people and create communities in which individuals can develop and fulfill their potential? Or do you first get people to start fulfilling their potential and then to participate in planning their own communities?

Brohi, expressing the concern of the non-planners, was fearful that too much planning would leave the world with only the imprint of the planner.

The danger of which he spoke, particularly in underdeveloped countries, was plain. Ghana's Director of Planning said that in his country the planners decide what should be built and build it. On the other hand, American participants like Charles Abrams pointed out the realities of political life that sharply restrict the possibilities open to the planner.

Dozens of other questions and comments came from these and the other participants—Jacob Crane of the United States, R. Llewellyn Davies of Great Britain, Sture Linner of the UN, Mohamed Makiya of Iraq, Waclaw Ostrowski of Poland, E. Papanoutsos of Greece and Carl Schweyer of Germany.

No one had the answers, not even the experts who had gathered for the conference. Thus, the reason for their call for a new discipline and wider research was obvious. It will be interesting to see if, when these or similar participants meet next year at Delphi, again at Doxiadis's invitation, anyone has done more than call for action.

The Declaration of Delos

Meeting in Delos on this, the twelfth day of July 1963, we the undersigned, drawn from a wide range of different disciplines, nations, political allegiances and cultural groups, affirm and declare that:

The city throughout history has been the cradle of human civilisation and progress. Today, like every other human institution, it is profoundly involved in the deepest and widest revolution ever to overtake mankind.

This revolution proceeds under the sign of dynamic change. In the next forty years, the world's population will rise to seven thousand million. Science and technology determine more and more of the processes of human living. As they advance, man's social behavior is profoundly modified. These changes present themselves in every field as a danger matched by an even greater opportunity. Man can use atomic power to reduce every human settlement to the shambles of Hiroshima. It may give them enough energy to fulfill all human needs. The world's population may far outstrip its food supply. Even to keep pace, today's food production must rise threefold by the year 2000. Yet for the first time, we also have the means of securing enough food for everyone.

These paradoxes are widely felt. What is not realised is that the failure to adapt human settlements to dynamic change may soon outstrip even disease and starvation as the gravest risk, short of war, facing the human species.

A universal feature of the worldwide revolution is the movement of people into urban settlements at an even faster rate. World population increases by two per cent a year, urban population by over four per cent. In the next forty years, more urban construction will take place than hitherto in the whole history of man. It is already evident that wrong projections of urban development produce inexcusable waste. The absence of any forecasts leads to chaos in the cities, to the undermining of civic order and the destruction of precious and diverse historical traditions. Thus, the need for the rational and dynamic planning of human settlements both now and in the foreseeable future is inherent in the urban situation today.

Man can act to meet this new crisis. There are sufficient resources for the task. Modern technology permits mobilisation of material means on a wholly new scale. Developed nations spend 150 million dollars a year on armaments and still their national incomes go up. Billions are spent each year on social services, some of which are made necessary by the inadequacies of urban life. Once a problem is recognised, the resources for meeting

it can be found. These resources are not, it is true, uniformly available. Some societies still lack the means for action. But this is not an absolute shortage and while they achieve modernisation, their lack can be made good by sustained assistance from more technologically advanced areas.

Guidelines for policy are also clearer than ever before, thanks in part to the great extension of systematic studies in human behaviour. The aim must be to produce settlements which satisfy man not only as parent and worker, but as learner and artist and citizen. His active participation is essential in framing his own environment. He must be able to use creatively the still unforeseen possibilities of advancing technology. Planning itself must ensure that such possibilities are not excluded by a static view of human settlements. Above all, the citizen should feel at ease in his own culture and open to the cultures of others.

When we turn to the applications of these principles to the problems of urbanisation, we feel the need for the most far-reaching reform and reinforcement of existing institutions and procedures. At present, educational systems at every level have not yet taken sufficient action to meet the new problems of human settlement or to explore the possibilities of meeting them through rational planning. In the universities, the application of the basic sciences to human welfare has been fragmented. They have dealt with parts of man—his health, his nutrition, his education—not with the whole man, not with man in community. Thus, we underline with all possible urgency our belief that in every action of ours, in the agencies dealing with these problems at a national or international level, in the institutions of higher learning, whether public or private, our society requires:

- a to establish in its own right a new discipline of human settlements
- b to initiate basic research of the most far-reaching kind
- c to bring together specialists from other relevant disciplines to work together on projects in this field
- d to work out new methods of training the men who can assume leadership and responsibility in the sphere of action
- e to attract some of the best young minds into this new area of research, development and practice.

We come from different nations, from dif-

ferent cultural backgrounds. Our politics differ, our professions are various. But we believe that the problem of human settlements is a general and fundamental problem in our new dynamic world and that it must be viewed and studied in such a way that it will, in common with all great scientific disciplines, transcend our local differences. We agree that the practical implementation of policy—in such vital fields as land-use, the location of

investment or the planning of cities over time—will be determined by domestic politics and needs, and as citizens we pledge ourselves to attempt to bring these issues into the active political dialogue of our local societies. But we are not divided in what we wish most strongly to affirm—that we are citizens of a worldwide city, threatened by its own torrential expansion, and that at this level our concern and commitment is for man himself.

Charles Abrams (USA), *Housing expert and Visiting Professor*, MIT

Edmund N. Bacon (USA), *Executive Director*, Philadelphia City Planning Commission

Stewart Bates (Canada), *President*, Central Mortgage and Housing Corporation

Petro Bidagor Lasarte (Spain), *Director General of Planning*, Ministry of Housing

A. K. Brohi (Pakistan), *Senior Advocate of the Supreme Court*

C. S. Chandrasekhara (India), *Secretary General*, East Asia Regional Organization for Planning and Housing

Walter Christaller (Germany), *Professor Emeritus of Regional Geography*; Vice President, Regional Science Association, USA

Jacob L. Crane (USA), *City Planning Consultant*

Richard Llewellyn Davies (Britain), *Chairman*, Department of Architecture, London University

C. A. Doxiadis (Greece), *President*, Athens Technological Institute

Leonard Duhl (USA), *Psychiatrist*, National Institute of Mental Health

O. E. Fischnich (UN), *Assistant Director-General*, Technical Department, FAO

Lyle C. Fitch (USA), *President*, Institute of Public Administration, New York

R. Buckminster Fuller (USA), *Director*, Generalized Science Exploration, Southern Illinois University

Clifford Furnas (USA), *President*, State University of New York at Buffalo

S. Giedion (Switzerland), *Professor of Art History*, Zürich and Harvard University

J. Gorynski (Poland), *Undersecretary*, Ministry of Communal Administration and Housing

Eiichi Isomura (Japan), *Professor of Sociology*, Tokyo University

Barbara Ward Jackson (Britain), *Economist and author*

Sture Linner (UN), *Director of United Nations Special Fund Programs in Greece*, Representative of the United Nations Technical Assistance Board

M. S. Makiya (Iraq), *Principal*, Department of Architecture, University of Baghdad

Edward S. Mason (USA), *Lamont University Professor*, Harvard University

Sir Robert Matthew (Britain), *President*, Royal Institute of British Architects

Margaret Mead (USA), *President*, American Anthropological Association; Associate Curator of Ethnology, American Museum of Natural History, New York

Marshall McLuhan (Canada), *Director*, Centre for the Study of the Extensions of Man, University of Toronto

Waclaw Ostrowski (Poland), *Professor of Town Planning*, Technical University, Warsaw

Alfred R. Otoo (Ghana), *Chief Development Officer*, Accra-Tema Metropolitan Area

David Owen (UN), *Executive Chairman*, Technical Assistance Board of the United Nations

Charles H. Page (USA), *Professor of Sociology*, Princeton University

E. Papanoutsos (Greece), *Vice-President*, Athens Technological Institute

Shafik H. El-Sadr (UAR), *Undersecretary of State* for the Ministry of Housing and Public Utilities

Carl Schweyer (Germany), *President*, International Federation of Housing and Planning

C. H. Waddington (Britain), *Professor of Animal Genetics*, University of Edinburgh

Sir Robert Watson Watt (Britain), *Center for the Study of Democratic Institutions*, Santa Barbara, California ◀

MIDTOWN PARKS

for busy cities

ROBERT L. ZION ASLA

Mr Zion—of Robert Zion-Harold Breen, Site Planners and Landscape Architects in New York—has appeared in our pages before with his original ideas for making the city more liveable. The following material formed part of an exhibit prepared jointly for the Architectural League of New York and the Park Association of New York City

Photos by Robert Zion - Harold Breen





New York—noontime relaxation

OUR URBAN PARK SYSTEMS have not kept pace with the enormously increased concentrations of population in business and commercial areas. As a result, there are few city parks today convenient to the office worker and to the shopper, parks designed to meet their special needs.

It is a well-known fact that the great tensions of urban life demand release from close application to work. The office worker who returns from his lunch hour refreshed is a more productive worker. The shopper who can pause to rest will return to shop; those who cannot, will return home. The Midtown Park, therefore, makes good economic as well as social sense.

For such parks to contribute effectively to city life, however, they must be readily available. They cannot be looked upon as mere amenities; they have become necessities. And necessities must, by definition, be close at hand and easily come by.

Their presence must be felt everywhere throughout the area—on the way to work, on the way home, as well as during the lunch hour. If such a system of parks is to succeed, there must be *a proximity as well as a profusion*.

Cost is usually offered as the reason for limiting parkland acquisition in midtown. A myth, without foundation, has arisen among New York's park administrators, for example, that three acres is the minimum feasible size for an urban park.

Acquisition of three-acre sites in highly developed areas is clearly impossible. Therefore, few

Rome





... and Stockholm

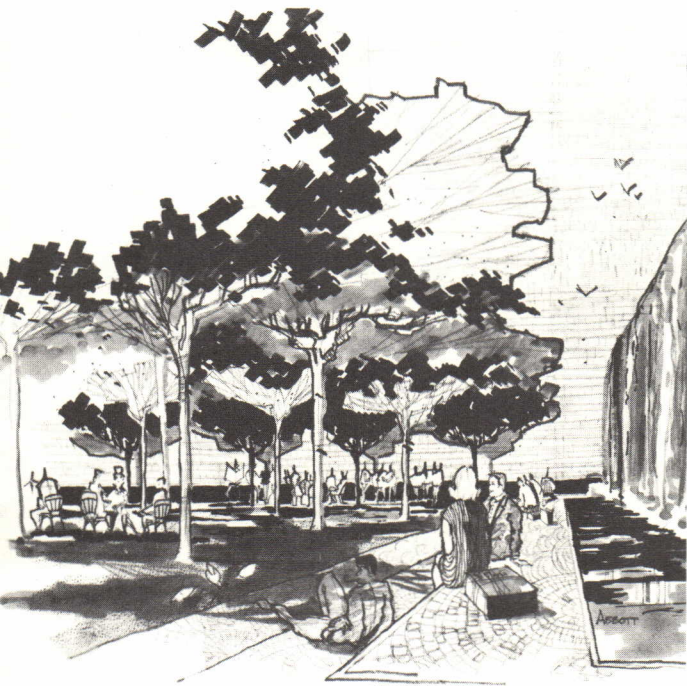


parks have been acquired. A basic misunderstanding of the design requirements of the Midtown Park has led to this impasse. In the hope of stimulating public interest in establishing networks of such parks throughout our cities, an outline of these design requirements is set forth:

... and Seville



... and even Moscow!

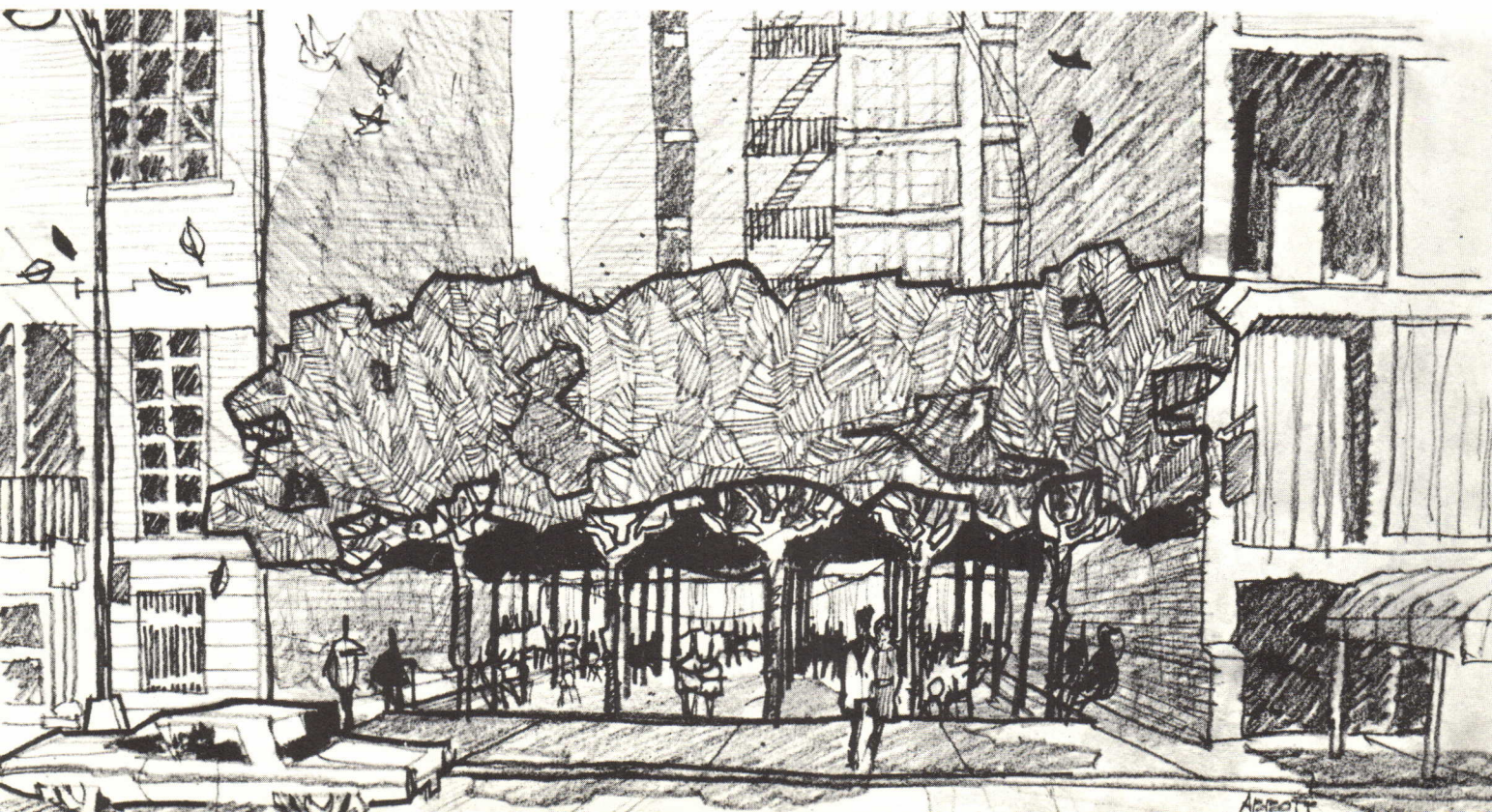


56th Street site before and after



Definition:

The Midtown Park is a small park or parklet, tiny by municipal standards (as small as 50 x 100), in order to reaffirm the dignity of the human being. It is a pool of space removed from the flow of traffic (including pedestrian traffic), enclosed, protected and sheltered





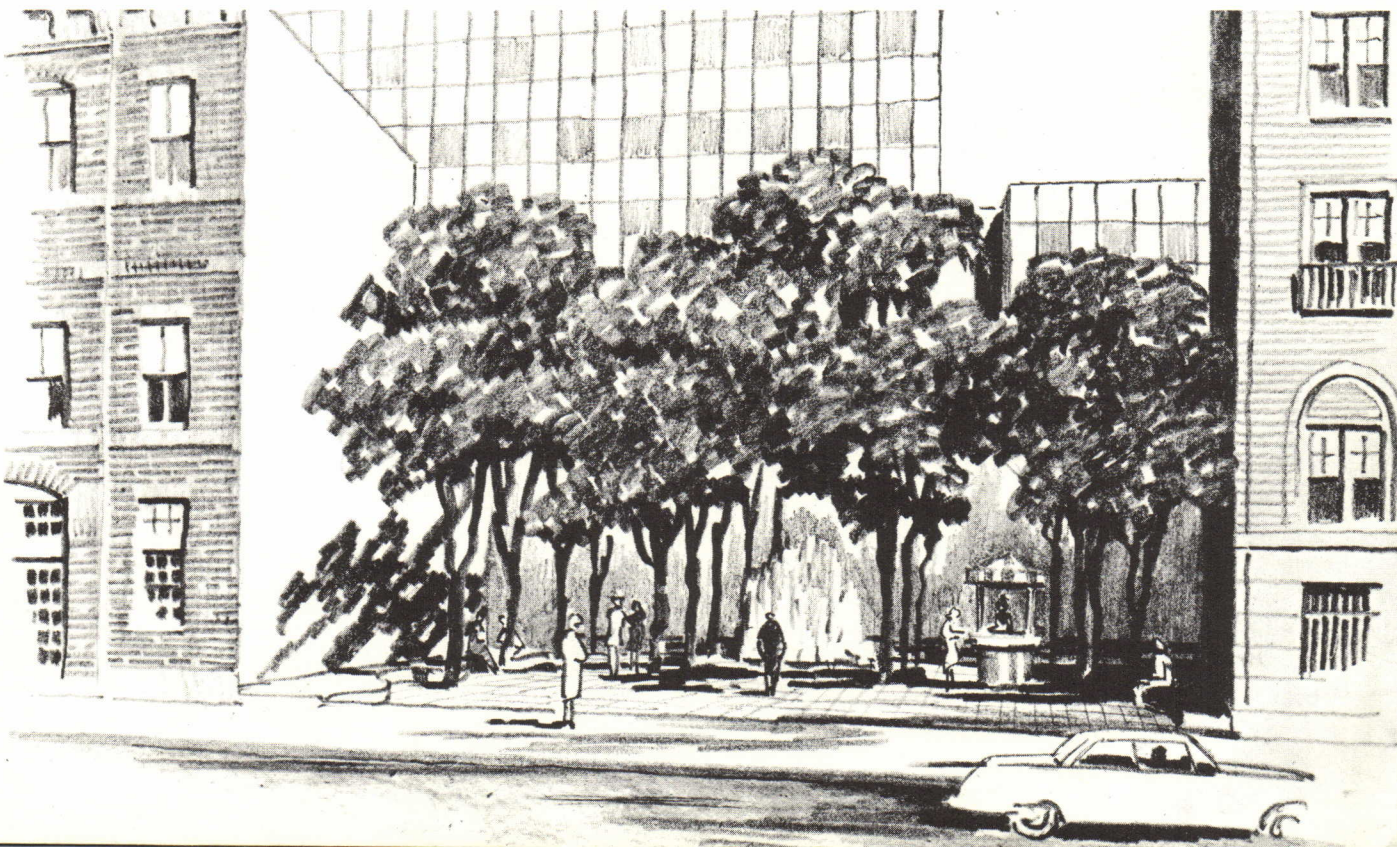
*40th Street site
before and after*

from noise. Preferably, it is a space between buildings, benefiting from the shelter of neighboring structures; the type of space which is now most commonly used as a parking lot.

Use:

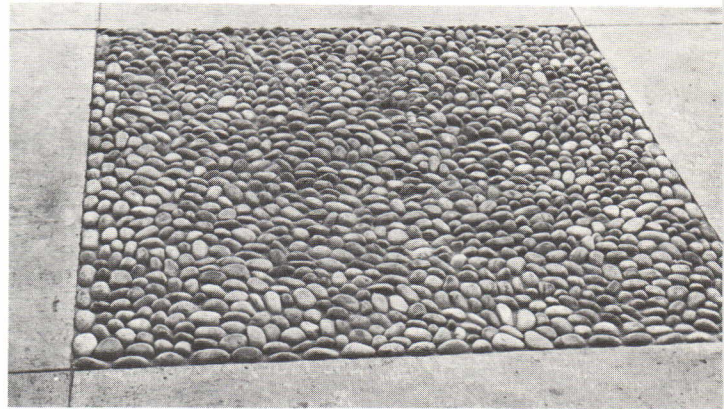
The Midtown Park is for adults—office workers, shoppers, tourists and passersby. And,

it is for *rest*: rest for the office worker who has finished lunch and seeks a place to spend the remainder of the lunch hour; rest for the shopper—an opportunity to put down her parcels, recline a moment in a comfortable chair and perhaps sip a coffee before continuing; rest for the tourist or passerby who will be refreshed visually





Imaginative lighting . . .



Parklet pavement . . .

by the scale of the place and
by the dense green growth and, hope-
fully, by the quiet of the tiny space.

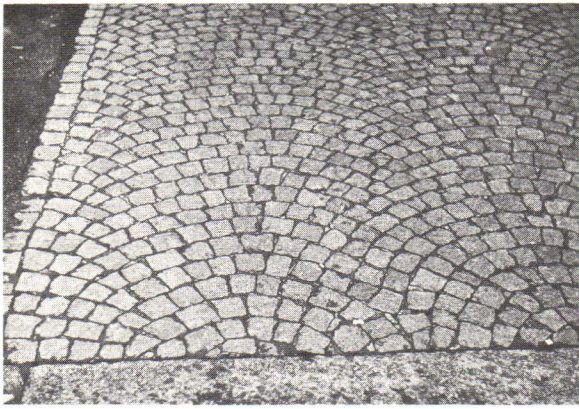
Design:

The Midtown Parklet is a small outdoor room,
human in scale, with walls,
floors and a ceiling.

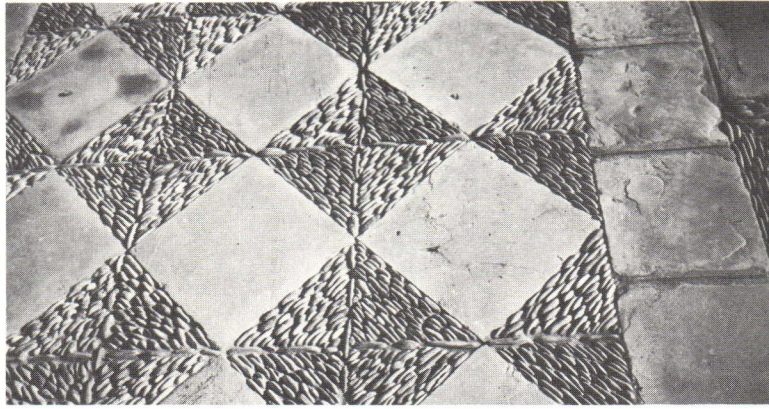
The *walls* are those of neighboring buildings.
They embrace, unify and protect.
Covered with vines, they become “vertical lawns”
providing the green we thirst for in the city,
requiring none of the care
which the traditional lawn demands.

. . . need not only be from poles





. . . texture underfoot



. . . and pattern to delight the eye

The *floor* should be more than something to walk on; it must have an interest of texture underfoot as well as a design to intrigue and refresh the eye.

Pavement need not be expensive or costly-to-maintain in order to enrich the outdoor room; some of the commonest materials—as gravel—can match in effect the most costly. Above all, variety and pattern are essential.

The *ceiling* of the outdoor room is a dense canopy of leaves formed by the close architectural planting of trees (12 to 15 feet apart), planted to create a solid roof

of shade and a uniform, bold and restful silhouette as seen from the street.

The *furniture* of this outdoor room consists of the following basic elements:

Seating—To replace the traditional bench, a revival of the single chair. Light and portable, canvas sling or wood, upright or reclining, but above all *movable* and *comfortable*. Sitting walls and steps to accommodate the more hardy.

Water—Bold simple waterworks to refresh the spirit, providing restful sound as well as vigorous movement.

Bright kiosks

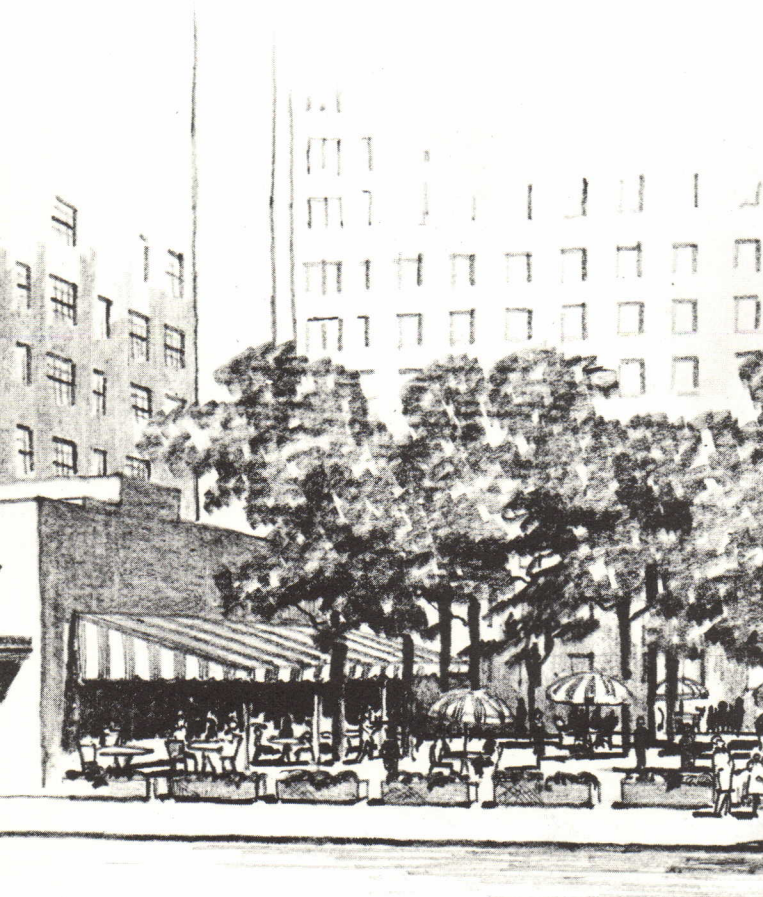


Rugged planting





51st Street site before and after



Plant Material—Trees, numerous and densely planted for shade, vines to cover walls, and occasional tubs of bright, boldly-colored flowers. Only rugged material.

No lawns and flower beds requiring care and prohibiting use.

Enclosure—Bold open iron fencing, permitting control and closing after dark, if necessary. A turnstile accepting a subway token to defray expenses and discourage undesirables.

Kiosks of attractive and colorful design, housing vending machines for sandwiches and drinks; in the larger parks, cafes.

Games—Facilities for quiet games—horseshoe pitching, darts, etc.

To illustrate, a prototype parklet has been developed for a 50 x 100-foot lot off Fifth Avenue in New York City. Presently used as a car park, this parklet has been paved with granite blocks and gravel, planted heavily to trees and vines, and furnished at its far end with a roaring cascade to drown the harsh noises of traffic.

This is typical of the potential of the countless wasted spaces which exist throughout our cities, capable of easy conversion into such parklets at a cost of under \$30,000. Maintenance costs virtually can be eliminated by the use of materials which demand no more care than our streets and walks.

Acquisition of the land, however, removes it from the tax rolls and thus represents the loss to the city of a continuing income.

A proposal for a system of such parks must, therefore, answer realistically the inevitable question: *Who pays?*

The cost of the Midtown Parklet can be shared by those who benefit most from its presence: Those who own or rent space in adjoining office buildings, whose properties have become more valuable because of the nearness of such amenities; the neighboring merchants who will profit inevitably from the fact that the weary shopper can now rest and return refreshed to shop; and finally, the park users can help to defray the expense by paying a modest sum (a subway token perhaps) for its use.

From the point of view of the city itself, a system of Midtown Parklets makes very good sense. It is thereby providing a neglected segment of its citizenry with a much-needed and healthful amenity, and it is making midtown a more pleasant place to work and shop—an important consideration indeed in the struggle against the flight to suburbia. ◀

Comprehensive Architectural Practice: Human Factors Analysis

LAWRENCE WHEELER PH D * AND EWING H. MILLER AIA

By means of human factors analysis, based on the principles of the relatively new science of human engineering, architects—with the help of industrial psychologists and mathematicians—are able to analyze thoroughly, accurately and in an orderly manner the design factors that relate to people at work

** Instructor of Psychology, Consulting Industrial Psychologist and Adviser to Miller, Miller & Associates Architects and Engineers, Dr. Wheeler is currently working on a study of color and the human eye on a grant from the Carnegie Foundation*

The management of modern industrial and business systems requires understanding, coordination and control of men, machinery, work-environments and work-processes. The efficiency of these complex operations depends upon how well management understands each factor—its capabilities, limitations and effects upon the others. Today the architect can—and should—aid management in the solution of these complex problems. To accomplish this, architectural firms can benefit from the methods and information available in the field of *human engineering*, a professional area of research concerned with increasing human efficiency through analysis of human factors in relation to machines, work environments and work processes. Human engineering deals with communications patterns, motivation, status, trainability and other characteristics of men at work; thus, it can be part of a modern, scientific approach to the development of architecture designed to suit the needs of management.

Forward-looking architectural firms will, no doubt, increasingly endeavour to join human engineering and architecture for the purpose of solving the design problems of modern industry. By means of such services, management will be able to benefit from applied research concerning the effects of their surroundings upon people at work.

Up to the present time, the experience of the authors with these new services has been primarily concerned with the development and design of a series of trucking terminals for a top-rated national freight carrier. The approach has been found to be especially valuable in areas where communications and paper work are involved—areas in which human behavior patterns are extremely important. The sample data in this article have been drawn from one such analysis.

Human factors analysis uses straightforward, scientific techniques to give rapid, practical and profitable results that an architectural firm can use in designing new industrial—or other—buildings or in modifying old ones. Three steps are usually taken: the collection of information, the analysis of information and the evaluation of the analysis.

A Brief Outline of Human Factors Analysis

Collecting data is done in several ways: 1) *Interviews and questionnaires*, to find out where people in an organization get their operating information and where they send it. 2) *Random-time observational sampling* (watching what happens), a method that reduces the bias that often creeps into interview situations. 3) *Motion picture observation*, a technique used only for highly complex, rapidly moving systems.

Information analysis

Analysis of information requires the development of *link values* (quantitative statements showing the frequency and importance of information as it moves among work groups). Then *vector analysis* (a mathematical procedure that gives a geometric layout in which job groups are shown as related points on a plane surface) is applied. The vector plot is modified according to such psychological factors as the motivation of employees and the status of supervisors and executives. Finally, a floor plan is developed, on a trial basis, with the modified vector plot as a starting point.

Evaluation

Evaluation of results is the next step. To find out whether a new plan, procedure or system is any better than an old one, indices are developed for average distances walked, ease of voice or visual communication, crowding, accessibility, human traffic crossovers and other factors. These indices permit comparison of an existing office or industrial building with the design for a new one. Definite, quantitative predictions as to increased efficiency can be made on this basis. If the new plan is not an improvement, changes can be made until the indices of efficiency become higher for the new, than for the old, arrangement. Ordinarily, however, vector analysis will make this step unnecessary.

Trial floor plan

In doing an analysis of this kind, the psychologist and architect first make a rough floor plan of the existing building. Then all jobs are listed by title, along with the names of the current job-holders. These people are then located on the floor plan. A list of all equipment is drawn up and each item indicated on the plan. Then the people are interviewed, random-time sampling observations are made of each job group, or questionnaires are prepared; or all of these things may be done. What is required is a complete picture of the information flow through the system.

Interactions among
job functions

Human factors analysis for architectural purposes, based on the foregoing methods, leads to a set of data representing *interactions* among *job functions* within the space to be designed. These interactions have two characteristics, *frequency* and *importance*, neither of which may safely be neglected by the conscientious designer. The data describing the interactions usually come from observations of a functioning plant. Frequency of contact is estimated by random-time sampling of employee activities. Interviews or questionnaires are the chief means used for estimating importance. Terms employed in this type of analysis may be defined as follows:

Interaction, contact between points in a system, if the contact results in movement of information between the points (people or machines);

Function, a job group or job activity (often this means the things one person does, but sometimes it means the similar, or highly related things, two or more people do);

Four types of
information movements

Type of communication, basically there are four types of communications or movements of information, each type giving rise to a separate "matrix" (definition below) of data; a) *transport* (a person and/or material moves within the system), direct voice contacts are also included in this category; b) *signals*, information goes from one center to another within the system by mechanical or electronic devices (eg intercom., phone, closed-circuit TV or other signal devices) but no material, such as paperwork, moves; c) *external*, information leaves the system, either as a signal or in material form (eg mail, teletype, to files—other than those within separate functions, storage); d) *no movement*, information stays within the job function and there is no movement between elements of the system (eg control of operation of a machine not directly sending messages, data recording, or visual contact only).

Link values and the matrix

Link value, whenever there is a flow of information between two points in the system, a link value is assigned to the interaction. A link value is an index based on: 1) frequency of the interaction, and 2) importance of the interaction. Frequency may be directly observed and evaluated, while importance is usually estimated on the basis of the expense resulting from lost or inaccurate transmission of each message. Where both I (Importance) and F (Frequency) have been reduced to quantitative values of appropriate kinds, usually by means of rating scales, then it can be said that $I \times F = LV$ (link value).

Matrix, link values are placed in a rectangular table that has all the functions listed, in the same order, along the top and one side of the table. Where n is the number of functions, the cells representing interactions may be represented as equal to:

$$\frac{n(n-1)}{2}$$

The sum of link values for all cells of the matrix having to do with a given function may then be examined; these sums indicate the importance, or "rank order" (definition below) of each function in terms of its general strength of interaction with all other functions. The sum of the link values between any two functions (a single matrix cell sum or inter-function sum) may also be examined and will show the strength of the connection between the two functions.

Minimizing operations

Finally, the inter-function sums may be used to perform a minimizing operation by means of vector analysis. This produces a set of points, in a plane coordinate system, with each point at the minimum, weighted distance from all other points. A "weighted distance" bears a known and specified relationship to the link values, as indicated in the paragraphs on the Vector Analysis Process, pages 46-49. The set of points is a mathematical solution to the problem set into the matrix, but it will not ordinarily be subject to immediate translation into architectural floor plans. This is because design factors and certain matters of employee psychology cannot be set directly into the matrix data. Nevertheless, the vector solution provides an optimum geometric arrangement of job functions and forms a precise starting point for architectural planning.

Rank order, job functions may be arranged according to their matrix sums of link values and the resulting list numbered

Link Value Matrix

from 1 through any required number (*n*) giving 1 to the job having the largest total link value. The rank order numbers form a convenient index for use in planning and should be listed wherever functions are named. The rank order number gives an immediate, abbreviated indication of the importance of the function in the overall communication network, as shown on page 48, at the top, in the Link Value Matrix Table.

In summary, human factors analysis requires *collection of data* on information flow, *application of mathematical procedures* leading to trial floor plans and *evaluation* of the new floor plans relative to existing ones. The method is an application of standard, scientific procedures to architectural design problems wherever people must communicate in order to get a job done.

Vector Analysis Process

The method of vector analysis employed by the firm of the architect-author of the present article was designed by Dr Cletus

COLLECTION FORM: COMMUNICATIONS DATA FOR HUMAN FACTORS ANALYSIS

Date: _____ Place: _____ For: _____ Analyst: _____

Communication Type: (place letter within symbol)

△ Transport	○ Signal	□ External	◇ No Movement
a auditory	i intercom	m mail	c control machine
w walk	p phone	x TWX, phone	r record data
t transport	s signal system	f file	v visual contact only
Person &/or material moves	Signal by wire within system	No interaction within system	No movement within system

Link Values: $I \times F = LV$ I = Importance* F = Frequency**	Make entries that will aid in analysis of: Design Factors, Status & Motivation
--	--

4 very	4 more than daily	*Estimate by cost of lost or inaccurate message.
3 considerable	3 daily	**Estimate by type of message, if frequency data not available.
2 somewhat	2 weekly & monthly	
1 slight	1 rare	

Functions: list all internal first, then external; number serially; locate incumbents on floor plan.

Equipment: list all types; assign lower-case letter to each; locate on floor plan.

T#	R#	CT	I	F	LV	Description of Operation or Interaction

J. Burke, California State College at Hayward. The procedures are generally as follows:

- 1) Set up the matrix of link values based upon quantified observational and interview data, as shown in the Link Value Matrix Table;
- 2) Select three job functions that show minimum sums of link values, but are associated with each other to some extent (eg, garage, sales, dock);
- 3) Establish these three as a triangle in a coordinate system by giving each one a location (a pair of numbers);
- 4) Mathematical procedures, which involve minimizing a weighted, quasi-distance function, are then applied to the remaining job functions; each is weighted according to its relationship (link value) with every other function, and according to its own importance (sum of link values) in the total matrix. (For the mathematically inclined reader, a summary of this procedure is reproduced below);

SUMMARY OF MATHEMATICAL PROCESSES OF VECTOR ANALYSIS

1 Let: $\phi = \sum_i \sum_j w_{ij}(x_{ik} - x_{jk})^2$, where ϕ is the desired value,

2 Then: $\frac{d\phi}{dx_{sk}} = \sum_i \sum_j \frac{d}{dx_{sk}} w_{ij}(x_{ik} - x_{jk})^2$

3 And: $\sum_{j \neq s} w_{sj}x_{jk} - x_{sk} \sum_{j \neq s} w_{sj} = 0$

Where: i and j are the different objects; $k = 1$ and $k = 2$ are the first and second coordinates; w_{ij} is the weight associated with the pair of objects; and s is the object with respect to which we differentiate, and where: unless $i = s$ or $j = s$ we get zero; $w_{ij} = w_{ji}$ is true; $w_{js} = w_{sj}$ is true; and when $j = s$ we get zero,

4 Then: $\sum_{\substack{j=1 \\ j \neq s}}^m w_{sj}x_{jk} - x_{sk} \sum_{\substack{j=1 \\ j \neq s}}^{m+3} w_{sj} = -\alpha_{sk}$

Where: The three values $m + 1$, $m + 2$, and $m + 3$ are already selected,

For these three: $\sum_{j=m+1}^{m+3} w_{sj}x_{jk} = \text{a constant} = \alpha_{sk}$ (for each coordinate separately),

5 Then: Letting $k = 1, s = 1$,

$$-x_{11} \sum_{j=2}^{m+3} (w_{ij}) + w_{12}x_{21} + w_{13}x_{31} + \dots + w_{im}x_{mi} = \alpha_{11}$$

6 And: Letting $k = 1, s = 2$,

$$w_{12}x_{11} - x_{21} \sum_{\substack{j=1 \\ j \neq 2}}^{m+3} w_{2j} + w_{23}x_{31} + \dots + w_{2m}x_{mi} = \alpha_{21}$$

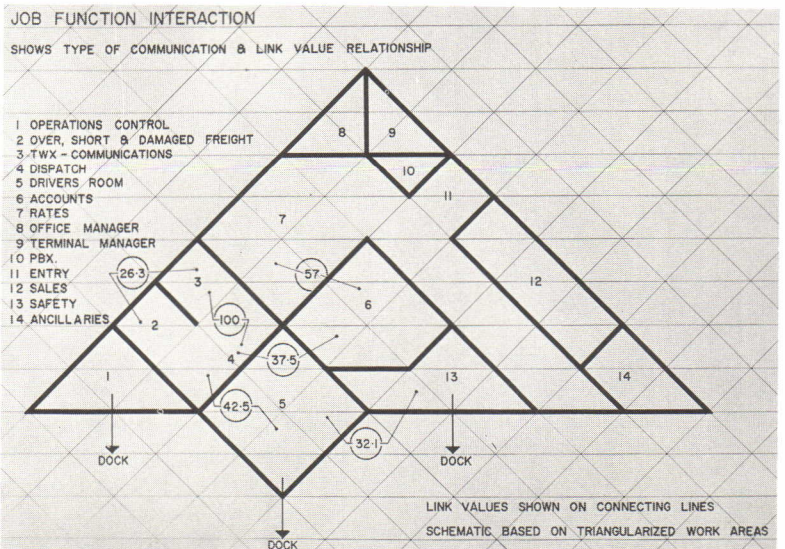
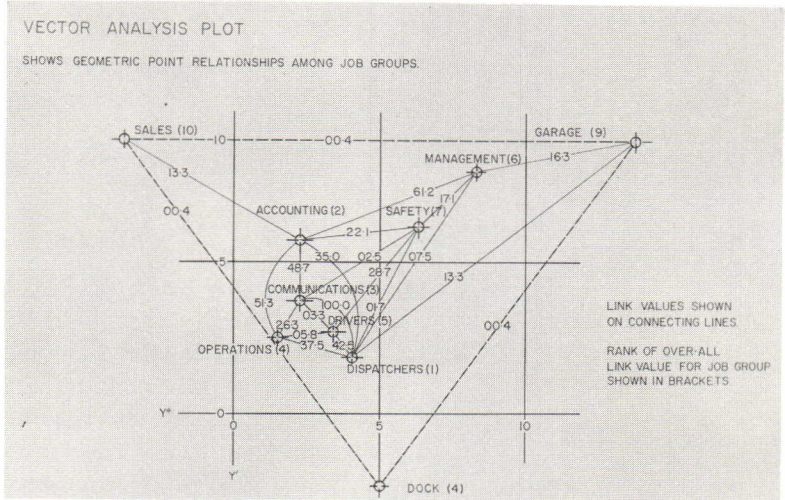
Equations 5 and 6 are solved by the Doolittle multiple regression system (described in J. P. Guilford, "Psychometric Methods," McGraw-Hill Book Co Inc, New York, 1936), to obtain the weighted values that represent the vertical and horizontal coordinates of the m variables not previously located.

LINK VALUE MATRIX

Shows Strength of Relationships Among Job Groups

Job Groups or Functions:										Job Group Title	Rank Order of Over-All Link Values
1	2	3	4	5	6	7	8	9	10		
37.5	100.0	40.0	42.5	13.3	35.0	00.0	01.7	07.5		1 Dispatchers	1
	26.3	16.7	05.8	00.0	51.3	01.7	02.5	04.2		2 Operations	4
		10.0	03.3	06.7	48.7	07.5	02.5	03.3		3 Communications	3
			11.7	00.4	01.7	00.4	05.0	04.2		4 Dock	8
				00.4	32.1	00.0	28.7	00.4		5 Drivers	5
						06.2	00.4	06.7	16.3	6 Garage	9
							13.3	22.1	61.2	7 Accounting	2
								00.8	02.5	8 Sales	10
									17.1	9 Safety	7
										10 Management	6

All link values expressed as percentages of largest single link value (between Job Groups 3 and 1).



5) The results of the analysis are expressed as coordinates (vertical and horizontal) for each job function; when plotted, the locations of the functions are now optimal (in accordance with the frequency and importance of interactions between and among groups) for the given set of data.

Vector Analysis Plot

The Vector Analysis Plot, across-page, middle, is a graphic representation of the data developed in a calculation such as is shown on page 47. It should be noted that function No 6 (management) falls well away from the routine job functions and that this is in accordance with the idea that the locations of managers' offices need to be determined by factors that cannot easily be quantified (such as status, motivation of employees, non-routine nature of activities, etc).

*Vector Floor Plan
and Data Collection Form*

Across-page, bottom, is an example of a floor plan illustrating a Vector Analysis Plot. Because of its practical value, an example of the Data Collection Form employed by the office of the architect-author of the present article is shown on page 46. This form gives the scales for estimating the I (importance) and the F (frequency) values for each link value. One entry shows where information comes from (R#), where it goes (T#), the communication type by symbol (CT), the information value (I), the frequency value (F), and the computed link value (LV). From such data sheets as these, the matrix of link values for each type of communication can be developed.

Architect and psychologist

It should be noted that the Data Collection Form specifically directs the recording of data in a form that will aid in decisions concerning problems of status, motivation and design factors. Design factors are the special province of the architect, but status and motivation fall within the human engineer's area of specialization. Is an office window merely a window? Indeed not; it is also a potent factor in the motivation of employees, if they feel that their supervisor may be watching them through it. Furthermore, such a window may have either positive or negative motivating effects. Psychological analysis, by means of questionnaires and interviews, will permit the human engineer to advise the architect concerning such problems.

Should the manager's office be located "up front," to enhance his status, or should it be near his main work-contact areas? Again the question is not simple; status *may* be enhanced, in some cases, by putting an administrator in or near the working plant, away from the front office "showcase." An appropriate psychological survey could throw much light on this matter, for given supervisors in given organizational contexts; however, the results may be expected to vary from man to man and from one company to another.

Similar problems, bearing heavily upon the final operating efficiency of work environments, could be listed by the dozen. Often, both management and the architect are equally insensitive to the psychological effects of decisions in matters such as these, yet methods for obtaining systematic, objective solutions do exist. Architectural firms require the skills of human engineers in order to have these methods adequately applied on behalf of the programs of their clients.

Two recent references that provide detailed descriptions of some of the methods of human engineering are: Robert M. Gagne and others, "Psychological Principles in System Development," Holt, Rinehart & Winston, New York, 1962, and Arthur D. Hall, "A Methodology for Systems Engineering," D. Van Nostrand Co., Inc., Princeton, 1962



Responsibility for

J. ROY CARROLL FAIA

President, The American Institute of

The Washington Building Congress annually solutions of details by the mechanic in shop left to his discretion; and execution in requiring exceptional skill." President Carroll in introducing him, John W. Stenhouse work with skill, ingenuity, imagination and

SINCE PREHISTORIC TIMES, when man first began to fashion shelters for himself out of the materials at hand, craftsmanship has been an essential part of building. Indeed, for many centuries the man who determined what was to be built—the man we now call the architect—was also the man who built it—the craftsman.

Early in my own architectural practice I had the privilege of designing a small church. I recall this experience with the greatest of pleasure for a number of reasons, the chief of which was that on that job I learned to know, personally as well as professionally, the members of the various building trades—the craftsmen.

The then young architect, realizing that the church had no money at the time for stained glass windows, suggested to the builder that they together pay for one small well-designed window and thereby set a high standard for future similar work. It was not long before various craftsmen on the job heard of this idea and insisted on sharing in the cost of this modest gift.

The window consists of a tree, bearing medallions, each medallion illustrating one of the building trades, and over-all runs the biblical inscription, "We are builders together. Let every man take heed how he buildeth." This stained glass window stands not only as a reminder of the contributions of the craftsmen to the building of this church, but a reminder, if we need one, of our interdependence on each other.

As society became more complex, man began to divide the work on his buildings. He began to specialize in certain tasks for which he had a particular talent or interest. The division of labor became widespread in society, and the building field was no exception. The process of building

began to break down into a number of specialties. The first of these probably occurred when some men began to concentrate on the design of buildings—the determination of what buildings were to look like and what function they were to serve—and others began to concentrate on the fabrication of buildings—putting them together.

This new approach had its advantages. By allowing certain men to devote all their time to the study and practice of designing buildings, it led to the practice of architecture as we know it today. It also gave the craftsman opportunity to perfect his skills.

Despite its advantages, this division of responsibility had a major flaw: it created a gap between the architect and the craftsman—a gap that has widened over the centuries.

With the arrival of the industrial revolution, when man began to discover that the machine could be made to do much of his work for him, this gap seemed to widen into an unbridgeable gulf. The machine suddenly became the answer to all needs. It could produce things and put things together faster and cheaper than man could with his hands. And if it couldn't do these things quite as well—that was the price we had to pay.

Man's love affair with the machine has continued ever since the industrial revolution. Machines have been developed that can do almost anything. Today, in fact, they not only can substitute for man's hands, they can take over many of the functions of his brain.

The building industry also became enamored with the machine, although it lagged behind most other industries in this respect. Nevertheless, it has developed more and more ways for the machine to replace the work of man.

Craftsmanship

Architects

*honors craftsmen for "outstanding
or field, where these were
a highly commendable manner of work
spoke at the award ceremony;
AIA said ". . . it is still possible to execute
love. . . ."*

There is nothing wrong with this development of the machine. It has been a desirable thing, creating greater speed, efficiency and economy in construction, and should produce even more jobs for us all. But in our obsession with the wonders of the machine, we forgot about the craftsman. We forgot that the machine could not completely replace men's hands. We forgot that the machine is, after all, only a tool of man, not a dictator. And in our increased dependence on the machine, there was instilled in the craftsman the feeling that his role was becoming less and less important, that he was no longer an essential part of building.

This stigma of dwindling importance placed upon the craftsman has done him a great injustice. It caused a gradual decline in the quality of his workmanship. As the craftsman began to feel relegated to a second-class status, he took less pride in his workmanship, and the quality of his work slackened. It is this situation, probably more than any other, that brought the building industry to the realization that it could not do without the time-honored craftsman. The industry discovered that it could not develop machines to overcome poor workmanship. It became apparent, once again, that the craftsman was as important as ever in the attainment of quality building.

In trying to solve the problem of quality in craftsmanship, the building industry has learned two valuable lessons: that it must provide every possible encouragement to the craftsman, so he can develop his skills fully and increase the excellence of his work; and that the machine, for all its accomplishments, is no substitute for human hands.

We are building at a rate never experienced by any country in history. We are virtually build-

ing a second United States. The quantity of building to be done in the next decade and thereafter is staggering to contemplate and will tax the abilities of the building industry as never before. But there is another factor which is demanding attention, a factor which challenges the building industry even more than quantity. That factor is quality.

There is a stir in this country today. More and more Americans are taking a critical look at their environment, and they don't like what they see. In increasing numbers they are coming to the conclusion that too much of what surrounds them in their daily lives is ugly. They are asking themselves why. Why, in the wealthiest country on earth is there such a dearth of beauty in our environment? Why are so many of our streets a confusion of cheap and ugly signs, utility poles, overhead wires, billboards, junkyards, used-car lots? Why are our 200-horsepower cars forced to creep along at five miles an hour in bumper-to-bumper traffic? Why must millions of us live in stereotyped houses placed side by side in monotonous stretches? Is this the best that our great wealth and advanced technology can produce?

Americans are becoming impatient with this deplorable situation, and they are demanding that something be done about it. The question is, whose responsibility is it to see that something *is* done about the ugliness which surrounds us? When I was elected president of The American Institute of Architects, I made a statement which may bear repeating. I said that we would blame the doctors if our people were covered with running sores; that if crookedness ruled the courts, we would blame the lawyers; and that the architects must take the responsibility for ugliness in their own communities.

Without in any way diminishing the architect's responsibility, I would like to add the words "building industry" to that statement, because the problem must be tackled by the industry as a whole, not just by one segment. Together we must work to improve the quality, or if you will, the craftsmanship of our total physical environment.

The challenge is one that we should accept gladly, because it gives us an unprecedented opportunity to do a great service to the American people. We have within our grasp the capability of creating the highest quality of environment the world has ever known. We have the talent, the resources and the money. All we need is the determination.

In our headlong rush to supply the United States with the quantity of building it needs, let us not fail to see to it that everything we build is imbued with quality. Experience should have taught us by now that, without quality, we shall have cheated ourselves of the fruits of our riches. ◀



*Commission on Professional Practice, William W. Eshbach AIA, Chairman
Committee on Office Procedures, Daniel Schwartzman FAIA, Chairman*

Assignment of Separate Contracts to a Single Contractor

DEAN F. HILFINGER AIA

The September 1962 AIA Journal examined the general aspects of current bidding procedures in an article entitled "The Single vs the Separate Construction Contract System." That article touched upon modified systems that combine the advantages of both systems. Two such modified systems are discussed in detail below.

Architects practicing in areas where statutory requirements call for separate bidding on major portions of the work have the problem of effectively administering the resultant separate construction contracts. One answer to this problem lies in the assignment of separate contracts to a single contractor—usually the general contractor. Two methods of assignment have been developed in Illinois. One is known as "New Chicago Plan for Separate Bids." The other is a method developed by the University of Illinois for all of its construction on the Champaign-Urbana campus and on both of its Chicago campuses.

New Chicago Plan

The New Chicago Plan endorses and supports *single contracts* based on *separate bids*. Under this plan, the architect prepares separate specifications for each of the five principal categories of work: general construction; plumbing and sewerage; heating, piping, refrigeration and automatic temperature control systems; ventilating and distribution systems for con-

ditioned air; and electrical work. The architect includes in the specifications for general work an estimated percentage of the total cost of the project or the estimated dollar amount represented by the mechanical specialty contracts. This provides the general bidders with a basis for estimating their costs of supervising and coordinating the work of the mechanical specialty contractors.

In the New Chicago Plan separate bids are received simultaneously for each of the listed categories of the work from a specific number of prequalified bidders. Contracts are awarded by the owner to the low bidders in each category, and the mechanical specialty contracts are then assigned to the general contractor by formal notice in writing. This makes the general contractor in effect a single contractor, with the assigned mechanical specialty contractors becoming essentially subcontractors, but it insures the selection of the mechanical specialty contractors by separate competitive bidding and eliminates shopping or bid-peddling by the general contractors for these important phases of the work.

The New Chicago Plan also contains a requirement that "each general contractor shall certify that a reasonable and controlling portion of the work included in his contract will be performed by his own labor force." This recognizes and attempts to circumvent the problem of broker-contractors, but the determination of "a reasonable and controlling portion"

of construction is difficult of determination. Such is not easy on public work because elimination is difficult even on the basis of usual prequalification methods.

The New Chicago Plan was a voluntary attempt to eliminate bid-peddling and to unify the previously opposed bidding positions of the general contractors and the mechanical specialty contractors. The plan was developed and endorsed by the Chicago Chapter AIA, the Chicago Chapter of the AGC, the Chicago Association of Consulting Engineers and the Mechanical Specialty Contractors Association of Chicago. Detailed information on this system may be secured from Marion J. Smith, Executive Director, Chicago Chapter AIA, 221 N La Salle St, Chicago 1, Ill.

University of Illinois System

The University of Illinois system was developed because the University wanted to obtain the benefits of single contract responsibility, but is prohibited by law from awarding single contracts. Under present law in Illinois, all work constructed with state funds or administered by state agencies must be contracted by awarding separate contracts for the same five divisions of the work mentioned above under the New Chicago Plan. Legally, single contracts cannot be awarded on state work in Illinois. The University of Illinois therefore must take separate bids on the five principal divisions of the work. However, there is one principal difference in that it takes bids on all of the mechanical specialty contracts *one week in advance* of taking bids on the general work. Immediately following receipt of bids on the mechanical specialty contracts, the architect puts out an addendum to all general bidders giving them a listing of the low bidders and the amounts of their bids on each of the mechanical specialty contracts.

Furnishing to general bidders in advance the information on the bidding for the other portions of the project gives the general contractors a much more accurate indication of the amount of these other bids than an estimate would, and it has the further distinct advantage of indicating what other contractors the successful general contractor will be working with. This very neatly eliminates the well-known complaint of general bidders that "if I had known so and so was going to be the heating contractor on this job, I would have raised my bid X per cent." Under this system, the general bidders have the opportunity to do just that, if they wish.

The general bidders' base bids do not include the assignment of contracts, but the first alternate in the general work calls for the dollar amount to be added to the base bid in case the mechanical specialty contracts are assigned to the general contractor. The University usually, but not always, accepts this alternate and assigns the mechanical specialty contracts to the general contractor, but if it feels that the amount the general contractor wants for accepting the assignment is excessive, it will award separate contracts without assignment. Incidentally, the amount the general bidders ask for acceptance of assignment of the mechanical specialty contracts is usually from

three to five per cent of the total of the mechanical specialty contracts.

There is one other difference between the University of Illinois system and the New Chicago Plan. The general contractor on University of Illinois work has first approval on the payment requests of the assigned contractors. He therefore has a potential lever against a non-cooperating assigned contractor in withholding or reducing the amount of the latter's payment requests. This gives the general contractor the same relationship to his assigned contractors that he has with his own subcontractors. The assignment notice used under the New Chicago Plan does not usually incorporate this feature.

The assignment of contracts under the University of Illinois system is handled in a thoroughly complete and legal manner. A three-page "Agreement of Assignment, Acceptance and Consideration" is included in every specification, and complete explanation of and reference to the assignment system is contained in the other contract documents as applicable. Further information on this system may be obtained from the Department of Professional Practice, AIA, 1735 New York Ave, NW, Washington, DC, 20006.

BIDDING LITERATURE CHECKLIST

The Architect's Handbook of Professional Practice, AIA, September 1963 Edition

Chapter 14, "Specifications," contains a discussion on the inclusion of bidding documents in the specifications volume, ie, sequence, reproduction, binding, distribution.

Chapter 16, "Selection of Contractors," a comprehensive discussion of all bidding documents and procedures, ie, preparation, production, implementation and administration.

AIA Documents, September 1963 Edition

A310, "Bid Bond"

A501, "Suggested Guide to Bidding Procedures and Contract Awards"

AIA Journal Articles

"The Single vs the Separate Construction Contract System," Dean F. Hilfinger AIA, September 1962

OTHER MATERIALS

AGC Document 25, "Prequalification Statement for Building Construction," 20¢ a copy, Associated-General Contractors, 1957 E St NW, Washington, DC, 20006

CEC Document Part L, *Legal & Procedural Documents and Bonds*, \$1.00 per set, Consulting Engineers Council, Suite 410-413, Madison Building, 1155 15th St NW, Washington, DC, 20006



*Commission on Architectural Design, Morris Ketchum Jr, FAIA, Chairman
Committee on Religious Buildings, Kenneth E. Richardson AIA, Chairman*

A Guide for Planning Church Buildings for the Church of the Nazarene

CHARLES J. BETTS FAIA

The eleventh in the series of reports prepared by the AIA Committee on Religious Buildings intended to serve as guides for the architect faced with planning a building for a religious faith other than his own

Historical Background

The Church of the Nazarene as a denomination is the result of the union of several groups of church people from all sections of the United States and several other countries early in the twentieth century.

In the 1820's a revival of the doctrine of entire sanctification, as taught by John Wesley and others, swept especially strongly across the eastern section of the United States. It was not confined to any one denomination, and interdenominational associations and camp meetings were formed, that like-minded men and women might share their witness to heart-cleansing and perfection in love.

As these people testified to the Biblical basis and reality of their new-found experience, their testimonies were not always kindly received by their fellow Christians and church leaders. Consequently they formed local prayer groups and, where the opposition was particularly severe, withdrew from their denominational affiliations and formed independent groups. Pastors were secured to oversee the work and local congregations joined with others in association. Two of the stronger associations from the Pacific Coast and the northeastern states joined together in 1907 and were united with a third group from Texas and the South in 1908. This is taken as the official beginning of the Church of the Nazarene. At that time there were 10,414 members in 228 congregations. The denomination sprang up spontaneously; it is not a schism, split-off or division.

Since that time, a number of groups of people with similar beliefs have been incorporated into the denomination. The membership is spread widely throughout the United States, Canada, the British Isles, Australia, New Zealand, the Republic of South

Africa and Germany, with 335,005 members in 4,803 congregations and 706,133 enrolled in its Sunday schools (1962). Its missionary work is carried on in forty-three countries with a membership of 58,965.

Basic Beliefs

The following agreed upon statement of belief is contained in the Constitution of the Church ("Manual, Church of the Nazarene," 1960 edition, paragraph 24):

"Recognizing that the right and privilege of persons to church membership rest upon the fact of their being regenerate, we would require only such avowals of belief as are essential to Christian experience. We, therefore, deem belief in the following brief statements to be sufficient. We believe:

1 In one God—the Father, Son and Holy Spirit.

2 That the Old and New Testament Scriptures, given by plenary inspiration, contain all truth necessary to faith and Christian living.

3 That man is born with a fallen nature, and is, therefore, inclined to evil, and that continually.

4 That the finally impenitent are hopelessly and eternally lost.

5 That the atonement through Jesus Christ is for the whole human race; and that whosoever repents and believes on the Lord Jesus Christ is justified and regenerated and saved from the dominion of sin.

6 That believers are to be sanctified wholly, subsequent to regeneration, through faith in the Lord Jesus Christ.

7 That the Holy Spirit bears witness to the new birth and also to the entire sanctification of believers.

8 That our Lord will return, the dead will be raised and the final judgment will take place."

Other beliefs of the Church affect the design of its buildings. In common with other Christians, the Church of the Nazarene recognizes baptism and communion as sacraments of the church. Baptism is administered to believers as declarative of their faith, but also may be administered to small children. Baptism may be by sprinkling, pouring or immersion, according to the applicant's choice.

Communion is observed quarterly, usually with the participants kneeling at the altar of the church. It is open to all Christians and is administered by the pastor, with other ministers or the church stewards assisting.

A more detailed explanation of the beliefs of the Church is contained in the "Manual of the Church of the Nazarene," published every four years.

Church Government and Sequence of Authority

The Church of the Nazarene has a representative form of government. Each local congregation selects and calls its own pastor for a term of from one to four years, and elects its board, consisting of trustees and stewards. Churches are combined into districts and elect representatives to an annual district assembly. These representatives elect a district superintendent, a district advisory board and other district committees. The call of a pastor for a local congregation must be approved by the district superintendent. The sale or purchase of any property and the construction of any building by a congregation must be approved by the district superintendent and district advisory board, or the district board of church extension.

Every four years the district assemblies elect delegates—half from the clergy and half from the laity—to a General Assembly. This assembly is the law-making body of the denomination and the final court of appeals in all matters of policy and doctrine. The delegates at the General Assembly formulate the program of the Church for the next four years and elect a board of general superintendents (now six in number) and a General Board to carry out this program. These serve the denomination in the same way a pastor and church board serve a local congregation. The General Board is divided into departments, which elect executive secretaries to carry on the work of the denomination.

This organization provides a democratic government, wherein local congregations are free to carry on their own program of worship and evangelism, but the whole maintains cohesion through district and general superintendents and boards.

Buildings

Over 50% of the congregations in the Church of the Nazarene have a membership of less than 50, and only 5% have more than 200 members. This fact alone would indicate that most congregations need a modest, inexpensive, functional building. However, these congregations are stronger than the membership figures would indicate, for these reasons: 1) The Church requires a confession of conversion as a prerequisite to membership, so that a high percentage of the membership is active. 2) The Church has a strong Christian education program, and the Sunday school attendance usually exceeds the membership, with a resulting enlarged constituency. 3) Tithing is urged and widely practiced and the Church has an unusually high per-capita giving.

Types of Buildings. Only in recent years have congregations given serious consideration to adequate planning of church buildings. Earlier, the prime con-

sideration was to scrape together enough money to erect any kind of building, and usually some church building the pastor liked was used as a model. More careful consideration is now given by many congregations both to over-all design and the expression of the church's theological beliefs. The Division of Church Extension has encouraged such study and provides free literature to bring these factors to the attention of the pastor, building committee, and church board.

The local congregation may choose its own architectural design, and while the approval of the District Board of Church Extension is required, the latter will veto the congregation's wishes only if they are extreme or go beyond a reasonable budget.

Nazarenes avoid expensive and extravagant construction or decoration. Simplicity of design is desired, with only modest use of stained glass and symbolism.

Church buildings should provide space for five basic functions: worship, evangelism, Christian education, fellowship and administration.

Mandatory Planning Requirements. There are no mandatory planning requirements, but it is recommended that the following be given consideration in a building program.

Worship. The worship area will be used for worship and evangelistic services, weddings and funerals. The congregation takes a very active part in the worship and evangelistic services, by singing, praying, voice response to well-made points, and participating in altar calls for new converts or rededication of one's self.

The worship area is divided into two main sections, the nave and chancel, referred to as the sanctuary and platform. The choir and pulpit are normally located on the platform. The altar and communion table are located in front of the platform.

Pulpit. The proclamation of the Word of God through preaching is a basic belief, and the pulpit is therefore located at the front center of the platform. Ministers desire as much audience rapport as possible. The platform should be no higher than necessary for the speaker to be seen, and the pulpit low enough so the upper bodily movements of even a short man may be seen. Pulpit chairs or seating for at least four to six persons should be provided, with enough space so an energetic speaker is not stepping on the toes of others seated on the platform.

Altar. The term "altar" refers to the combination "penitent form" or "mourner's bench" and Communion rail, and is located between the platform and the congregation. As evangelism shares equally with worship in the services of the church, the altar is one of the most important pieces of furniture in the sanctuary.

The altar should be 20 to 24 inches high, from six to 12 inches wide at the top rail, and as long as the size of the sanctuary will conveniently accommodate. There should be at least three feet of usable space between the altar and the pew screen or first row of pews. It is preferable to have the floor level the same on both sides of the altar, but in buildings that seat more than 150, the floor level between the altar and

the platform may be elevated not more than five or six inches so that the minister, when standing on that level for reception of members, etc., may be seen above the heads of persons standing in front of the altar. A kneeling pad at the altar is helpful. It is usually best to have the altar in sections with the open space in the center. It should be permanently attached to the floor. Additional movable sections may be available for use in communion services. A small shelf may be attached to the back of the altar, with holes bored to receive used communion glasses. In some instances, these shelves are made so they can be slipped in under the top of the altar and not seen in other services. Holders for facial tissue boxes behind the altar are recommended.

Communion table. The communion table is usually placed immediately in front of the pulpit between the platform and altar. Its size should be appropriate to the size of the building and congregation. The table will contain the communion elements which are served to the communicants at the altar.

Choir. The choir is used as an aid to and as participants in worship. The divided chancel is never theologically appropriate and should not be used. The choir is located in the chancel or platform area, usually behind the pulpit; however, it may be placed to one side and at right angles to the congregation. A low screen is normally placed in front of the choir. The choir is usually led by a director (not the organist) and some elevation of the back rows is desirable. The choir should not be a distracting element when the minister is standing at the pulpit. Choir seating is normally not over 10% of the sanctuary capacity. A choir room for the storage of music and robes should provide the choir access to the platform without having to march through the sanctuary.

Musical instruments. Space for both piano and organ, side by side, should be provided. Some congregations use an orchestra in Sunday evening services.

Baptistry. Some churches desire a baptistry for immersion. Sometimes it is located in a small chapel, but if in the sanctuary, it should be in the wall surrounding the platform area. Since baptism by immersion is not required, the baptistry need not be located in the center of the platform wall, where it becomes the focal point of the sanctuary. If a baptistry is used, appropriate dressing rooms for men and women should be provided.

Some churches may desire a baptismal font. This is usually placed near the platform at one side of the sanctuary on the same level as the congregation, but there are no specific requirements governing its location. Most churches will use a silver bowl for baptism, which is usually brought into the sanctuary only at the time of baptismal services.

Seating. Both the major emphasis on evangelism and the desire for a warm Christian fellowship in worship affect the seating of the congregation. All seating should be as close to the pulpit as possible. The concept of warm Christian fellowship and the full schedule of services during the day have caused

congregations to reject any plan of dual worship services. Buildings must, therefore, be designed to seat the entire congregation in a single service.

Pew spacing should be 34 inches back-to-back minimum, with 36 inches preferred. This provides space for kneeling at and facing the pew for prayer. Twenty to 21 inches per person is the minimum for seating.

Overflow seating. Many congregations desire provision for overflow seating for special rally services. These may be adjoining rooms with folding doors, a large narthex or vestibule with removable or glass panels, balcony or wide side aisles.

Lighting. Most congregations prefer light, bright sanctuaries, which at the same time incorporate a sense of dignity. The brightness symbolizes the joy of Christian experience. A high level of lighting is necessary to make possible easy visual contact between the minister and the congregation, with care to avoid direct glare. Controlled natural light is an asset. Artificial lighting should preferably be on a dimming device. Public address controls and, in larger churches, communication facilities with the platform are located in the rear of the sanctuary or in the narthex.

Narthex or vestibule. Whenever possible, the building should be designed so the church can be entered without climbing stairs. The narthex should be large enough to encourage visiting after services. Space should be provided for coats and hats. The building should be planned so the entrance from the parking area is a main entrance.

Sacristy. A room near the platform for preparation and storage of communion elements and equipment, and for flower arranging, is a great convenience.

Chapel. Some congregations may need a chapel in addition to the sanctuary, for use as a prayer room, for small weddings, devotional services, etc.

Evangelism. The sanctuary is used for both worship and evangelism. Evangelism and nurture are the ultimate purposes of all the activities of the congregation. Building requirements relative to evangelism are the same as those for worship, with special attention to short pew lengths for ease in responding to the altar call.

Christian education. Space varies for all age groups, and the amount needed is related to the size and ages of the Sunday school. Departmentalization is encouraged, with a large number of departments as the size increases, rather than larger groups. Dual use of space should be used consistent with efficient operations. Space should be designed for flexibility, with some inner partitions as movable walls for possible removal or change in the future. Accordion-type partitions are not recommended for pre-school and children's areas. Provision should be made for visual-aid facilities, storage and for a Sunday school office and supply room. A table of space requirements and arrangements is available upon request. The rooms for babies and toddlers serve also as nursery during church service. All pre-school departments should have toilet facilities immediately adjacent.

Administration. The minimum is two rooms, for church office and pastor's study. In small churches, the office also serves as Sunday school office and duplicating and workroom; when possible, however, these should be separate, and additional offices included as staff requirements indicate. The office and pastor's study should be easily accessible during the week when services are not being held, and should have their own heating and airconditioning—usually a window-type unit is satisfactory.

Fellowship and recreation. Congregational needs and wishes vary greatly. Some will want rooms for scouting or caravan activities. Such rooms may also be used for Sunday school classes. Some will want a fellowship hall and kitchen. Where budget is limited, the fellowship hall may have folding door separations for use by several Sunday school classes. If at all possible, the fellowship hall should be in a wing or building separate from the sanctuary. In some congregations, there are those with convictions against a kitchen in any church building. Gymnasiums are not recommended, but an occasional church may wish one because of a community situation.

Parking. It is desirable to have at least one parking space for each four persons in attendance even when local city codes require less. Outdoor activities such as basketball and shuffleboard may be included in parking area. Parking area should be adequately lighted for use at night.

The committee should be asked about other functions to be provided for, such as day nursery, library, public address, etc.

For answers to questions, literature on specific building problems, and the review of preliminary drawings for suggestions without charge, write to: The Division of Church Extension, 6401 The Paseo, Kansas City 31, Mo.

Glossary

Altar: "Mourner's bench" and communion rail.

Caravan Groups: Similar to scouting, with more emphasis on the Bible and the Church.

Nurture: The education and growth of the individual in Christian life.

Bibliography

"Manual, Church of the Nazarene" *

"Called Unto Holiness," Timothy Smith (history of the Church of the Nazarene during formation) *

"Church of the Nazarene," (booklet)

"The Minister and Church Architecture"

"We Have an Altar," Norman Oke *

"Planning a New Building," (leaflet)

"Seating the Congregation," (paper)

"The Nazarene Altar," Norman Oke

* May be borrowed from the Division of Church Extension. The other items may be secured without charge upon request. ◀

Coming in the January Journal

Through the Martini Glass

ALFRED BENDINER FAIA

The *Journal's* long-lost humorist-laureate returns to the fold.

The Architecture of Worship or the Worship of Architecture?

ROBERT H. MUTRUX AIA

"If there was once one Church, and one way to build it, will there be one way to build the united Church?" An architect takes a long look backward and forward.

The Responsibility of the Architect to the Public and to the Profession

JOHN C. PARKIN FRAIC, FRIBA

A distinguished Canadian architect reminds us that our social responsibility and our creative individuality are mutually beneficial, and that "we ought to trust our architectural Brahmins less, our 'warrior class' more."

Human Needs Demand Effective Color

HOWARD KETCHAM

A professional color engineer reviews the historic uses of color in architecture, to point up the need, not for a greater, but for a proper use of color today.

Architectural Research

Four articles, led off with one by Ben H. Evans AIA, new Director of AIA's Research Programs, followed by Harold Horowitz AIA, Walter T. Rolfe FAIA and a story on a research project at the University of Michigan.

The New Role of the Architect

The two articles in the Comprehensive Services series deal with "Building Programming" by Louis Rossetti FAIA and "The Architect in the Business World" by Leo Daly AIA.

Book Reviews

Color: A Guide to Basic Facts and Concepts. R. W. Burnham, R. M. Hanes and C. James Bartleson. New York, Wiley, 1963. 249 pp illus 6" x 9½" \$8.50

Reviewed for the *AIA Journal* by Waldron Faulkner FAIA

We have all heard the story of the blind men and the elephant and how each came to a different conclusion as to what a pachyderm was like. Those who have heard the heated discussions among colorists on some of the basic facts of color might well feel that the blind men could symbolize the chemist, the physicist and the psychologist and the vastly different approach each has to the concept of color. The fact that even the Commission Internationale d'Eclairage has never formally agreed on a definition of the term "color" makes one realize the need for agreement as to basic concepts among colorists.

The general plan of organization of this book masterfully fulfills this demand in a clear and authoritative manner. It begins with relatively unquestioned facts (as opposed to fancy) and moves gradually to those on which there is less general agreement.

Among the basic facts we find a much-needed definition of color; descriptions of color stimulus, receptors and response and a detailed description of defective color vision.

In the category of applied facts, stand those related to colorimetry, object-color systems and color names.

Under the heading of marginal facts come those connected with color-vision theory, color aptitude and experimental color esthetics.

Although this book does not lay claim to any new data, it does bring together and tie down in permanent form many concepts over which there has been much difference of opinion. This work began as a report of a subcommittee of the Inter-Society Color Council on the basic elements of color in education and was carried to a logical conclusion by the three authors after an immense amount of study and discussion. It does seem to demonstrate beyond much doubt that a horse can be designed by a committee and with real success.

Florida Hurricane Report. Trustees of the Internal Improvement Fund of the State of Florida. 66 pp mimeo. Available on loan from AIA Library

Reviewed for the *AIA Journal* by Eugene F. Magenau AIA

A number of references on hurricanes were listed in Technical Reference Guide TRG 13-1 (*AIA Journal* October 1959, pp 75-86). The "Florida Hurricane Report" is a worthwhile addition. Written by a committee of two architects, three engineers, a

city-planner-building-official and a real estate developer, it contains information of value to architects and others living or working in the hurricane belt.

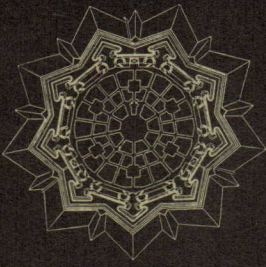
This review of hurricane characteristics aids in understanding typical and special features of "Donna," the September 1960 hurricane rated as Florida's most destructive. Cause and effect are highlighted in detailed descriptions of damage to buildings, mobile homes, highways and bridges, communications and utilities. Shortcomings of windstorm insurance, building code enactment and enforcement are discussed.

A four-page summary advises the State of Florida (and the reader) what to expect from hurricanes and what to do about them. Of the six appendices, one summarizes various state and Federal legislative programs dealing with public measures for flood rehabilitation, beach conservation, warning services and the like. Another outlines what the private individual should do before, during and after a hurricane. Recommendations of the Mobile Home Association are included because mobile homes (house trailers) suffered the highest proportional losses among dwellings of all types. One section describes how wind forces act on structures of various shapes and another gives the technical derivation of the formula for design wind loads psf.

Architects and engineers can take no special pride in the reported fact, proved again by "Donna," that structures designed and supervised by registered professionals seldom sustain much damage. After all they are just doing their job. But this fact lends support to the plea of coverage by adequate building codes, and certification of compliance for all public and institutional buildings by the designing architect or engineer. This procedure would offer underwriters a way to recognize preferred risks with lower rates—as they do in other fields. Substantial reduction of property damage, injury and loss of life due to hurricanes is a major objective which wider familiarity with books such as the "Florida Hurricane Report" would help achieve.

Environmental Engineering and Metropolitan Planning. Edited by John A. Logan, Paul Oppermann and Norman E. Tucker. Evanston. Northwestern University Press, 1962. 265 pp 7" x 10" \$7.50.

This book is the result of the first national conference, held at Northwestern University, between civil engineers and planners to discuss the interrelated problems of urban growth and development. The conference was an attempt to draw planners and environmental engineers into a closer working relationship and base the results of the future character and viability of metropolitan America on the degree of their cooperation. The proceedings were directed mainly to the "health" of the citizen—as a meaningful and acceptable approach to metropolitan planning. The topic was studied from the point of view of technical knowhow and planning requirements. Problems and examples of practically applied approaches to these problems were discussed by the engineer, planner, government and citizen.



URBAN DESIGN:

THE ARCHITECTURE OF TOWNS AND CITIES

SEVENTH IN A SERIES OF ARTICLES

Designing the Parts of the City, Architecturally

Suppose that the city were not a creation of man but of nature. Suppose that it were an animal. In some ways it functions very much like an animal, if one considers that each of its parts is comparable to the vital organs, or parts, of the animal body.

In considering the city this way we see that there are vital links between a city's parts—vital links which can determine the size, position and form of the parts. We also see that some parts are healthier than others, that some maintain themselves, that some need emergency treatment, that some need plastic surgery and that still others should be amputated.

The Arab cities of North Africa illustrate this point of view. In the center stands a mosque, the spiritual and thus the intellectual center of the city. Nearby is the palace of the ruler, and so the center is as well a government center. Then, near the mosque one finds candle makers, perfume and leather merchants. The leather merchants are joined by cloth merchants who require a roofed hall which can be locked. Consequently the need for carpenters and locksmiths and metal smiths. By now we are near the gates, where we find saddle makers and hostels for travelers. And so the parts of that city find their places and their characters, in this case, in a relatively static society.

In this article we will approach our own cities in somewhat the same fashion, recognizing that the parts of our cities, unlike the relatively static Arab city, exist in a state of nearly violent physical change. We will try to understand the parts of our cities and try to foresee what forms they are seeking to become in the face of our dynamic times.

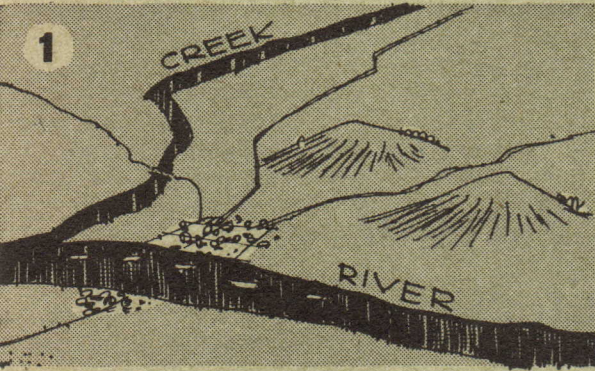
Our advisor for this article was Martin Millsbaugh, a former newspaperman who served on the Urban Renewal Administration and who is now Deputy Manager of the Charles Center project in Baltimore. Joseph Watterson FAIA edits these articles, which are written and illustrated by Urban Design Project Head Paul D. Spreiregen.

CHARLES A. BLESSING FAIA, AIP, *Chairman Urban Design Committee*

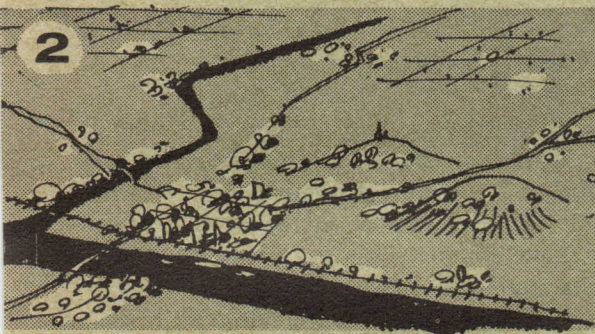
Committee: Charles A. Blessing FAIA, Chairman, Robert L. Geddes, Donald H. Lutes, Harry M. Weese, FAIA, Arch R. Winter, Corresponding Members—Edmund N. Bacon, Kenneth W. Brooks, Carl Feiss FAIA, Albert Mayer FAIA, Daniel D. Berry, Matthew L. Rockwell, Archibald C. Rogers, Nicholas Satterlee, Dewey Somdal FAIA

Designing the Parts of the City, Architecturally

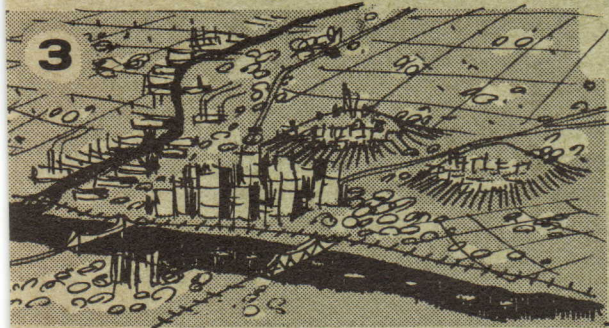
Development of the parts of a river city:



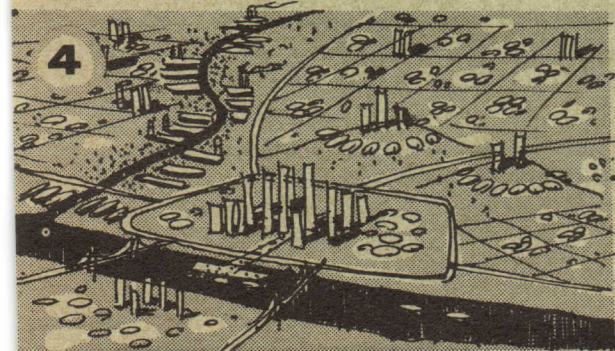
Original agricultural and trade center



Later development as an industrial center as well



Present-day confusion of form



Tomorrow's refinement of form

The Center

Downtown is the center of the American city and heavy is its responsibility. Louis Kahn has written that "the center is the cathedral of the city." It is its soul and brain. To embody this role the center must also be the acropolis of the city.

Our downtowns developed at the most strategic place of access in our cities on a usually preordained street grid. At their best, downtowns contained the highest concentration of services for the whole community. Now we see this function diminishing and many virtues of our downtown lessening. This is very much a concern of urban design, for through urban design, operating, of course, in hand with sound economics much can be done to retain the valuable facilities in our downtowns while the areas around them take on new form.

Change and development is the key to understanding the downtown's role. No downtown ever remained static in form or function. It is through the understanding of the changing nature and role of downtown that we can produce effective urban design for this vital area of the city. Our downtowns grew as their surrounding communities grew, as long as the means of access between the two were ample. Close around the downtown were complementary parts of the city: the early downtown was bordered by close-in residential areas, by manufacturing areas and by a harborfront or railyard. Thus access was to a large degree by foot as well as horse and wagon. As cities grew, the downtown thus found itself constrained and its possible directions for growth limited. Because of this, the growth of the center was usually somewhat linear, usually in a direction of a city's general growth away from harborfront or riverside. As fashionable areas of the city grew, "uptown" developed, as both a complement and a competitor to downtown, the original center. As the city grew further and its needs increased, an off-shoot of both uptown and downtown developed—"midtown," a third form of the center.

At this stage of the development of a city's center the degree of access required taxed heavily the form and appearance of the center. In order for this complex to operate it had to support an inordinate amount of movement. At that point the center's physique broke down and failed unless some remedy could be found.

The early public transportation systems were such remedies. In fact, they were built when people could not live without close and direct access to the center. For the population depended on the center, if not for their livelihoods then for its services. Public transportation systems prior to the automobile—the trolleys and the subways—allowed our cities to take their first giant steps. The subway systems were rather drastic remedies but they had a major saving grace. They could be built underground out of sight and

would impose little on the physiognomy of the city. The opposite practice of raising subways above ground as elevated railroads was a destructive measure for the streets that received them. What effects can circulation systems have today?

Even with the best of circulation and access systems, there seems to be a limit as to just how big and all-encompassing an urban center can be. Our downtowns seem to be an American phenomenon, but one that now reaches a point of saturation as a form. As the size and age of a city increases, the center becomes a series of centers. The central functions become nucleated and widespread. This phenomena of ours as it takes its shape will undoubtedly find a form that is unlike any urban form seen before because the problems and conditions are entirely new.

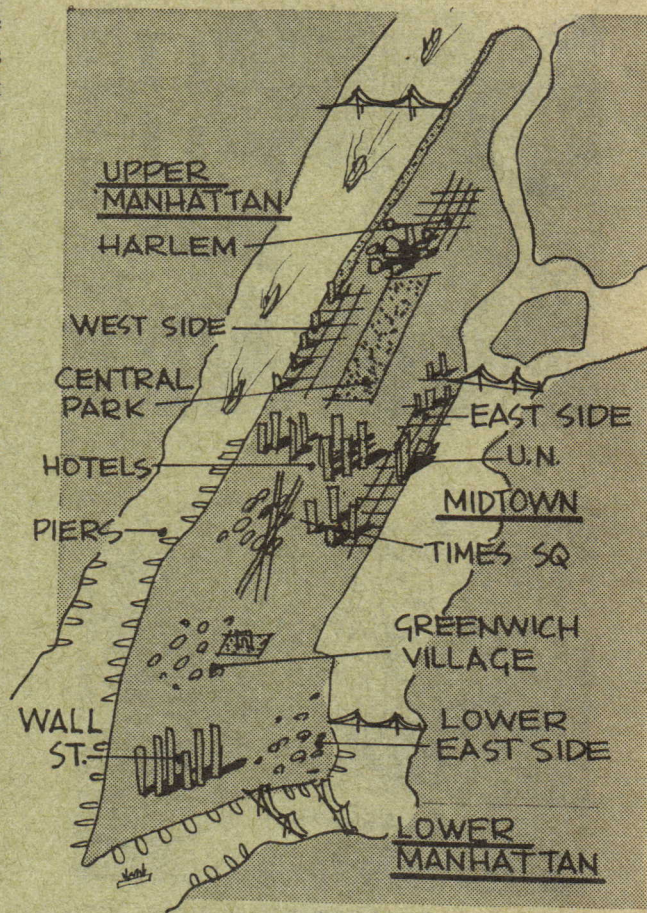
New York, for example, has several centers rather than a distinct downtown. Paris has a series of hubs connected by spokes of central city services. London has its quarter for law, its street for doctors, its section for the theater, its area for clothing, but over-all it is more of a rough tweedy fabric of facilities than it is a clear-cut focus of them in the center.

In a word, the services and functions of our central cities seem to be dispersing increasingly over the ever-widening metropolitan area; this actuated by our use of the automobile and the limitless freedom of choice it gives. We assume that we will learn to use this freedom with more wisdom.

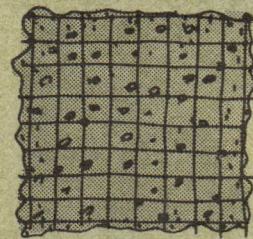
A discussion of the newly forming pattern of the dispersed metropolis was a major theme of the book, "The Future Metropolis." * In that book Kevin Lynch posed the implications of several form possibilities ranging from a totally dispersed pattern of living, working, servicing and leisure, wherein there would be minimum physical or functional differentiation (Wright's "Broad-acres" is an example of this as a design) to a highly concentrated center with spokes of peripheral use interspersed with spokes of open space (the "Year 2000 Plan" for Washington). One of Lynch's illustrative form arrangements was a blend of both, a pattern in which there were a number of foci which accented the general pattern of close-knit intermingled uses. The foci were functional and physical. Thus there might be a center of offices demarked and visible from afar as a cluster of skyscrapers, or a focus might be a medical group or a university-law-government complex.

This would seem to be the pattern which we are developing. How well we attain it, for large cities as well as small ones, depends on our ability to recognize the urban groupings we have at present as valuable resources, and to see in the currents of change and development phenomena which we can use to refine the form and arrangement of these groupings.

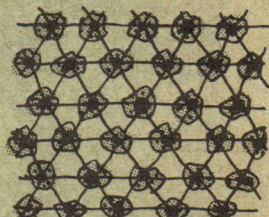
In "The Future Metropolis" we are told that the center itself is likely to become more of an administration center than a center of various services—that the breadth of its function is narrowing very much. Thus, shopping in the center may increase in absolute terms only slightly while the increase in shopping in a metropolitan-wide area will increase both absolutely and proportionally. This simply means that shopping and many auxiliary services once found only in the central city will follow population, leaving behind a central city of a new sort, a central city with new and different possibilities.



The various parts of Manhattan emerge as the city matures



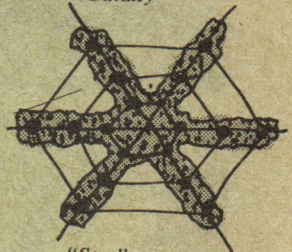
"Sheet"



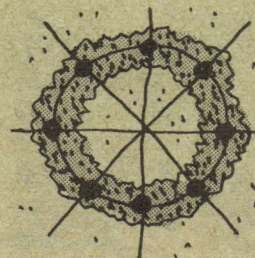
"Galaxy"



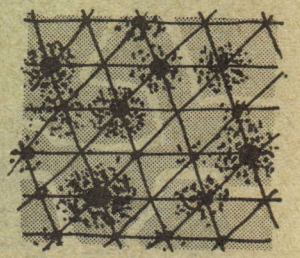
"Core"



"Star"



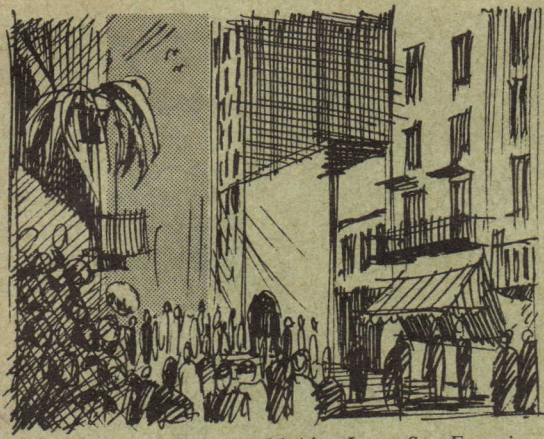
"Ring"



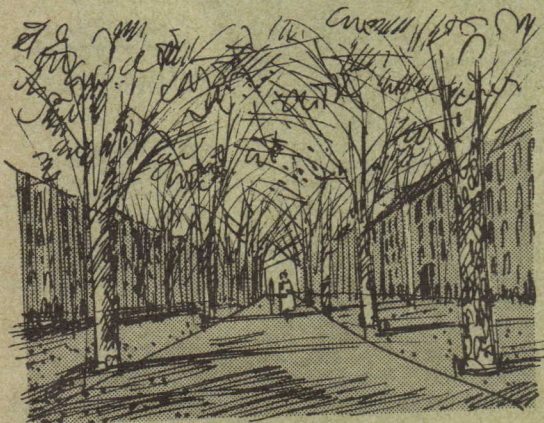
"Polycentered net"

Various metropolitan forms and the arrangement of their parts (adapted from Lynch)

* Edited by Lloyd Rodwin, George Braziller publisher, NY 1961



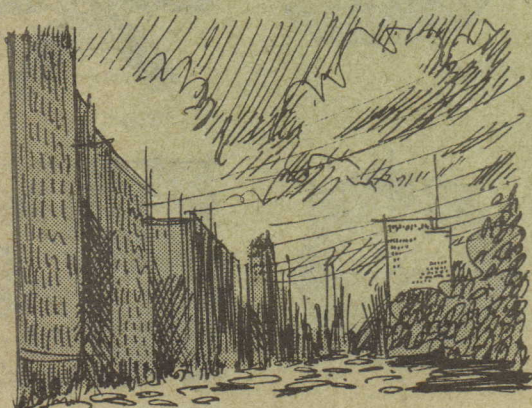
Maiden Lane, San Francisco



Commonwealth Avenue, Boston



Connecticut Avenue, Washington, DC



Michigan Avenue, Chicago

Reforming the Center—The Street

We can well begin our discussion of the center city and its parts by considering the street. The street perhaps more than any other single element of urban design has two powerful effects: it can unite central enclaves together and the physique of the street itself can support or undermine the function of a particular enclave—it can be helpful or inimical to the area it serves. The street is one of the most clever inventions of urban form. It is to the city as the wheel is to machinery. One of the first tasks of urban design in the central city, regardless of the degree of transformation it encounters, is to assure that the form of the street is appropriate. Consider the shopping street in the center of the cities.

A shopping street which is too wide precludes vital visual and physical contact with both sides of the street simultaneously; it is inimical to shoppers because they cannot maintain full contact with the goods at hand. Shoppers cannot use both sides of the street simultaneously. Imagine having a fifty-foot aisle in a five-and-ten-cent store—or even a fifteen-foot aisle. Conversely, if shopping diminishes in the city, this may have its advantages. The prophecy for our central cities being an increase in administrative office use suggests that the shopping which will prevail will be largely for the office workers, a white-collar class whose tastes are likely to run higher and higher. Along with the shops they will require restaurants, cocktail lounges and the many nooks these people use during their working day.

The point for design is that an increase in administrative offices means an increased need for prestigious office buildings. The “wide” American downtown street may be an ideally urban size, an attractive and altogether appropriate setting for fine office buildings. With streets of such size, however, will remain a need for its counterpart, the narrow and more intimate scale of a “nook” street. Without that the pristine glamour of the grand office street may be too overbearing.

Thus, the beginnings of urban design in the central city could be the assessment of streets according to their widths and positions, and from that an idea of where different center city developments might take place more appropriate to the physical dimensions of the streets. The recent plan for improving downtown San Francisco recognizes these physical characteristics of streets and their effects on shopping. That plan proposes a number of corrections to the physique of the streets which are inappropriate to the uses they support, as well as improvements for better interrelations between streets and functional enclaves.

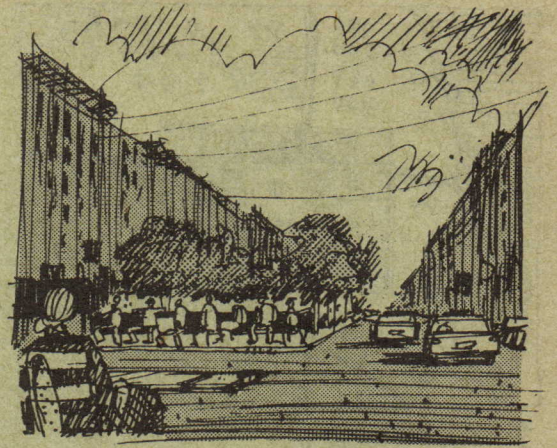
A key issue in regard to a street is the sidewalk and its treatment. A sidewalk, like a street, can be too narrow as well as too wide. It can be too open as well as too closed. It can be well landscaped or poorly landscaped. Too wide a sidewalk can be difficult to maintain and difficult to shade. It has more potential, however, than one which is too narrow, for that precludes the possibilities for shading by tree or canopy, or the development of sidewalk displays, cafes, kiosks or simply a place to sit down. One good tree in an urban scene can be more effective visually than several sickly trees. Small potted trees seen against the virile facades of great corporation buildings or banks may seem puny and pointless.

A key issue, too, is the length of a block. A city block can be too long or too short—too long to provide rhythmic relief and lateral access and too short to allow substantial development. Long blocks could be punctuated with rights-of-way that would penetrate buildings. It is worth noting here the practice of urbanized Europeans in referring to the “street” or the “avenue” (“you go down the street and turn left at the first avenue”) while Americans refer to the “block” (“you go down the block and turn left at the corner”). We have yet to develop our sensitivity to the street.

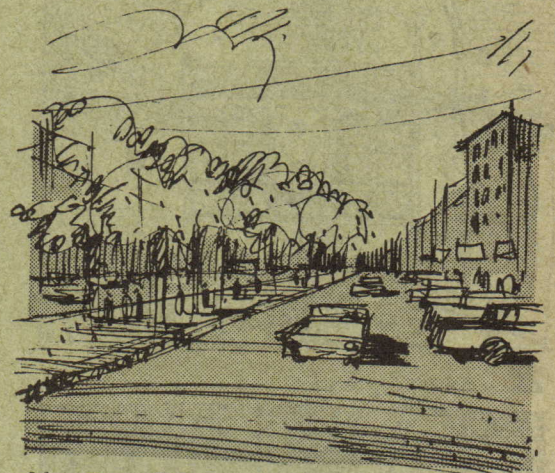
Orientation is another key consideration of the street. A north-south street receives greater variety of light and shadow effects during a sunny day than an east-west street. The sunny side of an east-west street can be overbearingly hot during the summer, and attempts to shade a city street, particularly a busy shopping street, are not easy. Nor are the chilling effects of the blasts of winter wind or its shady side easy to alleviate. A possible area of research and experimentation is the study of devices which could block chilling winter winds on city streets and other devices (perhaps building forms) which could induce and magnify cooling summer breezes.

One of the major contributions to urban design might be the development of a department of the city which will tend to the city's streets as well as our park departments tend to our urban greenery. What we need is a clearer understanding of all our cities' open spaces ranging from the traditional park down to the sidewalk. Perhaps such a program could result from an active liaison between the design section of a city planning staff and the local park or street department, in frequent consultation with local architects. We would begin by understanding the sidewalk as an open urban space functioning as a necessary compliment to the fixed uses of bordering private land. The sidewalk is the free space for people where the roadway is the free space for cars. The sidewalk is the corridor for people. It is the resting place, the moving place, the shady place, the first contrasting relief from the office or shop as one steps out of a building.

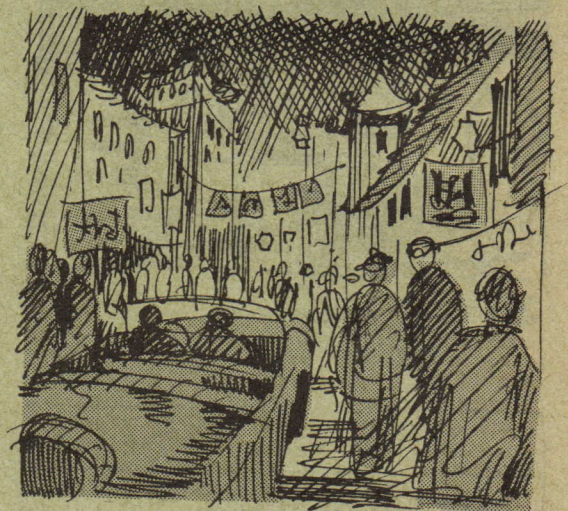
If we would reflect on the many sensations we feel in walking down the street as fully as we are conscious of the sensations of driving, we would have the solid beginnings of a viable urban street design program for our cities and towns. It is significant that the design of street lighting in the past forty years has been dominated by street lighting for the automobile. Few, if any manufacturer's catalogs of street lighting contain designs for sidewalk lighting for pedestrians. If only ten or twenty per cent of the standard poles available were for pedestrians at walking scale the problem could be solved. We criticize not the attention to good street lighting for cars; we criticize an oversight in the provision for the walker. It is not accident, then, that the old gaslight, either electrified or with its original wick-system, is enjoying a fresh vogue. It has scale for the pedestrian.



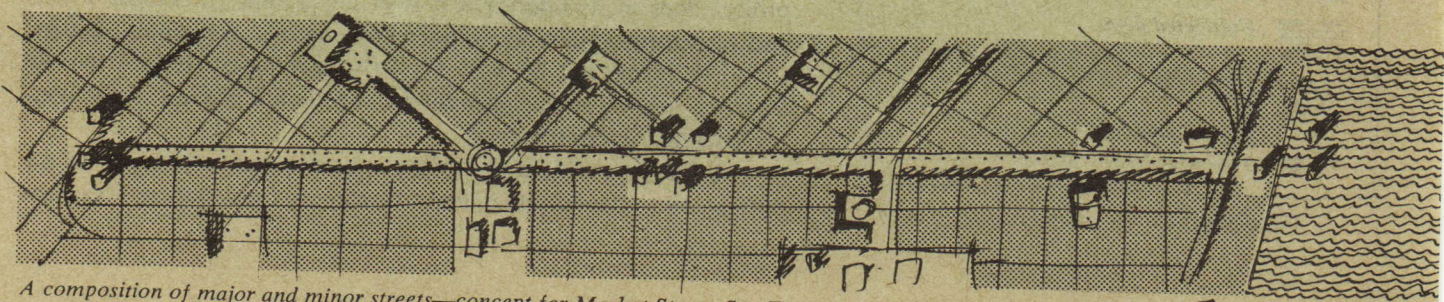
Sitting places on upper Broadway, NYC



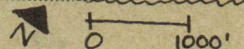
Main Street USA

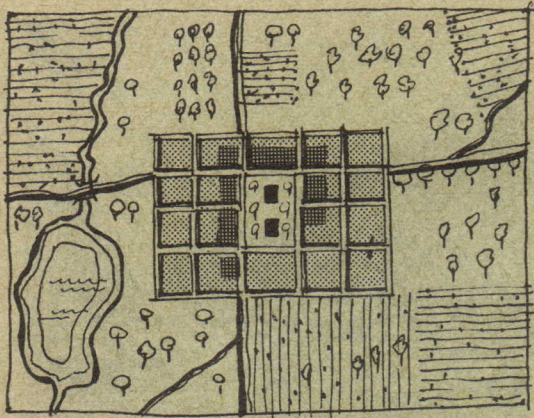


"Chinatown" in the evening

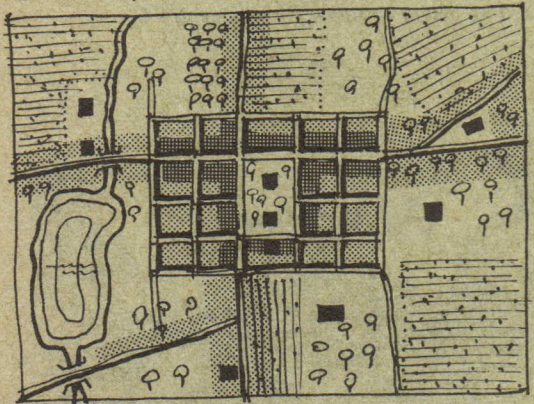


A composition of major and minor streets—concept for Market Street, San Francisco, by architect Mario Ciampi with planner James McCarthy

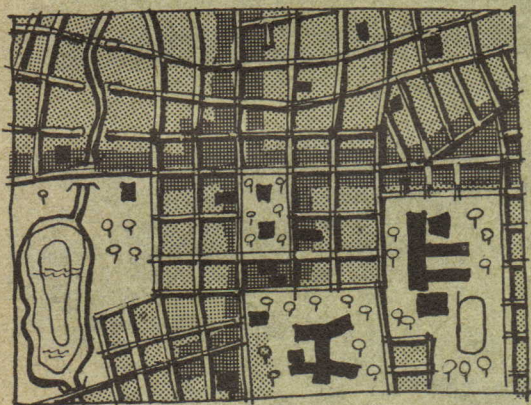




1 Early settlement



2 Ensuing expansion



3 Present development

The Center's Clusters of Activity

Programs for revitalizing downtowns must address it as a whole although action may concentrate on a key section. Downtowns are really organized as a series of activity clusters linked to each other. These clusters can take a variety of forms in the existing downtown proper.

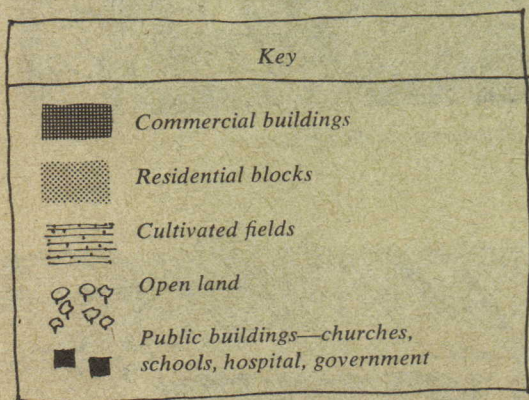
Because most downtown "projects" are built to replace worn out sections of blocks of buildings, they are generally peripheral to the downtown's actual core. Even so they alter the core considerably. One form which a downtown project can assume is that of an anchor, actually more of a function than a form. Two major projects in Boston are anchors. The Government Center, itself a key hub of the city, will form a nucleus of activity which will arrest the general movement away from Boston's old center. The Prudential Center, a mile or two away will mark the culmination of Boston's center, a boomerang-shaped swath bending about the central Common and Public Gardens.

Another equally valid form is the project which extends the city's center. Such an example is Hartford's Constitution Plaza, lying off the main shopping street toward the Connecticut River. Philadelphia's Penn Center is also an extension of the city's center. Still another form is the center city project as a linkage. The project can bridge a void in the central city between clusters. Such is the function of Baltimore's Charles Center. It stands between Baltimore's shopping area and its office area.

These projects, in their various stages of completion, have already begun to pose such interesting questions of design that they have become required visiting for the architects of now-beginning projects. One major question is the form of the pedestrian areas in these projects. In some projects the street in its traditional form as a corridor does not exist. Instead the whole project is treated as a block whose interior is a large plaza of pedestrian movement. With such an arrangement it is particularly important to effect a strong connection to neighboring pedestrian streets. This arrangement gives rise to the serious question of liveliness in an area where autos are excluded entirely. It may be better to have auto streets visible if not penetrating the central open spaces of a project than to exclude them entirely. Autos and people in the city can exist side by side in harmony when they do not conflict with each other's movements.

A particularly vexing problem may be the edge of such a several-block project, the difficulty being that an apparent edge is all too much an interruption between project and bordering area. A strong edge may be desirable since it clearly marks out the new project and gives the opportunity to emphasize the new. Often such peripheries stand in the urban scene in salient token to the might of their occupants. Still, the interruption of the rhythm in the urban fabric can be too harsh. A remedy may lie in a simple expedient—drawing the project boundaries not through streets but through bordering blocks. This, in fact, is what the project does in its interior if it is of any extent: it bridges streets and transforms their bounding quality into a conjoining quality. Could the same not be done across streets which demark the old from the new by simply including a substantial portion of the non-project edge across the street?

A further problem lies in the apparent and real vitality of the project. Who can say that Penn Center or Constitution Plaza are



Development of the central parts of a town

not intense, confronted with the facts of their worker populations? Yet how apparent is this during the course of the day? Perhaps we have to find a way to achieve an even greater diversity of use in our projects, perhaps including some shops of less polished mien: a delicatessen, a movie theater, perhaps a five-and-ten?

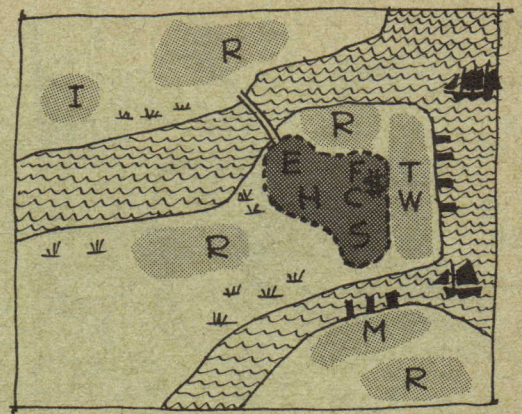
The clusters of the changing central city have varying degrees of strength and permanence. Perhaps the most solid are the financial districts. Seldom do they move. The reasons for this include the solidity of the construction of bank and financial buildings and the prestige and enduring importance which results from an early-established locale of quality. Wall Street developed as the natural business center of the original port of New York. So with the financial area of San Francisco, New Orleans and Boston. Financial areas are generally masculine in character. This brings up another aspect of the various parts of cities—their gender.

Fine shopping areas are generally feminine in character, as witnessed by the theme of window displays and coffee shops. As shopping areas lose their fine quality, they lose, too, these feminine touches. It may not be too absurd to think of more delicate and graceful forms when we undertake designs for the improvement of worn out downtown areas—forms and details more comfortable and pleasing to women. Similarly, there are areas of the city that are masculine in tone, such as financial and government areas, whose haberdasheries, barber shops and bars are keyed to men.

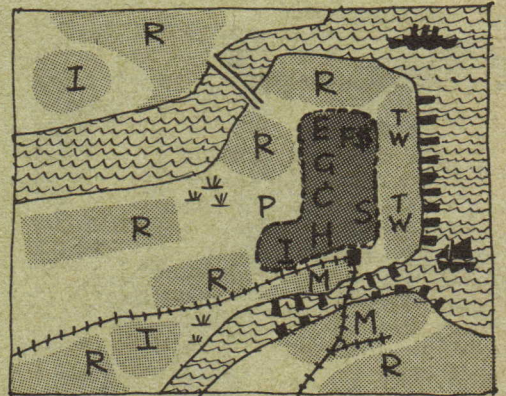
The various clusters of the central city may not only have their own gender, they can induce gender in their surroundings, particularly in the channels of linkage which connect them to other clusters or hubs. In Boston, for example, there is a stretch of land between State Street financial area and North Station, a major commuter rail terminal. Many of the men who work in State Street come from Boston's North Shore, and they come as commuters. The distance between North Station and State Street is a brisk fifteen-minute walk, a walk which attracts men but discourages women. The result is that the path between the station and the financial area is masculine in tone. Along it are found hardware stores, men's bars and cocktail lounges, oyster restaurants, used-book stores—all elements in a man's urban "world."

It may not be a useless exercise of design imagination to think of the generator-feeder relationship of shopping areas in similar terms, but slanted toward women. The experience of the woman shopper who braves a car trip downtown, parks and heads for the shopping streets may be formidable. Often it is enough to discourage her entirely. Here is an area of generic urban design: the design and treatment of all the things she sees and experiences so that she is put at ease, so that she feels assured and not threatened in driving, so that her heels will not be lodged in gratings, so that she does not have to encounter the gray fringe so common to our downtowns. It is a matter of designing the expressway-artery-parking-walking-shopping sequence for her.

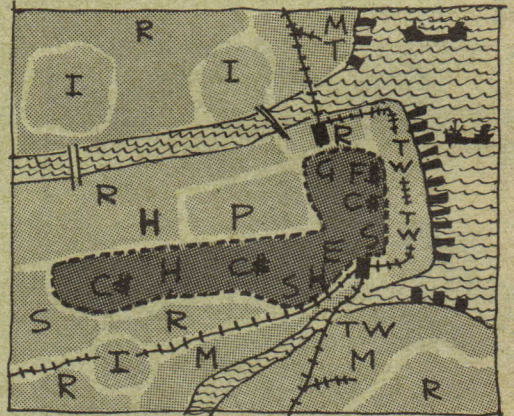
The objectives of urban design in the central city can be simply stated: it must be made easy to get to by all means of transportation; it must be made so attractive and must have so many delights that it is worth going to; and it must be arranged so as to be continuously alive with humming vitality. In the central city these objectives are complicated by the remains of places which are not too palatable visually and are difficult to remove. Peripheral hubs may thrive amidst sprawling chaos. Both kinds of hubs can be remedied.



1 Early settlement



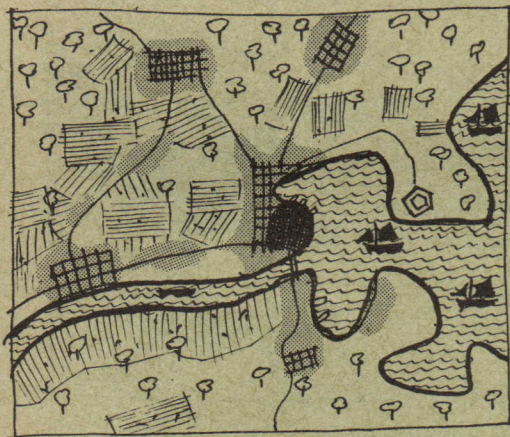
2 Ensuing expansion



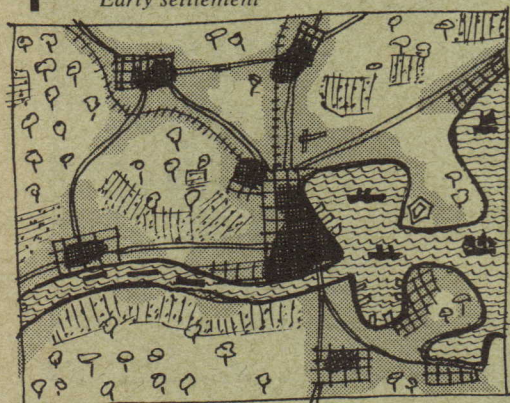
3 Present development

Key	
Core	Core Adjuncts
F# Financial	R Residential
C# Commercial	I Institutional
S Service	P Park
E Entertainment	M Manufacturing
G Government	TW Transportation & warehousing
H Hotel	

Development of the central parts of a city



1 Early settlement



2 Ensuing expansion



3 Present development

Key	
	Open land
	Cultivated land
	Low density development
	Medium density development
	High density development

Development of the central parts of a metropolitan region

The central city contains many institutional clusters particularly hospital and university groups. Two courses of design action can be taken for them, one having to do with their needs for growth and expansion, one having to do with their relation to the center city proper. Most of these institutions need more space, for the growth of their plant, for parking and for nearby residence. The prevalent decay around institutions is providing more and more fresh ground for their expansion and, if wisely planned, can effect new continuities with nearby hubs. The American college campus, particularly, furnishes us with a design device that wants extension—the series of linked spaces. This same device can be a basis for the sound design planning for hospital groups.

Another major type of cluster in the central city is the residential group, one which we will delve into in our next article, but which must be mentioned here. Suffice it to say that the main element of liveliness in the central city is people moving about, and the more people who live close by the more vital and alive the central city is. The amount of new residential construction in very close proximity to our city cores should induce us to prepare land close around our central cities for it.

Certainly there is a case for preserving and stabilizing the amount of old housing in the city. At the very least we must prevent its further decay, for this kind of housing serves well the needs of low income people, many of whom work in the central city. If modestly remodeled, this housing can serve the young people who come to the city to live and work. This is no small segment of the population. It may be that we can accomplish this by an indirect approach, namely the removal of unrelated through traffic which deteriorates old neighborhoods near the central city. This, too, we shall discuss in a later article.

Discussion of the various clusters of the central city must include the government center. Almost every city has some sort of governmental area, if only the modest but stately courthouse square. Government centers at any scale have two requirements: their forms must register as symbols of government function; they must be located and arranged so as to be part of their environs. The first of these requirements is easier to fulfill than the second.

By rather elementary arrangement, a space can first be created by the buildings themselves or, in the case of the courthouse square, a space provided for a single building in the center, to be seen as a showpiece. Physical continuity with the city can be achieved through an extension of the central space as a series of outreaching links and through careful blending of the form and character of the new buildings with the texture of the old.

Functional continuity with nearby parts can be achieved by introducing uses other than governmental into the government cluster. Law firms, real estate offices, a theater, perhaps a public library—any use which complements the function of government or is related both to government and business—can enliven the cluster.

In detail design, the arrangement and location of particular uses, the very location of building entrances, can spell success for the design of a government center. For example, the courthouse entrances can be located so that the daily parade of guarded juries across the square to a restaurant can be a subtle symbol. The continued arrival and departure of official cars, the paths of lawyers and officials between their offices, the corners where the hangers-on congregate—all will take their positions from the design and treatment of the main elements of the government cluster.

Gray Areas

Thus far we have discussed the parts of the city which can be rebuilt in whole or in part, but extensively enough to give them an almost entirely new visage. We have also concentrated on the central area of the city. Before we go out to the city's new edges, its suburbs, let us imagine that all of the rebuildable parts were rebuilt. Let us imagine we had reconstructed our downtown, our center-city colleges and hospitals, our government centers, our new in-town apartments. If we were to go aloft in a helicopter and survey the results, we might experience some dismay.

For we would see that a large portion of the center city was largely unchanged. We would see that the entire city cannot be rebuilt in a decade; we have a limited capacity to rebuild which can affect only a portion of the city during each stage of its life. We would see, in short, that the gray areas of the city are extensive. These gray areas are also areas of concern for urban design, although they cannot be transformed as dramatically as some other of the clusters in the city. The possibilities of the gray areas are more elusive, more latent.

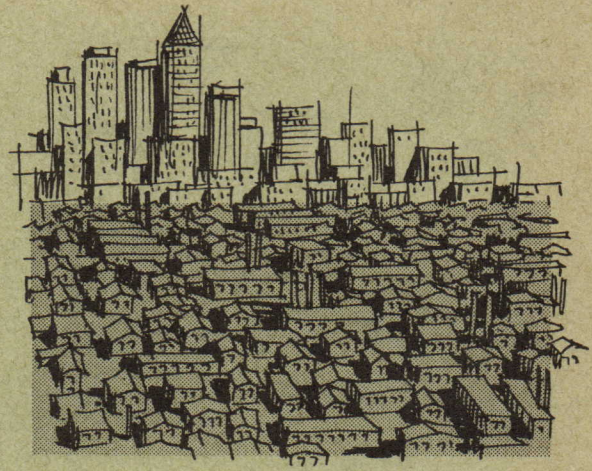
The gray areas of the city are its older parts, the places where you go to have a rubber stamp made, where printers locate, where office supplies and furniture are sold, where wholesale distributors do business, where cars are repaired, old sewing machines rebuilt, pictures framed, where city-bound hillbillies find their first urban dwellings, where rugs are cleaned, where restaurant linen is washed, where mufflers are replaced and office equipment is repaired. The gray areas are not quite slums—they are the service quarters of the city, the place where small businesses may begin and, often, where major ones thrive. They are not glamorous areas, but they may be very much alive if not with color then with people living and working. The gray areas of the city are a necessity.

For urban design, this fact of urban life should not come as a disappointment but a realization to be reckoned with. What can urban design do for the gray areas?

For one thing we must start by seeing how well they actually operate. It may be that a gray area is definitely going downhill. In that case we should regard its land as a new resource for the near future. More likely it is threatened by problems of circulation. In that case we should attend to our traffic planning. It may be that there are pockets of left-over housing in a gray area which are unhealthy and whose occupants should really be relocated.

Perhaps the real defect of the gray zone is that we see too much of it. We pass by large extents of it on our new elevated auto expressways as we soar above the streets toward the center city. We pass through much of it as we proceed along our center city's major arteries. We see it as we approach the center in the morning on the way to work and in the evening on our way home. Its too frequent sight taxes our patience. The answer may lie in application of theatrics to the urban scene. If the gray area is too frequently visible, too depressing because it is too much in our presence, perhaps we can arrange our major routes to avoid it, to bypass it, to give us views of the parts of the city we hold in higher esteem. In the Renaissance, architects were able to recast the service elements of buildings into what appeared to be blank walls which could form entrance courts or the walls bordering a long passage. Could we not do this on the larger scale of the city?

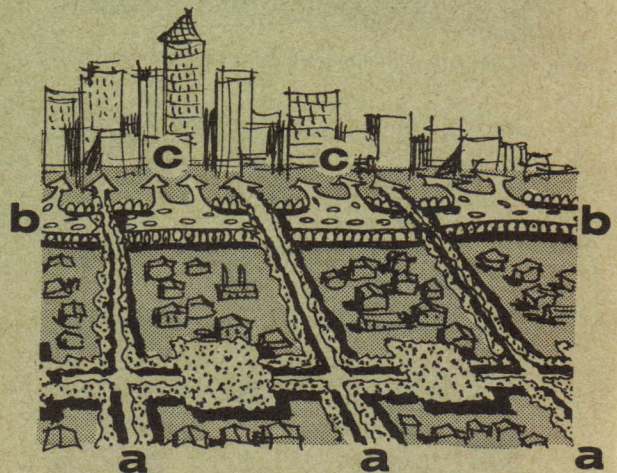
Could we not conceal or at least play down that which distorts the image of our central city's better self?



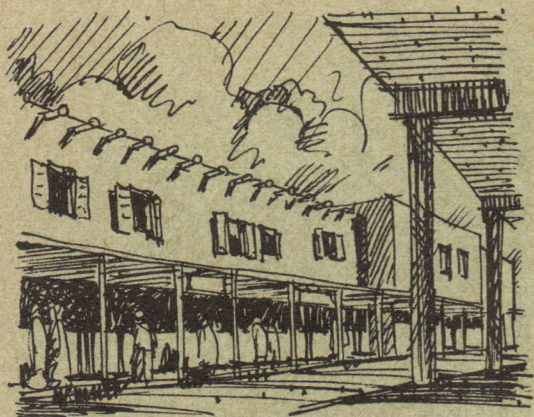
Gray areas are vital functional and physical adjuncts to the center of the city



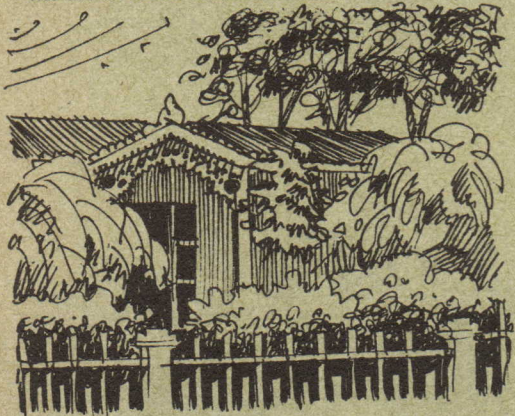
We can diminish their visual effects by shielding our approach views. At the same time we can relieve the gray areas with open spaces



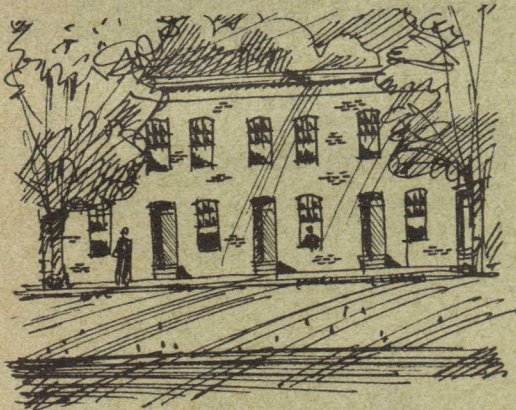
Better still we can link them to the center city with their own system of paths (a), our expressways can bypass the gray areas (b) and both systems can enter the central city together (c)



Fine old buildings are grandparents in the urban scene—arcaded streets in Santa Fe, NM



A house in "Sauerkraut Bend" in San Antonio, Tex., an area settled by German emigrants



Row houses with white marble steps in Baltimore, Md



Old Mystic Seaport in Mystic, Conn., an assemblage of old buildings and famous sailing ships

The Preservation of Some Old City Parts

The outstanding quality of our cities is the rapidity with which they change. How different they are from ten years ago, twenty years ago, fifty years ago. The history of our cities span and will continue to span the most pronounced changes in the modes of human habitation that the world has ever seen. Such is the condition in which our cities exist. Some feel in the rapidity of this change an exalting excitement, a good fortune to be living in so dynamic a period. Yet change is not always good. With change come new problems. With change comes the destruction of the better institutions of the city. Change is accompanied by the destruction of many of the landmarks of progress which we have created along the journey through time. On this problem rests the case for historic preservation.

If we can accomplish only a limited amount in the re-creation of our cities then it especially behooves us to replace only those parts of the city which are entirely worn out and, particularly, to try to preserve the remnants of the past which are of special merit—high watermarks in the efforts of the past. This applies not only to individual buildings but to whole sectors of the city which come from a period of exceptional quality.

Patrick Horsbrugh, in "Pittsburgh Perceived," stated the case most vividly. Horsbrugh points out that there is a "trough of disregard" for the works of the past, an interval of time in the life of a building or city area in which its existence is under greatest threat. Generally this period extends from thirty years to a hundred years after a building or sector is erected. It is in this period that the economic value of a building may warrant its replacement and in which our tastes may disdain the forms of the recently passed period. Perhaps the interval of "the trough of disregard" is shortening. With a more mature understanding of ourselves comes a more thoughtful appreciation of our yesterdays.

The preservation of historic buildings is but one suggestion of the attention we must give to the form of our cities as collections of bits of historical development. Through programs for recognizing outstanding historical buildings we can begin to recognize what is good. Somewhat more challenging is the task of recognizing buildings and whole areas which, while not masterpieces, are respectable guideposts from our recent journey.

Our cities are a rather heterogeneous fabric, even the newer cities built rashly. Our urban fabric is quite a crazy quilt, a kind of non-objective painting on an urban scale. That is an advantage really, simply because it expresses us so candidly. From a very practical standpoint, the recognition of what we take as the ordinary may open many doors of possibility for us in the improvement of our cities. It is one thing to recognize the outstanding works of the past, the masterpieces of past eras. It is another thing to recognize the various examples of "pop-architecture" on an area-wide scale which line the flow of urban life from past times through to the present.

It is significant that we increasingly find in the renderings accompanying urban design proposals and plans, the careful inclusion of a Grecian bank, a Romanesque house, a Victorian Gothic church. Such buildings possess a wealth of sculptural detail and embellishment that is nearly impossible to obtain today. Such richness in buildings, where found, is sure to increase in visual value and in our esteem as we multiply the number of our more bland contemporary structures.

There are several positive approaches to preservation. There is a National Trust for Historic Preservation of particularly fine works. A major interest of the AIA focusses on preservation through the Committee on Historic Preservation. There are numerous local societies that tend well their own historic riches. Necessarily a full discussion of these programs cannot be included here. Yet there is a guiding principle which is quite helpful.

In general, we should avoid compromises (or proposals) which satisfy neither requirements for modern living or for historic authenticity. This means that we must find valid modern uses for old buildings and areas and that we should restore them in ways that express the best of their two worlds—the past and the present. At least we can do this for the non-masterpieces, the masterpieces can exist in their own right often solely as museum pieces. Even in those the touch of life through contemporary use and habitation underlines the merits which we desire to preserve.

Georgetown in Washington, DC, or Beacon Hill in Boston would be destroyed if they were not lived in as areas of fine town houses. Old Mystic Seaport in Connecticut would be less convincing if modern yachts could not dock at its wharves. Indeed it is when the touches of excessive preciousness dominate that old historic quarters begin to lose their meaning to us.

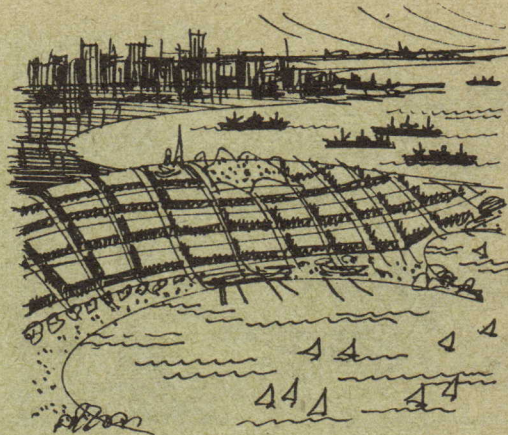
Thus it is that the treatment of the old historic buildings around Independence Hall in Philadelphia, now cleaned and repaired, seem somewhat lifeless since they have been “freed” of their surrounding squalor. No one would expect that they or their surroundings should have remained wretched slums but we well may ask if a new living neighborhood of buildings of sympathetic scale and feeling should not have been built to replace the one destroyed. Fortunately, time is with us here. Some future generations may be able to do that and perhaps we should leave the task to the future, when our skills and understanding of these matters and our ease in dealing with them have ripened.

Our brief discussion of historic preservation must touch on one other area: the old market sections of our older cities and towns. Boston, Philadelphia, Chicago, New Orleans and many smaller cities have such old urban kitchens. Many have long outgrown their locations. The possibility of maintaining their former role as provisioners for the *whole* city is out of the question.

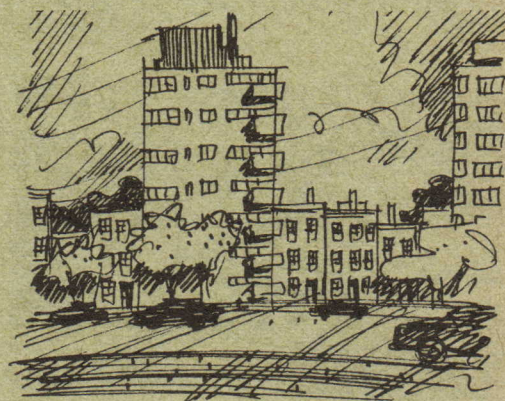
Yet these old areas have real fascination and color—and perhaps a new role. Most of their operations have moved away to modern new terminals, conveniently located at the outskirts of our cities along expressway and railroad lines. Many of the provisioners remain and thrive—where they still serve a purpose.

They supply in-town residents in cities which have been able to maintain a continuous intown population and which have a large number of in-town institutions and restaurants to provide for. Such is the case of Boston's old market area. Around these old markets we frequently find some of the best restaurants, often “holes in the wall.”

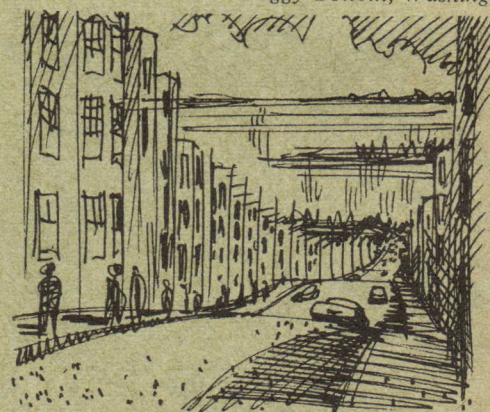
The remedy for their preservation is real use—not artificial or quaint imitation of function. They must have an appreciative population to serve, a clientele nurtured through the years who insist on the quality. Tourists who delight in visiting these old markets are an asset, but not without latent harm. For old restaurants and market areas that come to depend on tourists may relax their quality. The basis of the old town house's or market survival is the same—authenticity of use.



South Boston, Mass, a residential community originally established for clipper-ship builders



A mixture of scales between new apartment towers and old rowhouses in Foggy Bottom, Washington



Bay windows, cubic houses and long vistas in San Francisco



Dickeyville, a restored Colonial community near Baltimore, Md

Outskirts

Up to now we have been discussing the possibilities for the older parts of our central cities, which range from preservation to rehabilitation to transformation into a new cluster of function. Yet looking at the city as a whole, it is obvious that its growth is occurring in new sectors outside the old center, indeed along and outside the city's old physical limits. Many of these new parts are, in reality, emigrants in new forms from the old center. What are the applications of urban design for them?

With some dismay we see that the functions formerly taking place as cluster activities in the old center city may not find it appropriate to regroup as they migrate. Thus the old newspaper row disperses into a series of unrelated modern plants, forming no new "community" along their expressway locations. Headquarters offices, once conjoined in recognizable quarters of the city, seek rural pastures and become individual estates in the suburban landscape. Warehouses, once located alongside rail freight lines, join in the outgoing procession.

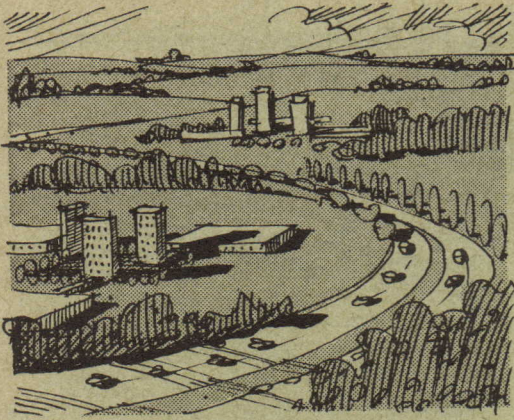
One major form which has resulted is the industrial park. Both the buildings which seek isolated sites or those that seek community in industrial parks follow a very old pattern: they line expressways as individual pieces or as groups in a new giant scale of geometry. Now they are seen as we speed by them at sixty or more miles an hour in our car, where in former days we walked by them. Often, however, they are designed as if we were walking by them. Front entrances facing a highway, designed as if for pedestrians, emphasize the shortcoming of their design in failing to recognize a new scale of moving and seeing.

The choice of sites for these new buildings is little subject to the will of urban design, yet the decisions of architectural form for these sites is controllable. Architects have the full responsibility of designing new plants as appropriate components of the new view, both where the buildings are conceived as lone entities and where they can be clustered, as in an industrial park. Perhaps we have been overly hesitant in suggesting more verticality in their forms. We may be too much the captive of horizontal function; some vertical function could be equally if not more functionally appropriate, and give greater visual richness to the highway.

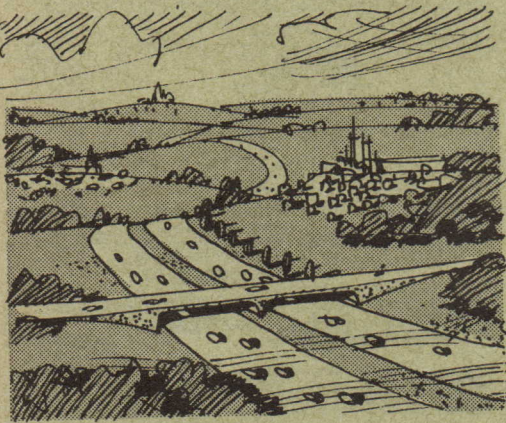
A typical plant requires a large amount of horizontal space for its machinery and production flow lines, but it also requires "front office" area for executive and clerical operations. These elements could be housed in a tower form, and in an industrial park several towers could be clustered in a clear and powerful design relationship. In short, the industrial park and the individual plant could more clearly state their presence in the landscape and so add more dramatic accent to it.

Radial Routes—The Automobile Shopping Street

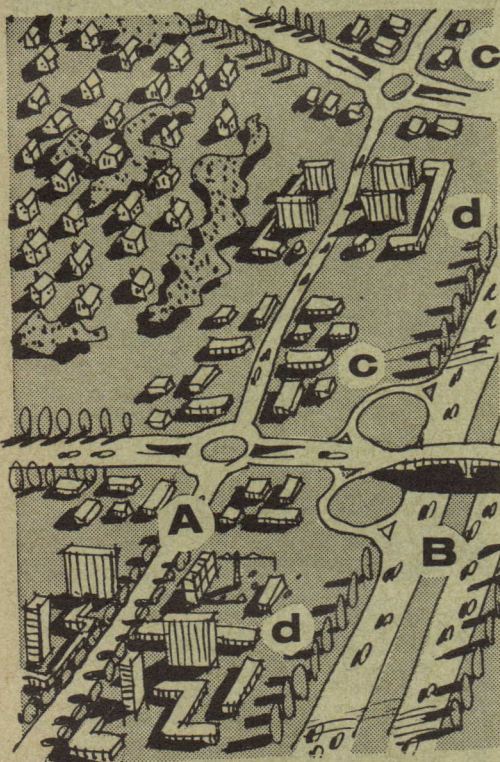
An outstanding characteristic of every growing city is the ugly traffic arteries which reach out from the center and extend far into the suburbs. Lined with often marginal businesses they are the predominant scenery of the developing American urban motorway landscape. Too often they are seen, for these routes are usually the main routes of auto access into and out of our cities. Zoning once sought to control their arterial land uses, but the pressure to strip-zone them has been irresistible. The traffic hazard they present has been inadequate to arrest them. In these arteries lie the sources of the deepest woes for those seeking to improve the forms of our cities.



Articulation of industrial parks in the rural landscape



New towns in the metropolitan landscape



The future of the old automobile shopping street: (A) the former automobile-oriented shopping street; (B) new expressway; (c, c) clustered auto-oriented shopping facilities; (d, d) new developments as clusters on the old auto-street

The future may hold the keys to a solution. The traffic function of many of these ugly main arteries is being replaced by our new superhighways. Here we have the chance for at least a choice: we can avoid these places by using alternate routes.

The strip road, however, does serve a purpose. It is, like the downtown gray areas, a kind of second-rate market place, but oriented to the auto customer. We should, however, try to re-route through traffic so that it does not have to pass through such honky-tonk roads. We might even rearrange traffic patterns so these roads are not through arteries, leaving them as linear "free markets," wild with their mad arrays of signs and hideous structures.

It may be, too that some of these strip roads, when replaced by paralleling superhighways, will become ghost roads, just as we have had ghost towns. What then for the future use of this land? What then for the future of the businesses now there?

Perhaps we need some visionary planning for the future use of the old roadsides and some planning for various free-market clusters, something less polished than our new shopping centers yet understood as an adjunct to the whole community.

New Hubs

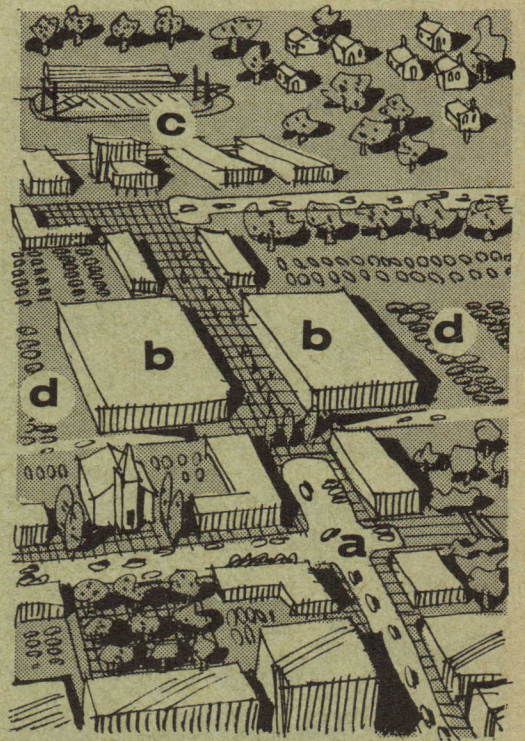
Clearly, the major challenge for urban design in our growing metropolises, cities and towns lies in their new parts and in the new forms which have been developing.

The regional shopping center has achieved a form that would seem to almost preclude its further development. So successful is it as an arrangement that it has been introduced right into the city. While its form and interior planning may have reached a high point its relationship to its surroundings has not. No design has yet resolved the problem of the unsightly sea of cars that surround the large shopping center. Almost in no instance do we find its central malls extending into a nearby old community.

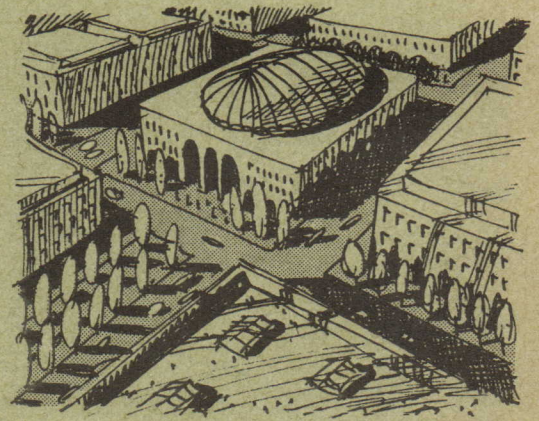
Perhaps some advances can be made by diversifying the purpose of the shopping center. It could become a community focus as well as a commercial highway focus. The inclusion of high-rise apartments and office towers is an obvious first step. Why not connect it with a "second rate" shopping cluster? Most polished shopping centers are set amidst such a fringe. Why not recognize this fact and plan a continuous linkage?

Perhaps we can find ways of including a YMCA, a neighborhood athletic club, schools, churches, a zoo and small factories as adjuncts or parts of it? This is a challenge to urban design (not to mention our society's outlook) with the realization that the basic linear form of shopping cannot be interrupted, but it can be supplemented with many other facilities linked to it laterally.

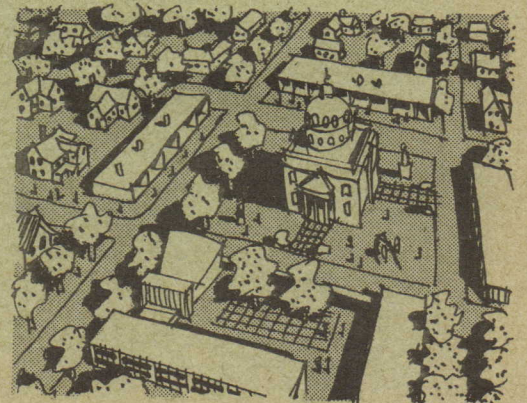
The fact that the new shopping center is an emerging urban center is evidenced by the attraction it has as a strolling place on Sundays when its stores are closed. Less recognized as a new suburban focus are the many new school buildings we have built around our cities and towns. Their potential role in the community has hardly been tapped, let alone expressed in design terms. The community school plant serves far more than children. In the evenings it is the setting of adult education, adult amateur theater companies and adult physical exercise. In the summer it might house higher education programs. School buildings are the major community facilities for many of our smaller cities and for most of our suburbs. What of the development of its form and arrangement as a more related community component?



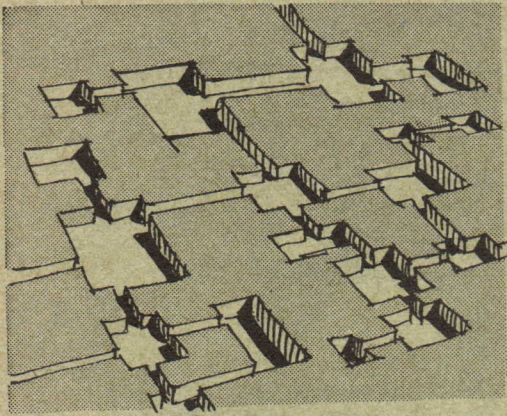
The integration of a shopping center with a town's central facilities:
 (a) original town center;
 (b, b) new shopping center;
 (c) school facilities;
 (d, d) parking to serve all the town's central parts



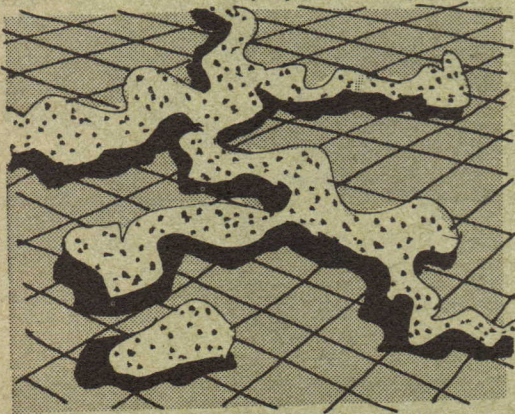
An arena contained in a building whose edge uses are continuous with surrounding urban functions



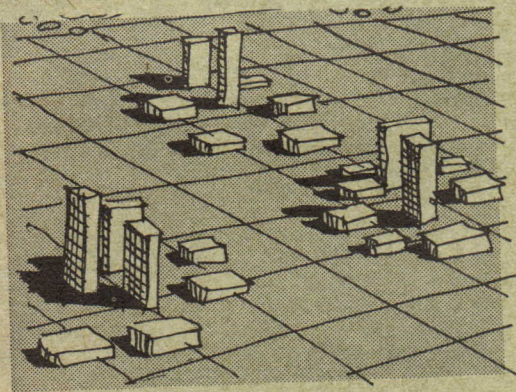
A high school (foreground) set alongside a small town's central square with town hall and shops forming a true town center



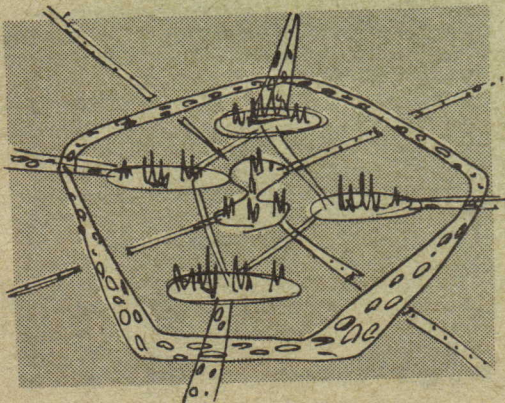
The various parts of the city can be tied together by special linkages . . .



. . . by continuous swaths of greenery



. . . by vertical articulation



. . . and by clarity of the connecting pathways

Land bordering the large school could be occupied by buildings other than houses. We might have some businesses around it, perhaps small factories of an inoffensive nature. School courts could open into the neighborhood as part of the weave of a system of linked open spaces. The Conte School in New Haven's Worcester Square Redevelopment area demonstrates these possibilities and suggests even more.

Large schools are being designed as a series of parts—a wing of classrooms, a block of gymnasium, auditorium and library buildings which are not so much separate entities as they are, in fact, a series of component buildings in a community. In our smaller towns we could introduce the elements of the school plant into a community design right in the heart of the town. School buildings could be strategically placed around the town green, extending back into some of the rear areas of the center, in short, as part of the real fabric of the town's heart.

The more we ponder the new formations in and around our cities the more we see new questions arising. These raw questions are directed at forms that are yet embryonic and forms that often seem on the surface to have found their balance. We have been able above to discuss only briefly some of the questions and some of the possibilities. We can suggest some other parts of the newly forming urban fabric for conjecture. The marina residential developments could bear some thought. The mobile-home community (trailer camps) could be an entirely new kind of community which could be a more positive urban element. Perhaps the sites for such communities could be selected so that they had fine vistas out over our towns, to give their inhabitants some degree of belonging. We could at least find some modest landscape techniques to soften their harsh metallic appearance.

Perhaps we could conjecture to advantage over the possibilities for rural governmental centers. Only Frank Lloyd Wright's Marin County government buildings gives us a clue to the possibilities of that. Wright's building should be studied in relation to its whole site plan which is a slice of Wright's old "Broadacres" proposal. Its lesson is that even in the countryside so major a building as a government edifice is one component in a series of central community facilities. We might do well to ponder the changing use of our urban parks. We use parks quite differently from our Victorian predecessors, although many of our parks are inheritances from them. Are we making a mistake in the siting of large new convention halls and sports arenas in our central cities? Should their behemoth bulks be so openly displayed or could their bulks be buried in the mass of the city, revealing only the entrances? Could their now-bland peripheries become shops, offices and hotels rather than remain large extents of unusable wall?

In trying to develop large spaces of natural greenery around our cities, we might consider the validity of the small operating farm as a provisioner of fresh vegetables to the city. Could there be some thought as to the economics of this and to the steps necessary to encourage the small farmer to continue his way of life near our cities? The sight of genuine operating farms near our cities may be more desirable than the sight of unused natural land. Of course, we would need a mixture of both the real farm and the real green open field, left free.

We mean to suggest here that a continuous and fresh questioning of our current practices and motives can yield fresh solutions, if not further courses of action.

Putting the Pieces Together

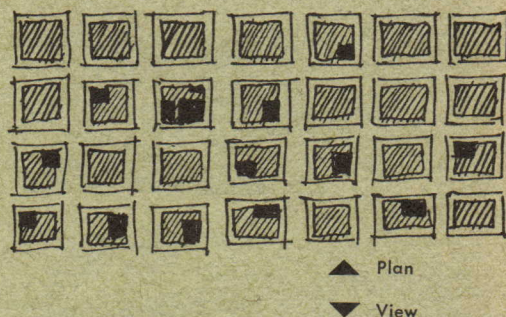
The overriding question that emerges from a discussion of the city's parts is just how do we go about putting all the pieces together? Indeed, just how distinct should the pieces be? The discussion of the city as a series of organs connotes its division into a series of separated functions. This is the hidden danger of such a discussion. The question is one involving a decision to blend or not to blend certain parts with each other, of the degree of mixture that a part can sustain. It is, as well, a decision for the degree of visible articulation of a part. Some present developments give us a glimpse of the range of possible answers.

Topography is usually the basis for the physical termination of a part of the city as an edge. Where topography imposes no edge, and where functional continuity is desirable, blending may be desirable. One of the best examples of this is in the center of Philadelphia, where the fine town houses around Rittenhouse Square, punctuated with the buildings of some of Philadelphia's best clubs and institutions, give way to tower apartments, then blend into fine shops, then culminate in the office towers of the central city. The change is so subtle as to almost be unnoticed. In this case interruption by articulation of this subtle progression would be harmful. The lesson to architects working in such areas is to design their individual buildings not to counter this blend, but rather to join in with it. Conceivably that could mean that an extremely large building for such an area would best be arranged as a series of parts rather than a large monolithic form, in this way to join with big and small buildings together.

Thus separation and blend can have definite social implications. It may be convenient to think of the parts of the city when programming its needs or evaluating certain problems, but the fact is that people do not live in neat planning units. They live in cities and they use whatever parts of the city they choose to use. The purpose of blending or separating parts of the city is not to restrict one part from another. It is to make the whole more intelligible. In present-day life this means that we have to clearly see enough of the parts of the city to recognize where we are and where we are going. In present-day terms of circulation, this means that much of our seeing is done from fast-moving cars along ribbon expressways. Thus the design and placement of visual landmarks and expressways must be joined on the urban design palette.

If an edge is developed on a fall line, the edge becomes a visual guide. Separation of a residential area from a factory zone is, of course, desirable. That is the kind of result we get from good planning. But if we set up artificial barriers between certain residential and commercial zones we may be doing real harm. The point is that we do not have to clarify the form of the city and the position of the various parts by creating physical barriers between them. There is another method we can employ. It is well illustrated by developments now occurring along the Charles River in Boston.

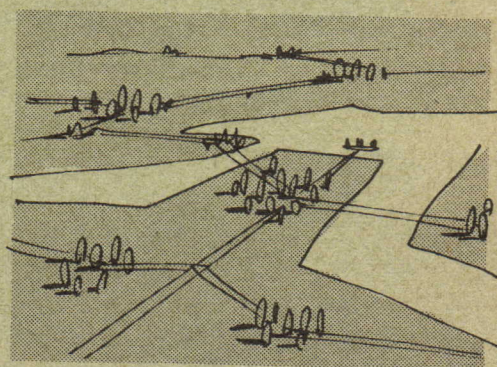
The Charles River is one of the most pleasantly developed rivers in an American city. Once a swamp, it was filled and its banks landscaped. The City Beautiful period endowed it with a handsome embankment on the Boston side. For many years it has had a fine river drive on both sides. Even a rash modern highway along the Boston shore failed to destroy its charm.



Geometric pattern in plan is neither a guarantee of orderly arrangement nor visual clarity



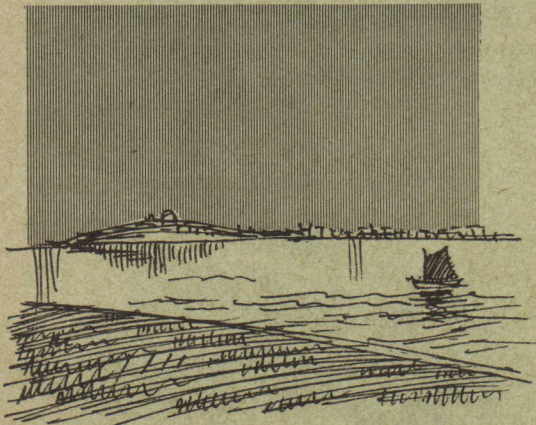
A seemingly disordered plan may possess more orderly arrangement and visual clarity than pure plan geometry. Coherent variety is a product of plan, not elevation



The enlarging scale of parts of the town and the city—and our kaleidoscopic movements through them—requires an enlarged sense of urban design



*The original form of Boston's Beacon Hill
—a three pointed hill on a flat horizon*



*The hill, refined by grading into round form
and topped with a golden dome,
climaxed the panorama of the city skyline*



*Twentieth-century tower
construction blurred the earlier image*

This river wets the feet of three major universities—Harvard, Boston University and MIT. Of these three BU never had a real campus. Harvard has its yards and MIT has its great court. All have the lovely river. Not long ago these universities had only slight emphasis on the skyline. MIT had its dome, BU had a little tower and Harvard had a profile of Georgian chimney pots. That emphasis was rather elegant.

The old skylines are a thing of the past. To one who has known the old skyline the first impact of the change is shocking. For now, all three schools have major tower buildings. It may require considerable thought to comprehend the latent merits of the transformation.

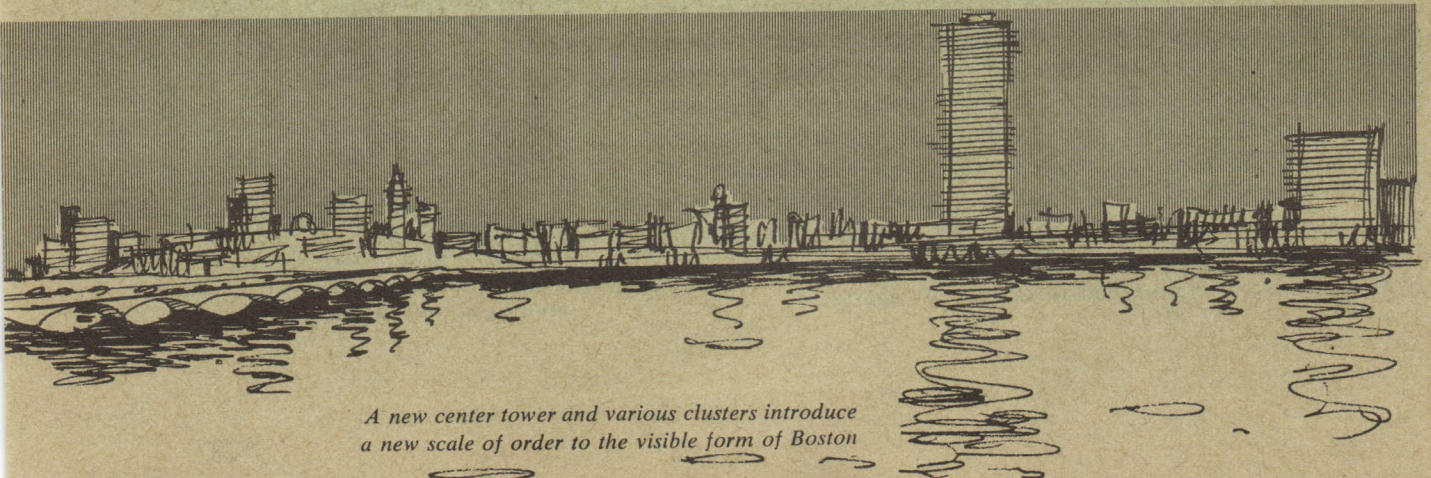
Harvard leads in the development with a pair of dormitory towers and a tri-cluster of towers for married students. BU follows with a central vertical block. The central block emphasizes BU's lack of a real campus when considered in contrast to MIT's two towers which mark out the ends of MIT's linear campus. MIT's two towers, as they now appear, are the weakest on the river, but MIT's campus development will add more.

These towers serve to locate and present the three universities on the river to us in a new way. They aid the intelligibility and clarity of the enlarging city-form. They tell us with varying skill of the forms of the campuses they articulate. What is more, these towers do not interrupt the flow of form from university to surroundings, from "gown to town." It is all part of the same fabric.

The appearance of these towers must be judged while driving along the river. There is no question as to the message they convey. Yet there is a further aspect of their appearance. They are by no means the only sets of cluster towers seen on the Boston skyline. Some other towers are seen encamped about the golden dome of the State Capital on Beacon Hill. Other of doubtful profile mark various parts of the city.

One tower in Boston serves as the flagpole for the whole system—the slender new Prudential Tower which is higher than any of the others. This will be the ultimate visual rallying point of Boston—the visual center of gravity of the city.

This entire visual system is really no more than a very-old system, but on a major new urban scale—very likely an undigestible new urban scale but one with which we will have to come to terms. Before these towers were erected Boston's profile was low, accented by lithe church steeples and culminated by the State House's gold dome. Many may mourn the passing of the more intimate old system. The new scale of the towers is but a product of the way we are coming to live in our cities.



*A new center tower and various clusters introduce
a new scale of order to the visible form of Boston*

Library Page

The Road to Athens

Socrates says in "The Symposium" that the road from Piraeus to Athens is ideal for conversation. Indeed, the road to Athens has been well traveled these past few years, and perhaps by architects as much as persons from any profession. Remains of the first buildings in the history of Western architecture rest in the Aegean area and have continuing fascination for the man of the West, the architect above all.

Not only has the architect gone to Greece to study at firsthand the source of his heritage, but in recent years he has traveled there because of a revival in the ancient Greek arts of town planning and building. The spirit of Phidias apparently abides in Athens, and the ancient Aegean is inspirited by a persistent power. Three decades ago the influential Charter of Athens was proclaimed by the CIAM, and this past summer saw the signing of the much discussed Declaration of Delos on this haunted island. Undoubtedly, this, too, will prove to be another far-reaching statement on architecture and urbanism. The international group of signers was led by Athenian Constantine Doxiadis, founder of that total new science of human settlements known under the term *ekistics*.

The renaissance of concern for classical and contemporary Greece requires refreshing our memories on its greatness and glories. Robert L. Scranton, Professor of Classical Archaeology at the University of Chicago, states in his book, "Greek Architecture" (New York, Braziller, 1962) that three books provide all that is necessary as an introduction to the facts of Greek architecture. They are W. B. Dinsmoor's "Architecture of Ancient Greece" (3d ed, London and New York, Batsford, 1950), A. W. Lawrence's "Greek Architecture" (London, Penguin, 1957) and D. S. Robertson's "Greek and Roman Architecture" (2d ed, New York, Cambridge University Press, 1945). It seems desirable to remind AIA members of several other books which deal with the ancient architecture and cities from new and different perspectives. These books will have an interest for any who have visited Greece, as well as for those who are preparing for the odyssey.

Mr Scranton's own book is a volume in the series "The Great Ages of World Architecture." In the forty-eight pages of text he does not survey Greek architecture in the traditional manner; rather, he is concerned with presenting the architecture as an aesthetic expression of Greek culture in the principal periods of Greek history. In the first chapter the author discusses the classic style of Greek art as revealed in the Hephaestum of Athens, this monument being to him the best embodiment in architectural terms of the Greek ethos developed around the middle of the fifth century, BC. In this building are all the characteristics of the "classic" style of Greek art—"idealism, objectivity and literalism . . . clarity, massiveness and poise . . . regularity, concentration and architectonic composition." From this start-

ing point the author considers the development of ancient architecture in order "to observe the various aspects it has taken, and how they relate to the 'classic' form."

Vincent Scully devoted years of research to his book, "The Earth, the Temple, and the Gods" (New Haven and London, Yale University Press, 1962). This critical history of Greek sacred architecture focuses upon Greek temples as physical embodiments of the gods in sacred places. Mr Scully shows how landscape determined architecture. He points out that all Greek sacred architecture explores the character of a god or group of gods in a specific place. The place itself is holy, and the site embodied the deity even before a temple was built. Thus, any Greek sanctuary includes the elements of landscape and buildings, the two forming an architectural whole and making the architectural task the unification of topography and temple. To study this volume carefully is to approach Greek architecture with new appreciation and understanding.

"How the Greeks Built Cities," by R. E. Wycherley (2d, London, Macmillan, 1962), is an unusually useful volume which approaches the ancient architecture of Greece from the perspective of the *polis* as a whole and considers each architectural element of it—agora, temple, theater, gymnasium, stadium, house and fountain—in individual chapters. The author relates architecture to the daily life of the classical age in a remarkable way, extracting from the city building experience of the Greeks some principles for contemporary city planning. He concentrates on the Hellenic city of the sixth, fifth and fourth centuries, BC, when it was at the highest stage of development. Although this book was published originally in 1949 and the intervening years have seen a phenomenal amount of archaeological investigation in the Aegean lands, which the author acknowledges, Mr Wycherley saw no need to rewrite the book completely. Despite the new information the idea of the classical city and its principal elements remains the same. He presents new or improved plans and photographs in his illustrative materials, and supplementary notes point out recent work.

And briefly two other books are called to your attention. "The Doric Temple," by Elizabeth Ayrton, photographs by Serge Moulinier (New York, Clarkson N. Potter, 1961), is a collection of superb photographs interspersed with brief explanatory captions and sections of text. So spectacular are the photographs that one agrees that they suggest "a new visual approach to the Doric order of Greek architecture," being not only illustrative but "a contemporary comment on an architectural form of 2,500 years ago." Finally, those of us who view a visit to Crete as the "fulfillment of the dream of a lifetime," as did Mrs John F. Kennedy recently, will appreciate James Walter Graham's "The Palaces of Crete" (Princeton, Princeton University Press, 1962). The viewpoint of the study is architectural, and Mr Graham concentrates on the form of the houses and palaces presented in their final, predestruction phase.

These books are available on loan to members at the usual service charge.

MARY E. OSMAN

Architectural Psychology in a Psychiatric Hospital

Andrew Berger PhD, Clinical Psychologist, The Menninger Foundation
and Lawrence Good, Instructor in Architecture, University of Kansas

This article was distributed by the American Psychiatric Association as a supplemental mailing to "Mental Hospital Service," November 1962. Reprinted with permission of the American Psychiatric Association

A CONSIDERABLE NUMBER of publications on the architecture of mental hospitals have appeared lately, indicating a great deal of interest in this field. As extensive as this interest has been, however, no systematized research in this area has been proposed. Most of the "directions" to architects on how to build mental institutions are arrived at by means of empirical observations, practical experiences, intuitions, etc. The need for a coordinated effort between architecture and social sciences in terms of research under controlled conditions in this area is obvious. The following paper is an attempt in that general direction. The authors will welcome any comments or further ideas about this presentation.

The project under consideration involves plans for establishment of a research center at Topeka State Hospital for study of architectural variables as they may be used in the treatment and rehabilitation of psychiatric in- and out-patients, and as these variables may be integrated within the total milieu program of a psychiatric hospital for the differential treatment of emotional disturbances. In order to communicate the spirit in which this project is presented, the authors wish to share their following assumptions:

Medical and social sciences have made enormous strides in the last twenty years toward the understanding and treatment of emotional disturbances. We have evolved from a basically custodial theoretical framework to a milieu and psychodynamic conceptualization.

Most of the psychiatric hospitals still in use in our country were designed and constructed from the custodial theoretical frame of reference.

The best method of treatment of mental disturbances at any time is that which attempts to organize all the various medical, psychological, social and physical elements of the total environment in such a way as to be *all* synchronized with the most prevalent philosophy of understanding mental illness. For example, when the most accepted treatment philosophy was of a "custodial" nature, the "best treatment" was to care for patients as unobtrusively and inex-

pensively as possible. In practical terms, this meant collecting large numbers of patients in places remote from society, in buildings designed to permit surveillance of the maximum number of patients by the minimum number of attendant personnel.

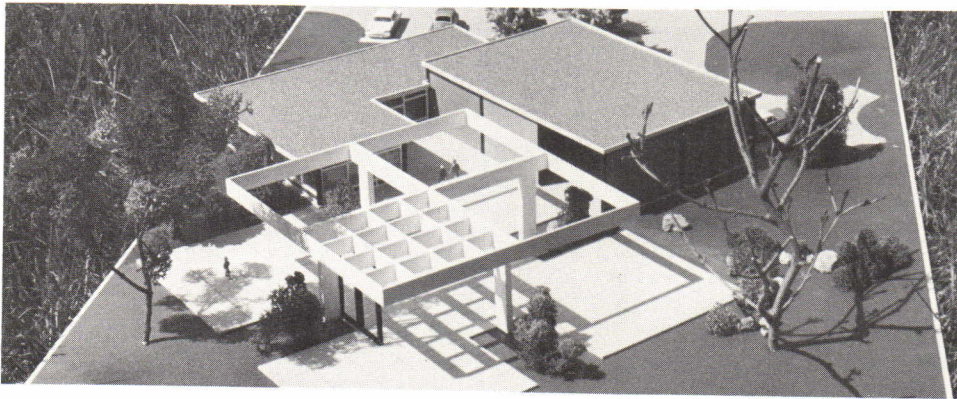
One aspect of recent movements in the philosophy of treatment of emotional disturbances is the prominent role played by *individual differences*, so that treatment now is of the individual within small groups, while most physical facilities are not compatible with that point of view.

The various components employed to form any physical environment have certain meanings to people and can be organized in ways which will convey certain messages to them. Therefore, the physical environment of psychiatric patients can be used as an adjunct in the differential treatment of emotional disturbances. Just which types of physical environment are appropriate in such a treatment program is a problem that remains to be investigated.

A tremendous amount of reconstruction and new construction of physical facilities for the treatment of emotional disturbances is and will be occurring in our country, providing an opportunity to build so that the physical milieu could coincide with other aspects of the patient's environmental treatment program.

Any renovation of the old physical facilities for the emotionally disturbed or building of new ones at this time can easily become obsolete if built in such a way as not to permit adaptation of the inevitable advances that will take place in the treatment philosophy of future years. A concept of maximally-flexible construction of treatment facilities may best meet the requirements of individualized treatment and of adaptability.

The long-range goal of this project is to determine the psychiatric architectural environments which are optimally conducive to the successful differential treatment of hospitalized psychiatric patients. In order to accomplish this goal, we propose to institute an intensive and long-range program of study of the effects of controlled architectural en-



environment upon personality in general, and specifically upon the personality of institutionalized psychiatric patients.

The concepts underlying this research design have implications not only for the development of new treatment methods but for the integration of the fields of psychology and architecture. Architectural research for psychiatric purposes has not formally existed. An initial effort to define "research for architecture" was made in March 1959 by The American Institute of Architects in a joint conference with the National Science Foundation. Investigative efforts have been concerned with the development of technological procedures related to building, and have not been addressed to an understanding of both the physical and emotional needs of building users, and the manner in which technological developments might best be integrated in order to meet these needs.

Social scientists, in contrast, have traditionally investigated man's various needs and reactions to his environment, but have not dealt with the possibilities of construction and manipulation of physical surroundings in order to best meet these needs. The challenge of integrating the fields of architecture and psychology, directed toward the evolution of new concepts in the therapeutic design of psychiatric treatment facilities, could best be met with the development of an inter-disciplinary research center. In such a setting, architects could be given the opportunity to collaborate with social scientists and other specialists in research involving the manipulation of various factors of the physical environment, attempting systematically to discover the social-psychological meanings of such manipulations. To this end, it is proposed to develop a flexible laboratory facility in which a series of architectural environments can be built, controlled, and changed, and whose differential effect upon people can be experimentally examined in terms of:

1) The way in which the various environments to be studied are perceived by well-adjusted and hospitalized persons

2) The various effects which these architectural

environments have on the behavior of individuals and in terms of the individuals' interaction with others

3) Whether such environments can facilitate changes in personality adjustment when coordinated with differential treatment of in-patients, out-patients and patients of day-hospitals.

In order to accomplish this coordination of the architectural environment with the treatment philosophy of any cluster of patients, the following methodological procedure will be attempted.

1) The various components of the architectural environment will be classified broadly and defined specifically by architects, the principal categories of such an environment being: a) enclosure characteristics defined as structure; wall, floor and ceiling planes; degree of open or closed, organized or disorganized space; furnishings; b) light, characteristically defined as quantity, quality, color, hue, intensity, value, etc; c) sound, characteristically defined as frequency, intensity, fidelity, background noise; and d) atmosphere, defined as temperature, humidity, air composition and movement.

2) The various components of the psychological spectrum which form a part of the philosophy of treatment will be broadly classified and specifically defined by psychiatrists and psychologists. Examples of treatment concepts which might be so classified include: the provision of structure; provision of control; the fostering of appropriate sexual identification; conveying acceptance; communicating nurturance; providing for the therapeutic gratification of impulses; intruding of surroundings upon awareness; and forcing of involvement with the environment. An example of the way in which the more specific meaning of a concept such as "structure," from the psychiatric viewpoint, might be determined is presented later in this paper in the form of a hypothetical beginning of a research program.

3) The various specific components of the architectural environment will be classified along certain well-defined psychological dimensions. For this classification, architects, artists, landscape architects,

stage designers, painters, psychologists and psychiatrists can be used, with acceptance of various components of the architectural environment as reflecting specific psychological dimensions to be based on criteria of agreement among these individuals. As an example of how this might be done, we might consider the psychological continuum of "feeling of strength to feeling of weakness." In this case it would be the task of the judges to reach an agreement regarding the various meanings of the components of the architectural variables so that an environment could be constructed which would convey to the patient the feeling of strength. The effects of this environment, coordinated with the more familiar current psychiatric treatment approaches, could then be evaluated with regard to how successfully a feeling of "strength" was conveyed to the patient.

4) As many as possible of these translations of treatment goals into architectural environments will be attempted, both in terms of the qualities of single variables taken in isolation, and in terms of the *gestalt* effect of combinations of these variables. This second approach is most important in light of our long-range goal because, as implied in the enormous literature on *gestalt* psychology, in repeated statements at the Salt Lake City Conference on Architectural Psychiatry, and as Richard Neutra ("Design for Survival") states in his own approach to architectural psychology:

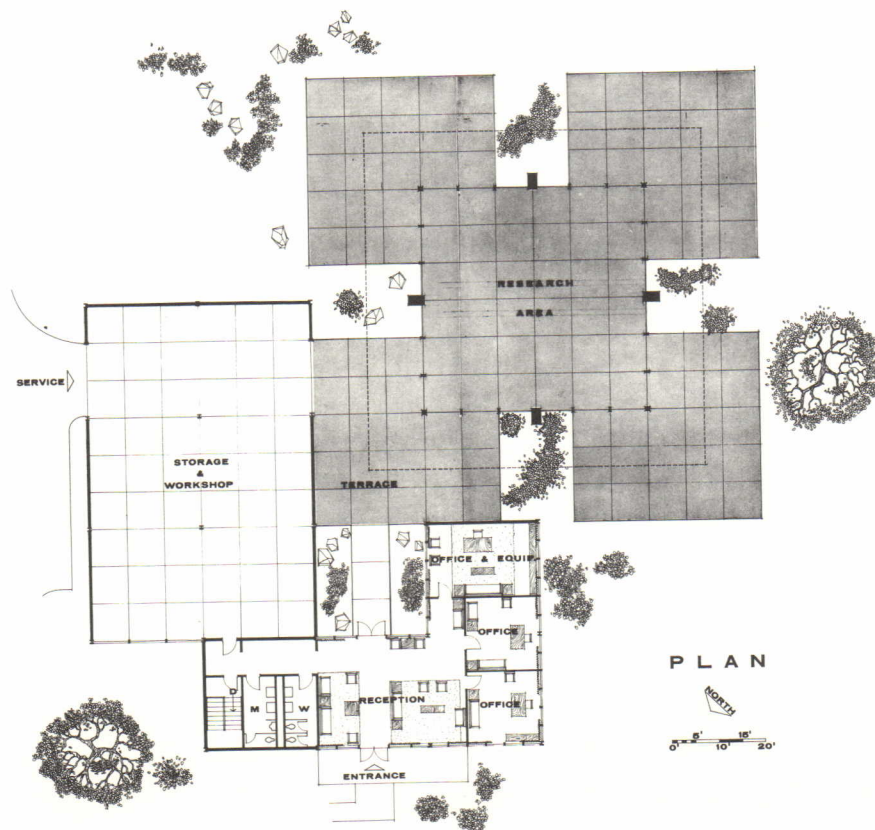
"It is clear that experiments stressing objects of the third group (arrangements and compositions, over-all stimulus combinations such as a room de-

signed for a specific use) will often draw heavily on the findings derived with the first and second groups which contribute elements for composition. But in some instances, the experiments turning on the third group may yield independent results that could not have been obtained by any other means or on an elementary level. After all, the human organism reacts as a whole and responds to the environment as a fused totality in which any one stimulus is hardly separable from the rest. Design is perceived and specifically planned not as the sum of designed elements or of separate stimuli, but as an integration of such stimuli."

The environmental research building is proposed as a research center within the master plan of the Topeka State Hospital campus. Cooperating with the hospital in the design of this center is the Department of Architecture of the University of Kansas. The Research Center will be located in the immediate building complex that will make up a new treatment section of the hospital, and which is now in the planning stages.

The proposed research center building is designed to provide for two principal functional requirements: a) a highly flexible research area, b) permanent supporting and service facilities.

The research area, a clear-span space 48 feet square with overhead clearance of 18 feet, will constitute the heart of the research center building. Here experimental environments will be created. The supporting and service facilities will provide for such functions as reception of participating personnel,



office and equipment space for researchers, restrooms, and storage and shop space.

These two principal building functions, the research area and the service facilities, are conveniently related to one another to facilitate flow of personnel, materials, and equipment, but structurally detached and independent, thus assuming a maximum of flexibility.

Over the research area, a permanent roof will be supported on four columns spaced in a 48-foot square and aligned with the diagonal axis of the compass. Through use of prefabrication techniques, all four enclosing panel walls may be easily interchangeable to provide many combinations of walls, windows, doors, screens, etc. The majority of research area will adjoin outdoor terraces, making it possible to explore indoor-outdoor space relationships as well as experiencing weather, sun, and view orientations from within. It is anticipated that many environmental settings with necessary observation spaces will be created and recreated within the research area. Mechanical services in this area will also be designed with future flexibility in mind. Multiple systems of heating, cooling, humidifying, lighting, etc. will allow the researcher to specify and control these segments of the environment. Plumbing utilities will be made available under the floor slab for future flexibility in the planning of patient living units within the building.

The entire research center building will be made accessible by pedestrian walks from the complex of the new treatment section at Topeka State Hospital.

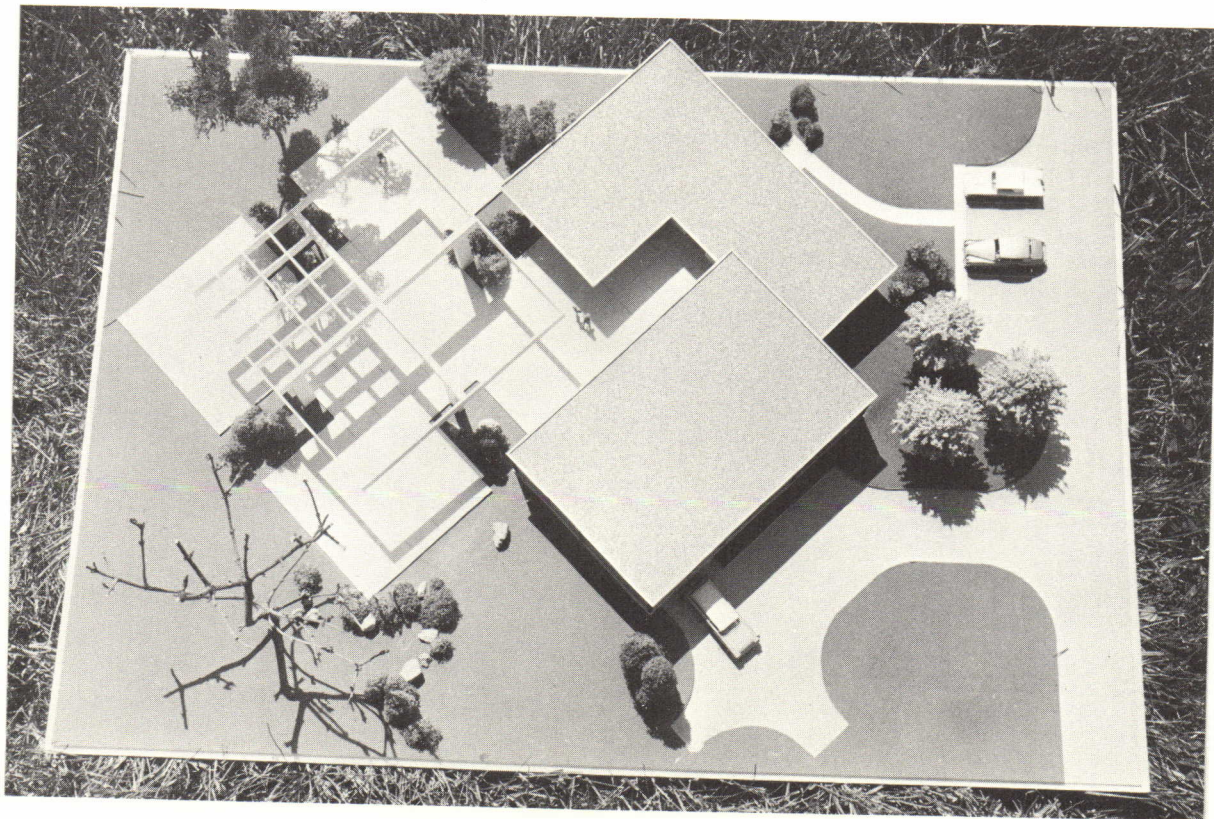
In addition, a service drive will provide easy loading and unloading of materials and equipment, plus parking for approximately ten cars.

The following example will give some idea of a possible first step in a series of hypothetical investigations which could be carried out within the research area we propose:

Let us assume that out of our clinical problems with a certain cluster of psychiatric patients there arises the need to provide them with a well-structured, unambiguous environment. We attempt to carry out such a psychiatric prescription by clear, direct communications to the patients in our interpersonal relations so that, as much as possible, no surplus meanings will be conveyed by our messages to them. We ask them to carry out orderly, concise, concrete tasks that can be accomplished by them, and follow a routine where the patients can predict the outcome of their immediate behavior, can be sure of doing "the right" thing, and where there is no fear of extra, unexpected demands entering the specific tasks under consideration. The problem before us would involve determining how an architectural space could be created for such a cluster of patients which would be consistent with the traditional therapeutic means of providing structure.

We would first ask a group of psychiatrists to describe what they mean by "structure" as prescribed for the milieu treatment of schizophrenic patients (not to be confused with *architectural* structure), as much as possible using words from a long list of adjectives and adverbs given to them. We could then

Aerial view of research building complex. Unit on left is research area with roof removed. Note multi-lateral orientation of terraces, and their proximity to planted areas



identify the adjectives and adverbs which most often occurred in these descriptions and which were most effectively communicative, and list them in a seven-point scale, one end of which has the word selected and the other its antonym, following the model provided in the Semantic Differential Scale of Charles Osgood, George Suci and Percy Tannenbaum ("The Measurement of Meaning"). Having developed such a scale, it becomes possible to ask psychiatrists to rate the concept "structure" on it, in order to convey more exactly their meaning of that psychiatric concept, ie,

orderly	X	:	:	:	:	:	:	disorderly
stationary	:	:	X	:	:	:	:	moving
repeated	:	:	:	X	:	:	:	unrepeated
fragile	:	:	:	:	:	:	X	sturdy
free	:	:	:	:	:	:	X	imprisoned
.								.
.								.
etc								etc

(In the example above, the concept rated would be considered very "orderly," slightly "stationary," very "sturdy" and "imprisoned." Rating of concepts at the midpoint, such as between "repeated" and "unrepeated," cannot be used and therefore other adjectives and adverbs will be substituted for them.)

We can in this manner obtain a profile of the meaning, in terms of the adjectives and adverbs provided, that psychiatrists give to the word "structure." Findings obtained from several psychiatrist raters on the meaning of "structure," plus the most cogent descriptions of psychiatrists regarding that word, could then be passed on to architects who would be asked to use this information in designing and constructing a room. Once such an experimental room would be built by the architects, the psychiatrist raters would be asked to rate, with the same Semantic Differential they used before, the room placed before them. In these second ratings the words "structured" and "unstructured" would also be found among the various adjectives and adverbs and their respective antonyms.

If these ratings should indicate that the experimental room is seen as being more "structured" than "unstructured," and the ratings on the other words significantly coincide with the ratings done on the meaning of the concept "structured" previously obtained, we could assume that the psychiatric notion of providing structure had been satisfactorily translated into architectural space.

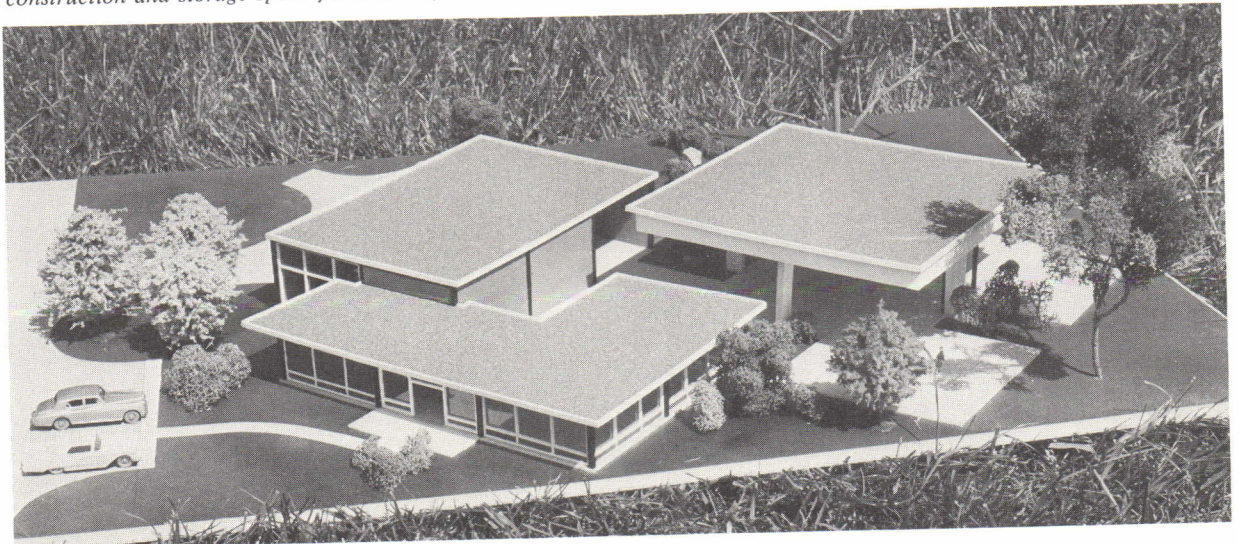
Thus, a meaningful communication would have taken place between the psychiatrists and the architects. Whether this same meaning would be perceived by hospitalized and non-hospitalized subjects would have to be determined by having them rate the experimental room on the first Semantic Differential used by psychiatrists. If the profile of meanings across the various adjectives and adverbs should coincide with that made by the psychiatrists, we would be safe in assuming that the meaning of structure as conveyed by a room had been communicated to the subjects by the psychiatrists and the architects.

Basic research of this nature could well include the various differential diagnoses in patients as variables, could involve changes in perception under altered conditions of consciousness, or could be concerned with the effects of the various drugs now used in psychiatric treatment. Research on learning with hospitalized and non-hospitalized subjects, on the more molecular-physiological components of behavior, on group interaction processes, or on the effects of crowded living conditions as found in slums or prisons, are examples of the investigations which could also be carried out in an inter-disciplinary, massive attack on the problem of man in his environment which would be feasible in the setting and research program we have envisioned.

Dr Berger was formerly Senior Clinical Psychologist at Topeka State Hospital.

The authors wish to express gratitude for the continued support of Professor George M. Beal, Chairman of the Department of Architecture, University of Kansas.

Structure on right is research area; at bottom left is office space in connection with research and at top left is construction and storage space for assembly of environmental settings





Commission on Architectural Design, Morris Ketchum Jr FAIA, Chairman
Committee on Hospital Architecture, Matt L. Jorgensen AIA, Chairman

Standardization of Hospital Bedroom Electrical Circuits

*(This material represents collaborative team effort
by staff members of Kiff, Voss and Franklin—The Office of
York and Sawyer, New York City.)*

WITH PATIENT WELFARE frequently dependent upon the uninterrupted operation of heart pacers and other equipment at the bedside, hospital clients have a right to expect architects to adopt a reasoned approach to electrical patient-room circuiting.

Yet this area of design is essentially left to chance when an architect has not thoroughly studied office practice for patient bedroom wiring, and particularly when he employs different electrical engineers for various hospital work.

When the gradual proliferation of patient room equipment—electrically-operated beds, oxygen tents, special suction apparatus, cardiac defibrillators and respiration assisters—finally culminated in the addition of hypo-hyperthermia equipment to the bedside complement, it became obvious to the Office of York & Sawyer that the informed adoption of a standard on patient circuits was imperative.

After a good deal of study, the office adopted a standard which is followed by each electrical engineer doing work for the firm. The fundamental aim of the standard is to provide at the head of each bed receptacles powered by three separate circuits, including a single receptacle powered by its own individual circuit. The latter outlet is designed to be reserved for special-treatment equipment. It is planned that the circuit feeding this single receptacle will ordinarily be connected to the Critical I System (NFPA), powered by the emergency generator. However, because of varying client reactions to emergency system requirements, no standard office practice can yet be adopted for Critical Systems I and II functions.

The study began with an investigation of bedside procedures in hospitals. On the basis of the information gathered, a tentative draft standard was adopted as a basis for discussion. Collaborating electrical engineers provided wholehearted assistance in criticiz-

ing the proposal and offering many of their own independent suggestions.

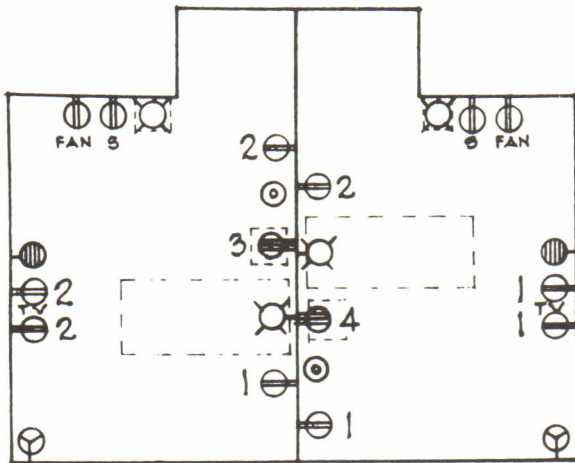
The standard, adopted through this procedure and shown on room diagrams, provides that four-bed rooms will have four 20-ampere circuits: two to supply the single receptacle between each pair of beds, and the other two to be wired alternately to ten receptacle outlets. For identification, the first two circuits are marked Nos 3 and 4, and the latter circuits are designated as 1 and 2. Circuit 1 will supply a duplex receptacle at the head of each bed and one at the window side of the room. Circuit 2 will also supply a duplex receptacle at the head of each bed and one on the wall at the windows. The bedside receptacles supplied by the No 1 circuit will be installed 1'-6" above the floor, while the alternate set of duplex receptacles will be installed 2'-6" above the floor, or about the height of the top of a bedside cabinet.

To insure that the single receptacle will not be used for routine functions, it is to be installed in the communications console between the two beds.

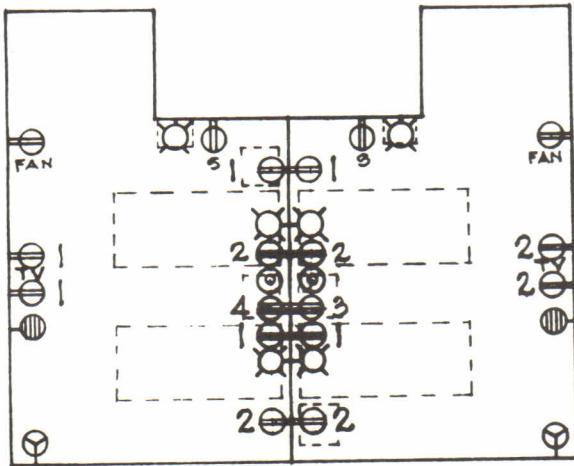
For two-bed rooms back to back, the standard provides essentially the same arrangement, except that in addition, circuits 1 and 2 will also feed television electrical receptacles—seven feet above the floor—on the wall of the room opposite the head of the bed.

Single-bed rooms back to back will also have four circuits, except that in this case the circuits 1 and 2 will be wired alternately to four receptacle outlets in each room, and are permitted to serve in addition two additional lighting or convenience outlets in the room.

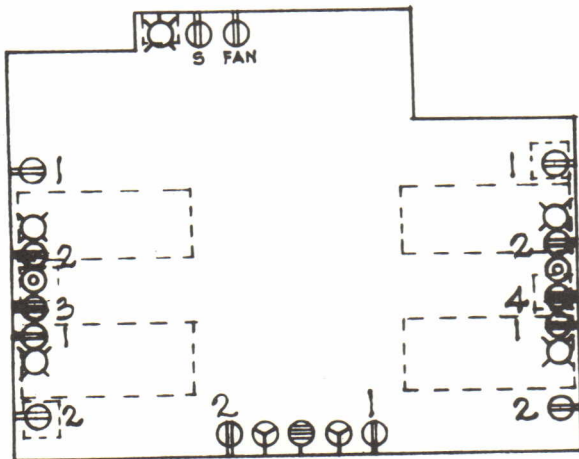
Otherwise, general circuits serving room lighting, fan outlets and lighting, and receptacles at lavatories shall be supplied by circuits other than the four re-



ONE BED ROOM
BACK TO BACK



TWO BED ROOM
BACK TO BACK



FOUR BED ROOM

served for bedside receptacles. The standard also provides alternate means of wiring for those situations in which individual room airconditioners are to be installed. This circuiting may be either 208-volt single phase, or may utilize a three-phase home run of three #8 wires in a 3/4" conduit, which may then serve six instead of two airconditioner outlets. When this method of wiring is used, a two-pole 20-ampere circuit breaker is required at the outlet instead of at the distribution panel. A standard combination fitting is available for the outlet installation.

In order to insure the availability of adequate future capacity, the standard makes the following recommendations to the electrical engineers:

1 Size each lighting panel and its feeder on the basis of the total connected lighting load plus 70% of the connected receptacle load, based on an assumed load of 1,000 watts per receptacle circuit.

2 Size each feeder serving two or more lighting and receptacle panels on the basis of the total connected lighting load plus 50% of the connected receptacle load.

Service equipment is to have capacity for lighting and receptacle load based on 70% of the connected lighting load, and 35% of the connected receptacle load.

In all cases, of course, the final sizes should be checked to assure that they are equal to or exceed code requirements.

Although these calculation methods may be considered conservative in the light of present-day practices, the critical nature of hospital usage and the general trend toward increased use of electrical equipment and appliances is such that, while the firm anticipates that the spare capacity provided will be adequate for future flexibility, it intends to watch developments so that its requirements may be raised even further if this should prove advisable.

The standard also provides that a maximum of two circuits shall be placed in each home run. This is intended to allow pulling in two additional circuits, should they be needed in the future. This maximum does not apply to the general circuits in the room, in which three circuits may be combined in each home run. Panel boards are required to provide spare circuits on the basis of one for each four-bed room; one for two two-bed rooms; and one for two one-bed rooms.

In a supplementary note, the standard makes a plea for standardization of finished plates, suggesting that uniformity of material, finish and color is desirable. It points out that in the same building, there may be found a combination such as stainless steel switch plates, brass finish clock hangers, bronze tone outlet covers, base paint nurses' call boxes and plastic telephone outlet plates.

Another note indicates that a decision should be made by the hospital administration as to whether general room lighting is to be controlled by a switch at the room door, or by the patient who might control up-lighting at each bed.

The standard takes the form of a numbered office memorandum to be used in connection with a standard office drawing. ◀

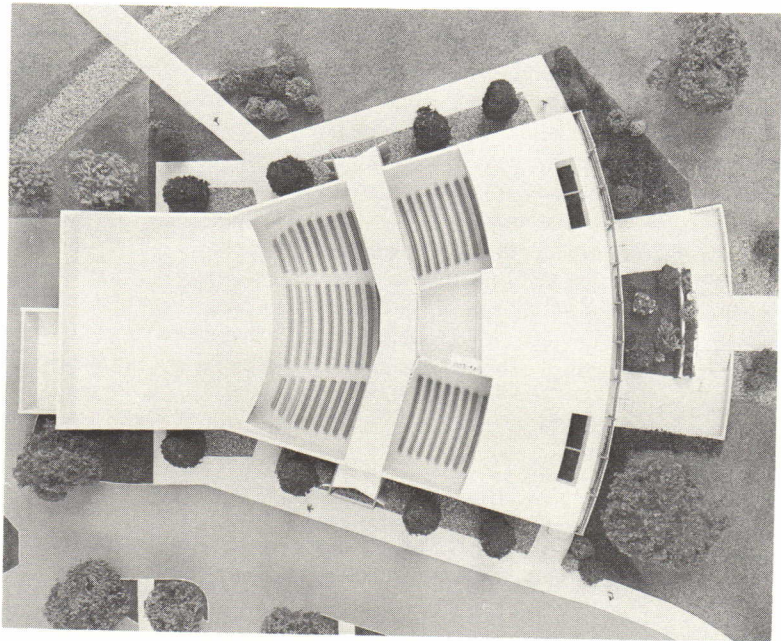
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School Plant Studies

BT 1-54

“Still Sits
the
Schoolhouse”
... but
less so



HAROLD B. GORES

President, Educational Facilities Laboratories

*Adapted from an address given before the
Georgia Chapter AIA in April 1963*

One of a series of papers prepared by members of the AIA Committee on School Buildings, and by selected specialists, to make laymen aware of school building problems and trends and to stimulate discussions. They are not intended to be definitive last words and carry only the authority of their respective authors. New subjects are being worked on and contributed articles are welcome. Reprints of these non-technical articles are widely distributed to educators and interested laymen. One copy of each current issue will be sent free of charge—additional copies 10¢ each.

THESE ARE VIVID TIMES. Because they are so vivid we suddenly find that the schoolhouse holds increasing interest these days. Whether attributable to Sputnik or not, is anybody's guess. But it is clear now, even to the man in the street, that we are in an international education race; that in the long run it won't be the hardware possessed by the military that will save us, but the amount of information possessed by the people. If education is becoming the first business of a modern state, it becomes very important to everybody that schools work well.

Recently I read a little book called "The Race to the Year 2000." It is a small book—a kind of poor man's Spengler's "Decline of the West"—in which the author tries to predict what will happen between now and the year 2000. One of the things in the book that struck me most vividly was that by 2000, one-half of all mankind will be Chinese and Russian. By that year, which many of us will observe, only about five per cent of mankind will be people we Americans call Americans. The United States may then bear the same relation to the world's economy that Switzerland bears today to Western Europe—a small band of decent people who succeed and prosper solely because of their industry and inventiveness. Since this may be our role in the year 2000—the Switzerland of the globe—our schools have got to work and work well.

Margaret Mead, the anthropologist, put the problem best when she said that in a simple society, where change is slow, the culture can be handed down economically from parent to child, father to son, mother to daughter. The whole bundle of social

agreements—what's U, what's non-U and what's taboo—can be transmitted within the family and tribe with hardly the loss of a speared fish.

But when life gets complicated by the accumulation of more facts and more non-facts, it becomes more economical, and therefore more necessary, to assign the transmission of the culture to special people called teachers.

Miss Mead goes on to say that when life gets very complicated, when cultural change is exceedingly rapid, having older people called teachers teaching younger people called pupils is too sluggish an arrangement. In periods of rapid change everybody must learn from everybody else—the young from the old, to be sure, but also the old from the young.

Consider the role of, say, a sixth-grade teacher today. It was only ten or fifteen years ago that a sixth-grade teacher could answer about every question a sixth-grader was likely to ask. How many legs has a grasshopper? What's the capital of Montana? How far away is the moon? Teachers had stored in their heads the encyclopedic facts of life and these were enough to get them through the day without loss of face from not knowing the answers.

Today, no teacher can be sure. There may be lurking in the back of the sixth-grade room an eleven-year-old demon who has been watching television or reading the more solemn columns of the newspapers and is ready to pounce with the question, "Teacher, the Russians are going to use solid fuel to get to the moon. Why are we sticking to liquids?"

If the teacher is a normal, well-adjusted, educated person, she won't have the slightest idea. She'd better ask the kid what he thinks and remember what he says. The situation requires that everybody learn from everybody, and the youngster must learn from everybody and everything. It may be just a shadow on a tube, a voice on a tape, a picture on celluloid; the point is he can now acquire information that doesn't have first to pass through the mouth of an older person called a teacher. This getting of information from inanimate sources is causing a revolution in schoolhouse design.

There are very sensitive schools, generally on islands in our culture here and there, where people worry about how efficiently the schools operate and to what extent a child can pursue certain parts of his education individually rather than always have it filtered to him through another person. We now see spaces devoted to independent study for those youngsters who are highly motivated, who have a thirst for knowledge. Last January a school opened in Blackwell, Okla. (the Blackwell Senior High School designed by Caudill, Rowlett and Scott) where *every single one* of the school's 600 students is provided with his own individual work place. These work places are physically arranged around the informational materials that students use to learn from, each in accordance with his own degree of curiosity, his own level of ability and his own pace of learning. The building that contains these work places is the central design feature of the entire school—the axis of the campus—the center from which all other activities radiate. Wasn't it Einstein who asked why

"The sensible thing to do is put the acoustic surface on the floor." Carpeting, used throughout open-plan school as an acoustic aid, at Andrews High School, Andrews, Texas. Caudill Rowlett & Scott, architects

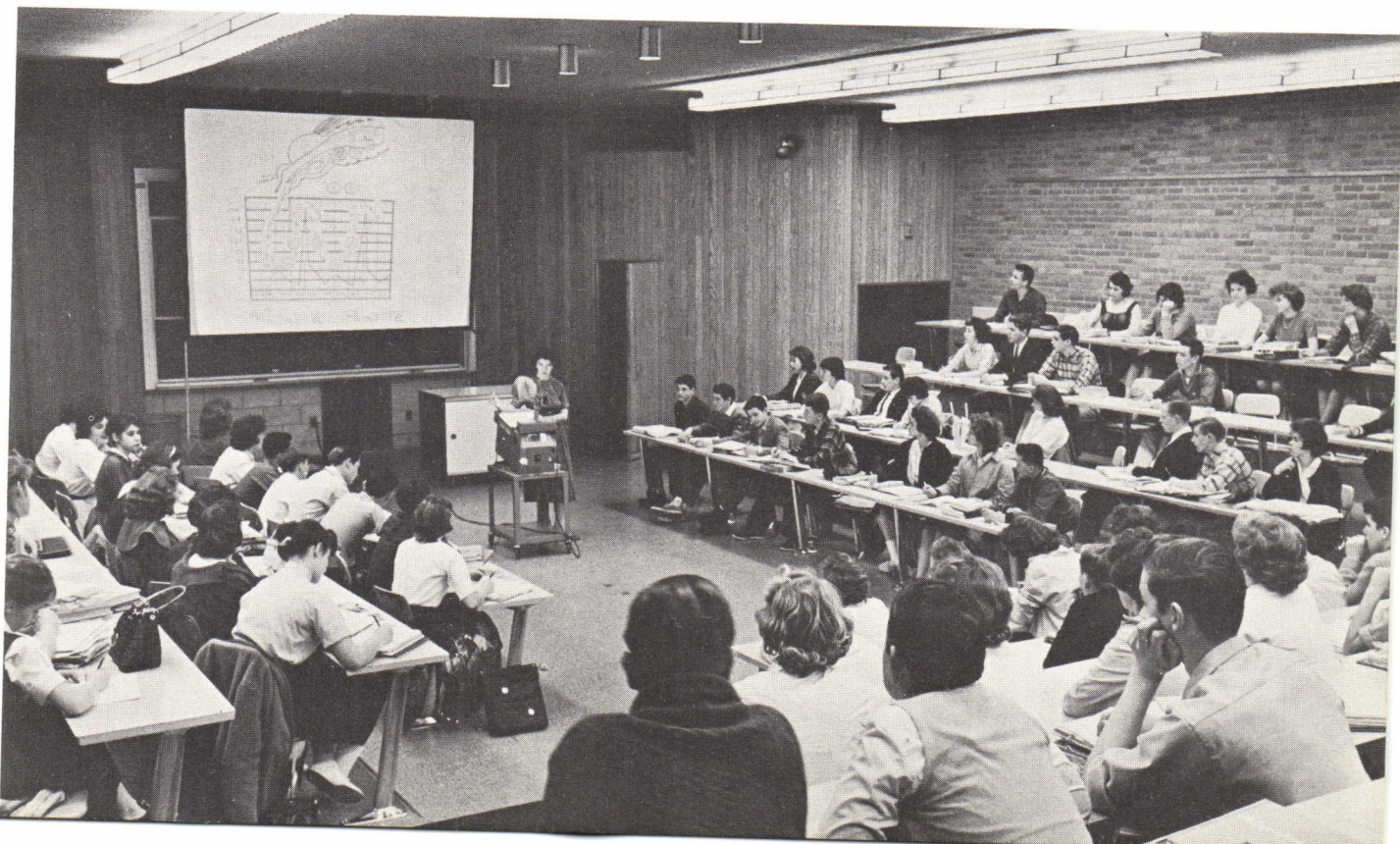
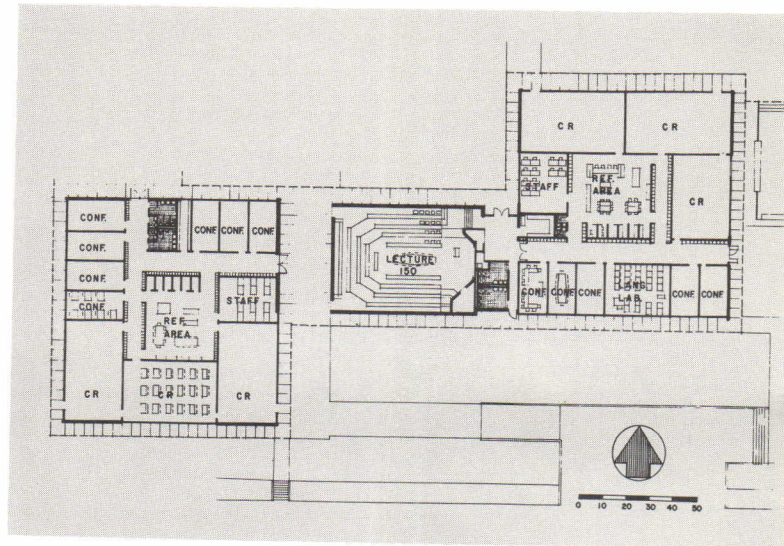




"You can create many types and sizes of sub-spaces, depending on what tasks a youngster should be doing and how many should be assembled at once." Wayland Senior High School, Wayland, Massachusetts, has its languages resource center and a language laboratory; space for large groups is provided in lecture hall, resource center has individual carrels around perimeter. The Architects Collaborative

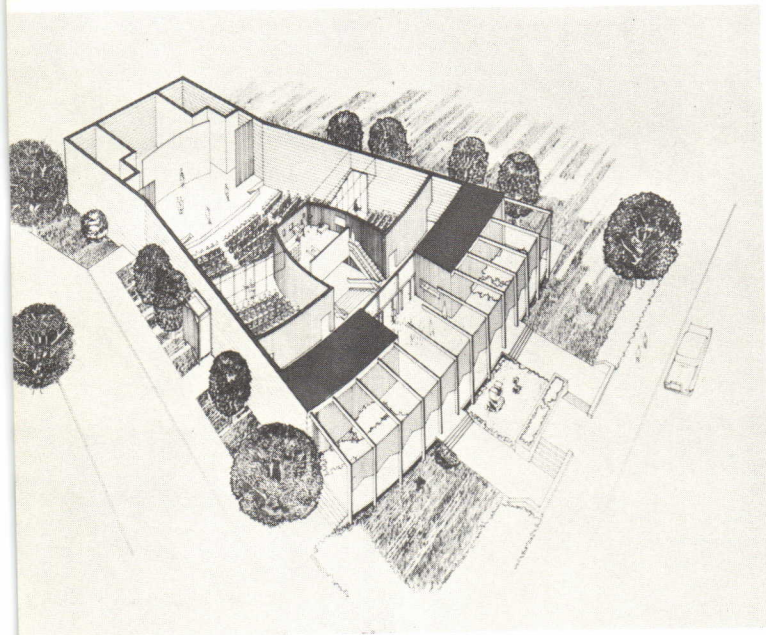
schools are so operated that by the time a child has left grammar school, he no longer has a thirst for knowledge? If we are to keep them thirsty we must turn them loose to learn at their own pace.

Let me recall to your mind what the old school-house really is. In general it is a big box filled with little boxes, of equal size, called classrooms. In some cities there are standards that say how long, how wide, how high the box is; frequently 24 feet wide and 32 feet long and 9 feet high. There are two schools of thought. One group likes square boxes, another group likes rectangular boxes, and bitter words can be exchanged over square versus rectangular boxes.





"If you need a partition in one of the very sensitive areas which demands visual or acoustic privacy, don't hesitate to use an operable partition." Operable walls in new auditorium of Boulder City (Nevada) High School mean that auditorium can be carved into instructional space, used most of the week. Partitions cut off noise from band practice on stage from instructional spaces in rear alcoves. Zick & Sharp, architects and engineers



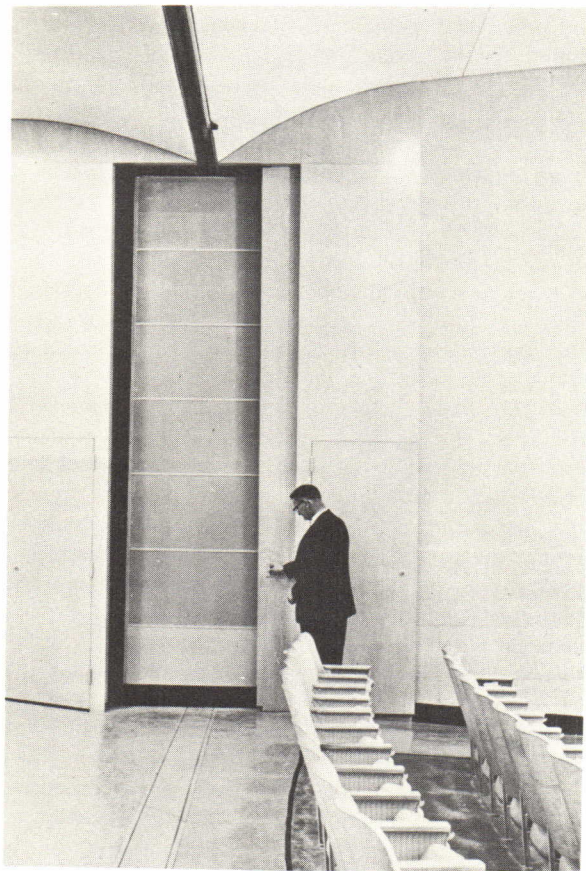
The very architecture sorts the children. It helps the administration to establish groups of a uniform size—twenty-five pupils if the community is rich, thirty-five if it is poor, and fifty if it doesn't care. This creates a problem. Let's say you have two second grades, and in one of the boxes (24 by 32 by 9 feet) you have the best teacher in the country—an old pro of fifty years of age who has a master's degree and can teach little children to read and to love to read. She's great.

On the other side of a four-inch partition is the next 24 by 32 by 9-foot box. This is the other half of the second grade. In this box is a teacher who graduated from Teachers College last June and was hired because she was a good scholar. In August she met a young man, in October she had a ring, in December she was married, in March she was pregnant, and in June she was out.

On one side of the four-inch partition the children had the greatest teacher in the country, and only four inches away the children had a teacher who couldn't even maintain order.

Query: Did those two sets of children have equal educational opportunity for one whole year of their lives?

In addition to classrooms, each school may have a cavernous auditorium that may not be in use more than 15 per cent of the time because its use is so specialized; a gorge-and-go cafeteria; a hangar-like gymnasium; a library (if there is one) will be the size of



two classrooms; a kindergarten (if there is one) will be one-and-a-half classrooms in size. These are the rules of thumb by which these eggcrates are put together.

If you walk through this school and take a fresh look, you would say that the design of the place derived from two desires—indestructibility and anti-sepsis. The floor is obviously chosen so that anything thrown down, or up, on it can be dealt with by the janitor with the greatest ease. The desks have Formica tops so that no errant scholar can unsheath his jack-knife and leave any evidence that he had ever attended this place. There is factory lighting overhead.

I have been in schools that really don't have to be swept. They could be hosed down. The nature of the places showed that they weren't designed around people—around little children and the needs of the teacher—but were essentially the solution to a storage problem confronting the administration. Cost per square foot was obviously the criterion that set the tone of the environment—sterile, reverberative, reflective, hard—from which the youngsters get their notion of what America is about, and worse, what it thinks of them.

Many school systems I have visited are enchanted by what they call "standards." Standards give one a comfortable feeling. Too often "standards" mean one never has to rethink the problem again. It is decided, once and for all, how long a classroom is, and that is standard. When schools are frozen, the

culture, too, gets frozen. In a time when cultural change is all around us, when all cultures are in a fluid state, it behooves us not to freeze the school-house.

Here and there, though, I see some departure from stereotype and, interestingly enough, the structures don't cost any more.

The first great change I see is a change in attitude. In the past, we have looked upon the school-house as a solution to today's enrollment problems: we have so many children and we need so many seats. But more and more, communities are now realizing that the new building will be standing, if it is well-built, to the year 2020 or so. Indeed, it may be only at halflife in the year 2000. The building will live through a lot of history if the next sixty years are anything like the last sixty. For the first time, we are getting a sense of prophecy in new schools. The architects and educators who are now designing them are giving consideration to the people who are to come after, rather than worrying only about how to solve the immediate problem.

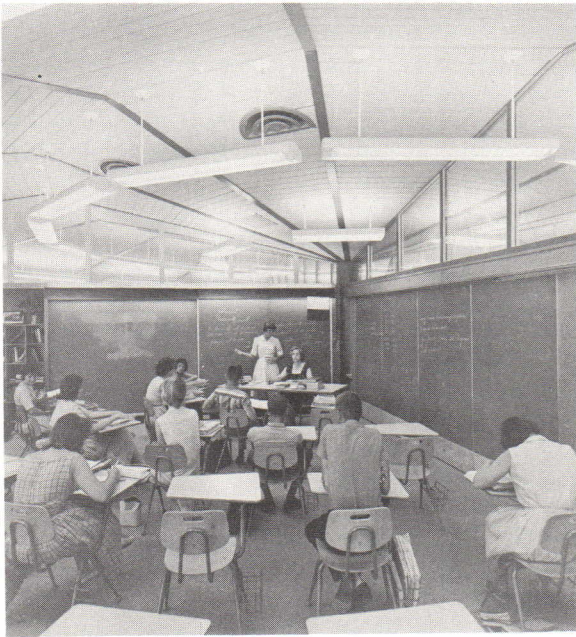
At EFL we get some interesting mail which reflects the new perplexities. Frequently a letter will ask:

"We are going to be building a new high school. How do we design it so it won't be obsolete in twenty years? How do we design it so we won't have to take a hammer to it in ten years?"

"We are right in the middle of reevaluating our program. We are going to be making shifts in how we group and arrange the students. How do we design a school when we aren't sure how we want to arrange the youngsters?"

These are hard problems. The architect has a feeling of guilt when he designs flexible, mutable, malleable space. Someone will notice that it isn't particularly specialized and will say, "What's the matter—don't you know what a school is?" The educator has a similar sense of guilt because someone will say, "Why did you leave this space general? Don't you know what education consists of?" So it is with all the factors that freeze the details to fit this precise moment in time. The more precisely you fit 1963, the sooner your building will be obsolete—unless, unlike everything else in our society, your schools aren't going to change. But we know they are changing.

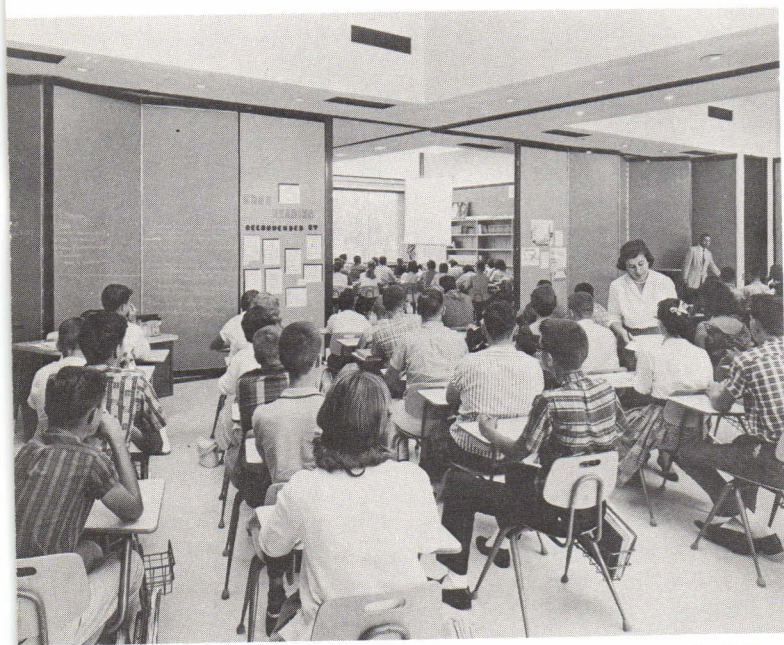
In 1958, I was superintendent in a small New England school system. We had only 18,000 pupils. But among them were two very bright boys who competed against each other all the way through school. In their senior year in high school they took the Westinghouse Science Talent Search Examination in which 25,000 youngsters competed. Surprisingly, these two boys came in first and second. *Time* magazine called up and said, "This is the first time in the seventeen-year history of the Westinghouse Talent Search that one high school has won first and second places. How did you do it?" The answer was a simple one: They were two bright students, and *the schools got out of their way*. For example, when the boys were ready for calculus, which was in their junior year in high school, they got it.



Another example is biology, which is always found in the tenth grade. Our schools are traditionally set up in such a way that it is difficult, if not impossible, to give students access to subjects for which they are ready. We just don't go far enough in giving access to the youngsters who, for one reason or another, depart from the norm. However, schools are now coming along which will "get out of the way."

As I move among teaching groups I hear less talk about teaching and more talk about learning. Most schools are organized by standard groups—the youngsters confined to one room with one teacher all day; or, if it is a secondary school, the groups interchange every forty-five minutes or whenever a bell rings. But this standard groupism is breaking up. Now we are beginning to ask for spaces to which one child can go independently—for maybe an hour a day, or more if it is safe to let him; or small seminar group spaces that are appropriate for perhaps ten youngsters, where the cross-fire of discussion around the table can give the youngster the kind of experience he never gets if he is in a classroom of thirty-five youngsters where most conversation is in the recitation pattern of question-and-answer. We see some schools coming on the boards with designs for one-, ten-, thirty-, one hundred-sized spaces.

It is very difficult to have these spaces unless they are fully utilized. Therefore, we are getting requests for ways to get high multiple use of space. You can create many types and sizes of sub-spaces, depending on what tasks the youngsters should be doing and how many should be assembled at once. Recent developments in high-performance operable walls make this possible. Today's operable walls can be moved at will and at once, to provide immediate flexibility and acoustic privacy. Last year a new instructional center, a subdivisible auditorium, was opened in Boulder City, Nev. Unlike most auditoria which are empty, echoing caverns for 85 per cent of the time, this one can be used for large group instruction throughout the day. Electronically operated movable walls separate two 100-seat sections from the 300-seat central body of the auditorium. The walls, made of rigid steel sandwich panels with an insulative filler, weigh nine pounds per square foot and stop 40 decibels. A four-inch brick wall can do no better. This means that a class in history or English can be taught on one side while a band practices on the other, with absolutely no acoustic interference. At the turn of a switch, the original large space can be recovered within two minutes. Potential utilization of the facility approaches 100 per cent and the superintendent says it has saved the building of five additional classrooms. Other types of operable walls at Chicago Teachers' College North are used to subdivide thirteen instructional areas into smaller ones. There they have made possible an increase in the utilization rate of classrooms from an estimated 65 to 85 per cent. Some kinds of operable wall leak sound, but you can get walls that do not. About \$5 per square foot will stop the ordinary sounds of instruction. If you have to stop more sound, it will cost more money. If you want to stop the sound of a band, it can be done for around \$20 a square foot.



Operable walls in action at Sarasota Jr High School, Sarasota, Florida

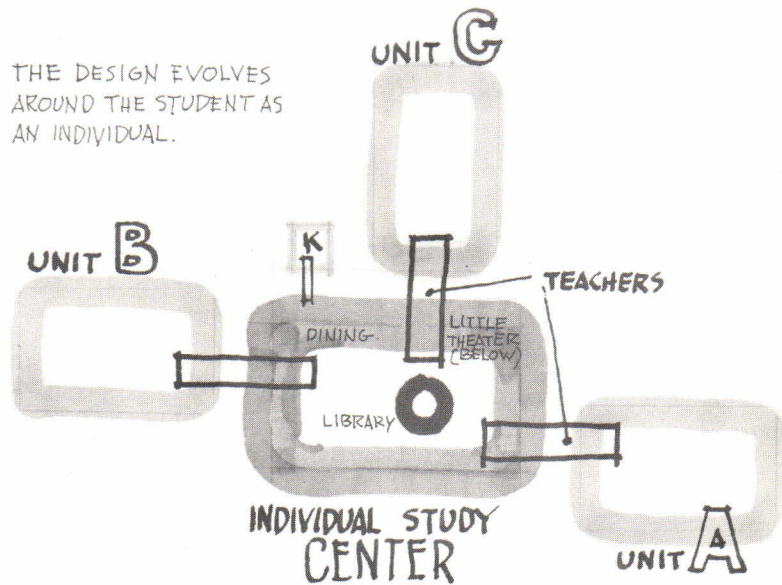
Part of the problem in the design of schools (as with the curriculum) is to *get out of the students' way*. In the old days of stimulus-response, behavioristic psychology, we had everything so nicely planned we knew exactly at what grade level everything should be taught. Even today, in most of America, a student takes algebra in the ninth grade. If he is ready for it in the eighth grade, that's too bad. And if he isn't ready for it in the ninth grade, that's too bad; he takes it and flunks it.

One of the great changes coming is in the nature of walls themselves. The first one, which everybody seems to embrace, is that interior partitions shall be non-bearing, acknowledging that some day someone is going to take a hammer to the place and change its interior. The difficulty is that so many people put in cheap partitions and then say that since they are cheap they can be broken down. But people have a sense of guilt about taking a hammer to a wall—especially if the building is on a twenty-year bond and isn't paid for yet.

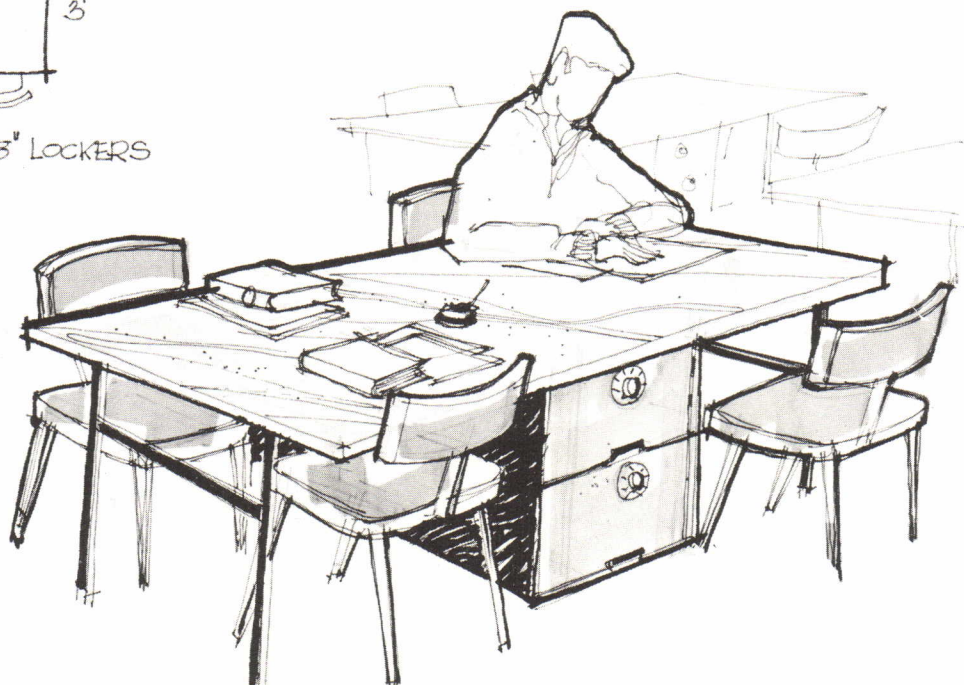
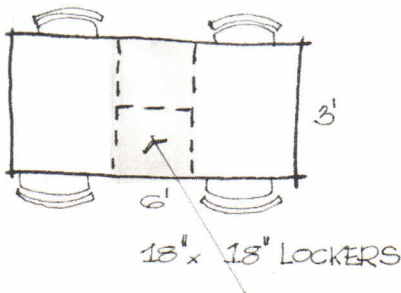
The taxpayer's memory is such that if you say you need a small appropriation to alter the partition, he says "Who put it up there in the first place?" But at least, if the interior partitions are non-bearing they can be taken out with the least cost. But if you can move to a kind of movable partition, which could be snapped in or out over a summer or a vacation, you will save money in the long run. If the need for a partition happens to be in one of the very sensitive areas of the school which demands visual or acoustic privacy, don't hesitate to use an operable partition.

One of the places EFL is working is Puerto Rico. The Puerto Ricans want to cluster four classrooms around a central library-like space, which will be the "toolbin" and will serve the four classrooms. Right now the classrooms are nothing but 26-foot square cement boxes—but by moving to the cluster, the Puerto Ricans will be ahead of almost anything we have in this country.

There is a general move toward change in school-house design. I know of one "middle school" (which used to be called junior high) in which 50 per cent



150 units like these provide a home base for each of 600 students in the Individual Study Center, focal point of campus at Blackwell Sr High School, Blackwell, Texas. Caudill Rowlett & Scott, Architects



of the academic space is going to be library-type—not library, but library-type; a great zone of space.

Today there is pressure on the schools to turn out youngsters who know more than youngsters have ever had to know before. Yet there is a movement toward amenity, toward treating the environment as though it were cast up for people we care a great deal about. We've never put schools together that have said to the child, "We think you're very important." Most of our schools say to him, "We think you're destructive."

Among the new things is acoustic, insulative floor covering. There is such a cultural guilt about saying "carpeting"—but look at the economics. Every study shows that carpeting can be maintained for about half of what it costs to maintain a surface that has to be waxed. In a six- to eight-year period it pays for itself in reduced cost of maintenance.

The floor is the chief reverberant drumhead of the room. To stop the noise of scuffing, scraping of chairs, things dropped and sound bouncing off the floor, the sensible thing to do is to put the acoustic surface on the floor. What we usually do, though, is put it on the ceiling. We put a blotter on the ceiling to catch sound bouncing off the floor. This is like putting an ambulance at the foot of a cliff.

Andrews High School, Andrews, Tex, has carpeted floors throughout the entire building because of the importance in its open plan design of trapping sound at its source—the floor.

In the opinion of Dr L. P. Herrington, an authority in thermal environment, use of carpeting can save five per cent of fuel costs. But though carpeting can lower fuel costs, can help schools get more light for their electric bills, and can quiet surroundings acoustically, it is difficult to convey to the general public the economic feasibility of such floor covering. The public just won't believe it. It would appear that the only place in the school where acoustic, insulative floor covering can be used—where people will understand—is the library. Nobody fights a book, and everybody agrees that library acoustics should be good, so libraries are getting carpeted without controversy. But for other spaces, our cultural attitude toward carpeting as a status symbol will have to change before it is politically safe to give children its benefits.

And this leads into climate control (or airconditioning, as some say) as our schools move from 1000-hour-a-year institutions toward year-round use. Airconditioning is an example of those so-called amenities. If it is planned for in the original design of the building, it can be had at little extra cost. Sometimes, even, it can be had at less cost than a traditionally designed non-airconditioned building. There is a high school for 750 (eventually 1250) students in McPherson, Kan, totally airconditioned, that cost \$11.79 per square foot. That is \$2.11 per square foot less than the average cost of twenty-two other conventional schools in the area, built about the same time. The key, there, was in the compact hexagonal design. Interior classrooms, made possible by the mechanical ventilation, reduced the perimeter and saved some 20 per cent of total wall space.

That brings us to the question of windows and glass. It is pretty clear that windows bear the same relation to light that fireplaces do to heat—the window, essentially, is an esthetic matter. The amount of exterior glass is being reduced in schools. If glass is "going out the window," we should bring it in the door. We don't begin to make enough use of interior partitions of glass.

I'd like to say a word here about educational specifications. At the moment, our architects are not getting hard enough questions asked them by the educators. Educational specifications tend to be confined to telling the architect what to do about height of the drinking fountains. What the architect really wants to know is, "What are you going to be *doing* in the place?"

New York University is building a new school in Washington Square, where land is \$750,000 per acre. The educational specifications, or rather the instructions, they gave to I. M. Pei AIA went like this:

"We can't afford a site; we can't afford a playground; so cover the site with the building. But we want our site *back*—that is, the play space we would have had. So don't pile the building up on one corner, leaving a black asphalt playground surrounded by a hurricane fence. Let the building rise up so that we have several zones of space out of which we can snap, at will and at once, the kinds of spaces we want from week to week—day to day—and in some instances, hour to hour. Give us our playground by putting it on the roof where we can afford it."

(For the rooftop, EFL has encouraged the development of synthetic turf which looks like and feels like grass, but never needs mowing, sowing, reseeding or resting.)

Perimeter classrooms lead out onto balconies which provide outdoor work space for each classroom. It is quite possible that some day you may approach this building in its high-rise setting, and see it literally alive from top to bottom with the shrubs and flowers the children have planted. Even 80 feet in the air a sunflower is a sunflower, and the big city could use a few to diminish its brassy, glassy facelessness. There will be a good-sized tree planted in the center of the building, and the building will circle the tree. Truly, this school will bring chlorophyll and oxygen back to the city.

In sum: Build schools that function to the maximum. Encourage school boards to accept clustered space rather than boxes strung along the corridor like coaches in a train. Encourage amenity—the child will rise to his environment. Encourage flexibility—it's a long way both to Tipperary and the year 2020. I don't know any state where what I have described is the general pattern. But things are happening on islands here and there in this country. If we get enough islands started—maybe one school here and one there that break out of the lockstep—we're on the way to what Katherine Lee Bates, a school-teacher who wrote "America the Beautiful," may have meant when she wrote, "Thine alabaster cities gleam, undimmed by human tears." The children sing it in school; some day they should be living it. ◀

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The Variety of Scale by Cecil D. Elliott

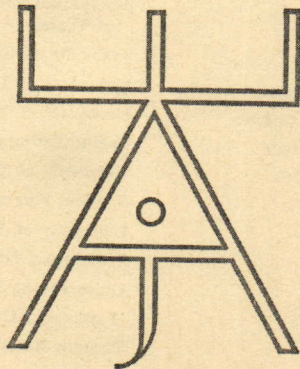
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The Variety of Scale

by Cecil D. Elliott, Auburn University

It is a truism that the essential qualities of a work of architecture cannot, since architecture is a visual art, be fully conveyed in words. No one would seriously maintain that this absolves those whose business it is to write or talk about architecture from the obligation to use words with some regard for exactness. Yet all too often we behave as if it did; certain words are bandied about as if all were agreed as to what they meant at any time, whereas in fact they may mean different things at different times, and even different things to different people at one time. Cecil Elliott here takes up the case of one such word, a small but much-abused one, isolating four distinct phenomena which it can denote in an architectural context and pursuing his inquiry beyond the realm of semantics to consider their practical implications for the designer.

About a dozen years ago at a leading school of architecture, a favorite criticism among the students was this statement, delivered in solemn and reproachful tones: "The building just doesn't have enough scale." The accusation could hardly be answered. It implied that scale was a quality to be desired; at the same time it referred to scale in terms that were quantitative rather than qualitative. Perplexed, the accused could only ponder the nature of this strangely variable absolute.

Even now the word "scale" is used with little consistency in the often formless jargon of architectural criticism. When a knowledgeable person says that a building "has scale" or is "in scale," we learn little beyond the fact that the speaker is pleased with the relationship of bigness and littleness in the design and feels this relationship harmonious. Yet one man's idea of proper and

fitting contrasts of dimension may be discordant to another.

There is a natural and healthy inclination among architects to explore areas of disagreement, but whenever they deal with scale they deal with several different phenomena. Each of these can have many meanings, and, quite naturally, as one's comprehension of scale grows, the connotations of the word broaden and its definition becomes more difficult.

Certainly there are almost endless evidences of different sorts of scale phenomena. The cool and reverberant interior of a cathedral and the jangle of highway noises heard in a sequestered garden are but two examples of scale characteristics involving senses other than vision. And there are especially involved forms of visual perception: Courtyards and city squares seem to have the same kind of scale relationship to the enclosing facades as the mass of a building has to its sides, but when an outdoor space is not clearly bounded, as in open country, it is difficult to judge the way in which we perceive and evaluate it.

Because they are simpler (and the problem is already complex enough), let us consider only matters involving the scale of seen objects.

Graphic Scale

Unfortunately, the architect cannot escape problems of scale in even the most basic and routine operations of his craft and the simplest aspects of the scale phenomena.

If, on an architectural drawing, an eighth of an inch represents a foot or one inch represents 100 feet, a comparatively simple and consistent

system of representation is used. It is truly scalar in nature. We know that a drawing made from an existing building will be a limited picture and that the nature of the building will be altered when it is thus reduced in size. These are handicaps that we tolerate as inevitable in the process of changing reality into a representation. Nevertheless this usual explanation does not acknowledge the real operational relationship between the architect's preliminary drawings and a building: The architect predicts the appearance of a building from the tiny trials made at his drawing board, and to some extent he is unavoidably occupied with the design of drawings as such. The completed building itself often suffers from the limitations of the size of its drawings, for it undergoes obvious changes when constructed at a dimension that is ninety-six or 1,200 times that of the drawings from which design decisions were made.

Personal Scale

A building, its surroundings and those people who view it within its surroundings are each and all parts of an intricate visual relationship. To give this relationship the consideration it deserves an architect must make sensitive judgments. The almost automatic arithmetic of graphic scale is seldom more involved than simple ratios of length, easily mastered with experience and drafting room equipment. However, the relationship between the size of a building, its environment and the size of people is much more complex: a balance of intuition and fact; a compromise between illusion and reality.

If a building, its walls smooth and unbroken, were set on a flat and treeless plain, its size could be judged only by binocular vision and by its position in perspective. Binocular vision would reveal extremes of near and far; a comparatively involved calculation based upon one's eye-level would give an indication of the distance to the building and a basis for estimating its size. But anyone who has tried to guess distances to ships at sea will recognize the limitations of these methods.

We can guess the size of a building by comparing it with adjacent objects (trees, men, autos, etc) whose approximate size we can assume. Or, should the face of a building be visibly divided into stories and windows, an approximation of the building's dimensions would be possible, although each story might be a vast high-ceilinged hall or barely eight feet from floor to ceiling.

Inevitably, if all the surrounding size indicators vary in the same direction, a misrepresentation would result, but such a remarkable conspiracy of circumstances is quite unlikely. We can usually rely on any disproportionate indicators being counteracted by others of normal size.

So far we have concerned ourselves with judging a building's size from afar. At close range there are other indicators of size. Each type of building, Gothic cathedral or farm barn, has a different scalar standard in its details. From the probable size of boards and stones we have some idea of the size of the building in which they are used. We know that boards four or five feet wide are unlikely, and that the stones in Gothic masonry are not of Cyclopean dimensions.

In this regard it is interesting to note a historical development. The Greek orders, with their established interrelationships, denote a generally scaleless architecture—scaleless in the sense that variation of size does not demand a corresponding variation of form. As part of the construction procedure, stone was placed in position before it was smoothed and carved, and the design had no particular relationship to the joints of the masonry. Auguste Choisy, the French architectural historian, pointed out that the medieval innovation of completing the carving of a stone before it was set in place encouraged craftsmen to make the height of a molding or a decoration correspond to a course of stone. This technique afforded an indirect indication of the building size; it was a major step toward recognizing the size relationship between building and observer: the personal scale.

In modern architecture, changes in building materials have made our assumptions of size less sure; and the visual drama of many modern designs (columns as thin as possible, windows as large as possible, the crenelation of building forms, etc) have also lessened the accuracy of our estimates. Many architects have stumbled into distortions of scale caused by altering the size and the shape of indicators whose original dimensions the viewing public takes for granted. The exaggerations that result from such variations are not necessarily bothersome or undesirable, but they decrease the likelihood of establishing a direct scale relationship between the viewer and the building.

Building Scale

The so-called monumental and intimate scales of buildings are usually intentional tamper-

ing with the system of size reference. In the monumental, elements of the building are more or less uniformly increased in size. The grandeur of the structure (otherwise it would just be a big building) can in part be achieved by huge columns and cornices so large that their ornaments dwarf a man. Many architectural devices contribute to monumentality, but this kind of scale distortion is the most obvious technique.

On the other hand, some buildings are big for functional reasons alone: the architect has neither desire nor excuse for monumental expression. A skyscraper may be larger than a monument, but once we come close enough to see features of known size and character, we accept it as a big building—big because of the number of spaces that it must include and because of a remarkable total of usual dimensions. We understand that it is simply an immense aggregation of man-sized parts.

Mere bigness does not govern our emotional response. We realize the size of a skyscraper, but if significant features were heroically proportioned we would be further aware that our own size and our own comfort were not considered most important. Bridges, memorials and factories of great size confront us forcibly with determinants much more powerful and much more influential than ourselves.

It might belittle the human ego if such confrontations were a perpetual part of human life. But occasional encounters with heroic scale can hardly cause psychological problems. The natural world often inspires humility and awe, and there can be no great harm in our sometimes being reminded by buildings that there are values and forces far beyond our own dimension of ordinary thought and action.

The very reason for a building, its function and location, establishes the range of dimensions within which it must fit, but the relationship between building scale and personal scale is seldom clear-cut. Just as the architect must devise a functional organization of people and building, he must also recognize the scales of the people and of the building, separately and together.

Conceptual Scale

If we admit the existence of the two preceding scalar characteristics in architecture, let us next investigate their limits. In an office building, for example, personal scale would be expected to govern the interiors of the upper stories; building scale would probably dominate a distant view. As in most multi-story buildings, the two scales would meet and mingle on the ground floor. In the lobby, as on the floors above, men are in intimate contact with the forms and surfaces of the

building. Since they crowd in the lobby at certain times of the day, a large area is required. Nevertheless, personal scale must be considered carefully because the lobby is the transition between a busy street and the cubicles overhead—a brief preliminary to the rapid elevator and hurried emotional adjustment that precede the workday. At the same time, the lobby must be scaled to the building as a whole. If the building is large, our awareness of its size stays with us as we enter. In a sense, the street extends to the elevator door. It is as foolish to give the lobby a cozy residential intimacy as it would be to follow the tradition of the 'twenties: a lobby as huge and impersonal as an Egyptian temple—with a traumatic concentration of changes at the elevator door.

In this sort of choice between the personal scale and the building scale, conceptual factors influence the scale expression of a building. During the initial stages of design, the relative complexity of the building and its relationship to the observer should have been decided. The architect's choice to protect the individuality and independence of the occupants would predetermine many decisions on scale; conversely, if he believed that the building owed greater allegiance to the magnitude of its functions, his decisions would correspond. For example, the designer is faced with an old dilemma of the design process, whether to accentuate the vertical or the horizontal divisions of the facade of a multi-story building. The verticals relate to the identity of the building as a total construction, a tall tower; the horizontals declare the building to be a layering of familiar dimensions. The choice must be based on the designer's interpretation of the essential nature of the building, its meaning in itself and its significance in its environment.

The relationship between the different aspects of scale can be further illustrated by relating each one to the sequence of events in the design of a building: Drawings are made (graphic scale) to determine the arrangement of useful spaces and shapes (personal scale) within a single form or a complex of forms (building scale) established by the practice of the art of architecture (conceptual scale). Or conversely, the meaning of a building (conceptual scale) derives from its nature and requirements (building scale) as based upon its purpose (personal scale) and indicated by the use of drawings (graphic scale).

If this seems a Hydra-headed analysis, with four faces appearing where there was only one, the result is no more complicated than, for instance, the analysis of color and its use. No matter how carefully and thoroughly it may be studied, the use and meaning of architectural scale remain a part of the mystery of the creative act.

Participant's-Eye Views

I: Seminar at Cranbrook

by A. J. Diamond

University of Pennsylvania

The eighth AIA-ACSA Teacher Seminar, on the teaching of architecture, was held in June at the Cranbrook Academy of Art. Excerpts from the recordings of the discussions have already been published in the November AIA Journal; papers by guest speakers at the Seminar are to be published in book form as a permanent addition to the literature of architectural education. But a seminar—even (or especially?) a very successful seminar, as this one was generally conceded to be—is more than the words that come out of it; time, place and people contribute, for good or ill, to the total experience, and this totality will be different for every participant. Here A. J. Diamond sets down how Cranbrook '63 appeared, and felt, to one participant.

It would be of no use if, when writing a play, a mere recording of life were made. To convey an impression of attitudes, to reveal insights, there must be emphases. Distortions even: not entirely an antithesis of the Tange-Maki no-plan, to use an analogy in architecture, but a revision. Some structure is discerned, on which spontaneous growth adheres: not just happenings.

But no final structure is possible. One scene from the play only: prologue is somewhat known. Subsequent scenes and sequel is there, hinted at, to be sure. That is: making attitudes strongly to form a joint for new members. The attitudes begin to form in the hypo of mix—much deadword, of course (200,000 in fact). Words like autumn leaves; no form visible on the ground: the elevation of time reveals the underlying structure.

Relationships really. Again, it's no use belonging to the naturalism school, or we might just as well look at life itself. That's the problem though. We *are* self-conscious. We admire the spontaneous, the primitive. And we must always be frustrated by this view: we destroy what we admire in the act of conscious recreation. But I do believe in spontaneity, in empirical-primitive, so face up to it: self-consciousness is here to stay. Put in the necessary, inevitable order then. The dovetail is beautiful. And it's not neat, honky-tonk exists.

This at Cranbrook, the substance that is. Words, Words, though. The best at the pool. Of course, the dead-day catalyst necessary for this too—and quiet walks before breakfast, dewy grass cold on bare feet. Wasn't the elder Saarinen clever? Oh I know it's contrived—there it is again, such self-consciousness—the pretty vistas, the blocked axes (terminating in a something, of course) are so satisfactory. As an ivory tower no doubt is.

Not this in the seminar: blocked vistas yes, but not contrived.

Best of all an identification by the flares that communicate across the room. Frightful to start with though: omygod have I to endure unending afternoons of this twaddle? Perhaps time to think then, or get lost in reverie. Besides, the weather is fine, a real chance of a rest. Anyway I did not expect much better. The food is not bad, no feedback yet.

But as I said, a few small scatterings of explosions. An immediate reaction. Talk so they know you're one of them, even if it's idiotic. And fighting pride, not wanting to give that one speaking—a young man in a hurry, and understandably; indeed, he has a long way to go—the satisfaction of participation. But he is unimportant. Oh, a regular guy and all that jazz, I know.

The detonations in all manner of colors and strange faces: keen predatory soft arrogance; self-consciousness lost in vehement protest—a fine economy: “all that bull” I think he said; firmness concealed by english hesitation; long-winded american protest? Objection? But all recognizable. They swung. So contact is made. So the small signs of gesture, intonation, giving away attitudes set up a series of proustian relationships. Of disagreement too. But a fellowship of likes. Not really long enough to form dislikes. I suppose, though, they were there: “Yamasaki's a bunch of baloney.” “Well, at least he's elegant.” “Hell, elegance implies a kind of economy—real elegance.” Good lord, let's get some fresh air, something that isn't trivial and pretty. I've had enough of cardboard cut-outs. So the welded flashes saw the Ford steel

works. Real exhilaration. Work with a heart. A Cathedral of industry.

Talk Talk. Think too, all day, and get a numb bum. At night real twist, and no-think. Just swing; beer too. Even here though, an out-of-placeness, a detachment, a critical view. It's inescapable. Only by the pool not this. For someone else perhaps, taking pictures from behind bushes. Queer. Same desires, such different manifestations.

So creative people resist conformity? Why all in bus tours? Not so stupid—only one girl, clear-eyed edith: the chances optimised in groups. Of course it's not too far fetched—you just don't know how to be honest. Pearls of irritation, if you only saw.

Why was not I (how contrary, jealously guarding privacy, enjoying loneliness) a member of a school, a movement? The times not ripe? But change is in the air, enthusiasms swelling. It's there, hard to put a finger on it. Change (constant) in architecture. No, not really change; a continuum, better a redirection, an impetus in a direction that is understood, a reversing out of the cul-de-sac of the dammed curtain-walled airconditioned nightmare. Mannerism. I don't believe in the cyclical view of history, but the stepping off from achievement that strikes *us* as significant. And of course we are right. Responses, resourcefulness. Stating the problem. Responsibility in dealing with problems. To hell with whimsy, ever so flimsy.

This was a theme. *How* then. Are we scared of new tools? Of change? It's a quiet life, don't disturb the murky pool. How I loathe small men,

the change resisters. Healthy appetites should be voracious. Computers? Do they help? Well yes, but ask the questions boy. And what questions! Ah. There's your creativity, in part at least. So much for the obsolete architect. Not Architecture that's obsolete. Go and paint pretty proportions then, and leave the world to us. We know all this can be used to produce mediocrity—it's no crutch. The bright are still bright, the stupid have a curl in the middle of their foreheads.

Perhaps though a different bright chap. The sort of perception necessary now might be different, though *I* don't believe this. That's what underlies it all, perception of the problem. Generalized thinking, the classics man in industry. Being in tune with the age. No kidding, just unblinkered honesty. *And Teach it*. Beggar the solution, and see how to solve the problem. I might say that the solution will be better sculpture (spontaneity of a kind, the element of chance given order, a sort of inevitable chance like Jackson Pollock) than any you can devise, if you want to look at it that way. Physical planning that actually achieves the answers to questions.

Now you know. This is the thread that made a web across the continent. The days were not absolutely filled with twaddle—oh yes our own, and in this lay a sense, a buoyancy. For me this was tremendous. It was at Cranbrook; not entirely a coincidence: the structure for this to occur was set up. The telephone was discovered in two places at once: there are always da Vincis, not always called for; I still don't support a cyclical theory, nor metaphysics. Nothing is complete.

2: Siltpile at Scottsdale

by Joseph Nicholas Wills

The previous article gives a participant's-eye view of an annual summer event, some years established. This one, by contrast, is concerned with a first: a course offered by Paolo Soleri (who will have become known to those who may not have known of him before as this year's recipient of the AIA Craftsmanship Medal) in the summer session of the Arizona State University School of Architecture. The course, officially designated "Architectural Craft" but generally known as "Siltpile," was held in the special environment that Soleri has created for his life and work in the desert near Scottsdale. Here it is described and discussed by one of the twenty-three students,

from nearly as many schools of architecture, who attended it. Mr Wills is a student at the University of Nebraska.

Our objectives were twofold: to learn the "silt method" and to become acquainted with Paolo Soleri's works and thought. From 5:30 am to 2 pm each weekday we carved architectural models in silt. Our classroom was a catenary sunshade, thirty-five feet square, which we built of poles and canvas strips. About 100 cubic yards of silt were placed in a valley, dug by Mr Soleri, and bridged by the sunshade. We spent 10 to 11 am drinking coffee or some other appropriate beverage.

Our film of the transformation of polyhedra was an outgrowth of interests derived from contact with students in design, both beginning and advanced students. Questions were raised about possible ways of subdividing spaces, and these inevitably led to more general questions about spatial order. We also became involved with ideas akin to those investigated by crystallographers and others concerned with the morphology of natural form. The purest examples of such ideas seem to lie in the area of regular and semi-regular polyhedra. The orderly surfaces of these polyhedra and the way in which some of them joined in closest packing to fill space appeared to be the proper point of departure.

An examination of the literature of the field showed that the various relevant forms were arranged like beads which had been restrung without any regard for what their original order on the string might have been. A single idea of Bucky Fuller's had first given me the clue to that order. Some ten years ago I was able to generalize that idea, and more recently to devise a comprehensive system in which polyhedra are related in terms of transformation. To describe their transformations one must have recourse to the dimension of time; and this, of course, requires some time device such as cinema.

Against this background, my colleague Clark Macomber and I, with a selected group of students in the School of Design at North Carolina State, undertook to make the film shown at Cranbrook this year. We soon found that we would have to go through some quite extensive preparation and experimentation in order to determine the proper technique, even within the limits of animated film making, for presenting our idea. At the outset we were well aware that the very stringent budget limitations within which we operated required as careful a preliminary plan as possible, to economize both material and labor; what was rather dismaying was the discovery that the literature of animated film making offered no really helpful technical information, so that we would have to find out through our own experiments what kinds of visual image and what rates of change would give the greatest information.

We discovered—and it was rather a shock—that our estimates of the time required for a given piece of information to be conveyed through the medium of animated film erred nearly always in the direction of excessive rapidity. To my mind, the film we made still goes far too fast in some

places. Another thing we discovered was that it is difficult to judge the single drawing, a static visual image, in terms of its effect along with the other drawings that give sense of movement in an animated sequence. For example, we did our initial animation experiments in line drawing and thought that we might enhance the sense of form by defining it with dark and light values. To our amazement we achieved what I call the "hurricane in a shingle factory" effect. As a result we decided on line drawing pure and simple as our chief medium. (Models we used to a much more limited extent—the problem here being, to put it briefly, the joints.) Another discovery under the head of rates of change was that it is necessary to introduce acceleration and deceleration when one changes from "at rest" to "motion" and from "motion" to "at rest."

The final problem, and perhaps the toughest of the many with which we wrestled, was the integration of sound with film, and this is without question the least satisfactory aspect of the film we made. Perhaps the fact that most of us were visually oriented people, somewhat fearful of the spoken word, was the heart of the trouble. Were we to do another such film, I am sure that a greater attention to the verbal material would be a primary consideration.

One of the most rewarding aspects of the whole experiment was that the students engaged in it with us were able to make significant and productive contributions to the program. This, I believe, was due to all of us having a very clear notion of what we wished to achieve, and a plan; had we not had this plan, I am sure that the experience would not have been nearly as satisfying for the students. Certainly the students' sense of accomplishment, imparted to their colleagues who did not actually participate in the program, has been very great. The fact that the student body sees this film and realizes that people like themselves helped make it gives them a greater sense of confidence in their ability to accomplish what appears to be a rather complex task.

A note on the equipment we used (and, in the case of one item, failed to use) may be of interest to those considering similar programs. We were able to get a large photo-enlarger through government surplus. This we converted, by removing the enlarger and replacing it with our camera, to a fairly creditable animation stand. We added to it some carefully modulated pin devices for registering the animation drawings and similar pin

devices for dimensional control in making the drawings; these allowed us to register automatically the animated sequences during the process of drawing and photography. Since our budget was very small, we developed an incandescent rather than photo-flood lighting system. We assumed that the university's electrical works would give us a constant, even supply of electricity. Only after most of the shooting had been done did we discover that we had been wrong in this and that there was considerable voltage fluctuation, though not enough to cause the lighting to vary in degrees perceptible to the human eye. A voltage regulator, which costs from \$40 to \$50, would of course have solved any problem here.

The basic cost breakdown of the film was approximately as follows:

Photo-enlarger	\$ 35.00
Camera (Bolex 816 Rex) with one lens	650.00
Automatic fade-in attachment for camera	35.00
Film with processing costs	150.00
Animation supplies	200.00
Model building supplies for working models of transformations	50.00
Labor costs for student labor, approximately	1400.00
Master print with sound (26½ minutes)	325.00
Final print	150.00
	<hr/>
	\$2995.00

Books

Design With Climate: Bioclimatic Approach to Architectural Regionalism

By Victor Olgyay. Princeton: Princeton University Press, 1963. \$15.00

A recent contribution to the literature of environmental control is Victor Olgyay's "Design with Climate: Bioclimatic Approach to Architectural Regionalism." Extensively illustrated with photographs and diagrams, it provides a convenient if somewhat uneven summary of the Olgyays' work in this field over the last twelve years, and is particularly useful since most of the original publications are no longer readily available.

In general, the book reflects an admirable design philosophy: to create both towns and buildings which are in accord with the biological needs of man and in harmony with the conditions of nature. Furthermore, it is Mr Olgyay's stated belief that thermal comfort should be maintained as far as possible by purely architectural means, through a rational and consistent application of engineering technology.

"A desirable procedure," he writes, "would be to work with, not against, the forces of nature and to make use of their potential to create better living conditions. . . . The aim in designing a structure thermally is to establish an indoor environment which most nearly approaches comfort conditions in a given climatic setting. In architectural terms this means that the planning and structure of a building should utilize natural possibilities to improve conditions without the aid of mechanical apparatus." Several statements in the book suggest that the author prefers to attempt to solve climatic problems by natural solutions before resorting to mechanical means. This preference seems to be firmly grounded in a deep concern for architectural economy, a sense

of respect for his client's bank balance, and a strong desire to see an authentic regionalism develop appropriate solutions for different climatic zones.

The book is divided into three main sections, each section corresponding to a specific stage in the author's method of bioclimatic design: Part 1, Climatic Approach; Part 2, Interpretation in Architectural Principles; and Part 3, Application. Part 1 begins by briefly investigating the influence of climate on the varied forms of human and animal shelter. Examples ranging from Eskimo igloos (cold) to grass-gabled Seminole pavilions (hot-humid) illustrate that similar thermal environments develop similar building forms. The remainder of Part 1 introduces two of the four basic elements of bioclimatic design—the *climatic survey*, a translation of annual weather bureau data into chart form for design analysis, and the *biological evaluation*, an interpretation of annual climatic data in terms of its physiological effects with the aid of the "bioclimatic chart" and "time-table." A "comfort zone" area shown on the bioclimatic chart indicates comfort conditions in shade.

Part 2 of the book is an exposition of the third basic element of bioclimatic design, the *development of technological solutions* to remedy sources of thermal discomfort as defined by bioclimatic standards. The following thermal control techniques are outlined. Site selection (chapter 5) is based on microclimatic wind and radiation criteria. Sol-air orientation (chapter 6) calculates the combined effect of air temperature and solar radiation for various orientations and times of day, and is worked out for climatic regions in four different locations in the United States (cool, temperate, hot-dry and hot-humid). The chapter on solar control (7) discusses solar exclusion using shading devices, trees and solar orientation and is an abbreviated version of the Olgyay brothers'

parison between a Muslim prince and idols or altars seem to me quite misleading generalities, whose discussion, however, does not belong here. It would seem to me that the plan of the Kufah Palace (pp 10-11) refers to the later seventh century construction and not to the 637 one. The description of the small audience-hall (?) at Mafjar (p 15) is slightly misleading since there was a door on one of the three sides supposedly lined with benches.

The concluding paragraphs of the first chapter (pp 19-20) represent a traditional explanation of the origins of Islamic art; but many recent discoveries—from the finds of Parthian art at Nyssa to the new interpretations of Umayyad palaces suggested by the archaeological surveys of G. Tchalenko in northern Syria—are in the process of altering so much our whole view of early Islamic art and of the cultures which preceded it that new interpretations are bound to be formulated in the near future. Mr Hoag cannot properly be criticized for not having formulated them, but the reader should be aware of the fact that the field of early Islamic art is in considerable turmoil. While the interpretation of the origins of the *muqarnas* is perhaps acceptable (p 24), there are several examples of the feature before 1037 in Yazd: some were excavated in Nishapur by the Metropolitan Museum, others were recently found in a dated mausoleum in Central Asia. Concerning the Alhambra, use should have been made of the very suggestive remarks made by F. P. Barghebur in the *Journal of the Warburg and Courtauld Institutes* for 1956. With respect to Seljuq architecture in Anatolia (pp. 39ff), it is somewhat misleading to say that caravanserais were the most "typical" monuments of the time, since such establishments existed elsewhere also and since there is in fact something anomalous and still unexplained (in spite of K. Erdmann's su-

perb recent monograph on the subject) about the luxury of the Anatolian buildings; one might also have expected a few words on the impact of Armenian and Georgian architectures on Anatolia.

These criticisms of details are an inevitable result of the comparatively backward state of studies in Islamic architecture. They may serve to enhance Mr Hoag's courage in having attempted to deal with it in forty-eight pages and should not detract from a perfectly valid general survey of an architecture which produced several major masterpieces and which served for a thousand years as the main artistic expression of over half of the Mediterranean area. It is to be hoped that this short and readable book will arouse enough interest that progress could rapidly be made in a field which sorely needs progress.

OLEG GRABAR

University of Michigan

Other Books Received

Inclusion here does not preclude review in a future issue.

ANONYMOUS (20TH CENTURY) By Leonardo Ricci. New York: Braziller, 1962. \$5.00

PRECISION PERSPECTIVE DRAWING. By T. O. McCartney. New York: McGraw-Hill Book Company, 1963. \$11.00

RECORD HOUSES OF 1953. By the Editors of *Architectural Record*, with a preface by Herbert L. Smith Jr. New York: McGraw-Hill Book Company, 1963. \$2.95

PHOTOGRAPHIC REPRODUCTION. By Harold Denstman and Morton J. Schultz. New York: McGraw-Hill Book Company, 1963. \$9.00

Letter to the Editor

The Bauhaus: Crafts or Industry?

Sir:

I have no desire needlessly to prolong a debate which, though it may have been triggered by my article on the Bauhaus in your October 1962 issue, was not of my choosing. Mr Gropius' letter in your September 1963 number, however, more or less compels me, "for history's sake," to submit a reply. The

circumstance, by the way, that I have questioned certain of Mr Gropius' statements may make it appear that I am somehow opposed to him. On the contrary, I have the highest regard for Mr Gropius, both because of his architectural achievements and because he established what was, after all, the most significant school of art and architecture of this century. I nevertheless feel bound to refute certain of

his assertions which, to the best of my belief, do not tally with the facts.

In his letter in your September issue Mr Gropius demonstrates convincingly that, long before 1919, he was fully aware of the importance of the machine in modern manufacture. The question at issue, however, is not what Mr Gropius thought or wrote before 1919, but what he said and did between 1919 and 1922 at the Bauhaus in Weimar. Having been, at least as late as 1916, an ardent champion of the machine, he shifted his adherence, becoming in 1919 an equally ardent champion of the crafts. If it seems unlikely that the man who built the Fagus Factory in Alfeld in 1911 and the two notable structures at the Werkbund Exposition in Cologne in 1914 could retrogress in this way, I need only point out that in 1921 he repudiated these pioneering buildings, in some sense, by erecting the all-too-expressionistic Sommerfeld House in Berlin.

In his letter which appeared in your June 1963 number, Mr Gropius says, ". . . handicraft in the workshops was, right from the start, not an end in itself, but laboratory experiment preparatory to industrial production." In my reply in the same issue I quoted from a letter of his of 1919, from his Bauhaus proclamation of the same year and from a letter written by Oskar Schlemmer in 1922. These citations constitute strong evidence that the above-quoted assertion, which Mr Gropius reaffirms in your September issue, is inaccurate. He chooses to ignore this evidence, except for calling attention to the fact that in quoting from his Bauhaus proclamation I had overlooked the line, "Constant interrelation with leaders of the crafts and with the industries of the country," which appears in the document. This amounts, on his part, to grasping at a straw because the proclamation is heavily weighted in favor of handwork for the sake of handwork.

The only evidence adduced by Mr Gropius in his September letter which has any bearing whatsoever on the question under consideration is contained in his quotations from two lectures delivered by him in 1919. This constitutes pretty flimsy proof of his contention that he introduced craft training at the Bauhaus as a necessary preparation for industrial design, when one weighs it against the evidence which points in another direction. Had Mr Gropius set out to demonstrate that this craft training was intended, first and foremost, to benefit craftsmanship in Saxe-Weimar-Eisenach, he would have had much easier going because his own pronouncements of the period in question contain far more positive proof of this than of the thesis he would like to establish. A case in point is the statement of his educational principles and objectives which is found in a lengthy address which he delivered, in defense of the Bauhaus, already under attack, to the provincial legislature on July 9, 1920. This was a major speech since the fate of the school could have hinged upon it, so that we may assume that Mr Gropius prepared it with the utmost care in order to present the Bauhaus case in as favorable a light as possible. I will quote from the official printed minutes of the legislative session of

July 9¹ enough of Mr Gropius' remarks about the early Bauhaus program to indicate its character:

Before I present, in excerpt form, further proofs that the orientation of the Bauhaus is in conformity with the thinking of competent professional men, I would like to try, briefly, to make the idea of the Bauhaus clear to you. . . . The question of art education is closely bound up with the economic problems of the country. The impossibility of doing quality work, which characterizes our economic life today, stems from the draining off of creative talents from handwork into the so-called fine arts. The crafts have become destitute and art is very mediocre. The normal aim of creative talents today is the practice of painting, the graphic arts or sculpture.

The existing educational institutions point to and press toward this very course. Out of this, then, arises the intolerable situation that, while handwork steadily declines, culturally, economically and socially, an art proletariat, consisting substantially of creative talents, is coming into being. They who deserve a better lot, are producing "fine art" of doubtful value. The German people, in their present poverty, can no longer bear such a waste of years of life and hours of study, of teachers and teaching facilities. . . .

. . . "Artists" are being reared but they acquire in this way [in existing art academies] no real artistic foundation because art, in itself, cannot be learned, it is a matter of personal endowment. Handwork, as such, however, can be learned. We (and this holds also for the individual) can no longer afford to be without an occupation which will place us in a position to earn money. A rich nation, such as we were before the war, was easily able to provide food for several thousands of additional persons. Today this is no longer possible. Furthermore, we can already perceive a strong return movement. Many design draftsmen from the factories, many humble persons in the arts and crafts schools and the academies are streaming back and are looking about for work. It is one of the main ideas of the Bauhaus to win all of these abilities over to handwork, these artistic abilities which are to enrich the crafts artistically. . . . It is a very grave sign that countless individuals have deserted creative, constructive work for commercial life. It is an important task of the state to revive this creative life and we must enlist new abilities for handwork, which is sinking more and more. When you enquire of master craftsmen in Weimar—I have spoken with many of them—you will hear time and again the same complaint, that they lack a new generation of suitable apprentices. The apprentices, they say, also prefer to go into the factories where they find easier work and an easier livelihood. The young artists, however, of whom I previously spoke, have an entirely different attitude. They want to go into creative work, and the important thing is to see to it that these artists who possess the capacity for normal constructive work find employment in the crafts and be won over to handwork. This refutes the false assertion that an institution such as the one we have here robs the crafts of talents. On the contrary, we even supply the crafts with talents, for the people who want to study with us have never before had a connection with handwork. They were purely draftsmen, graphic artists, painters, etc.

Mr Gropius then stresses the desirability of training students in the crafts under masters, the ob-

¹ Official minutes of July 9, 1920, session of legislature of Saxe-Weimar-Eisenach, pp 1883-1885, translated from the German by the writer. A copy of these minutes, in the Bauhaus collection of Dr Gropius, was photostated with his permission.

jective being, as it was in the case of the Bauhaus proclamation, the total work of art, which will unite all of the individual arts, as these were united in the Middle Ages. Later he quotes verbatim a substantial part of the proclamation and finally he discusses other German educational proposals which, in various respects, resemble the Bauhaus program, in order to demonstrate that this is on the right track.

The part of Mr Gropius' address which I have presented (in scrupulous translation) is the core of his exposition of "the idea of the Bauhaus." It is difficult to see how, in the light of what he said in 1920, he can today maintain that the craft training at the school was conceived as preparation for design in industry. The major emphasis throughout his remarks is on the sad plight of craftsmanship and the need to infuse new life into it by furnishing it with fresh talent. It is one of the main ideas of the Bauhaus to aid in this rescue work by winning people over to handwork. Far from planning to send trained men into industry, he appears to rejoice that designers already in industry are flocking back—flocking back, he hopes, to become craftsmen. In short, Mr Gropius' remarks in this address suffice to prove his present contention to be erroneous.

Werner Graeff, painter, designer and author who studied at the Bauhaus in 1921 and 1922, says, in the catalog of a recent exhibition of his work,² "The question is often asked as to what to ascribe the basic change in the Bauhaus program which was ushered in before 1923." He then goes on to discuss the role played by Theo van Doesburg in bringing this change about. Mr Gropius, no doubt, would deny that any such basic change took place and would insist that what appeared to others as a basic change was merely the logical unfolding of his program, foreseen by him from the beginning.

Hans Maria Wingler, whose recently published work, *Das Bauhaus*, according to Mr Gropius, "... may become the standard book on the Bauhaus" (your June 1963 issue), says, concerning the change in the Bauhaus program of which Graeff speaks:

... The leaning toward formalistic applied art [at

the Bauhaus], which was encouraged, first of all, by the still purely handicraft methods of production, was overcome toward the end of the Weimar period after the connection with industry was finally established and the requirements of serial production began to be investigated. . . .³

At another point Wingler comments on the influence of van Doesburg on the Bauhaus, saying that he (or his Bauhaus adherents) "... acted as a catalyst," helping "... finally to bring into action the partly overlaid and displaced ideas of Gropius, as these had previously been embodied in the Fagus Works and, if you will, to bring the Bauhaus community to its senses. 'Art and Technology—a new Unity,' as the lecture given by Gropius in connection with the Bauhaus Week in the summer of 1923 put it, was now the objective. . . ."⁴

Thus, according to the book which Mr Gropius has recommended as authoritative, Theo van Doesburg was instrumental in altering the basic orientation of the Bauhaus. He, at least, brought Gropius back to his true course, which he denies ever having left. This changed orientation—the shift from handwork for its own sake to the making of models for industry—was something new, indeed, for the Bauhaus, even though it may have represented, for Mr Gropius, only the recovery of a previously held point of view.

So the evidence points strongly to the fact that Mr Gropius erred in insisting that "... handwork in the workshops was, right from the start, not an end in itself, but laboratory experiment preparatory to industrial production." He, of all persons, should know what actually happened at the Bauhaus, yet the facts prove him to be mistaken. This minor difference of opinion, this tempest in a Bauhaus teapot will have been of some service if it has made a few readers realize that it is not always safe to leave the interpretation of history to those who have helped to make it.

HOWARD DEARSTYNE

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This correspondence is now closed.—Editor

² Introduction, "Bemerkungen eines Bauhäuslers" ("Observations of a Bauhaus Student") by Werner Graeff, in catalog of exhibition of his paintings held in the Bochum (Germany) City Art Gallery in March 1963. Sentence translated from the German by the writer.

^{3, 4} Hans Maria Wingler, "Das Bauhaus," Verlag Gebrüder Rasch & Co., Bramsche, Germany, 1962, p 15. Citations translated from the German by the writer.



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Abbreviations

- ED—Editorial
N—News
AA—Allied Arts
UD—Urban Design
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Professor Jones Dies

Roy Childs Jones FAIA, Professor and Head Emeritus of the School of Architecture at the University of Minnesota, died after a short illness on October 29 at the age of 79.

Long a leader in architectural education, Professor Jones served the Association of Collegiate Schools of Architecture as secretary from 1925-31, vice president from 1931-34 and president from 1934-36. He collaborated with Professor F. Hunt Bosworth of Cornell University in the first survey of architectural education in the US in 1930-31. The studies were published by the Carnegie Corporation and led to the establishment of the National Architectural Accrediting Board. Professor Jones was a Board member from the time of its formation in 1940 until 1952.

Professor Jones was educated at Purdue University and received his Bachelor and Master of Architecture degrees from the University of Pennsylvania. He joined the faculty of the University of Illinois in 1910 and three years later went to Minnesota where he was made the Head of the School of Architecture in 1936 and Advisory Architect to the University in the same year.

Pratt Offers New Program

A new graduate program, leading to the degree of Master of Science—Tropical Architecture, has been introduced by the School of Architecture of Pratt Institute. The program, which is believed to be one of the first in the US, is designed specifically for graduate architects from tropical countries or Americans or Europeans who are interested in working in the tropics in the field of architecture and community planning.

The courses will emphasize experiment and investigation of the fields of design and technology and will evaluate the findings in terms of climatic and economic environment and the human, historical and cultural qualities of the Middle East and the tropics.

Many of the projects in this course of study will involve cooperation with the United Nations to improve living standards in areas of the world where findings will be applicable.

The program that covers thirty-two credits of work in the fields of architecture and related social sciences can be covered in one year of intensive work. This period, may however be longer if certain undergraduate courses are needed to qualify for graduate work.

Applications and further information relative to admission may be obtained by writing to Dean Olindo Grossi, School of Architecture, Pratt Institute, Brooklyn 5, NY.

New College at Kansas State

A College of Architecture and Design has been created at Kansas State University, Manhattan, with Emil Fischer, formerly Head of the Department of Architecture and Allied Arts, as Dean.

The new college incorporates the landscape architecture curriculum now offered in the College of Agriculture and the work in architecture, architectural engineering and regional planning offered in the College of Engineering.

Dean Fischer and Dr Robert Ealy, Head of horticulture and landscape architecture, say the move will strengthen the academic program and increase its efficiency through consolidating library facilities and laboratory and studio space, making more effective use of the teaching faculty. Both administrators agree that accrediting bodies in their areas are encouraging closer academic association and coordination such as the College of Architecture and Design will make possible.

New York's Debutante Cotillion

The fifth annual Debutante Cotillion sponsored by the Women's Architectural Auxiliary of the New York Chapter AIA to benefit architectural students will be held December 26 at the Metropolitan Club, 1 E 60th St, New York. This year all monies raised will go toward the scholarship fund since Fischbach & Moore, electrical contractors, have donated the entire cost of the ball, which includes the President's reception and dinner.

Inquiries should be directed to the Cotillion Chairman, Mrs Robert W. Cutler at the Doric office, 17 W 54th St, New York. Special rates for college students have been made available at the Savoy-Hilton near the Metropolitan Club.

Washington Issue Reprinted

"Washington in Transition," the special January 1963 issue of the *Journal*, has had its second reprinting and is available for \$1.50 a copy postpaid from the Documents Division of the Institute, 1735 New York Ave NW, Washington, DC, 20006.

The reprinted issue is without advertising and is bound in paper covers with the wrap-around map, the same as the original issue. This reprinting is due to the great demand which has come to the *Journal* office for new or additional copies. It is also being placed on sale in many bookstores.

Rotch Scholarship Winner

The Rotch Travelling Scholarship for 1963 has gone to James Thomas Flynn (B Arch, Carnegie Institute of Technology, 1957; M Arch, Harvard University, '60) of Stockholm, Sweden, from a field of thirty-seven applicants. The alternate is Robert T. Cooke (B Arch, University of Minnesota, '60; M Arch, Massachusetts Institute of Technology, '62) of Providence, RI.

Cont'd on p 120



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Adolph G. Syska Scholarships

Two \$1000 scholarships in memory of Adolph G. Syska have been established to aid undergraduate architectural students who have an engineering aptitude and would continue studies which emphasize the mechanical, electrical and audial concerns in architecture. The program was created by the firm of Syska and Hennessy, Inc, New York, NY, through an annual gift of \$2000 to the AIA Foundation.

These awards will be made to students attending one of the member or associate member schools of the Association of Collegiate Schools of Architecture in the US and will be based on the recognized ability of the candidates who are entering their fourth or fifth year and in need of financial assistance.

In establishing this annual fund, the donor recommends that preference be given to students displaying the above aptitudes, but this will not preclude the AIA Committee on Academic Training from making alternate scholarship grants.

Pittsburgh Plate Glass Fellowship

The Pittsburgh Plate Glass Foundation of Pittsburgh has established a fellowship of approximately \$5,000 to be awarded through The American Institute of Architects Foundation, Inc, to a graduate scholar in studies or research related to urban design.

The award shall be made to a student or a graduate accepted for advanced studies at one of the member or associate member schools of the Association of Collegiate Schools of Architecture in the US which has a graduate program in support of urban design studies. The selection shall be based on recognized academic performance which includes undergraduate courses in both architectural design and planning, and a proposal for graduate study.

From the grant, a maximum of \$2,400 shall be established for living expenses, tuition and fees not to exceed \$1,850, and \$500 shall be awarded to the host university for unrestricted use by the head of the department of architecture. The recipient will be selected annually by the AIA Committee on Academic Training and recommended to the Pittsburgh Plate Glass Foundation and the AIA Board of Directors.

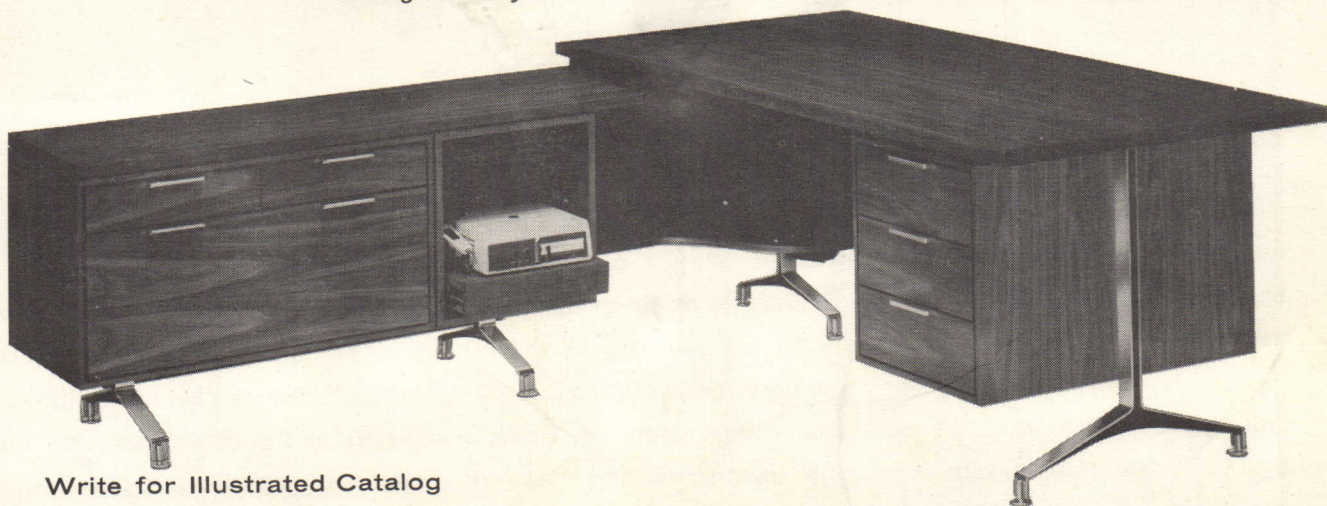
Rome Prize Submissions

Submissions for the Rome Prize Fellowships for 1964-65, which are offered in limited number in the fields of architecture, landscape architecture and the related arts, will be received through December 31. The fellowships carry \$3,000 a year. Inquiries should be directed to Miss Mary T. Williams, Executive Secretary, American Academy in Rome, 101 Park Ave, New York, NY. Requests should specify the applicant's particular field of interest.

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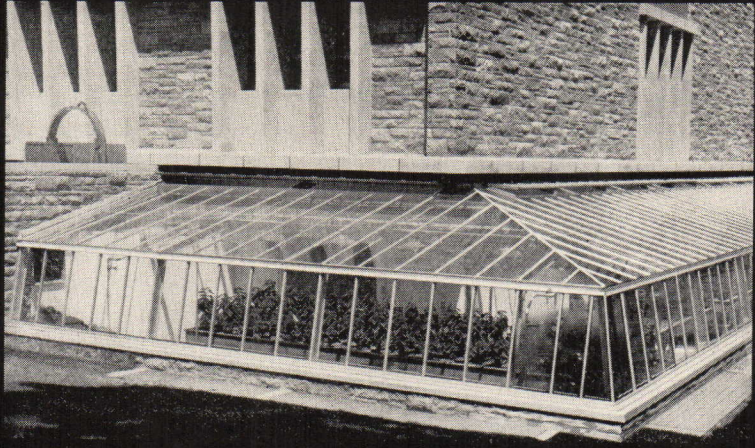


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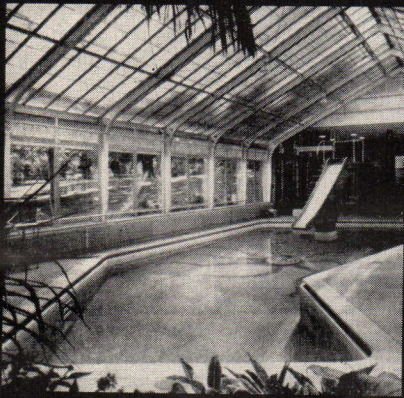
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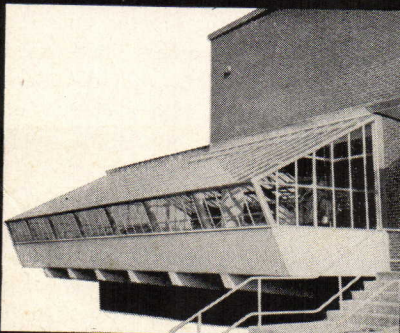


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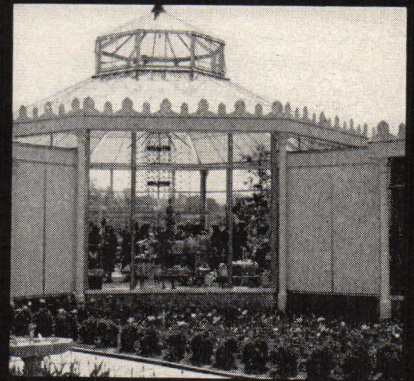


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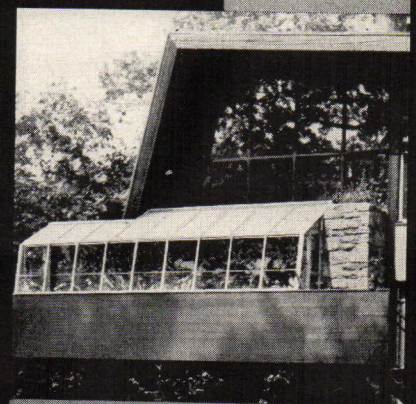
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Allied Arts

Experts and the Government

WOLF VON ECKARDT, HON AIA

This is what is called a "follow-up" story. A follow-up on our lament last March about US postage stamp design.

It is also an illustration of our government's lack of confidence in artistic expertise. As Judge Francis Biddle, quoting Harvard's Lawrence Lowell, has said in this *Journal* apropos the abortive FDR Memorial competition, the test of the American democracy is its ability to use experts. It is certainly the test for the ultimate success of President Kennedy's *Kulturkampf* which August Heckscher has so sensibly launched.

We have made great strides in science because our government has shown almost unlimited confidence in the abilities and judgment of our scientists. Laymen have no choice. Science, or much of it, has become so bewildering that we must take it on faith.

We have, however, made little discernible progress toward greater excellence in the government's use of art. For in this area—well, there is hardly a bureaucrat or Congressman who won't give you the "but-I-sure-know-what-I-don't-like" song. The delicate inter-relationship between democracy, excellence and expertise bears a lot more study, or better still, thought.

But to begin at the beginning: We said last March that there was hope in an announcement by the then Postmaster-General that there would be a competition for the design of the science stamp in honor of the centennial of the National Academy of Science. That stamp has recently been issued. It is by Antonio Frasconi and rather disappointing. Here is what happened:

The competition was suggested by John Walker, Director of the National Gallery. The Washington Post Company, through its *Art News* division, picked up the tab for it. A most distinguished voluntary selection committee was formed with no other objective than to prove that eminent artists and designers stand ready to design stamps for our Post Office to enhance our national prestige. The committee comprised Dr Alfred Frankfurter, a most distinguished art historian and editor of *Art News*, the oldest and most authoritative publication in its field; William Walton, a prominent painter and subsequently appointed chairman of the Fine Arts Commission; and Elwood Whitney, chief art director and vice-president of an advertising agency and editor of the book "Symbolology: The Use of Symbols in Visual Communication."

This distinguished group pondered all the technical aspects of the matter and then decided to invite Josef Albers, Herbert Bayer, Antonio Franconi,

Buckminster Fuller and Bradbury Thompson to participate in the competition. A more competent group is scarcely imaginable. These artists and designers were invited to Washington for a tour of the Bureau of Engraving to learn about the technical limitations and possibilities of their assignment. So enthusiastic were they about the challenge that rather than submitting one design each, they offered fifteen. The selection committee picked one design for each artist and here its task ended.

And here, also, is the rub. The final selection was left through the Citizens' Stamp Advisory Committee to the Postmaster-General. Why?

The Stamp Advisory Committee is mainly a group of enthusiastic philatelists. It also includes two engravers, two advertising men and one historian. But there is only one bona fide art expert—John Walker. As Dr Frankfurter remarked in his publication: "Can any jury of specialists, professionally committed to its task, perpetually allow even the semi-final choices from the fruits of their labors to be made by a committee of pure laymen?"

Surely, the recent judgments of this lay group hardly inspire much confidence in its collective artistic discernment. Consider the Gettysburg Centennial stamp it chose early this year. Its utter banality caused considerable consternation among stamp and art lovers alike. Or ponder the Sam Houston commemorative stamp, a copy of an old lithograph, but a bad one. Poor Sam got a face-lifting to make him look more heroic.

And why should the Postmaster-General have the last word on the selection of a work of art? Dr Frankfurter and his colleagues would hardly presume to select a new mail-sorting machine for him. Our Postmaster, as Frankfurter says, "hopefully has as his first task the efficiency of his department and its services to the public. Why should he be required ever to put his head through the noose of artistic taste—that perilous scaffold on which a number of great statesmen have met ultimate ridicule and venom?"

There was, in fact, more than a touch of the ridiculous in the story of this competition. Bradbury Thompson had, appropriately enough, chosen to symbolize science by use of the famous Leonardo da Vinci-Vitruvius microcosmos of human proportions. It was probably the best design of the lot. But, according to Frankfurter, it "was soon disqualified on the highest official level 'because it contains a nude.'"

Discouraging, isn't it?

But all is not quite lost. In the months since the President, August Heckscher and others have urged better design on our postal authorities they did manage, *mirabile dictu*, to come up with at least one superb stamp. It celebrates the hundredth anniversary of the Emancipation Proclamation and is a graphic symbol as simple and direct as it is powerful and plausible. The design shows a severed link in a massive black chain, placed against a blue background. The red lettering, for a welcome change, is of one piece with the design. The artist is Georg (spelling correct) Olden of New York. Bravo! ◀