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Journal

June 1964

REYNOLDS AWARD

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ARCHITECT
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Journal

JUNE 1964
VOLUME XLI, NO 6

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Opinions expressed by contributors are not necessarily those of AIA

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Coming in
the July
AIA Journal

The 1964 Honor Awards

Twenty-one pages of photographs, plans and Jury comments covering this year's winners of the most distinguished award an architect can receive for outstanding design

Town and Gown—A New Dimension

O. ROBERT SIMHA, Planning Officer, MIT
EDWARD S. GRUSON, Assistant to the Dean, Harvard Medical School
HERMAN H. FIELD AIA, Director, Planning Office, Tufts-New England Medical Center

The relationship of the university and the city as explored by three speakers in a seminar presented at the New England Regional Conference AIA last October

A Guide to Crash Construction Management

Some down-to-earth advice for prospective clients is offered by the AIA Committee on Industrial Architecture as a companion piece to the highly successful "A Guide to Better Industrial Building Leasing" published a year ago August, and again, a second article will be directed to architects to assist them in offering these services

Frank Lloyd Wright Drawings in the AIA Archives

A sampling from the 144 negative photostats of the original working drawings by the master which have been received at the Octagon

Architect-Researcher Conference

BEN H. EVANS AIA AND MARILYN E. LUDWIG

A report on a seventeen-man meeting sponsored by the AIA Committee on Research for Architecture and financed by supplementary dues to discuss the general state of affairs in research



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The Editor's Page

... on which you will read only what the Editor currently thinks—not Institute opinions or policies

Architecture—For the Rich or for the People?

A couple of weeks ago I gave an after-dinner talk at an AIA chapter meeting. It was held at a university, and members of the student AIA chapter were present. Among an assortment of pearls of wisdom, I said, "We must never forget that architecture is not an esoteric, ivory-tower art; it's a *people's* art, or it has no justification whatsoever. . . . As a matter of fact, I would like to toss out the thought that the truest architecture is the anonymous and indigenous peoples' architecture of the 'underprivileged' areas of the world—buildings built *by people* for and by themselves. In this world, and in this sense, we architects are sophisticated interlopers."

In introducing me, the chairman of the evening had read aloud a few excerpts from this Editor's Page written during recent years. After I had finished talking he said there was another quote from this page which he had fortunately not read—but on the other hand, he thought maybe he'd read it then. And so he read the following, from the Editor's Page in the issue of February 1963: "Architecture is still not for the masses: For their use, of course; for their delight, if possible; but for their appreciation, seldom. And a striving for popular appreciation dilutes and debases the work of art."

Now, Mr Editor, talk your way out of that! Well, I think I can, for despite the apparent contradiction, there's no basic conflict. However, two things have occurred during the reading year which elapsed between those two statements, which, I am perfectly ready to admit, profoundly influenced my thinking—and bang up against something that makes a deep impression, a fellow is progressing backward if he is incapable of changing his mind. One influence was the August issue of *Architectural Design*, containing the articles on the *barriadas* of Peru, about which I wrote on this page in our October issue; and the other was the fact that I had been reading and listening to Constantinos Doxiadis.

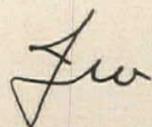
Architecture, in the sense in which we have traditionally used the word—meaning fine individual buildings, set, perhaps, in splendid isolation, like the Parthenon or the Taj Mahal or the General Motors

Research Center—is still not for the masses. Again, I say, it is for their use if they wish to use it, it is for their delight if they pause to enjoy it, but it is more apt to be for the appreciation of the sophisticated few rather than the "culturally deprived" many. Snobbish? I don't think so—and I certainly don't mean it that way. It is just an acknowledgement that people don't really *look* at our buildings; at most, they may be awed or impressed by them, but without comprehension, in our sense, of what they are looking at.

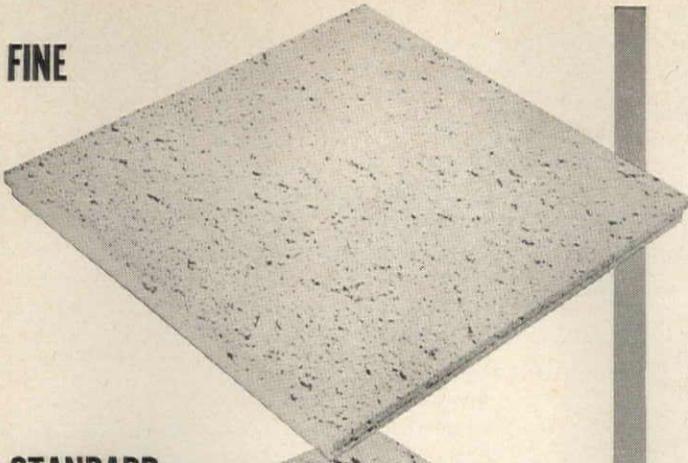
But when architecture is considered as *building*, not in the technical sense but in the sense of housing mankind and sheltering his activities, it is very much a people's art—and the architect's part in it is exceedingly small; 2%, it is said. How can the profession of architecture hope to have any impact upon mankind, how can it mould man's environment, until it lowers its sights from the individual beautiful building and broadens its scope to encompass the very real needs of all men? Millions of people—and I'm now referring to the Indians in Peru or the villagers in India, but to people right here in the USA—either never heard of an architect or don't know what he does. At best, they might consider him a henchman of the wealthy.

"How can we justify our existence to the average man if we don't serve him directly—or even indirectly? . . . 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 quotation is, of course, from Doxiadis.

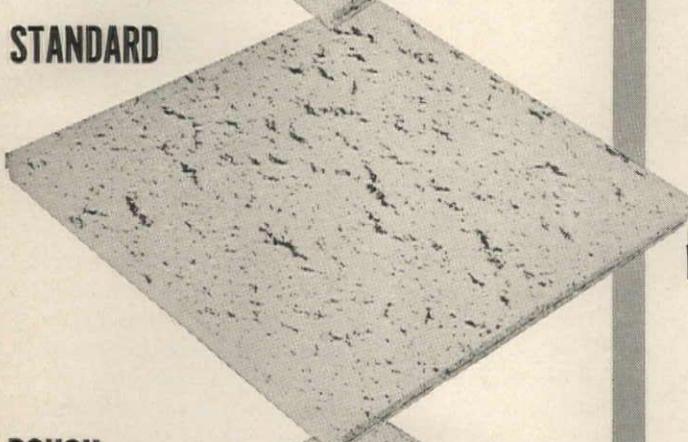
For five thousand years, we have let architecture grow to maturity with two faces, one turned toward the rich—kings, religions, governments, corporations—the other turned toward the poor—the masses of people, not necessarily poor in an economic sense, but poor in the sense that they are not getting the benefits that architecture can give them. And *that* face wears a blindfold. Until we can begin to tear off that blindfold, the profession of architecture is not living up to its mission.



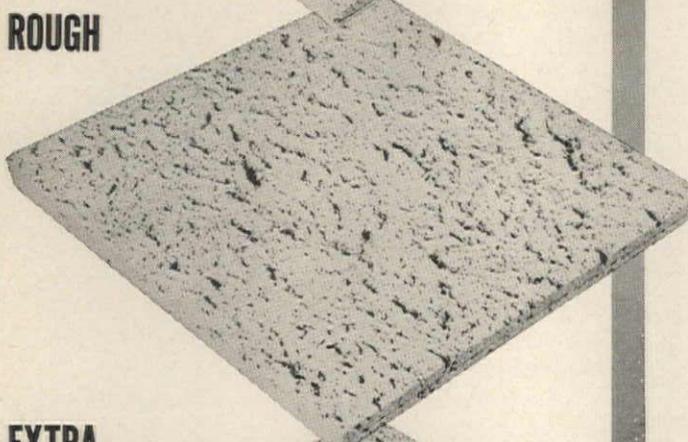
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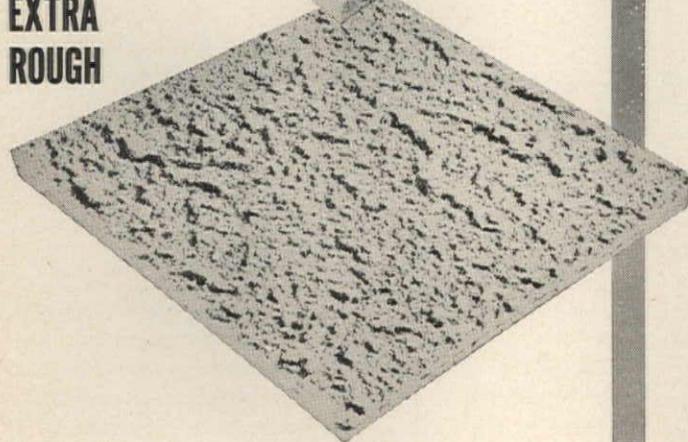
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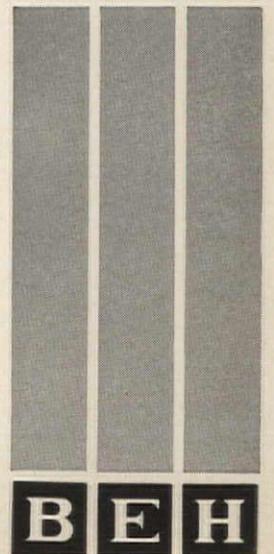
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June 1964



Letters

The Now-Empty Martini Glass

EDITOR, *AIA Journal*:

The boat trip to Mount Vernon during the Institute's Centennial convention in 1957 lulled me to sleep in a deck chair. Suddenly the words, "Menj a pokolba!" brought me wide awake. That's the inevitable result when I hear my native Magyar language in unexpected surroundings.

A portly gentleman and two slim, dark-haired younger ones were teaching my wife the above phrase, which means "Go to hell!" It was all in jest, of course, and I immediately entered the jolly conversation—that's how I first met Alfred Bendiner and the Olgay brothers, Victor and Aladar.

Since then I corresponded with Bendiner, met him again at the convention here in Cleveland and enjoyed his marvelous volume "Music to My Eyes," his articles in the *Atlantic Monthly* and the *AIA Journal*. Now he is gone, and with him we have lost some utterly human and perceptive wit that always filled his articles and droll illustrations.

I read Bendiner's review of "New York Landmarks" in the *April Journal*; enjoyed the rest of the issue and, as is my custom, left the best to the last: "Through the Martini Glass." News of Bendiner's nice recovery brought a happy feeling, and I mentally resolved to write to you and to Alfred my pleasure, then read his comments. You can imagine how startled I was when I read your footnote concerning his death on March 19, ending "a full, fruitful life."

ALOYSIUS SCHUSZLER AIA
Cleveland Heights, Ohio

EDITOR, *AIA Journal*:

I have just read "Through The Martini Glass" in the *February Journal* and would like to say, "Amen!"

Unlike Mr Bendiner, I did attend the Miami convention but it didn't take me long to discover that the sights and sounds around Mr Lapidus' "awful" swimming pool were more interesting and in much better taste than the "We're great! You're terrible!" statements being made in the meeting rooms by the proponents of the Clumsy-Concrete school of design.

Against this convention background of pontifical pronouncements it came as somewhat of a shock to read Jan Rowan's editorial in the *February* issue of *Progressive Architecture* in which he reported that, when questioned about the fact that the areas occupied by other than architectural students in the new building at Yale have aroused strong resentment, Paul Rudolph said, "After all, did anybody expect that my primary interest would not be in the School of Architecture?"

Assuming that the present students at Yale will become thoroughly inoculated with this profound mental attitude toward the attainment of quality in architecture, one wonders if the principal item on a convention agenda about ten years from now will be,

"The legal and ethical position of an architect who fails to tell his client in advance which parts of his building will be well designed and which parts will be lousy."

The dull rumbling in the background of the discussion at that convention will be Frank Lloyd Wright, the Saarinens, et al, turning over in their graves as they realize that they wasted so much of their lives developing their contemporary designs on the apparently mistaken theory that every part of every building their clients entrusted to them deserved their very best effort.

Have another Beefeaters, Bendiner! Your vision thru the glass gets clearer all the time.

KENNETH C. BLACK FAIA
Lansing, Mich

Criticism (Cont'd)

EDITOR, *AIA Journal*:

The article in the *February Journal* by Stan Sherman (at least I guess he is the author)* is an extraordinarily interesting piece of urban design criticism. Last year in Washington, I often speculated about exactly the set of circumstances which he discusses. That stretch of Massachusetts Avenue between the Forest Products Building and the Brookings Institution, and the two buildings themselves, constitute a magnificent and pointed case study. I am delighted that you published it.

A gentle, oblique educational campaign seems such a slow-moving and problematical way of preventing further proliferation of buildings of undistinguished design. It is a campaign, though, made easier and more effective by your action in publishing such useful criticism.

Paul Spreiregen's Urban Design series has made a real contribution. But inevitably such generalized work, citing only the great referents of the past, goes in the eye and right out of the back of the head without having much impact on a man's work. It has *got* to be said that one building is a whale of a lot better than another.

ROGER MONTGOMERY AIA
Head, Urban Design Program
Washington University
St Louis, Mo

* ED NOTE: Stanley M. Sherman is the author of the article in question.

A Gesture We Applaud

EDITOR, *AIA Journal*:

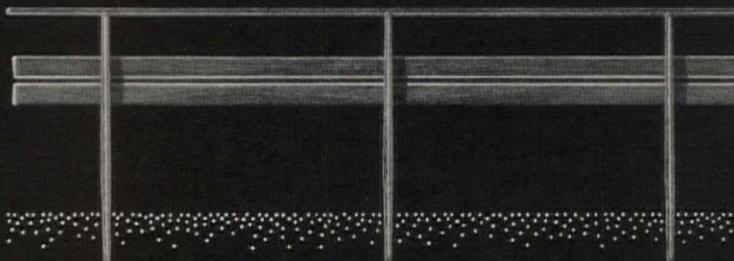
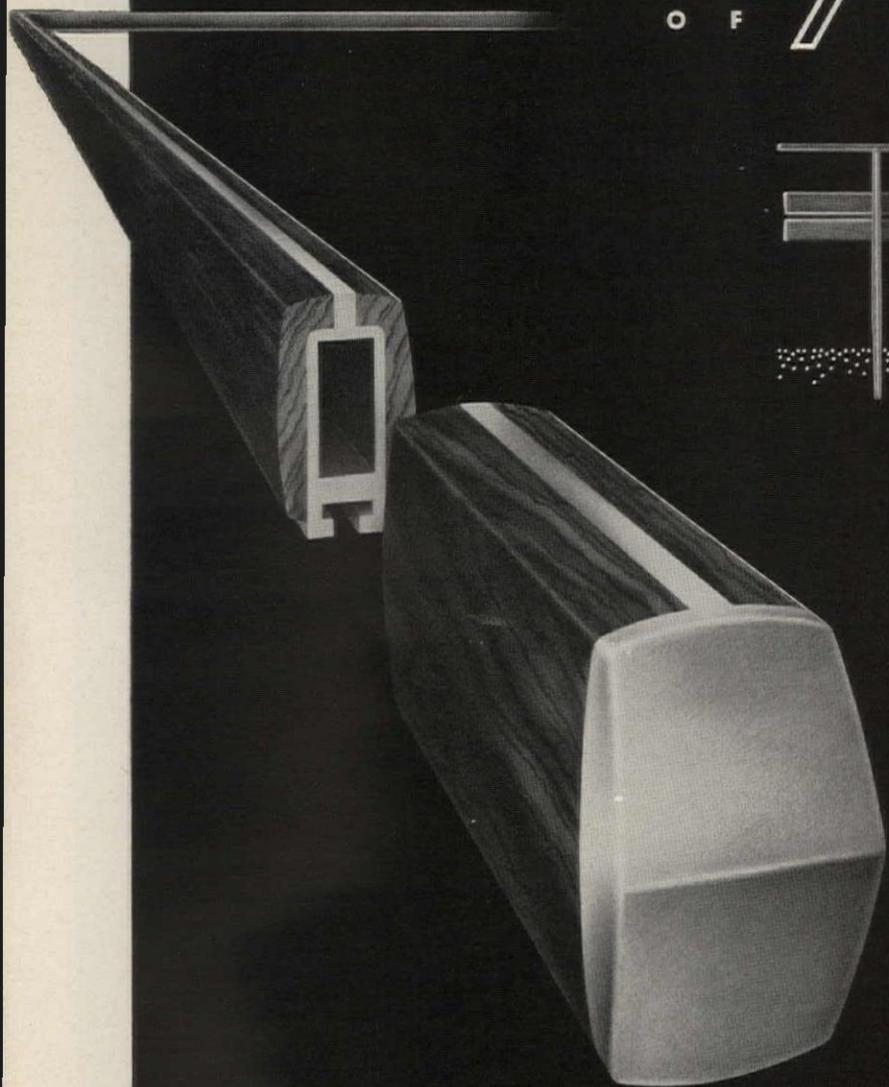
"Architects of Glendale," a civic improvement forum, is an active community organization in its third year. Our membership consists of over thirty architects who "live, or have their principal place of business, within the city limits of Glendale, Calif, or the boundaries of the Glendale Unified School District." We have voted to present a *Journal* subscription to schools in the district.

FRANK E. MOSHER AIA
Past President
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has hardly changed since the first mass-produced "enameled sanitary fixtures" were offered in the mail-order catalogs of the early 1920's. Bathtubs are now squarely enclosed rather than on legs and they have a rim for the shampoo bottle. But they still don't fit the human anatomy. Lavatories are built into plastic-, mosaic- or marble-topped storage cabinets, thus providing the convenience that went out with the commode under the old wash basin. But that's about the size of "wonderful things happening to bathrooms," as a recent plumbing fixture advertisement had it.

But neither "peachblow" nor baldachins will baffle the all too protracted flushing noises of the water closet. They will not stop our shaving mirrors from hopelessly clouding up; nor keep the bathtub calking from cracking and the plaster ceiling from peeling (why plaster in the bathroom?) and the corners from molding (why angular corners?).

The plain fact is that the bathroom has not been mechanically improved since the one Daedalus designed for King Minos at Knossos before he disappeared with Icarus 3,600 years ago. Perhaps the new, industrially fabricated bathroom units of the industrial designers will remedy this at last. No calking, no cracks, no uncleanable corners and perhaps even clear mirrors.

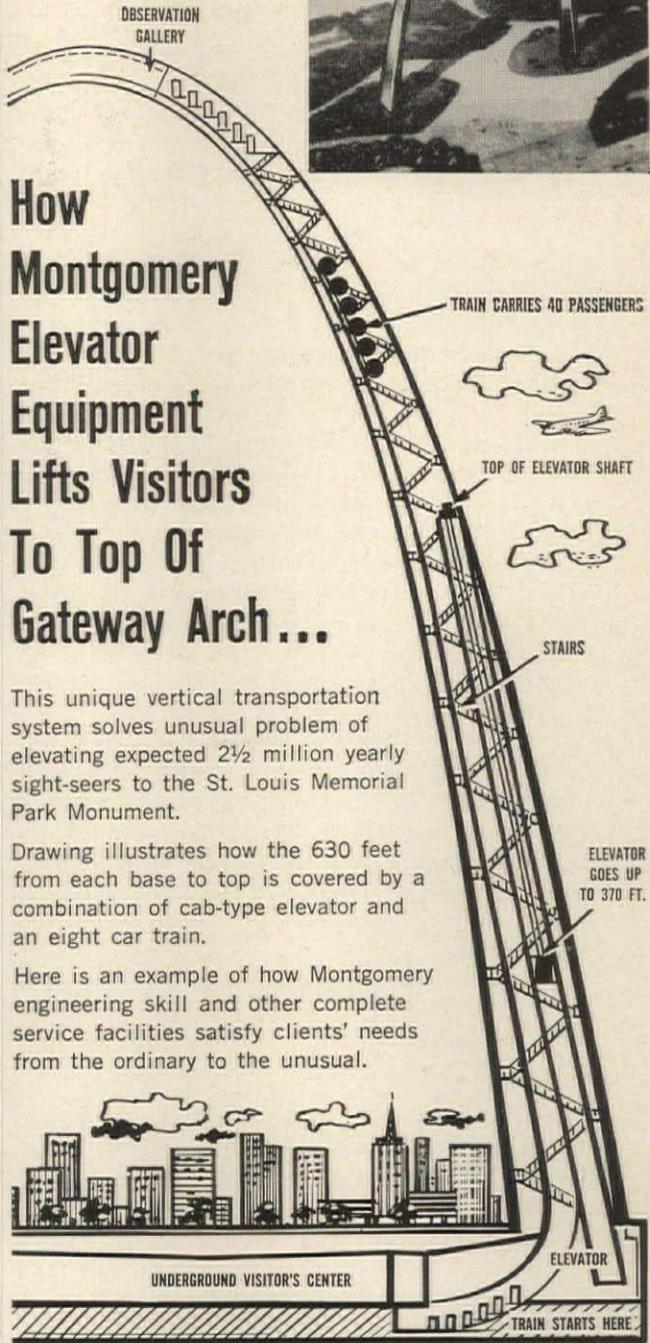
But the new, packaged bathrooms still will not give us the splendor and opulent glitter the Queen of Knossos enjoyed. According to Lawrence Wright's ablutional history "Clean and Decent," the queen's bathroom had a private staircase leading to a "withdrawing room" and a short passage leading to the "toilette chamber" as well as enclosed light wells to ensure fresh air and diffused, reflected light. Like the Romans after her time and some of the Renaissance Popes and Madame Pompadour, she had a spacious and comfortable place where she could relax and restore her spirits. And that's what we want too.

We want to retreat to the bathroom to soak the mind with the *Sunday Times* while we soak the body in hot water. We want a place not only for simple ablution but also for leisurely luxuriating and quiet contemplation. For the mind responds well to indulgent physical relaxation of the body and the state of guiltless undress is a wholesomely refreshing thing to enjoy.

The ladies are desperately seeking to turn the bathroom into a shrine to their beauty, seeking flattering light and the sundry accouterments, such as scales, sunlamps, hot towel racks and perhaps even a bidet, which designers and manufacturers provide so reluctantly and piecemeal that they must virtually fight for them. They are forced into clutter and then punished for it. Their makeshift shrine is very hard to clean.

"People," designer William T. Snith has recently said, "want the luxury of a Roman bath and they want that Roman bath as sanitary as Ben Casey's operating room. . . . It is the sybaritic experience of a Roman pool and its surrounding ministrations and ceremonial overtones that our modern man would like if he actually came out and stated the fact." ■

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Designed by the late Eero Saarinen FAIA as the theme structure for the Jefferson National Expansion Memorial, the Arch takes its basic shape from an inverted, weighted catenary curve. Steel reinforcing bars, totaling 216 tons, with about 13,340 cubic yards of concrete, make up the two foundations. They are sunk 60 feet below ground and 30 feet into bedrock. Each leg is an equilateral triangle with sides 54 feet wide at ground level and tapering to 17 feet at the top. An eight-car train following a curved hatchway has been developed for each leg, to be supplemented by elevators in the relatively straight portion rising to a height of 370 feet.

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Space between the walls will be filled from the base to the 300-foot level with steel reinforced concrete; above that level the space will remain open except for stiffeners of carbon structural steel.

HOME-TOWN PUBLICITY AT ST LOUIS: As an innovation at this year's AIA convention, the St Louis Chapter will offer a publicity service to architects as part of a public relations lounge, manned and sponsored by a local manufacturer, the Security Fire Door Company. This service will provide press releases and photographs of delegates for newspaper and trade press use in their home cities.

EDUCATION / New Degree at Virginia

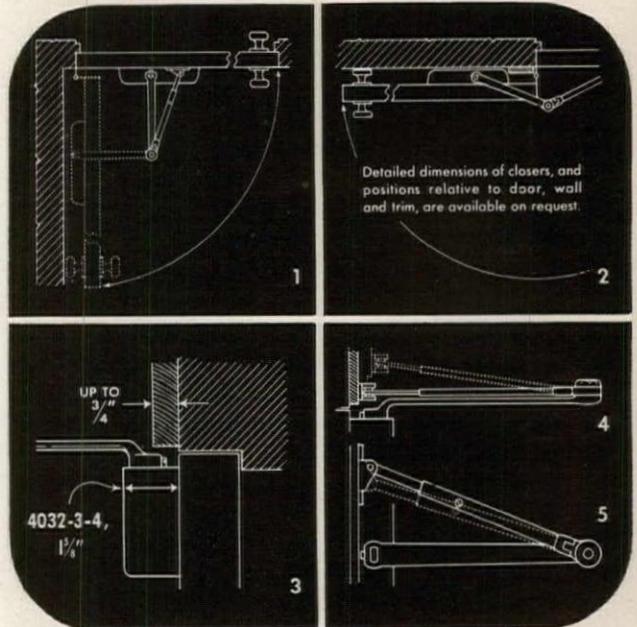
A new graduate program leading to the degree of Master of Architectural History will begin this fall in the School of Architecture at the University of Virginia. It has been created in part, Dean Thomas K. FitzPatrick AIA explains, because of the success of the undergraduate program which was started in 1958 and is currently the only one offered in this area in the US. For further details write William B. O'Neal AIA, Professor in Charge of History Programs, Box 1847, Charlottesville, Va.

Cont'd on p 116

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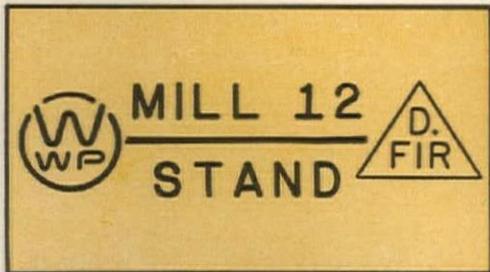
Vincent G. Kling, FAIA, Architect

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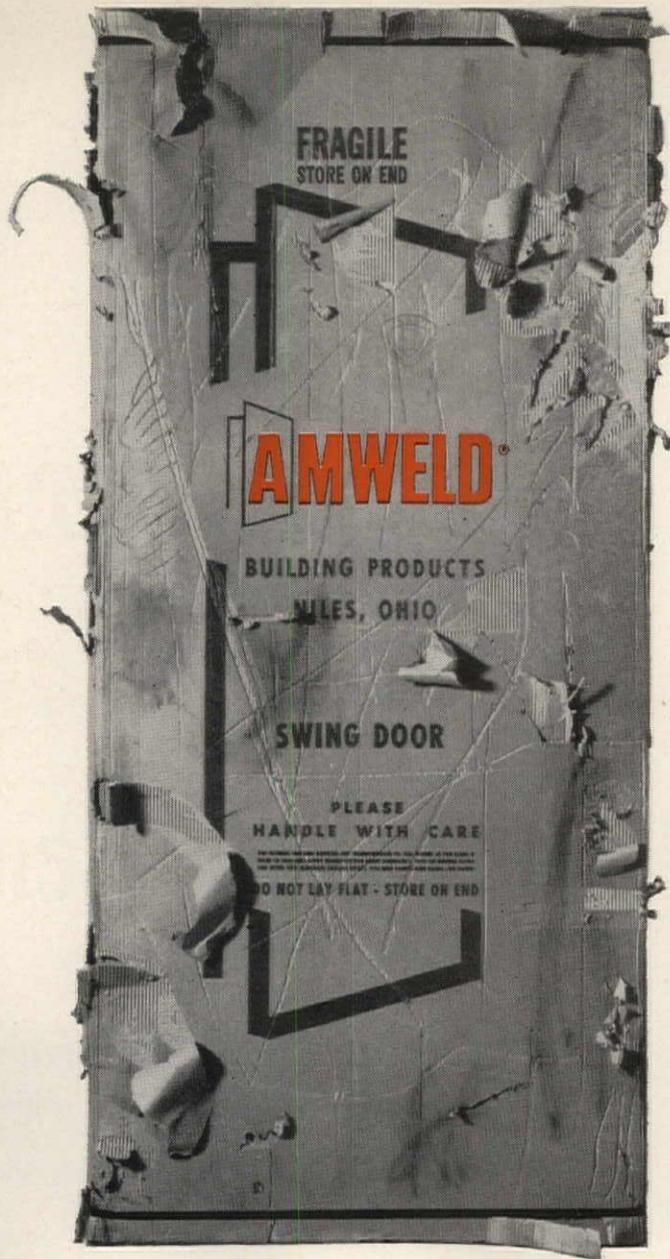
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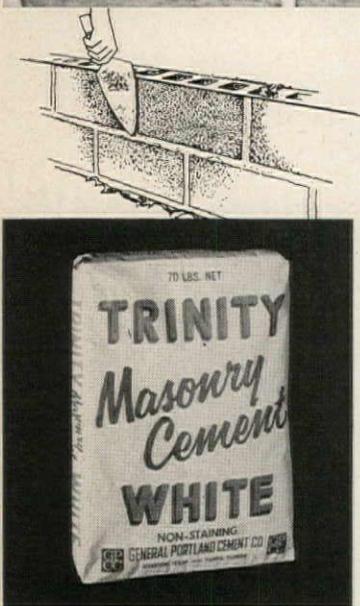
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Journal

Design and Criticism

GARRETT ECKBO FASLA

The distinguished West Coast landscape architect sees design as a constant research project, a patient search for relevant and meaningful form; and the function of criticism as social—analysis, clarification and comment

DESIGN BEGINS with the search for solutions to problems and may end with the search for art. Art is the production of forms and expressions which have meaning beyond the immediate problem and its solution. Design may stop short of the problems of art, and art may bypass the problems of design. All artists are designers, but all designers are not necessarily artists. Both are subject to criticism—by themselves, by each other and by invited or self-appointed critics from the world at large. Design and criticism have reciprocal relations—each one depends upon, and changes, the other.

It was not always so. In that golden age of primitive communism in which society began, design, art and life were one, so inextricably one that no one thought of separating them. Save for a few isolated and idyllic spots (all now within jet range) those days are gone forever. Eight thousand years of accelerating complications in production and divisions in labor have separated art from life, design from art and the various disciplines of design and art from each other.

Design begins with the most simple, humble, direct, practical problem-solving procedures. The first stone axe was the first design problem. Every do-it-yourself homeowner, every worker in the handicraft areas of production and construction faces similar problems daily. The commercialization and professionalization of design have developed as problems, have become more complex and standards for their solutions higher. Industrialization has accelerated the rate and expanded the scale of complication. But the basic process remains the same. First we must understand the problem, including the resources available for its solution, thoroughly by rational analysis. Then we must formulate its solution, by formula or by creative synthesis (or by both). Here lies the fork

“Criticism can take two approaches. It can criticize the object or work as it is, or as it appears to the critic, without research or reference to the conditions and processes which produced it. Or, it can make a serious effort to learn and understand those conditions and processes in order to better understand the result.”

“Design tends to change from a patient search for meaningful form to the assembly line production of perfect monuments. Any criticism which tends to question this perfection is apt to be received with closed ranks and incredulous silence by the profession.”

in the roads to potential art or practical mediocrity. Today all design is not creative. By a sort of Parkinson's Law of its own it may proceed via imitation and faithful reproduction to the ultimate crutches of engineering rule books, building codes, zoning ordinances, eclecticism and academic systems of style and form. All of these, in varying degrees and for various reasons, are substitutes for, or detours around, the creative design process.

What do we mean by creative design? We mean design based on the actual nature of the problem, rather than on preconceptions as to the form of its solution. We mean also design based on the actual nature of available materials and skills, rather than on abstract notions about them. We mean design which adds something, however small, to new solutions using familiar means for familiar problems—as a house of wood. We mean design which can produce radical new solutions for familiar problems by using unfamiliar means—as a house of fiberglass. We mean design which can attack new problems with means familiar or unfamiliar, and produce trail-blazing solutions—as in modern architecture and aeronautics. And we mean design which can solve familiar problems with familiar means in unprecedented forms by applying the inspirational qualities of art researches into space and form. Thus creative design springs from a triangle composed of problem, means and research by itself or others. It is in itself a constant research project—the patient search for relevant and meaningful form.

Relevant and meaningful have many interpretations. They may mean a housing development in which ordinary citizens can lead decent and dignified lives. Or they may mean the palace on the hill, expressing the wealth, the power, the benevolence or arrogance of those who own and rule the town, the region or the nation. They may mean a playground in which small children can become familiar with the potentialities of their own bodies and oriented to the physical and social world around them. Or they may mean a monument designed to impress the public and posterity with the fact that a great artist was there. They may mean a serious new effort to interpret the world around—or a campaign to bamboozle the public and protect the incompetence or cynicism of the designer. They may mean a campaign to lead man to a better world—or to sell him a gold brick.

Time goes on and the world changes. Yesterday's arrogant palace may become today's hospital, school or museum. This may give it a new relevance

and a new meaning, different from that which would attach to a new structure for the same purpose. Likewise yesterday's pleasant housing development may become today's overcrowded slum, with a similar but reverse change in relevance and meaning. Each designer is free to choose the problems on which he will work. But few can predict the action of history on their work. The designers of the Auschwitz gas chambers or of the atomic bomb are not to be envied. But if the latter ends the possibility of major war it will become one of the most ironic landmarks in world design.

To be relevant and meaningful today, design must concentrate on our most real and pressing problems. We are flooded every year with shining new advanced designs for *things*, isolated elements which are the commodities of our merchantile world—appliances, furniture, vehicles, houses, stores, office buildings. But we are more and more conscious that these are not solving our problems, and may in fact be creating new ones. Vehicles create traffic problems, construction creates problems of circulation, communication and community services. These are beyond the scope of commodity production procedures to solve.

At this point the need for a synthesis of design disciplines becomes apparent. The designers of furniture, vehicles and buildings should perhaps get together to discuss the joint effects of their work. However, their specialized preconceptions and the attitudes of their clients make this difficult. The result is the creation of a new professional discipline—planning. This becomes a coordinating, sometimes coercive, umbrella over the activities of other design fields, particularly the space-forming professions—architecture, engineering, landscape architecture. In their work the existence of multiple overlapping, and therefore the need for careful coordination, has been apparent for some time.

Time goes on, problems multiply, expand and interlock, particularly in urban areas. Land-use, construction, recreation, traffic, smog, economics, esthetics, industrial and handicraft production find themselves helplessly intertangled. Programs based on urban renewal legislation bring out the existence of a gap between planning and space-forming disciplines. We begin to formulate concepts of urban design, with attendant debate on whether this is a new field, or one to be taken over by an expanded architecture, engineering or landscape architecture. Hovering in the wings is the concept of environmental design, a more total approach to the prob-

lems of landscape experience, indoors or out, urban, suburban, rural or primeval. Beginning with shotgun marriages of various design disciplines (inspired by the exemplary collaborations and expansions of leading individual practitioners) we may perhaps develop a way of analyzing environmental design problems as elements interlocked in the continuity of landscape experience which has no beginning and no ending in either time or space.

The creative (curious, dissatisfied, restless) urge in man produces constant efforts to improve on previous solutions, to expand the boundaries of experience and understanding, to widen influence beyond the problem limits, to escape from the accelerating accumulation of precedents, traditions, rules and regulations. This is the urge which leads to the production of memorable works of art.

"Yes, every form has become a formula and distills a nameless boredom. Every common syntax is disgustingly insipid. The best gratitude toward the art of yesterday and in the fact of accomplished masterpieces is not attempting to imitate them. The perfect is what does not need redoing; and setting the past before us is raising an obstacle to the future. . . ." * We may well envy the ancients, the Egyptians and Greeks, who approach their problems with clear minds and open eyes, unfettered by our massive baggage of accumulated historical precedent.

As the scale of design expands the opportunity for creative exploration appears to shrink. Poets, writers and painters are our traditional and most reliable shockers, debunkers, boundary-breakers and trail-blazers. They are followed by sculptors, composers, architects, landscape architects, whose work involves greater concentrations of materials and labor. Engineers and industrial designers, in developing the potentialities of advanced technology, have produced new forms inspiring to the other arts. Planning, though often shocking to the city fathers, is most conservative and frustrating in the eyes of other designers. And yet any flight over not-completely-urbanized landscape will reveal the close analogy between general landscape and special painting, even the most advanced.

In handicraft societies the environment improves through the accumulating inspirations of thousands upon thousands of anonymous craftsmen and master builders, plus the occasional inspired artist whose name has come down to us. In industrial societies the inspiration of the craftsman has been largely lost, leaving the burden on the conscious professional artists and designers. The loss of the basic connection with earth and nature, represented by handicraft disciplines, leaves the professional artist and designer abstracted, etherealized, disconnected from reality. The resulting tendencies toward thinness, intellectualism, mechanical repetition and general cultural anemia are all around us. Only superior talents and vitalities rise above this tendency.

The machine is no substitute for nature as a source of design inspiration and discipline. People as nature can be inspiring—as society they may be frustrating.

The relations between scale and scope of work, technical organization, social attitudes and bold new creative ideas are thought-provoking. In a society such as ours, which includes dynamic, fast-moving (liberal, progressive or radical) forces—technology, the arts, civil rights and peace movements—and stodgy, slow-moving or stagnant (conservative or reactionary) forces—government, education, extreme right-wing groups (dynamic in a destructive sense)—the contradictions between conformity and free-thinking and free-feeling are in constant flux. The pressures toward conformity with the status quo, with its illusions of security, are constantly upset by the appearance of new ideas and forces which cannot be blocked or suppressed. Acting on the classical principle "if you can't lick 'em, join 'em," the forces of conformity tend to absorb each new idea as it appears, and convert it to their own purposes. Yesterday's inspiration becomes today's design formula and tomorrow's hack reproduction. The lazy minds which accept such easy precedents, which search for rules and regulations to stabilize life, eliminate problems (hopefully) and hence make design (decision-making) unnecessary, are of the essence of conformity. Yesterday's brilliant theory of atomic fission and fusion becomes today's H-bomb; yesterday's brilliant exploration of paint, canvas, feeling and space becomes today's billboard; yesterday's liberal finds himself at the Berlin wall or in the Vietnam jungle.

Where does criticism enter this picture? Criticism is expressing your thoughts and feelings about work performed by yourself or others. It may be positive or negative, in the sense that it may help the criticisee or the criticisor. Disregarding self-criticism, the most healthy and least-practiced area, we can distinguish between positive criticism, which is constructive in attitude in relation to the entire field or discipline whether or not it is accepted by the criticisee, and negative heckling whose primary objective (conscious or unconscious) is to improve the position of the criticisor at the expense of the criticisee. In a competitive society, where all is fair in love, war and business, it is often difficult to separate the positive and negative aspects of criticism. Hence our avoidance of critical analysis within or between professions, our fear of "hurting someone's feelings," of alienating a source of work, or of damaging another's source of livelihood (slander or libel). And, since practice makes perfect, hence the inept nature of our criticisms when they do occur. Only in schools do we have constant practice in criticism, but only on the unequal, one-way instructor-to-student basis.

Criticism can take two approaches. It can criticize the object or work as it is, or as it appears to the critic, without research or reference to the conditions and processes which produced it. Or, it can make a serious effort to learn and understand those conditions and processes in order to better understand the result. The former is apt to be a less tol-

* From "Dada," by André Gide, in "From the N.R.F.," edited by Justin O'Brien; Farrar, Straus & Cudahy. New York 1958

erant and more self-serving approach; the latter more understanding, more sympathetic or tolerant and more constructive. The former is concerned with the things or elements which result from art and design processes; the latter with the nature of the processes and with their results as milestones of development. It is debatable which approach is more relevant with more or less distance in time. The former might be called the intuitive or emotional, the latter the rational or historical. Both are subject to the pressures of competition and ego.

Criticism is active and professional in those fields most directly concerned with communication, hence perhaps easiest to criticize. In the fields of mass culture—movies, TV, radio, newspapers and popular magazines—where both carrot and club are heavy, we find clear-cut distinctions between criticism designed to please the producer (or his competition) and that aimed seriously at improving form and/or content. In the more restricted areas of theater, music, literature and poetry we find active criticism of both positive and negative varieties. In painting we seem today to have a special situation—criticism which attempts to explain or clarify, and in so doing produces torrents of language more difficult to understand than the subject paintings. There are a few exemplary exceptions.

When we move into the three-dimensional arts, criticism seems to become rarer and more difficult. Perhaps there is not as large an audience—and yet three-dimensional forms, structures and arrangements, which shape our ever-present environment, are more constantly with us in daily life than even the most persistent elements of mass communication. We can turn off the TV and the radio, throw away newspapers and magazines—but we cannot eliminate buildings, open spaces, streets, cars and street furniture. Yet criticism in these areas is on either a bare functional or an abstruse esthetic basis, with rare exceptions. We seem to have no vocabulary for discussion of three-dimensional experience on a common everyday plane. Perhaps this is a problem of a literate society which is literally drowning in the flood of words, both on paper and on the air. Perhaps, like smog, this tempest of language (in which words themselves lose their meaning) so obscures our vision that we can no longer see the fundamental landscape which surrounds us. Or perhaps education, caught between the three R's, academic culture and totally inadequate financing, has failed to orient us toward critical examination of that most eternal of verities (no matter how changeable), our physical environment. Perhaps our concern with the social environment (civics, current events, social studies and sciences) has blinded us to the physical landscape which is a direct specific and informative expression of it. Perhaps we are so bemused with technological marvels that we cannot see what they are doing to the quality of the landscape. Or perhaps, finally and most likely, in that conflict between competition and cooperation which lies behind our daily lives, in which competition is supported by the forces of conformity which view cooperation as an international conspiracy, construc-

tive (cooperative) criticism tends to become lost in the fog of destructive (competitive) heckling.

Is conformity cooperation? No. The essence of cooperation is freedom of choice, voluntary participation. Conformity offers no such alternative.

Perhaps I have minimized the chief function of criticism, which is, of course, social: to analyze, clarify and comment on a given work for the benefit of an audience which may consist of design colleagues, the world of art and design, or the general public. However, the relations between positive and negative criticism hold true in this larger framework.

Another factor complicating the relations between design and criticism is professionalism. This embodies various attitudes, not necessarily all together, with which we are familiar—the quest for esthetic or functional perfection, the concept of prime responsibility to the client, control of the field by self-administered licensing and organization in order to exclude unqualified practitioners, building the profession as an end in itself (“service to the profession”), a public image of omnipotence and infallibility, the gift of always being avant-garde yet never making mistakes, of constantly experimenting yet never wasting money, etc.

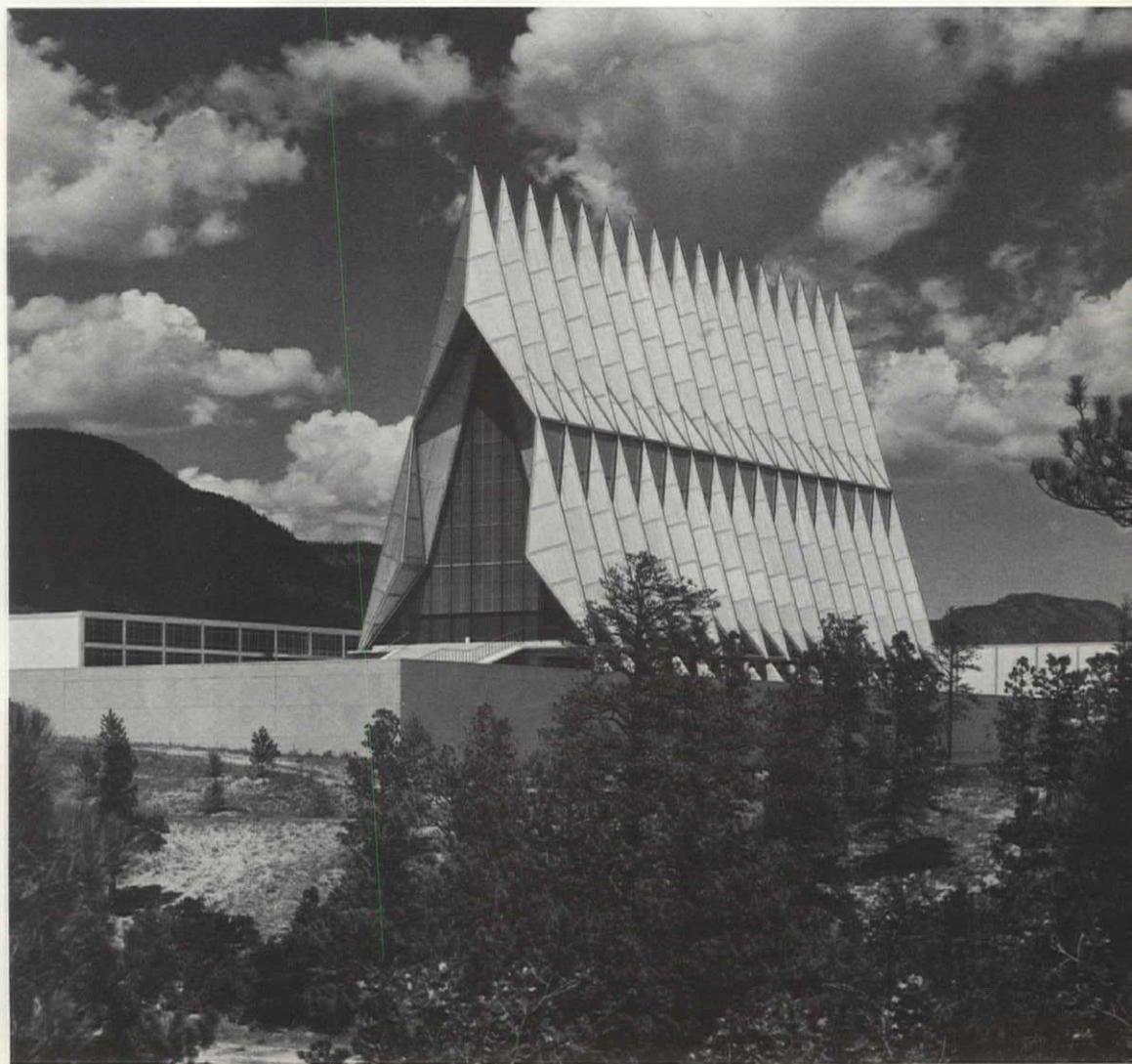
All of this produces subtle adjustments or distortions in the functioning design and criticism. The quest for perfection tends to make the results more important than the process which produces them. Each painting, building or garden becomes a monument, the final and conclusive answer in its field. There is nothing left thereafter but to produce a new, different and even more final answer. Design tends to change from a patient search for meaningful form to the assembly line production of perfect monuments. Any criticism which tends to question this perfection is apt to be received with closed ranks and incredulous silence by the profession. Within itself, of course, criticism will tend to produce groups pro and con a particular work. These will each tend to act as though they *are* the profession.

The concept of primary responsibility to the client tends to override responsibility to the community, or to society at large. Licensing has been called—usually by those who didn't make it—a system for limiting competition. The profession as an end in itself tends to forget its beginning as an analyzer of problems and a searcher for the best solutions (see differences between architects and landscape architects over site planning and urban design). The public image of perfect reliability tends to conflict with the modest experimental approach which is never satisfied with its results, and which does not expect to achieve perfection.

This is not by any means meant to imply that we should abandon the standards and orderly procedures we have established through professional organization. It is really just thinking out loud. We know that most of these conflicts and contradictions are resolved in the careers of those considered our best practitioners. The question is, how can we continue to improve professional practice, in relation to the actual nature of the problems which exist in our environment? ■

Air Force Chapel / Reynolds '64

SOM's controversial building becomes the second American project to win the annual \$25,000 international competition for distinguished achievement in architecture with significant use of aluminum



R. S. Reynolds Memorial Award

FOR THE SECOND TIME in the eight-year-old international competition, an American building—US Air Force Academy Chapel at Colorado Springs—has been named winner of the R. S. Reynolds Memorial Award in 1964. On behalf of Skidmore, Owings and Merrill, partner-in-charge and designer Walter A. Netsch Jr, AIA, of the firm's Chicago office, will receive the \$25,000 prize and an original sculpture by Leonard Baskin of Smith College at the AIA national convention in St. Louis on June 16. His design assistant for the project was Ralph P. Youngren AIA.

The Chapel's seventeen aluminum spires, rising 150 feet to dominate the flat buildings of the Academy campus, are formed by 100 tetrahedrons made up of steel pipe frames clad inside and out with aluminum. Between the tetrahedrons run continuous strips of stained glass, designed in Chartres. The spires are anchored to concrete abutments.

The Chapel provides separate worship facilities for three major faiths. A Protestant chapel on the upper level seats 900 persons; below, a Catholic chapel accommodates 500, and a Jewish chapel, 100.

Jury Report:

A religious chapel has always been one of the most challenging and difficult problems of architectural design. Traditionally, all people expect to experience more emotional, visual and spiritual stimulation from this type of building than from any other single form of the architect's expression.

The light, airy feeling of this beautiful soaring structure, so appropriately placed in the center of this complex of buildings, dominating its environment in a manner similar to the cathedrals in villages of

Europe (1), and reflecting in its silhouetted structural forms the mountains of its background (2), is uniquely appropriate to this very special problem of a chapel for the US Air Force Academy.

This building, while admittedly a subject of considerable controversial discussion among everyone seriously interested in ecclesiastical architecture, is nevertheless an ingenious and powerful solution to its particular and unusual design problem; and, in the Jury's opinion, it demonstrates a most appropriate use of both historical and contemporary materials and building techniques (3) chosen by the architects for expression of their design solution.

The Jury regretted that the spaces for worship and meditation for the two other denominations (4, 5) do not capture the inspiration of feeling which is so admirably obtained in the upper sanctuary. It was also felt that the west end of the upper sanctuary (6) might be lacking in the richness of material and inspiration of spirit which should be expected, and which is actually evident in the opposite end of the same space in the intricate and beautiful forms of the pipe organ (7) silhouetted from the interior over the east entrance.

The Jury was most pleased that it had the privilege of unanimously awarding the 1964 R. S. Reynolds Memorial Award to so distinguished an example of American architectural design in a competition open to all countries in the world.

HANS MAURER, BDA, CHAIRMAN

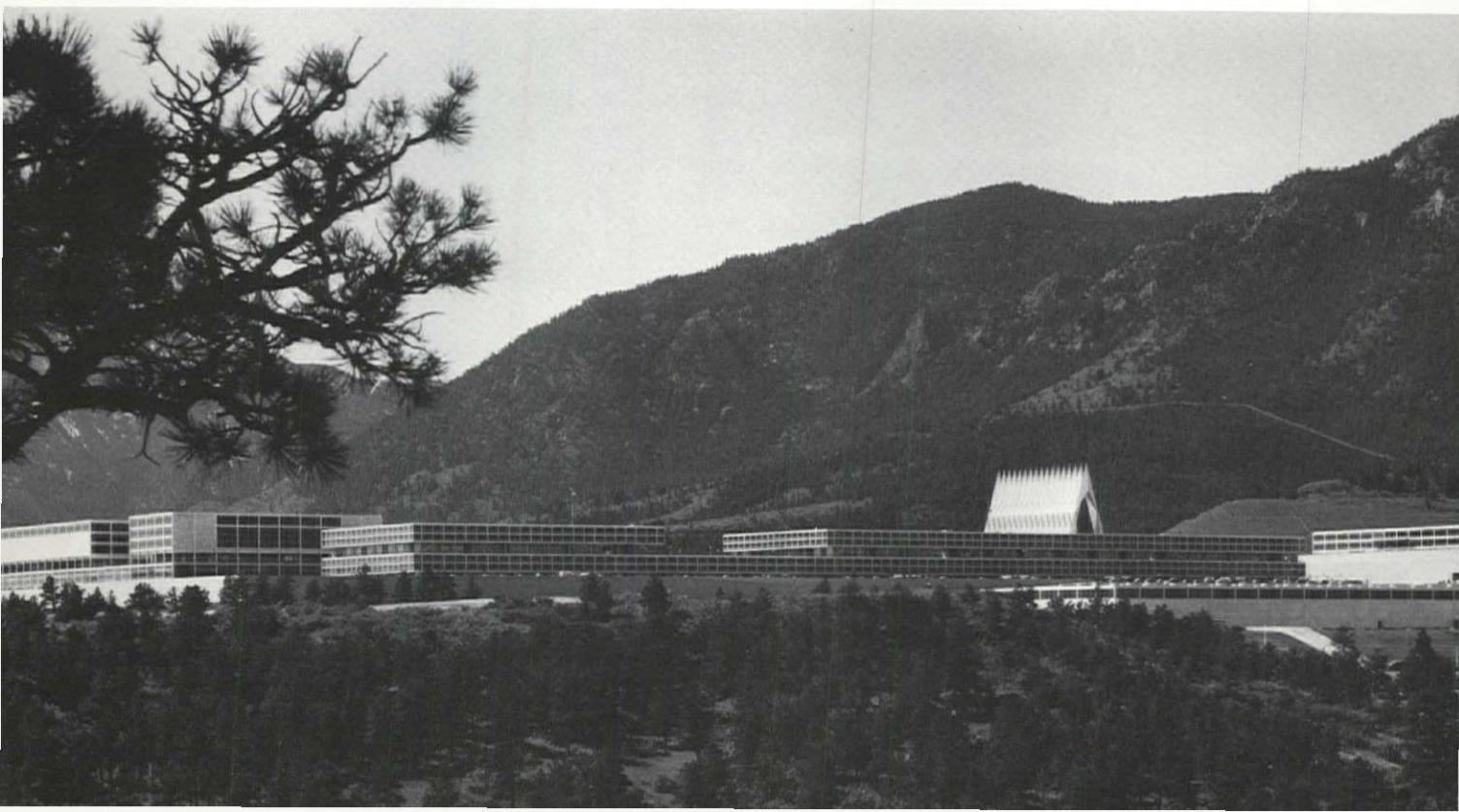
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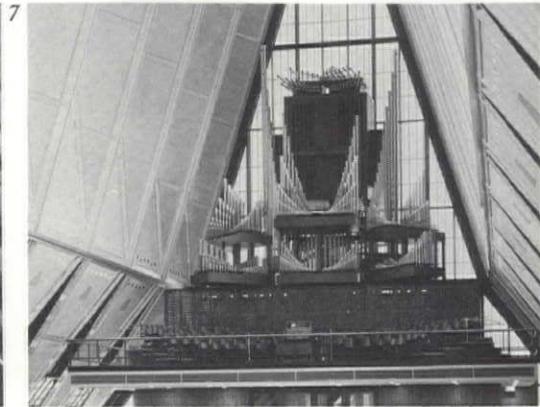
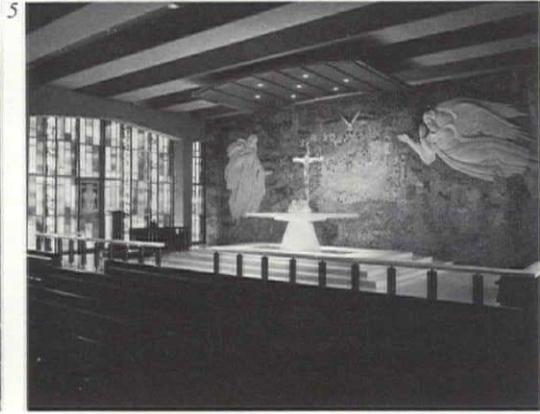
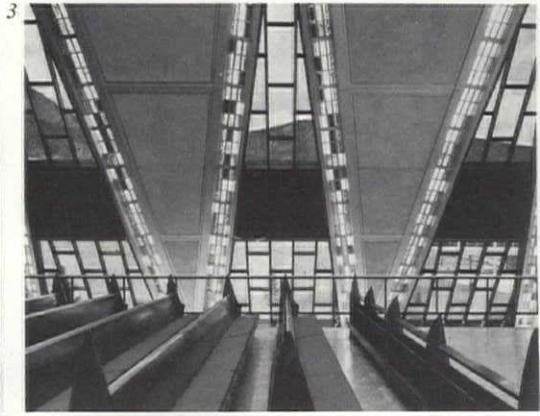
GEORGE F. PIERCE FAIA

ROBERT M. LITTLE FAIA

*MARIO CIAMPI FAIA

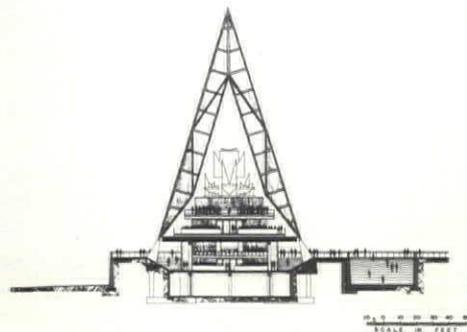
*Due to illness, Mr Ciampi was unable to attend the Jury deliberations. ■





- 1 "Dominating its environment in a manner similar to the cathedrals in villages of Europe"
- 2 "Reflecting in its silhouetted structural forms the mountains of its background"
- 3 "A most appropriate use of both historical and contemporary materials and building techniques"
- 4, 5 "Spaces for worship and meditation for the two other denominations (Jewish, left; Catholic, right) do not capture the inspiration of feeling"
- 6 "West end of the upper sanctuary might be lacking in the richness of material and inspiration"
- 7 "Intricate and beautiful forms of the pipe organ"

PHOTOS BY STEWARTS COMMERCIAL PHOTOGRAPHERS, INC



The Space Between Buildings

EDMUND N. BACON AIA

*Executive Director
Philadelphia City Planning Commission*

*Bacon conceives the city as a definite
art-form, influenced
by the movement systems within it*

THIS IS A MOST SENSITIVE and important moment in architectural history. The transformation of American cities which will occur over the next few years will be of a scale without parallel.

And so this question, "What does this transformation say about our contemporary civilization?"

The further question will be asked, and will be answered by the evidence at hand, "What has the profession of architecture done about all this?"

In my view a very important thing happened in Chicago in November 1961, when a group of architects met to discuss the subject, "Modern Architecture and the Rebuilding of Cities." Since these are some of the most brilliant and creative members of the profession today, the conclusion they came to was of great importance, and I am afraid the conclusion was that modern architecture can do very little indeed.

One of the participants sought refuge from city chaos in the creation of little miracle islands of perfect design, one asserted that city building would bore creative men, one plaintively asked that the architect be restored to the preeminent position without making it clear who was to restore him nor why he didn't restore himself.

This formal disavowal of the competence of modern architecture to meet the problem of rebuilding cities marks a critical point in the development of our profession. I stress it not to detract from the undoubted genius of the designers who made it, but to sharpen the issues which lie ahead, for the city will continue to exist, it will continue to be the center of our culture, and it will continue to be the central problem of architecture whether the profession of architecture recognizes it or not.

I think there is a new generation rising, not conditioned by the limitations of those now in the saddle, which has caught a new vision of the possibilities of the total environment and of the city as the place where architecture will reach its full potential. The important thing for them to learn from the Chicago conference is that they will not find in the work and thoughts of the older generation the answers to their problems. They must look within themselves

for the strength, the concepts and the basic motivation to bring architecture into the role it should play in the world tomorrow. It is to them I address what I have to say.

One could justly question under the circumstances, what business I, a member of the older generation, have to speak on this question. The thing I bring is not any exceptional skill as a designer nor any extraordinary intellectual powers, but rather a remarkable range of experience, over a remarkably long time continuity, under which a remarkably exciting and creative city has been subjected to a continuous and vigorous application of consistent architectural influences. Over a twenty-two year span I have closely observed the interaction between architecture and city development, how each has affected the other and has in turn been affected by it. I have finally succeeded in distilling the essence of this experience into a single, simple, explicit hypothesis, which I will now put forward in the hope that it will prove useful.

The important thing is not whether you like what we have produced on the ground; here I expect you to do much better. The important thing about this hypothesis, and I consider it to be very important indeed, is to contribute toward the answer to the question, "*How to relate the genius of the designer to the problem of the city?*"

Nature of Design

The first step is to consider the essential nature of design itself.

The word "design" should serve as a strong link between the architect and the planner. Surely the architect needs no props to feel at home in the word "design," and for the planner Webster reminds us that design means "purposive planning" and "the relation of parts to the whole," surely encompassed by the planner's concern.

At the outset I make a simple assertion, "Design is the unity of apprehension, representation and realization," and then set about to explain what this means. The three key words were chosen with care, and are interlinked in their meaning.

Apprehension was derived from a sentence in Heinrich Wölfflin's "Principles of Art History," "Beholding is just not a mirror which always remains the same, but a living power of apprehension which has its own inward history and has passed through many stages." I shall attempt to show how these various stages of apprehension have influenced the form of cities in the past, and how our contemporary apprehension of space might influence contemporary forms.

When I turn to Webster I find that apprehension means, "to become aware of through the senses," "to sense emotionally," "to lay hold of with understanding" and "the power of conceiving ideas." It requires the development of the highest sensibilities to really relate effectively to space. It is the extreme opposite in the evolutionary scale from the embryo, the spaceless state in which we begin life, and it is the point of beginning for the architect.

Representation was chosen because of the Webster definition, "to bring clearly before the mind," "to set forth with advocacy or with the design of affecting action," and, in the philosophical sense, "to apprehend by means of an idea."

Our ability to see and feel is limited by the scope of our techniques of representation just as surely as our ability to think is bound by the scope of our vocabulary. I shall attempt to show the enormous influence of new methods of representation in the past on both apprehension and realization, and to indicate the very serious limitation imposed on our current work by our failure to develop techniques for representation of space which parallel our contemporary apprehension of it.

Realization is derived from Walt Whitman's magnificent lines from "Leaves of Grass":

O to realize space!
The plenteousness of all,
that there are no bounds,
To emerge and be of the sky,
of the sun and moon and flying clouds,
as one with them.

In these lines, perhaps as fine an assignment to modern architecture as exists, Whitman has expressed

the burgeoning consciousness of space in the United States, and has magnificently combined realization with apprehension.

Webster finally completes the circle by saying to realize is "to convert from the imaginary into the real," and finally, "to apprehend clearly." The sense in which the word is used here is the realization of the design idea through the actual construction on the ground.

This continuous circle, feedback and interaction between apprehension, representation and realization is the vital essence of the design process and has its own history which I have divided into four sections, the Intuitive, Individual Centered, Single Movement System Centered, and Related Multiple Movement Systems. These are convenient broad generalizations rather than specific time spans but they fall roughly into these four periods: medieval, Renaissance, baroque and modern.

The Intuitive period was one in which the scale of town and city building was such that there was, in fact, unity of apprehension and realization, and representation played a different role from its role today because the buildings were conceived by the master builder full-scale on their ultimate site. The result was the unity which is typical of the form of medieval towns, of the town as a clear totality in the design sense.

The Individual Centered period started with the discovery of scientific perspective by Brunelleschi early in the 1400's which shattered the intuitive flow and unity of apprehension and representation of the medieval period. The ability, which never existed before, actually to represent on a flat picture plane what is seen by a single individual at a single point in space at a single moment in time arrested the flow of time, and fragmented time into a series of disconnected individual centered moments in time and space.

This was a logical outgrowth of the new emphasis on the individual resulting from the awakened interest in classical studies, and laid the basis for an entire new science, but its immediate effect was disruptive. The design work of the early and high Renaissance was principally that of individual, self-sufficient buildings. While clearly there is a medieval city and a baroque city, there is not, in the same sense, a Renaissance city, only Renaissance buildings.

I think we are in a closely comparable situation today. Modern architecture shattered the Beaux Arts grand plan, but no such thing as a modern city has yet arisen, only modern buildings separated by space.

The Single Movement System Centered period was a logical outgrowth of perspective. The development of one-point perspective, usually with the vanishing point on the center line of the picture plane, established a perfect unity of representation and realization. Designers now thought in terms of symmetrical buildings or groups of buildings seen from a single vantage point, and a one-point perspective rendering of them looked very much like the real thing. The sad part of it is that the modern camera records in precisely the same manner that Brunelleschi drew the Baptistery at Florence, so we are still

the prisoners of one-plane perspective, as it were.

As the men of the Renaissance played with this new toy, originally conceived as a means of representing mass, more and more they became fascinated with what it would do with space. The compelling vanishing point, the point of infinity, right in the middle of the picture, tended to pull space more and more deeply into the picture, finally resulting in a central shaft of space perpendicular to the picture plane, architecturally delimited and terminating in an architectural focal point. So was movement re-established as the basis of design, but this movement was along a single, straight track, right down the axis of a centrally oriented perspective.

While this was occurring architecture itself was generating more and more internal dynamism which, in the baroque period, burst forth in vigorous expression on the outside of the building, and finally extended itself beyond the structure to its surroundings, exhausting itself in the city. Pope Sixtus V added the final element in Rome by setting up a series of single axial movement systems, intersecting and interacting, punctuated by points of architectural emphasis spaced along them and at their termini. Now we have a total situation. The buildings put forth a vitality which flows out from them. They, in turn, are affected by the axial movement systems which impinge upon them from the outside and which provide channels along which their vitality can act. Through this interaction of building dynamism and the movement system design structure, we again have a unity of apprehension, representation and realization, and the total city design can be compared with the medieval intuitive unity.

Related Multiple Movement Systems seem to me to provide an adequate base for contemporary city design, and this is the hypothesis I propose to put forth here.

The single axial movement system which was the basis of baroque design no longer serves our needs. For one thing, the scale of the metropolitan area has expanded so greatly that this system is too limited to encompass the multitude of impressions produced. For another, the axial movement is based on an aristocratic notion of society which is just not compatible with our democratic ideals. Finally, the variety of our methods of transportation and the range of speeds of movement and rhythm of impressions gained presents a complexity of design undreamed of in the baroque period of the measured pace of the promenade, the sedan chair and the carriage.

The methods of design used in the planning of redevelopment projects today are not good enough. You have only to look at designs for most urban renewal areas to see that there is no system at all, or there are vague and ill-defined symmetries which are destroyed by what is interposed, or there is just the "flat thinking," based on a patchwork of different kinds of colors representing some static concept like "land-use," or "building intensity" or "floor-area-ratio," which has no vitality nor power to create life. Just as many architects are one-building bound, so many planners are one-plane bound.

One of the objectives of the simultaneous movement concept is to free ourselves from the picture plane and, in our planning, to move about freely in the many dimensions of spatial reality. Now the energy of the design will come from the totality of the forces impinging upon the building from the outside, the resolution of the total impact of the movement system which bears upon it, the structure itself being a moment of stillness in the total system. From this may grow the new urban esthetic, and through it may be restored the unity which existed in the systems of an earlier day.

Relation of Simultaneous Movement Systems to City Design

In order to influence the growth of cities, one has to be perfectly clear as to what one is doing. The methods of design used in single buildings or a group of buildings are ineffectual in the design of the city for two major reasons.

First, the geographic extent of the city is so great that the human mind is incapable of developing at one moment in time explicit three-dimensional solutions for the entire area involved. Efforts to use this approach only result in rigidity, sterility and frustration.

Second, the city is of so great a scale that the various pieces of it are built and re-built over a longtime-sequence. Therefore, any design used for part of it must be capable of organic growth, modification, extension into ever-enlarging geographical areas and over a long period of time.

It is my objective to describe the nature of simultaneous movement systems, to indicate their relationship with natural phenomena and then to attempt to show how they have been and can be operative in the growth of city form. We see this statement as one of a series of evolving concepts that will be generated over the years ahead as the problem of city growth becomes more deeply understood.

The Nature of Simultaneous Movement Systems

—In attempting to describe precisely what is meant by simultaneous movement systems, I am touching on the following three areas:

- Relationship of mass and space
- Continuity of experience
- Simultaneous continuities

Relationship of Mass and Space—The first step is to orient one's mind to the fullest extent possible to the concept of space as the dominating element. One must be able to respond to space as the basic element in itself and to conceive abstractly in space. The history of scientific thought in recent years has, of course, continuously led us farther into the realization of the dominance of space and movement and to the notion that matter is really the product of movement in space. We must gear our thinking about cities to these new revelations.

Continuity of Experience—The fact is that life is a flow of experiences, an unbroken continuity of individual extensions into space in time, each moment of which is affected by and in turn affects the moments and experiences which precede and follow it. It is amazing how few of the physical designers

seem really to grasp this fact. Of course, this is the basic ingredient of literature, poetry and music, but it has not played the role it should in architecture and planning. The true role of design in the city should be to create an environment conducive to a continuous flow of harmonic space experiences on the part of every individual who resides within it from the moment he rises in the morning until he goes to bed at night.

Simultaneous Continuities—If one is willing to accept as the problem of design, to the extent that it can be done, the total experience of each individual who lives within the city, one realizes that one must attempt to conceive of the continuity of space experience in terms of a series of movement systems based on different rates of speed and different modes of movement, each interrelated with the other and each contributing its part to the total living experience in the city. This includes the sequences of experiences of people who move about the city in automobiles on expressways and local streets, in buses, commuter railroads and subway tubes. Since we are concerned about the total flow of experience, our design problem includes the moment of transfer from occupant of a vehicle to standing on one's own feet and the series of impressions that are gained there, and finally the movement on foot through the various paths to the various objectives which city dwellers have. As it is possible to conceive the essential form of these movement systems in three dimensions in space as a simultaneous pulsating abstract design, so the design structure of the city begins to emerge.

Relationship of Movement Systems of Natural Phenomena—A crystalline form is not capable of growth. It is perfect and complete at its moment of creation and can change only through disintegration. The forms associated with crystals are suitable under the early Renaissance concept of the individual-centered world and concern about the perfect experience of a single individual at a single moment in time. These forms are not suitable where we are concerned with the experience of all people at all times and where we are concerned with the total city and its interrelationships over a flow of time continuity rather than of a single individual at a single moment.

As we look at a tree we see here a design form which is capable of growth and which is a direct physical expression of a series of basic movement systems. The seed of the tree contains an impulse for growth, a directive which, among other things, results in a series of tubes which have within themselves a common quality: unity of direction or parallelism, and, in relation to the environment in which they are located, purposeful basic direction; they move vertically.

The wonderful thing is that this original directive includes within it the allowance for slight divergence. If it did not, if it insisted on literal repetition of the original directive, as do so many regulations and inorganic ideas, the indefinite continuation of exact parallelism of the food-carrying tubes would result in death because the area of exposure to light

would be insufficient to nourish growth. On the other hand, the divergence is within controlled limits and is always related to the original directional directive. If this were not so, and if each tube went its own way, the purposeless, directionless, cancerous growth would result in death just as surely as would the indefinite continuation of the original parallelism.

As the movement systems are clearly defined and purposefully established, even though they are modest in extent to begin with, as they are used by more and more people over time, they become more and more deeply established in the collective psychology of the community and so as a natural outgrowth, logical extensions, increased continuities, variations and enrichments occur, all related to the central movement system just as the branches and flowers are related to the trunk of the tree.

The Relation of Simultaneous Movement Systems Concept to the Design of a City

Because it is organic, this system can effectively be applied to small parts of the city at the beginning and grow over time. This is one of the characteristics we established at the start of this paper as being necessary for successful action.

In my view, it is far wiser when faced with the problem of producing a design for the growth of a large city area, to study very carefully the basic movement patterns and to establish the beginnings of positive and purposeful movement systems on a fairly modest scale and of limited geographical extent at the outset. As one works with the city over time, one observes the effects of this movement system, continuously studying its impact on other systems and the directions in which growth is desirable. If one stays on the job and continuously observes and creates in relationship to this clear central phenomenon, the concept of simultaneous movement systems interacting upon each other will gradually emerge as the clear one expressible in explicit terms in three-dimensional space.

It is my view that the idea itself must grow organically over time and that it cannot and should not be produced in all of its manifestations at a single moment. Unless it is reducible to explicit positioning in space in terms of feet and inches, it has not arrived as a concept.

This approach to the design for the growth of cities prevents the fatigue of attempting to cover enormous areas and enables the designer to move freshly and clearly about a vast area with a clear frame of reference for determining what needs to be designed and what may be left alone.

The fact is that the movement systems must be related to natural or man-made topography, they must take into account the nature of terrain and of the natural features or structures upon it. They can serve to emphasize and dignify and give new meaning to the symbols of an earlier period such as church spires, public buildings or other beloved or significant monuments and they must create a harmonic continuity of experiences dignified by the term design.

The actual nature of design of each movement system relates to the tempo of movement, its

purpose and characteristics. Expressway movements require free-flowing forms and curves and articulation widely spaced in accord with the rhythm of fast vehicular movement. On the other extreme, pedestrian movement systems require interest and variety in spaces producing impressions of rapid change under slow foot movement. The system requires frequent punctuation by focal points and symbolic objectives, usually consisting of a series of short sections at different angles with definite visual termini to produce the conditions desired. In between lie a range of more monumental or more public types of movements or objectives each with its own special type of requirements.

It is astonishing how much power such a concept of simultaneous movement systems has both to organize the design work of many architects into a coherent whole and, also, to develop loyalty to it, providing the essential ingredient of continuity which is necessary when building at the scale of a city.

The establishment of a movement system through an area provides a central theme for this basic experience against which are played the various sub-experiences as one moves off the basic central movement system into the various local streets and foot paths. It enables the city designer to establish the central theme and leave the sub-themes to the individual designers of the various projects which comprise the area. It enables the city designer to establish the significance of existing landmarks, expressing depth in time of the area's development.

I have been inclined in the past to represent the design structure or movement system directive as self-fulfilling by some magical or mystic power. Of course, this is wrong. The way in which they fulfill themselves is through the impact they make on the minds and sensibilities of the participants who move over them, including designers, developers, administrators, politicians, taxicab drivers and voters, producing reactions which are shared by large numbers of people, finally producing a common state of mind or area of consensus which, in turn, produces agreement to move ahead on an extension or enrichment of an idea which many people have shared. Of course, this works only if there are clear, central channels over which common movement occurs. If the movements are formless, multitudinous or confused, no consensus nor growth can result.

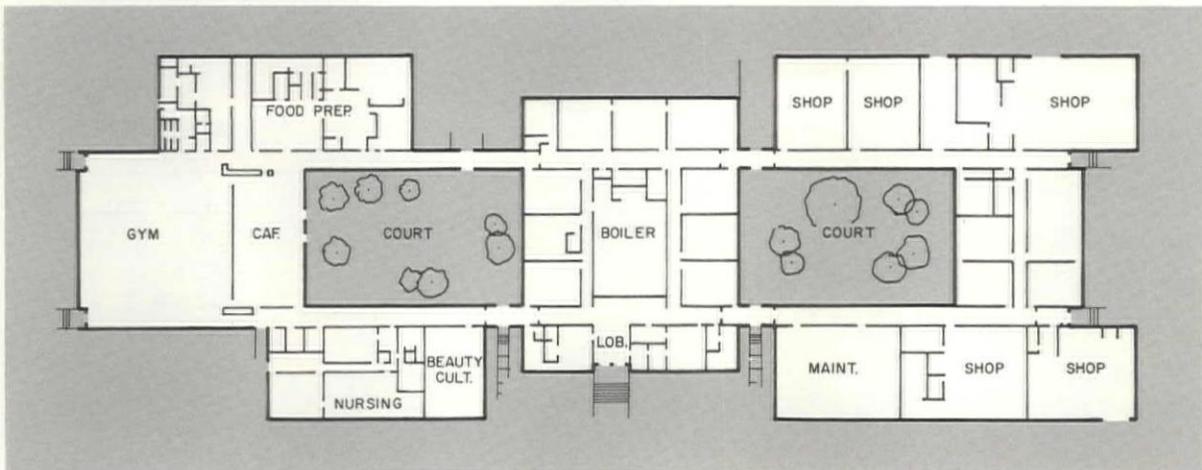
I must simply lean on the Philadelphia experience to say that a simultaneous, clearly expressed movement system is a very powerful influence capable of seizing men's minds and developing loyalties around it. Of itself it becomes a major political force. This is absolutely essential if we are to achieve a continuity of underlying design order over the period of time necessary to rebuild any significant portion of the city.

It is clear to me that the establishment of a total concept which involves a series of simultaneous movement systems, clearly expressed, not unrelated to the present scientific view of all matter, can truly provide the basic direction needed to liberate the creative capacities of the designers and to inspire the citizens with the will to get it done. ■

1964 School Building Exhibit

*From the 96th Annual Convention of the American Association of School Administrators
Atlantic City, February 15-19*

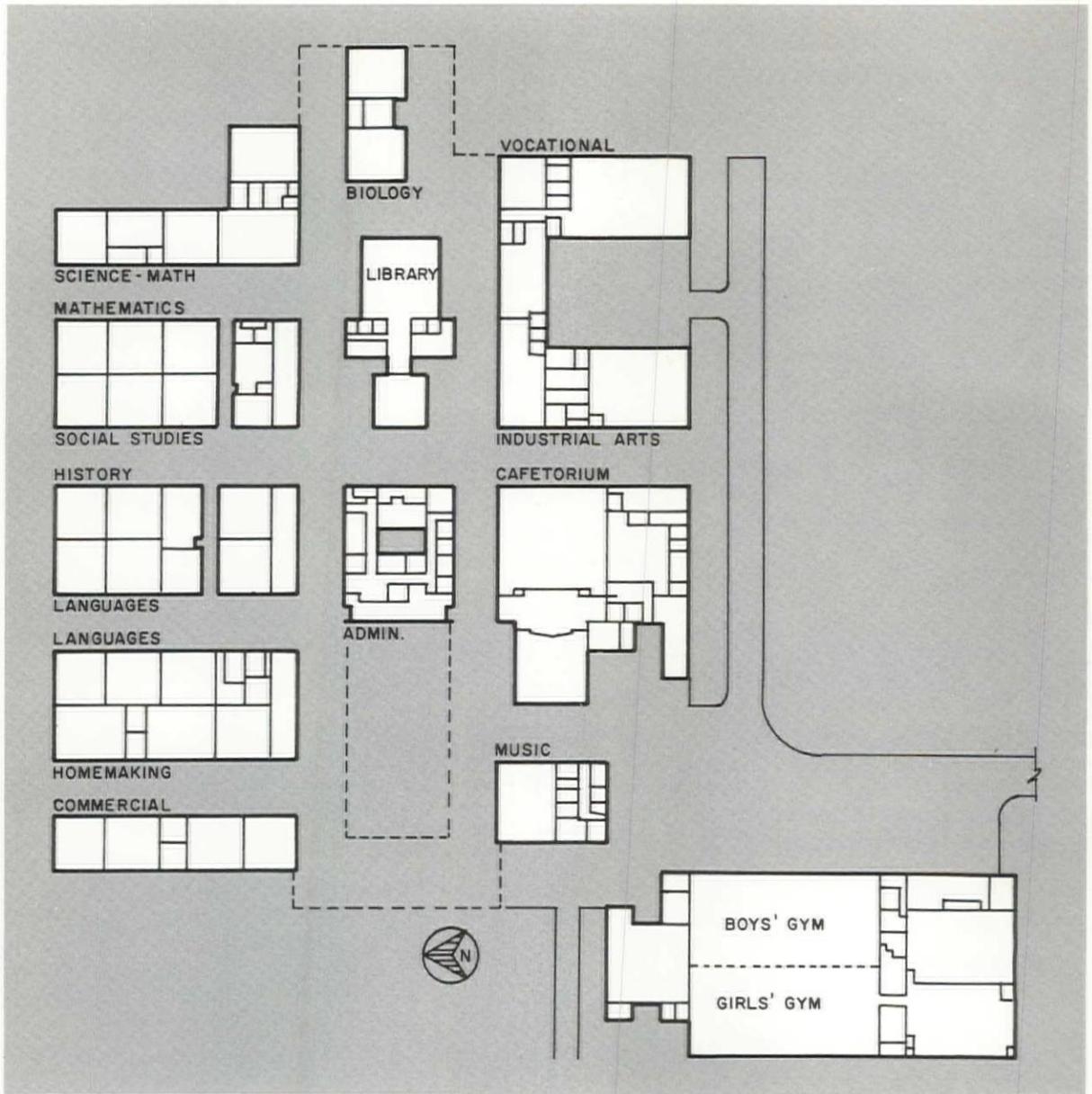
*A collection of designs selected by members of the AIA Committee
on School and College Architecture for an exhibit held in the Octagon House in Washington,
April 20 to May 24 (Committee members
exhibiting in Atlantic City did not participate in this selection)*



*Charles H. McCann School
of Vocational Education
North Adams, Massachusetts
The Architects Collaborative—
Architects
Cambridge*



PHOXION KARAS PHOTOS



High School
Issaquah, Washington
Young, Richardson and Carleton—
Architects
Seattle

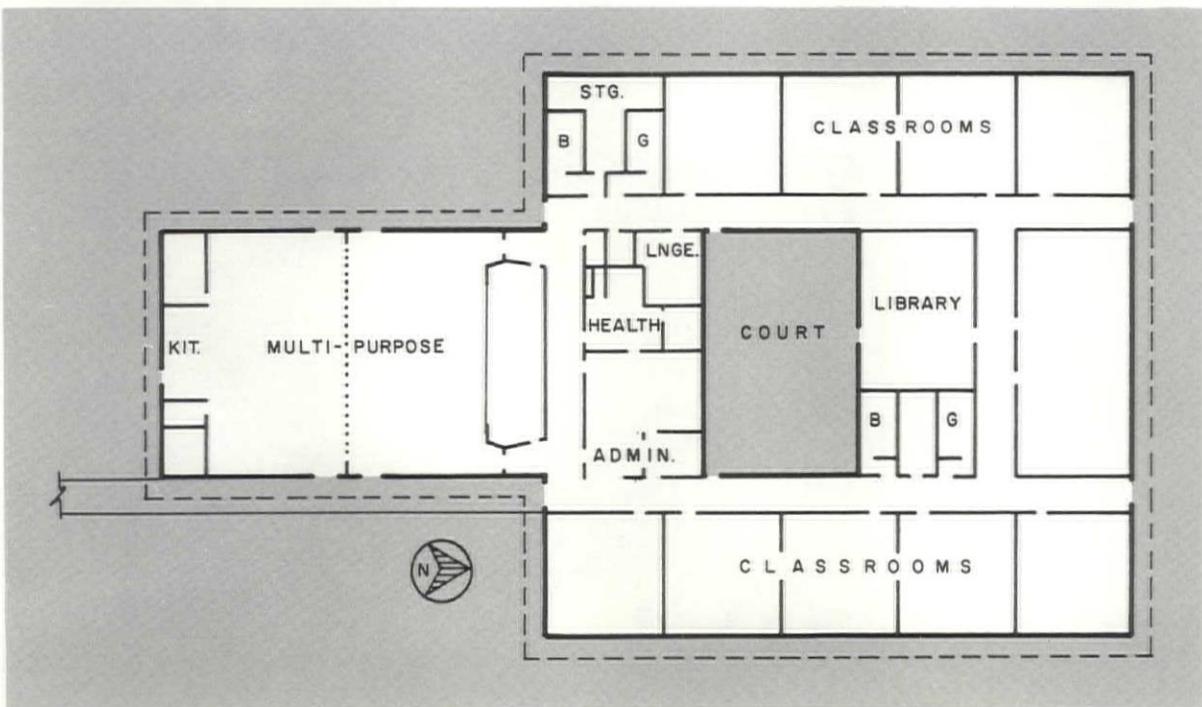


CHAS. R. PEARSON PHOTOS

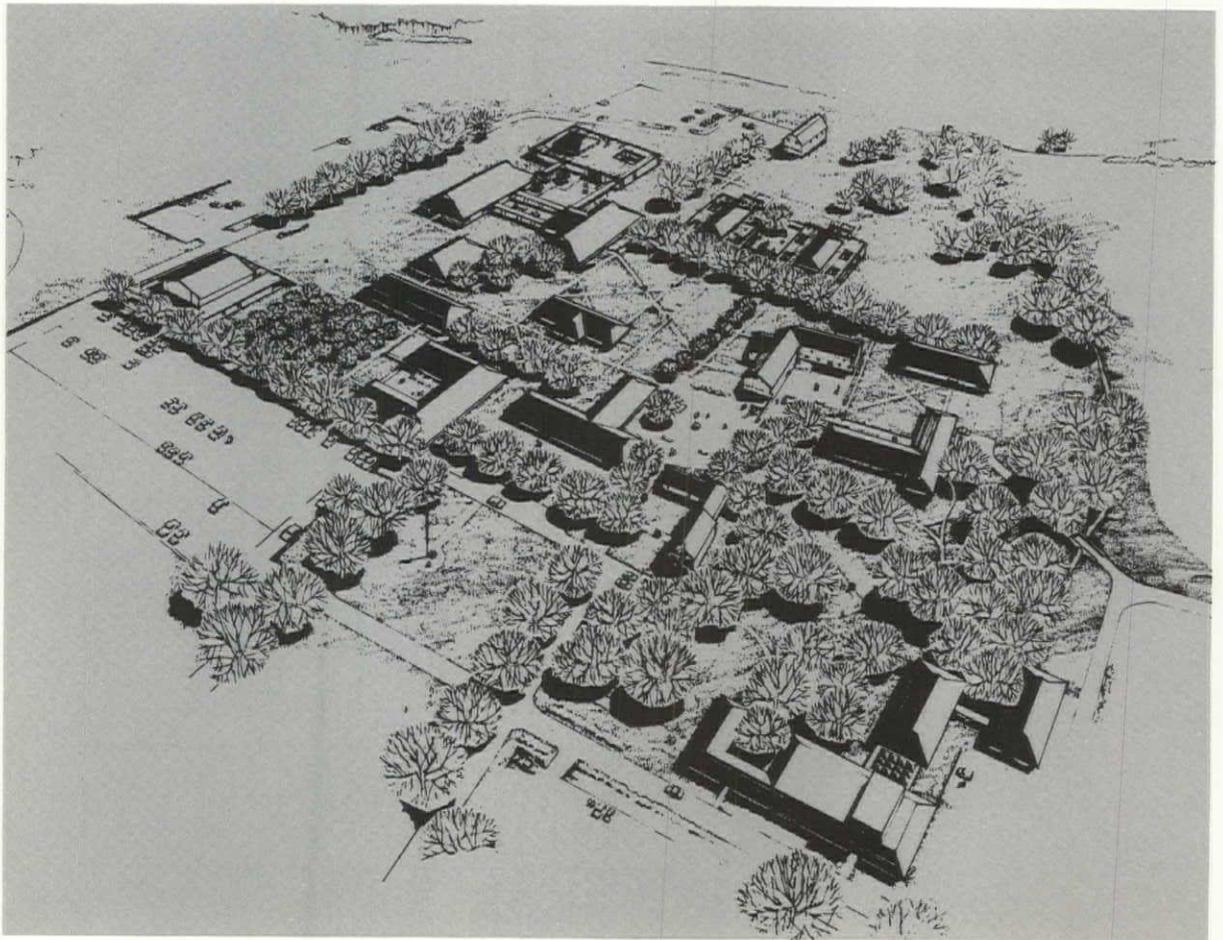
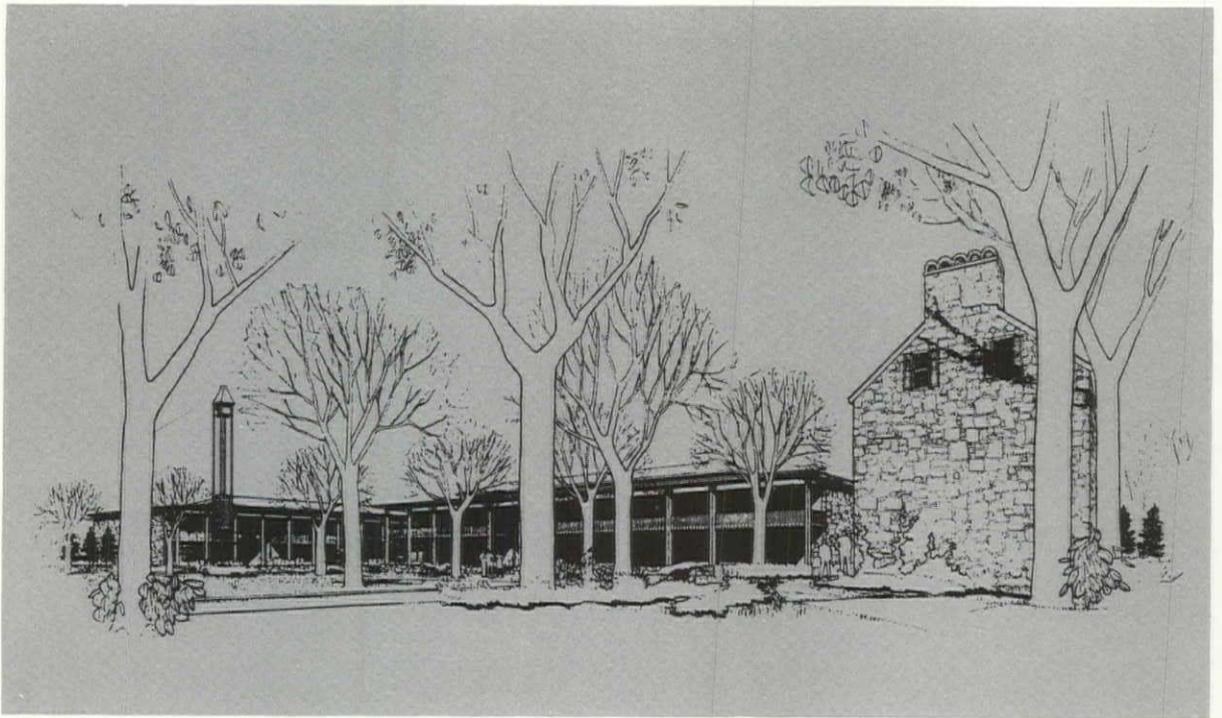


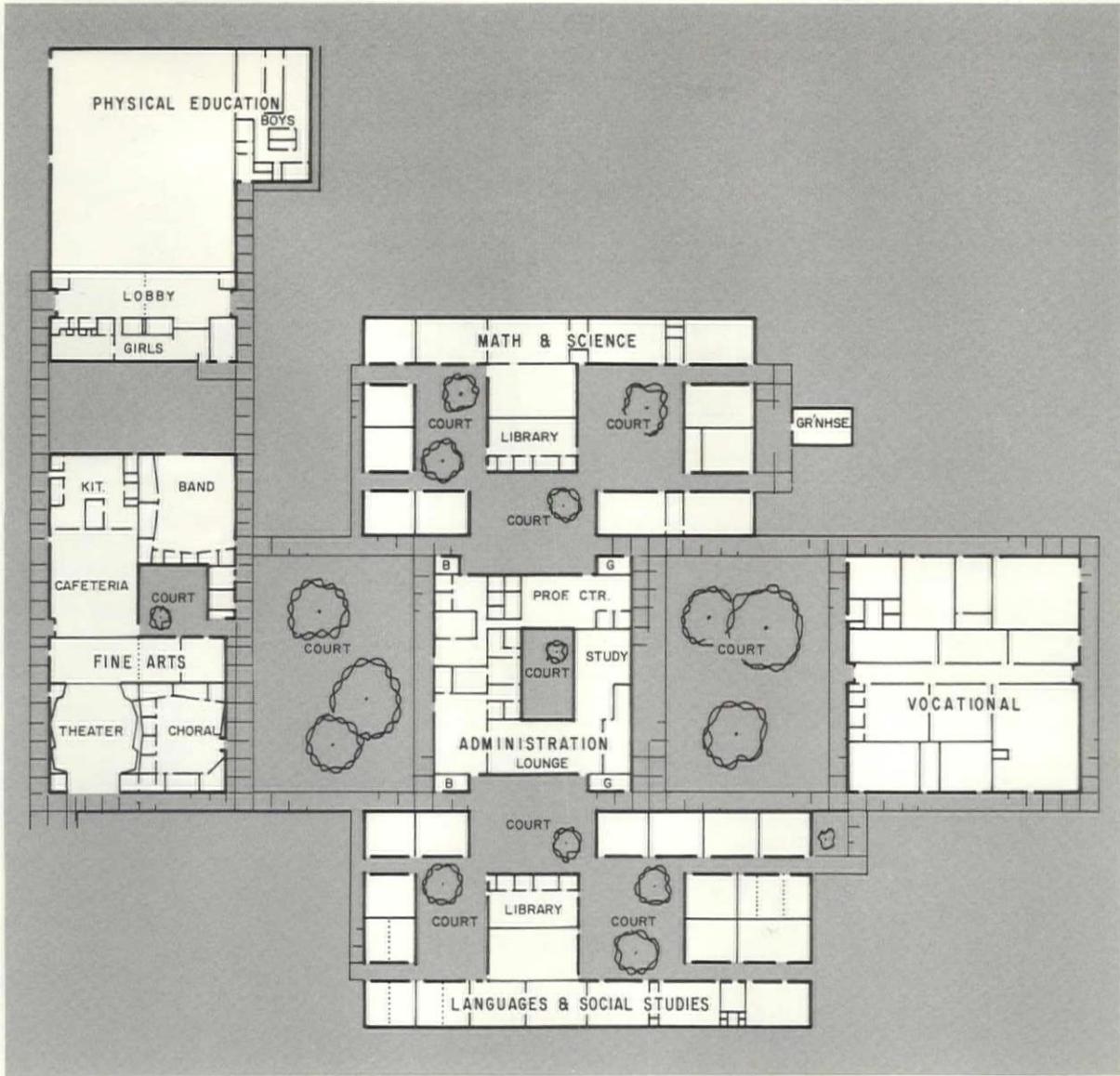


*Firgrove Elementary School
Puyallup, Washington
Robert Billsbrough Price AIA—
Architect
Tacoma*



Harford Junior College
Bel Air, Maryland
McLeod & Ferrara—Architects
Washington, DC

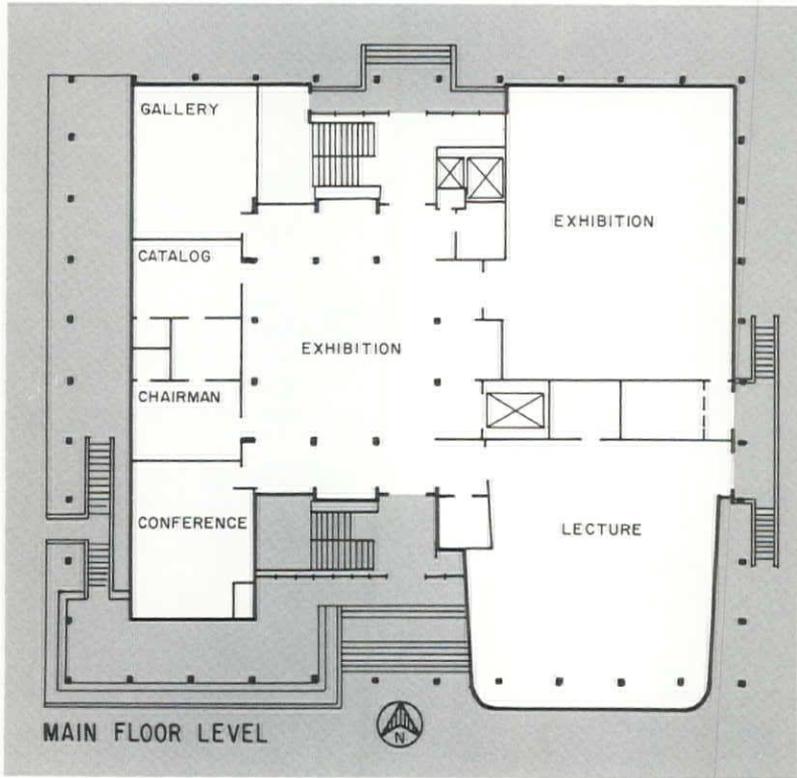
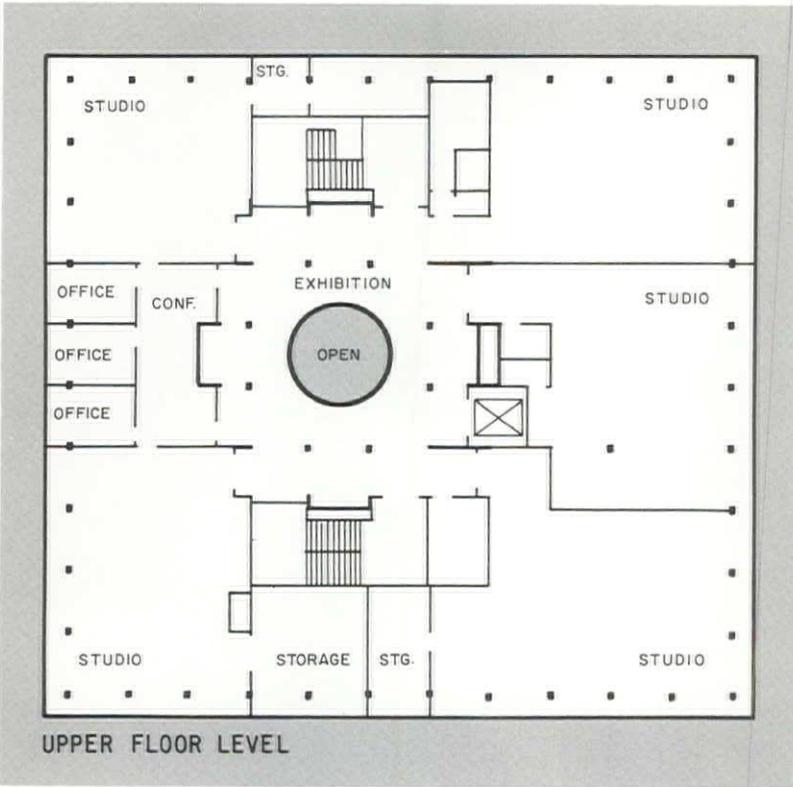




Senior High School
El Dorado, Arkansas
Ginocchio, Cromwell, Carter &
Neyland, Inc—Architects
Little Rock

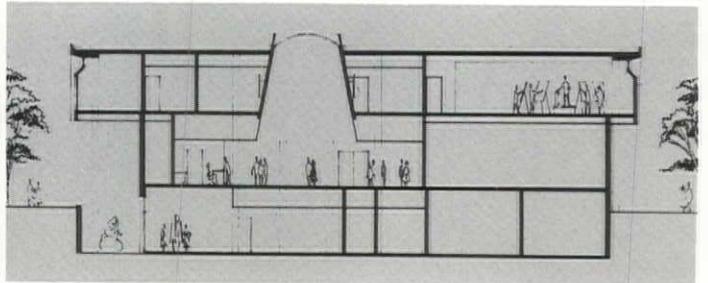


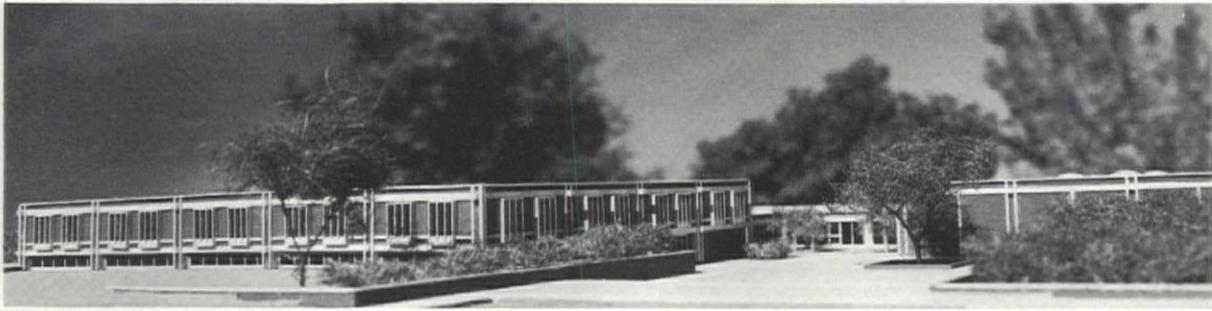
WM. E. DAVIS PHOTOS



*College Visual Arts Building
Albion, Michigan
Smith & Smith/Associates—
Architects
Royal Oak
Perkins & Will—Associate Architects
Chicago*

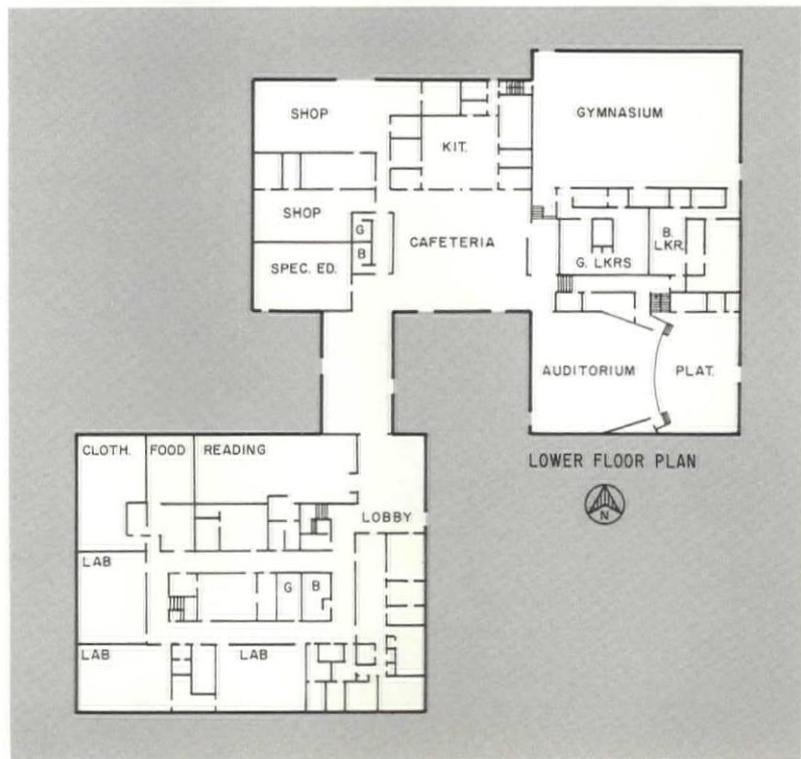
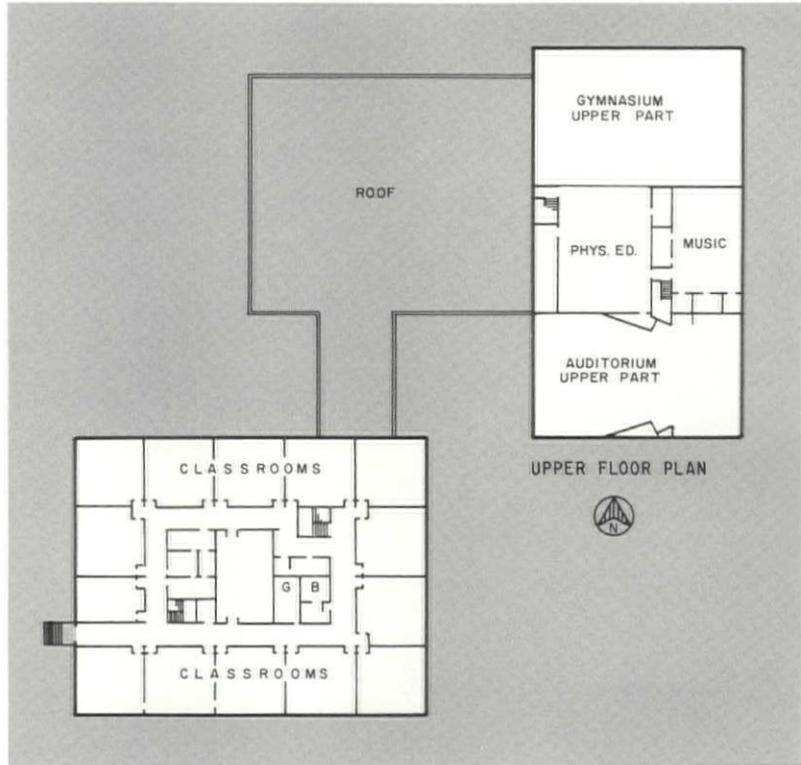
LENS-ART





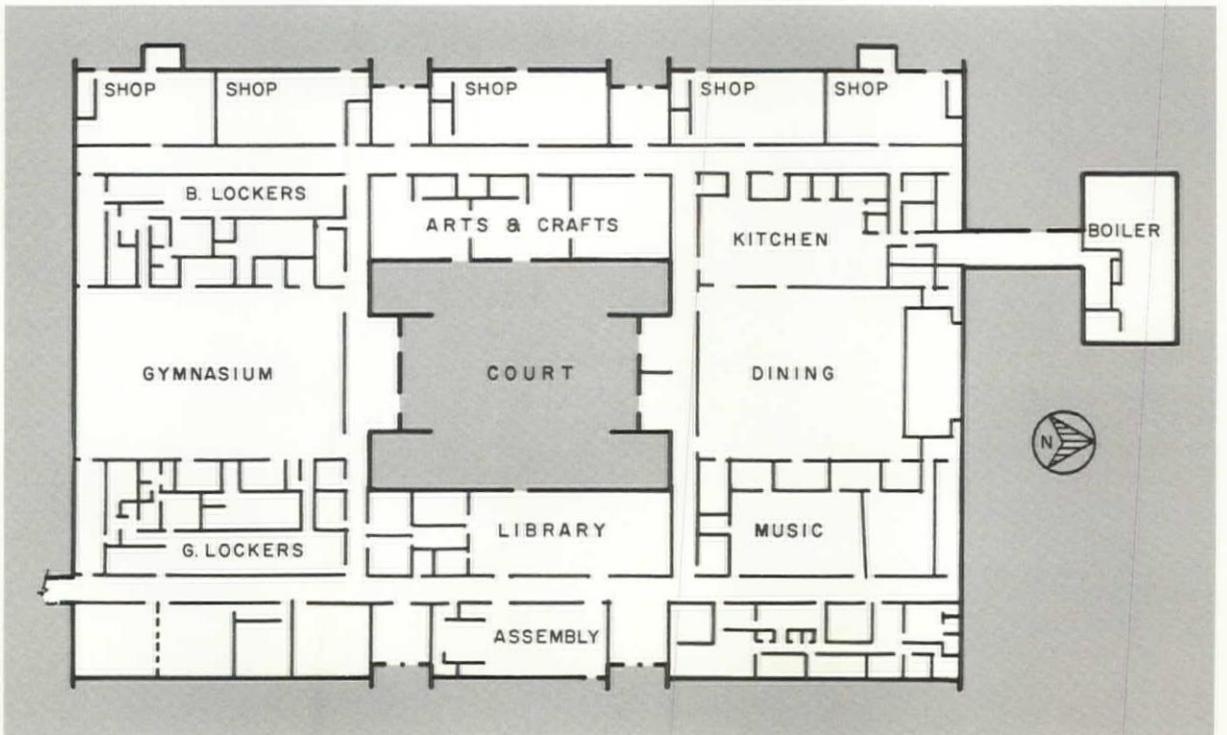
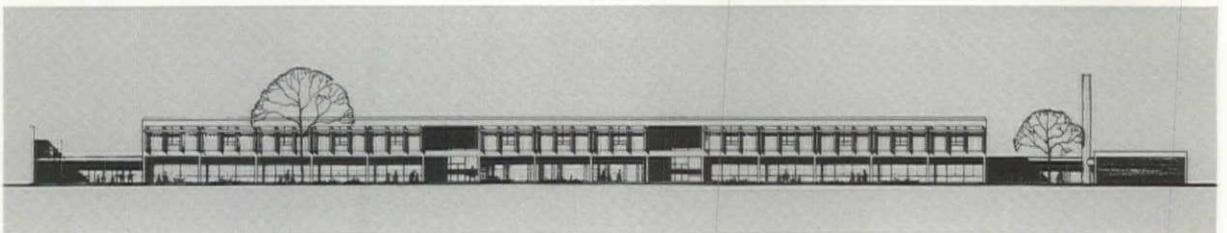
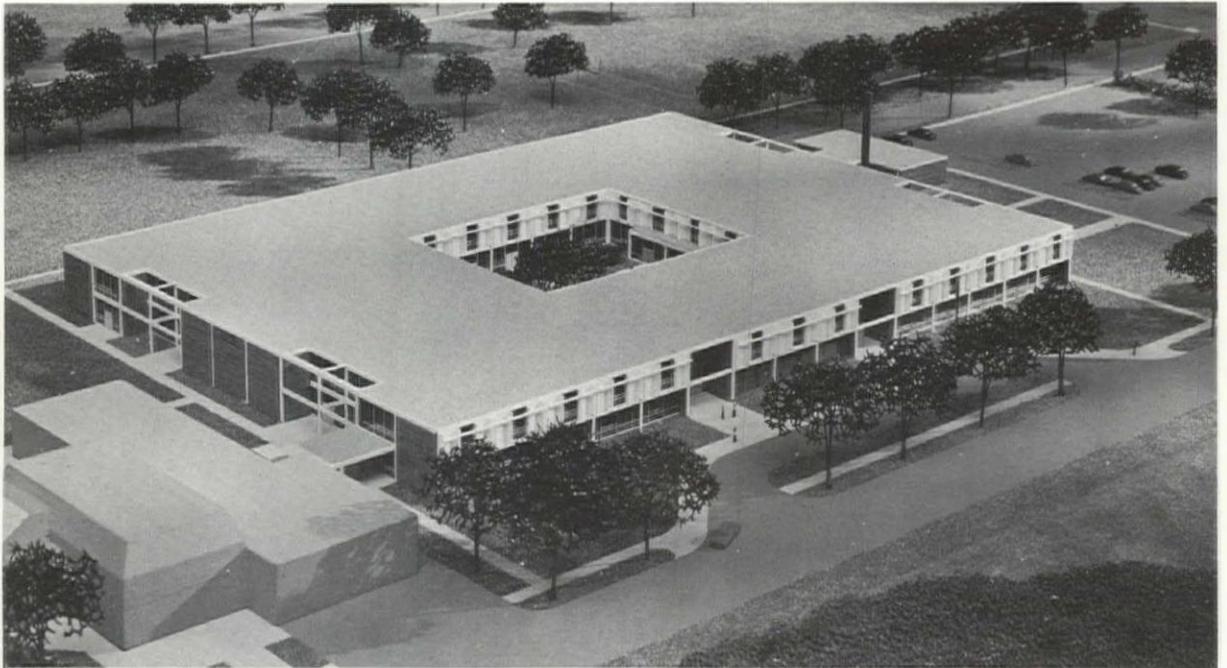
ROBERTS

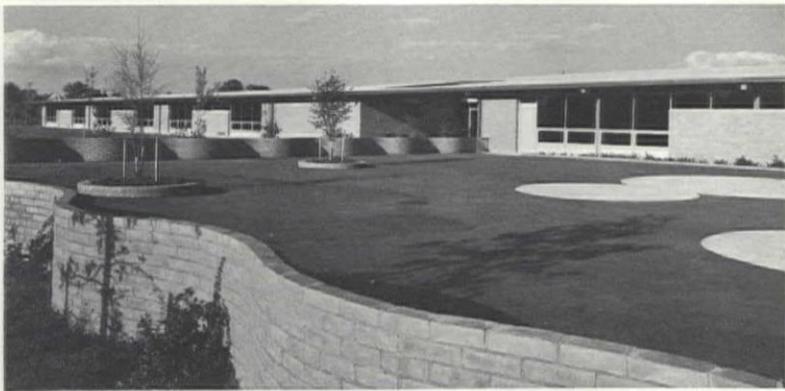
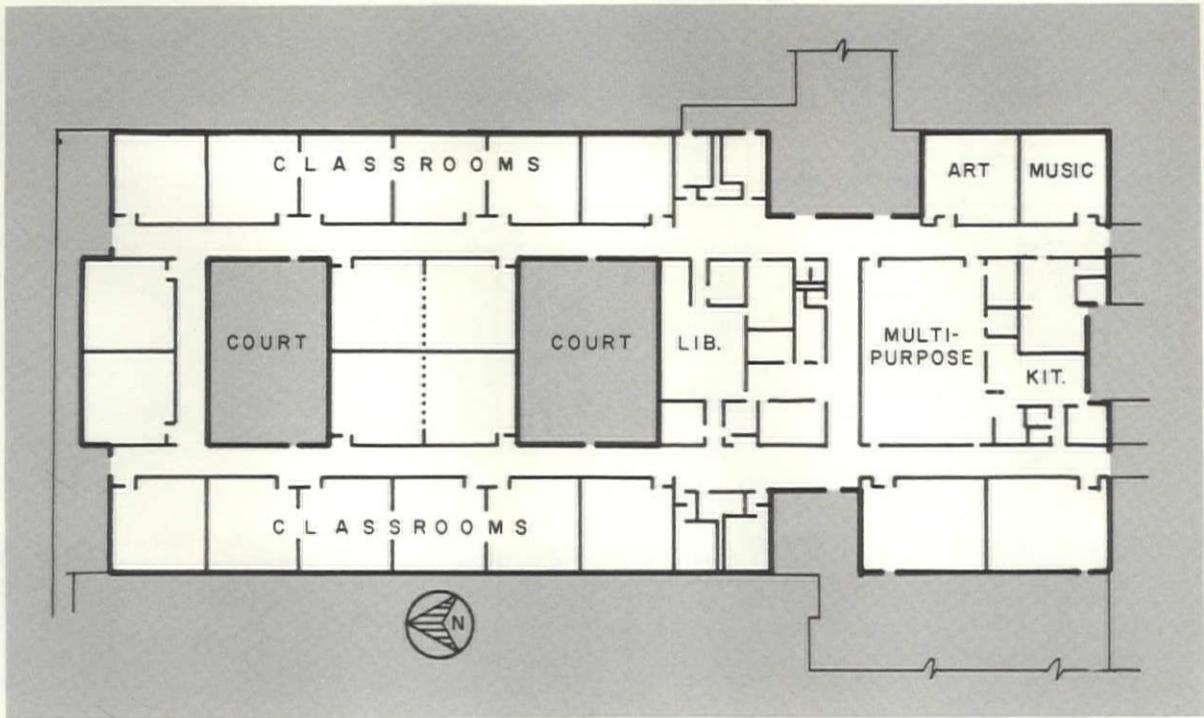
*Southern Hills Junior High School
Boulder, Colorado
Hobart D. Wagener AIA—Architect
Boulder*



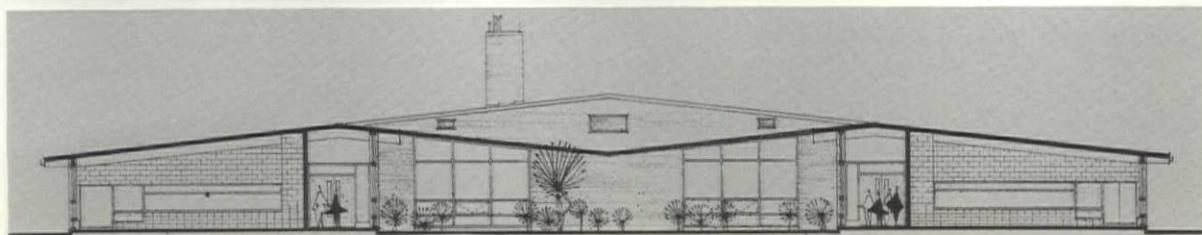
*Helen Newberry Joy Junior High
School
Detroit, Michigan
Linn Smith Associates—Architects
Birmingham*

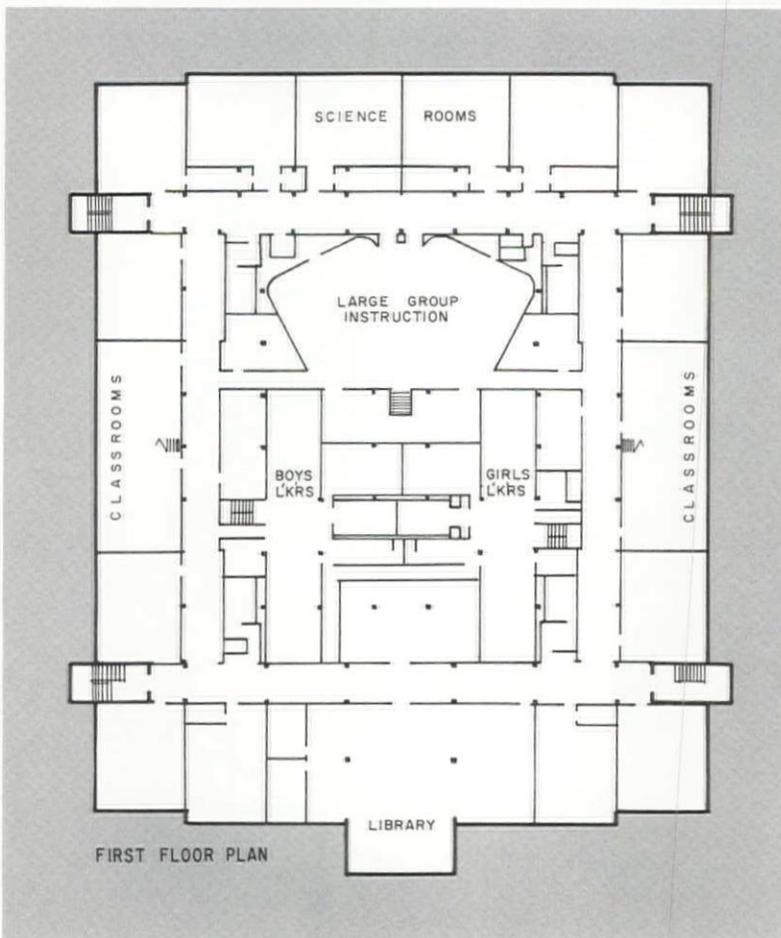
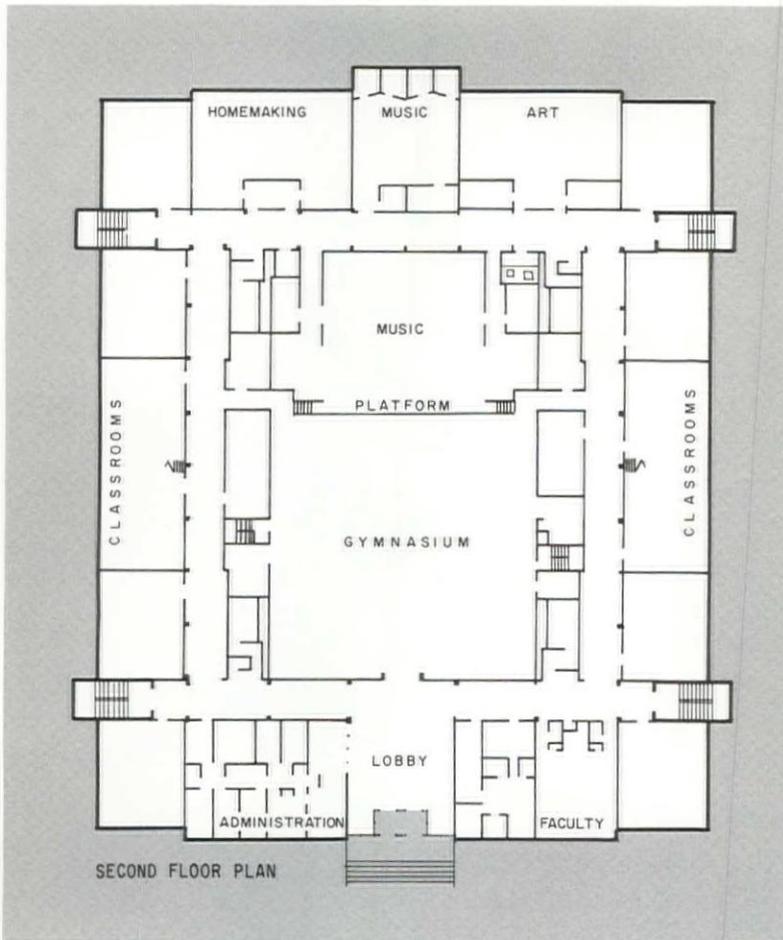
LENS-ART





*Wilson Hill Elementary School
Worthington, Ohio
Kellam & Foley—Architects
Columbus*





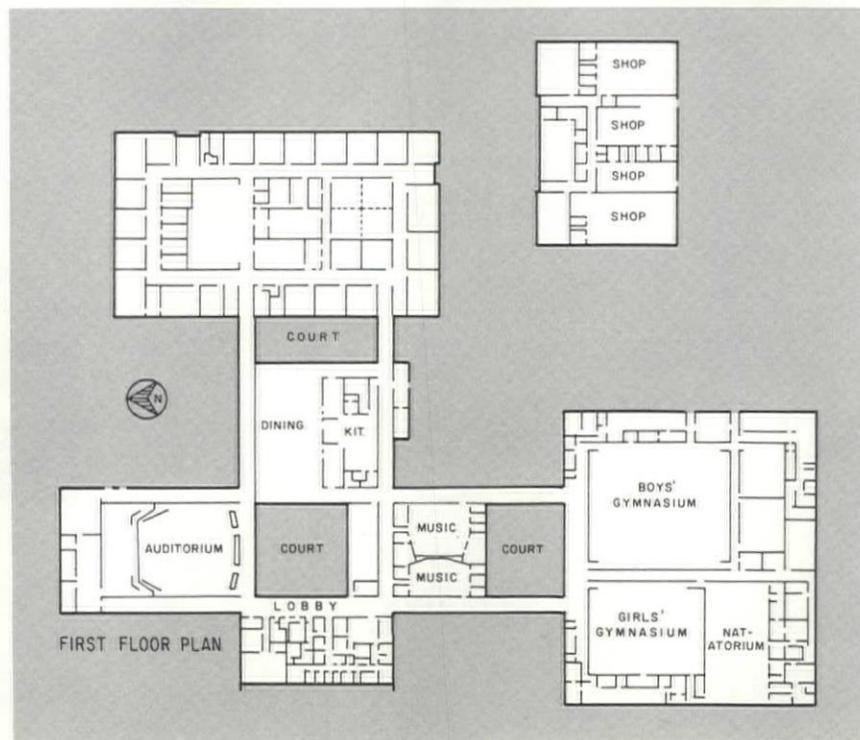
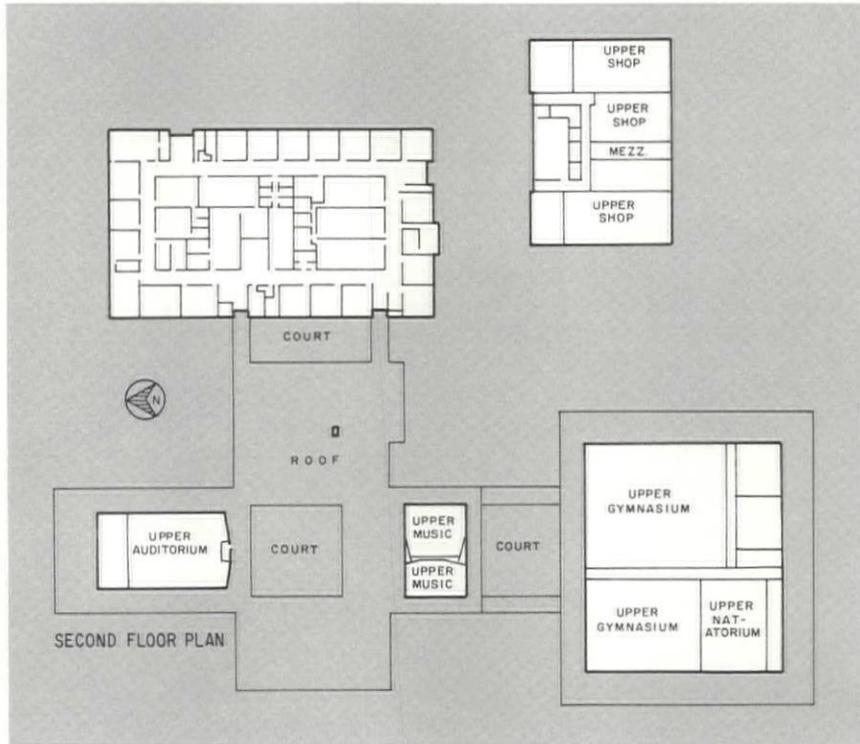
*Pleasant Hills Junior High School
Allegheny County, Pennsylvania
Celli-Flynn—Architects
McKeesport*

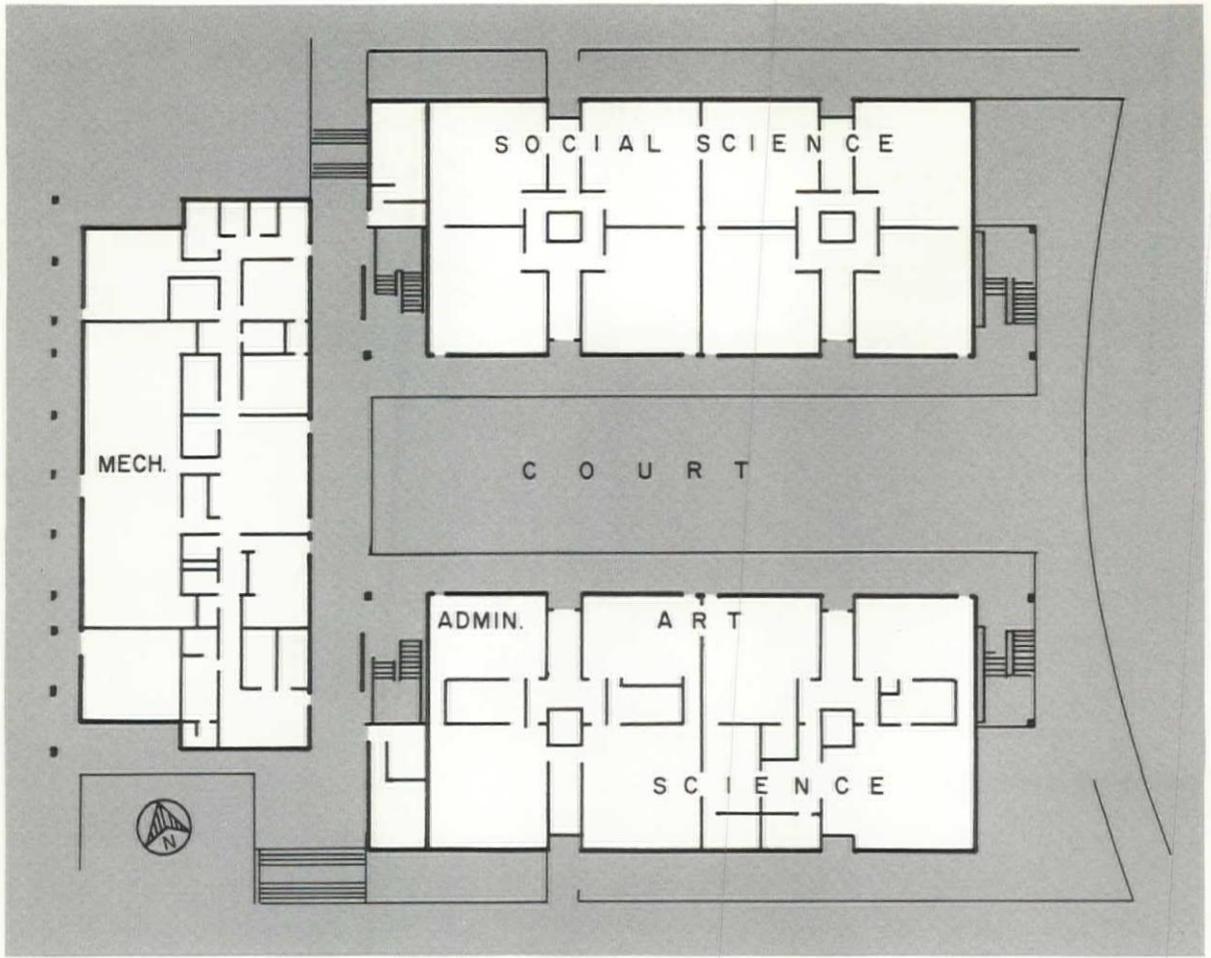




GUY BURGESS

*William Mitchell High School
Colorado Springs, Colorado
Bunts & Kelsey—Architects
Colorado Springs*





Senior High School
 Carlsbad, New Mexico
 Caudill, Rowlett & Scott—Architects
 Houston



FRANK LEE PHOTOS

A I A



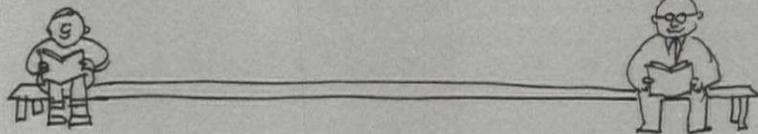
School Plant Studies

BT 1-55

The Educational Environment

*"Give me a log hut, with only
a simple bench, Mark Hopkins on
one end and I on the other, and you
may have all the buildings,
apparatus and libraries. . . ."*

JAMES A. GARFIELD (1871)



A seminar sponsored by the AIA Committee on School and College Architecture, at the annual meeting of the American Association of School Administrators, Atlantic City, February 1964

PROGRAM PARTICIPANTS

MODERATOR—Morris Ketchum Jr FAIA

ACOUSTICAL ENVIRONMENT—Robert Newman, Bolt Beranek & Newman, Cambridge, Mass

VISUAL ENVIRONMENT—William M. C. Lam, Cambridge, Mass

PHYSICAL COMFORT ENVIRONMENT—Marvin A. Mass PE, Cosentini Associates, New York

COLOR ENVIRONMENT—Howard Ketcham, Color Consultant, New York

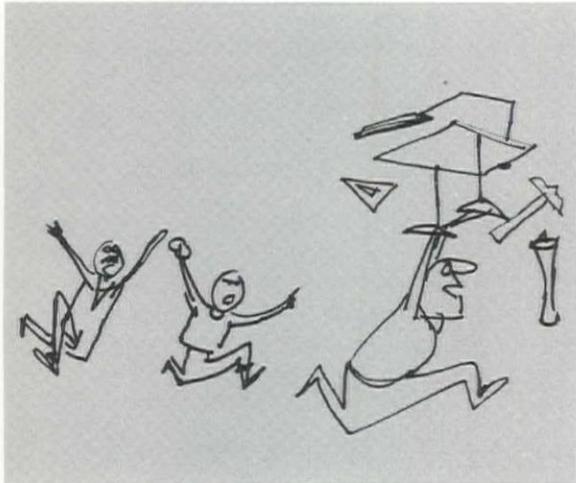
LANDSCAPE ENVIRONMENT—Stuart Dawson, Sasaki, Walker & Associates, Watertown, Mass

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.

EVEN IN THE PRESENT DAY of our sophistication, no one would be so rash as to discount the worth to the educational system of a brilliant and dedicated teacher. But today we are blessed with experts who can measure the hardness of the bench, the reflectance factor of the logs and the noise of the wind whistling through the chinks, and tell us the effect of all these factors on how much knowledge old Mark is getting across to his pupil at the other end of the bench.

The best teacher cannot teach and the brightest child cannot learn to full capacity in a room that is too dark, too noisy, too warm or too cold. The color of walls can irritate or soothe, elate or depress. The general amenity of the environment, exterior as well as interior, can influence and mold the judgment of a child long before he is old enough to realize that the tastemakers have been manipulating him.

An architect who designs a school bears the ultimate responsibility for decisions that will result



in an efficient, pleasant, comfortable school, or one that is uncomfortable and unworkable. But there is no reason why the architect should deny himself expert counsel. The Atlantic City meeting brought together five specialists in various phases of environmental design, together with architects and educators, for a discussion of the kind of collaborative effort which can result in the best possible school.

Mario Celli AIA, Chairman of the Committee, introduced the topic—the educational environment—in these words: “While we know many facts about the best environment, I am sure we will also discover that there is much we do not know. We have not related the child to the environment. We need to think about the child and his reactions to variations of light, sound, etc—the total educational complex. And we are after a building that will give us a true spirit of architecture and a *joie de vivre*.”

Morris Ketchum Jr, FAIA, who moderated the panel, told panelists and audience “We believe in collaboration. . . . The architect always has to take an inspiring and direct part in the leadership of collaborative design. There is good evidence of that in the list of speakers who will address you today—specialists in acoustics, lighting, physical comfort,

color and landscape—who will take you through the total environment of a school, the children, the building, its setting, the community.”

It was the original intent of the Committee to reproduce the proceedings in these pages in the same format in which the program was presented—with the speakers’ talks substantially as delivered and discussion periods uncut.

Several factors led us to see the wisdom of changing this plan. Foremost was the sheer bulk of the transcript. It became apparent after collecting papers and transcribing tapes that space simply would not permit reproduction of the entire seminar proceedings. Editing the papers was not a satisfactory solution; editorial surgery is a thankless and dangerous undertaking at best, and to abbreviate the seminar talks to fit space available would have been to drain them of vitality and spontaneity.

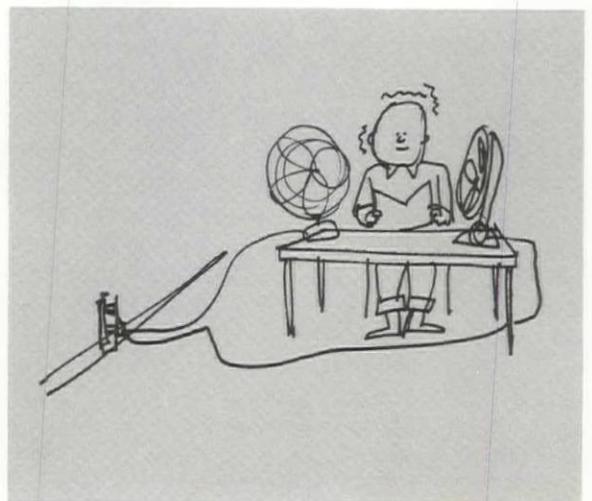
Another compelling factor which seemed to dictate adoption of a radically different format was the thread of interrelationship among the talks, which constantly pointed out the dependence of color on light; of physical comfort on light and sound as well as temperature, etc. It was felt that grouping of comments by subject matter would point up this interdependence and the need for a collaborative approach stressed by all the experts.

Acoustics and Light

WILLIAM M. C. LAM: I’m sure that Bob Newman would agree that in acoustics, as in lighting, we perform conscious tasks only part of the time, but we are always reacting to our environments. Thus in each field, response to the general environment is at least as important to comfort as the specific task conditions, and for many activities there are essentially no task conditions to be met.

Airconditioning

MARVIN MASS: The only way we can get American education down to a price where we can afford to pay teachers more (and architects and engineers more!) is to get more students through the same building. The only way we can do that is to have the buildings operating the year round, and the only way to do *that* is to aircondition the buildings. That



is why I think it is the cheapest way of building school buildings today.

JOHN HARWOOD: (Question—to Mr Mass) Granted that the building is a small part of the total cost of education—it is still the part that we are concerned with, and we have budgets. I would agree that if a school is used the year round in certain parts of the country, then airconditioning is a fine thing. But aren't we being brainwashed a little bit, when we are told to put airconditioning in Minnesota, where the schools are not used in the summertime? Is airconditioning universally applicable, regardless of climate?

MASS: Airconditioning is applicable wherever there is a cooling requirement to maintain the temperature of the room. Now, if you are in an area where there are more than enough schools, and there is no problem with teachers, and you don't have to run during the summer, and it is a mild climate in summer anyway—then you have to use your judgment and say that it doesn't pay to spend the money for airconditioning. But most schools that I know about have more students than they can handle (without summer sessions)—the universities have the same problem, more students than they have classroom seats—and these schools are going to have to run through the summer.

HARWOOD: But couldn't we apply the law of diminishing returns? In certain climates, where you may have a little discomfort in September and a little discomfort in June,—I don't mean that I'm against airconditioning, but is it worth it to tie up that much money in the physical plant where you get the benefit of it for perhaps two months?

MASS: You must use your own best judgment in terms of what is best for your particular school and your particular area.

Air Curtains

ROBERT NEWMAN: It is distressing to hear an architect say "Well, we hope it will work—this time." There is such a sense of futility in that phrase, as if there were no precedents, no criteria.

One monument to the forlorn hope that "maybe it'll work this time" is embodied in a story which appeared in the *Christian Science Monitor* not too long ago. The story concerned a proposed design for a pavilion restaurant to be constructed at the New York World's Fair, which would give fair-goers the charming experience of eating outdoors. There were to be no walls—just an air curtain which would keep out bugs, cold, heat—and noise. It was a lovely idea, until somebody pointed out that the fair site at Flushing is fairly close to LaGuardia and Kennedy Airports, and that an air curtain might not shut out enough aircraft noise to give the diners much peace and quiet. They are now using glass as the enclosing material.

But in spite of experiences like this, we still hear talk of using air curtains as partitions in schools. Common sense, and a grasp of the basic laws of physics, will indicate to the architect that as sound barriers, air curtains just don't work!



Background Noise

NEWMAN: When I specify an environment that is "free from distraction," I must make a distinction between a *quiet* environment and a *silent* one. An environment that provides privacy and freedom from distraction is not necessarily silent. Privacy is a function of the amount of isolation and the amount of continuous background noise.

There is a sharp line between too much background noise and not enough. If the background noise level is too high, teaching becomes uncomfortable or impossible. To evaluate background noise more qualitatively, as well as quantitatively—it should be continuous, unobtrusive and *tell us nothing*. (The usual source of this type of noise is the ventilating system.)

SPENCER B. CONE: (Question—to Mr Newman) Could you talk a little more about masking sounds; how may they be created other than by the roar of the ventilating system? What frequencies are best?



NEWMAN: First we have to decide what we are trying to mask. If we are talking about speech, we have to have a spectrum which contains a lot of components in the range of 600 cps to around 3000-4000 cps. It is very important to talk about the spectrum, and not just about how much back-

ground noise. Bill Lam will laugh if you say "How many footcandles of light do you need?" without specifying the kind of light—a red light that blinks on and off might satisfy a stated requirement in terms of footcandles. So with acoustics.

The noise Criteria Spectra of the ASHRAE Guide are a pretty fair measure of what is good background noise. It has to come from something like a ventilating system.

Of course, it is possible to introduce this sort of noise electronically. I don't think that's a very good idea when you are designing a building from scratch, but it sometimes helps in correcting a bad existing situation.

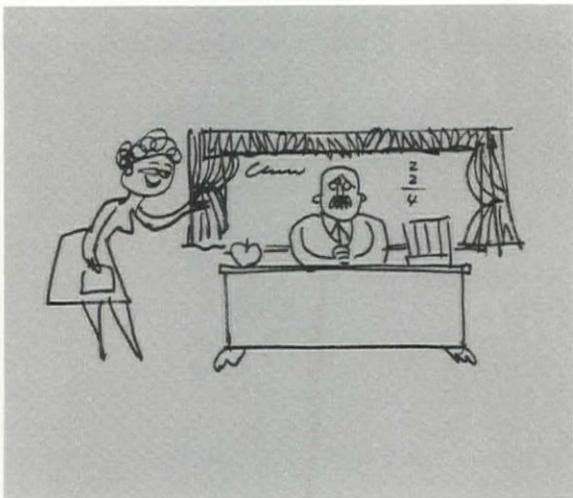
Carpeting

NEWMAN: Carpeting is wonderful—but it doesn't solve all the problems of sound control! We cannot design an acoustically bad classroom and then cure the bad acoustics by carpeting the floor.

Color

HOWARD KETCHAM: American business has discovered that color has an amazingly powerful effect on human emotions and is willing to back that discovery with money. Can the American education system afford to ignore this discovery—especially when the price of color adds up to less than 1 per cent of a school's construction budget; when it is just as easy to specify the right color.

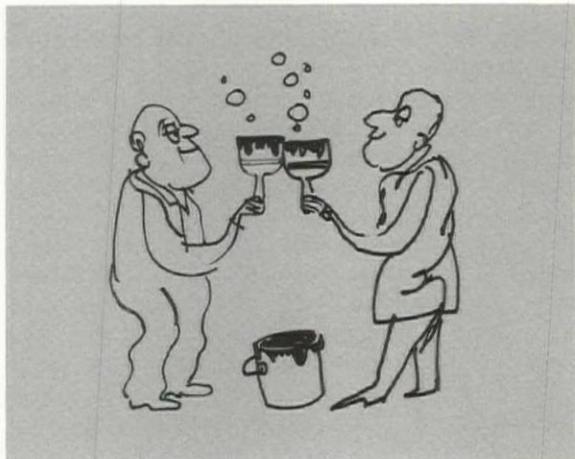
When it comes to color planning for the new school, the problem is likely to be resolved by hiring a local housewife with a flair for decoration, or by dividing the project up among the interested wives of the school board. When this happens, the com-



munity is spared the cost of competent professional color engineering—and is likely to be saddled with such things as chalk-boards in color so bright and contrasting that eye-strain is inflicted on teachers and pupils alike. Try concentrating on such visual aberrations as intense turquoise boards embellished with bright yellow chalk.

LAM: If you start with a good architect, who has done a good building, doesn't the color really

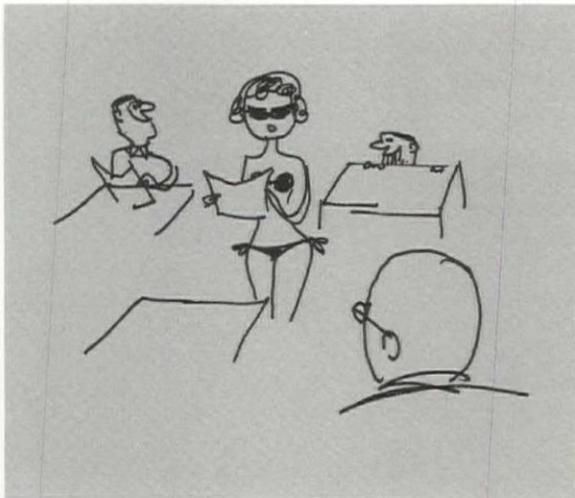
start from the natural materials—the wood or the concrete? I prefer to see the color come from the kids' artwork, for instance. In many of the spaces, anyway. . . . I'm a conservative.



Comfort

MASS: The best conditions that can exist for physical comfort in classrooms are *no conditions*—meaning that there should be no recognized difference between what a person considers "comfort" and the actual atmospheric conditions within the room itself. There should be no noticeable hot spots, drafts, complaints of stuffiness, no abnormal noises and in general the conditions of the room should be unnoticed. . . .

The student can't take off his clothes if he gets too hot or move his seat or put on sunglasses.



LAWRENCE PERKINS: (Question—to Mr Mass) Let's assume a room that is perfect acoustically, where the quality of light is perfect, where the temperature is uniformly comfortable—how many of us would like to spend six hours a day for twelve years in such a room?

MORRIS KETCHUM: The question I feel needs answering is, are ideal conditions humanly bearable for a full day?

Concrete

NEWMAN: You must take into account the nature of your materials, when you are thinking about the acoustical quality of a building. If you don't you are faced with the problem they have with Le Corbusier's building at Harvard—which is a dreadful building, cold and clammy and concrete-y, and very noisy. Corbu saw to it that the hearing conditions in the building couldn't be corrected, by stipulating that there was to be "no fuzz" added to the concrete. Well, the architect is perfectly free to say "I don't like fuzz." That's fine for Corbu in France, but what about the poor guys at Harvard?



Courtyards

STUART DAWSON: What is missing (from the secondary school of today) is, to my mind, a space that is the heart and symbol of the institutional community. Courtyards in contemporary schools miss by a mile. They end up being a maintenance headache, are often inaccessible, create greater walking distances, and more often than not are a visual flop.

Flexibility

NEWMAN: Criteria for sound isolation are not determined on the basis of whether the space is flexible or not. They must be met in any case. Barriers must be complete. Partial-height partitions won't do anything as far as sound isolation is concerned.

The most important thing about movable partitions, in this context, is the seals. A movable partition must be airtight. There are too many architects who do not understand the importance of seals and detailing for an airtight partition. The 40-decibel sound transmission loss we talk about requires a thousand-fold reduction of energy—so it is easy to see that leaks and cracks can defeat us.

Open-plan schools (and the open-plan school can be made to work, acoustically) must have a reasonably high level of ambient background noise.

LAMAR KELSEY: (Question—to Mr Newman) Do you foresee in the future any major breakthrough in the cost of acoustically good operable

partitions? I ask this because we are paying too dearly for flexibility in some cases, due to the high cost of this 40-decibel acoustical curtain.

NEWMAN: There are certainly going to be cost reductions. I don't think we are ever going to get much below the \$5-\$10 a square foot cost—there are certain limitations on good sealing, as I mentioned, and getting enough mass to the partition to stop 40 decibels.

It also depends on the height of the room. I recently looked at a scheme for a college. Nine-foot ceilings had been established throughout the space, and the partitions were to be movable (not flexible, but movable) over a holiday. Now 9-foot ceilings may be perfectly adequate for some spaces. But this had seminar rooms for 10 people, classrooms for 40, and classrooms for 200. A 200-seat lecture room with 9-foot ceiling is just not going to be a very good classroom, whether the partitions are movable or not! I think when we start talking flexibility, we ought to consider the philosophy that is used in many schools, of creating many different-sized spaces and "flexing" the students around among them.

Footcandles

LAM: Figure 1 shows a page from the excellent study "The Cost of A Schoolhouse" published by the Educational Facilities Laboratories in 1960.

Note the graph showing the sharp rise in the minimum recommended classrooms illumination—from 3 footcandles in 1919 to 30 in 1952.

Also note the polite words used by the author to identify what must rank as one of the greatest merchandising triumphs of American business. The light and power industry has done a fabulous job

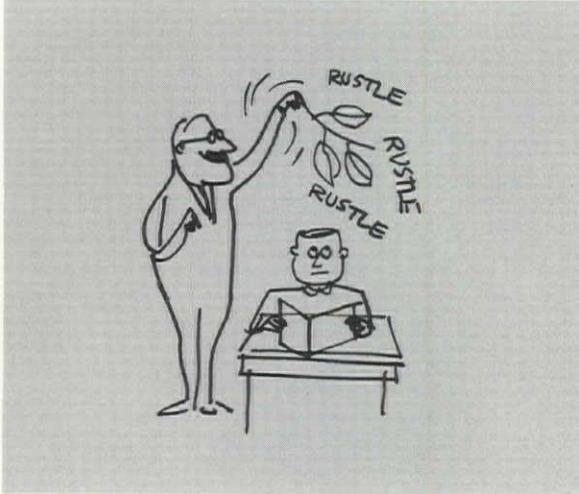


of selling the idea that more light is necessary—not just desirable but absolutely necessary—and not just a bit more, but 10 times as much in just 30 years. In 1960 no one knew how high the next authoritatively recommended levels would be.

Today we can erase the question mark from the chart, because the Illuminating Engineering Society has published its new recommendations. They are shown in figure 2. Note that the upward curve is

even steeper. The minimum recommendation has jumped from 30 to 70 footcandles for study halls, and to 100 footcandles for drafting rooms. And the IES would have us believe that the minimum requirement on the task of sewing is 150 footcandles.

This graph also shows the office lighting recommendations for drafting as being 50-100 per cent



higher than those for school drafting. Why? Is this because office budgets are usually more liberal than school budgets?

Unfortunately, the light and power industry is not only good at merchandising; they are outstandingly successful as a political lobby in getting their point of view written into law. The state of Virginia has already revised its codes so that all classrooms in Virginia must now be lighted to a minimum of 70 footcandles in accordance with the 1962 School Lighting Application Data published by the IES. I am sure many other states and cities are considering similar revisions. . . .

Note that in 1910, ignoring any daylight contribution, the recommended level of 3 footcandles provided 78 per cent of our ability to see contrast. Between 1910 and 1930, 15 footcandles were added to the recommendations to add 12 per cent visibility. The next increase of 12 footcandles only brought us a 3 per cent benefit. And the most recent jump of 40 to 120 footcandles still adds only another 3 or 4 per cent.

God, Boston and Le Corbusier

MORRIS KETCHUM: You will notice from your programs that we are now leaving the spiritual climate of Boston, represented by Bill Lam and Bob Newman, and going to New York with Marvin Mass. Before we do so I might say that things have changed in Boston. It used to be that the Lowells talked to the Cabots and the Cabots talked to God. Now, the Lams talk to the Newmans and the Newmans talk back to Corbu!

Lighting (outdoor)

DAWSON: Used properly, light may become the nighttime organizing device as well as providing a

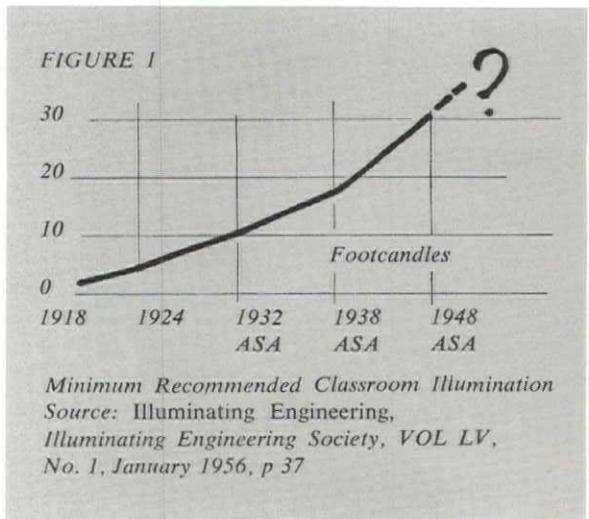
festive and welcome atmosphere. Major roadways might be defined with mercury vapor; parking, perhaps, could be expressed with a different light, say fluorescent. Pedestrian ways should be done entirely with incandescent—residential but not “cute” or corny in scale. Lighting should be more subtle at the extremes, becoming more intense as one approaches the main arrival. Above all, the source for these lights should be concealed, developing a sense of “moon glow” warmth rather than mercury light coolness. If globes are used, they should be of low intensity, in a festive way only—not as a direct source.

Relevance

LAM: Our reaction to sound, like our reaction to light, is always in terms of the relevance to the specific environment. A sound is judged to be noise or music, not by its intensity or ratios, but by its order or disorder. . . . Incongruities in the audio-environment are what we call noise. This is why I have coined the phrase “visual noise” to apply to anything in the visual environment which is irrelevant, and therefore distracting.

DAWSON: (Question—to Mr Lam) Regarding simply the psychology of light in a school, and not considering cost and esthetics, is there a learning value in a warm light versus a cool light? Or vice versa? Is there any value in one or the other as an encouragement toward learning?

LAM: The eye sees by comparison. In the daytime, incandescent light seems very yellow against a background of daylight. At night, it seems right. You don't want to duplicate something out of context—as if you said “People like the rustle of leaves,



so let's record the sound of rustling leaves and put it in the building.” It just doesn't work that way! And it would be the same thing to say “We like daylight, so let's put it in the building”—that is, make the color of the light match the daylight outside. I always work with the warmest fluorescent light—a warm white—for the reason that if it's a dull overcast day outside, you want it to seem warm inside, and if it's nice outdoors it still goes together.

Seeing

LAM: We see over a tremendous range of light levels, and we see by the balance of light more than by the quantity. Once 10 to 15 footcandles has been achieved, task visibility can be improved far more easily through quality changes, rather than by adding quantity. Apparent brightness is determined by brightness relationships, not absolute values. Therefore, a space feels bright in relation to the percentage of the visual field that appears bright, relative to the other things that are seen at the time. In addition to light distribution, the colors used and the design and control of daylight have much more to do with appearance than does the measured light level.

We look at tasks only a small part of the time, but react to the environment all the time. Whether our response to the environment is to be favorable or unfavorable cannot be forecast or explained by numbers—but by the exact design of everything in relation to what we want to see.

Science Labs

NATHANIEL BRYANT: (Question—to Mr Newman) I have noted in examining science laboratories on various campuses in the Midwest that there seems to be no attempt to treat a laboratory acoustically. In many cases, of course, that is because of the need to get a high gloss and keep down the growth of organisms—but these labs rival the famous building at Harvard which you mentioned, in their concrete barrenness. Have you tried to solve this problem?

NEWMAN: There are all sorts of answers. Of course, this same problem arises and is even more

From "The Cost of a Schoolhouse"
by Educational Facilities Laboratories 1960

Lighting: This is the aspect of building design for which standards have been raised in the most revolutionary way, due without doubt to an intensive educational campaign financed and intelligently conducted by the electrical industry. To illustrate the rapid rise of these standards, the 1943 Massachusetts Department of Public Safety Regulations say, "Artificial lights when used shall provide illumination . . . equal at least to the minimum intensities specified . . . and may be by electricity or gas, or by oil lamps. . ." The specific intensity for "Ordinary class, recitation and study rooms, library . . . and . . . laboratories in schoolhouses . . . 5 footcandles."

In 1952 the Illuminating Engineering Society recommended the minimum footcandle levels for schools which are shown at the left.

acute in surgical suites in hospitals, where everything must be sterile. I think the best answer, when a high degree of cleanliness is a necessity, is some sort of removable units—such as glass-fiber baffles wrapped with Mylar film which can be taken out and sterilized or thrown away. There are ways of covering the fuzzy material that does absorb sound with plastics that can be either washable, cleanable or disposable.

Site Plan

DAWSON: Since a large portion of the site is devoted to playfields, parking, roadways for cars and buses, service ways, pedestrian ways, etc, the site plan is of primary importance. . . . Factors such as exposure and orientation must not be forgotten. These, in combination with the architecture, must result in a harmonious and complementary composition. Poorly arranged land-use elements are unacceptable, such as oceans of parked cars in the symbolic gateway. Circulation must be properly organized to avoid accidents and such things as pedestrian trails across the flower beds. Poorly articulated details, such as unnecessary retaining walls, water in corridors and icy steps or ramps, are intolerable. A crystal-clear arrangement and connection of functional units, simply detailed, is imperative.

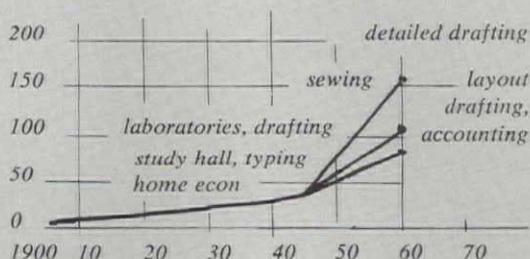
Stimulation

MARIO C. CELLI: I have a little personal experience to tell you, concerning the stimulation-value of color. We did a house in Tennessee, for a research engineer—a man who was vitally interested in analysis and figures. The bedroom was painted magenta. And a couple of years later he called us to report, very excitedly, that definitely and positively, the value of the magenta color was the equivalent of two cocktails!

Temperature

MASS: Any classroom should be capable of being maintained at a uniform temperature throughout the class-day and throughout the classroom it-

FIGURE 2

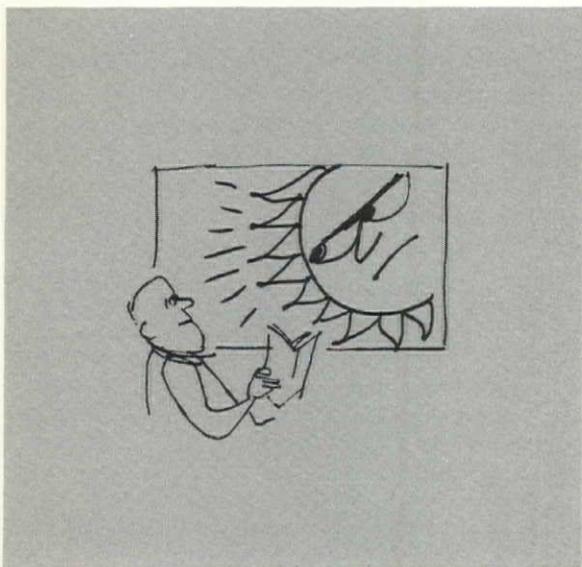


IES Recommended Minimum Footcandle Levels for Classrooms IES Handbook 1959 Edition
1960 figures from "School Lighting Application Data" published by IES in 1962

self. What is the correct temperature? It can vary anywhere from 70 to 80 degrees, depending on the environmental needs of the occupants. Students in the state of Alaska would probably be more at home at a lower classroom temperature than students in Hawaii or Florida—not because they learn better at a different temperature, but because they are historically acclimated to different temperatures and dress in accordance with their background.

Utilization

CELLI: I think we are going to have to do something to get fuller utilization of our school buildings. We can't any longer build buildings to be occupied seven hours a day, five days a week, 180 days a year. That is something like 15 per cent utilization! We are going to have to consider more community use of the school building. We're going to have to bring our urban design situation into the school, and ultimately, run the school all year round. This is coming, the teachers are fighting it hard, but it's coming. More and more colleges are going on a trimester or quarter system. Another reason: We are getting involved in better use of teacher competencies, and this will bring us into a situation of longer use of classroom facilities.



Windowless Classroom

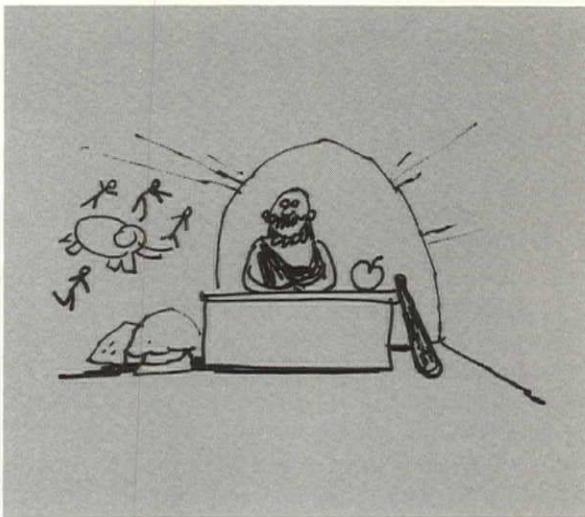
LAM: As a generality, I would say that it takes a lot less light to light a windowless classroom than one with windows (because the classrooms with windows require more lighting in the dark areas, to balance the daylight from outside), particularly if the room has, to use a British expression, a "bad daylight factor"—that is, the room is relatively deep compared to the height and width of the windows. . . . I would say you should have windows, if you are prepared to control the natural light.

I think that some contact with the outdoors is important, so I would hate to see a completely windowless room, if it is an outside room. You have to decide, "Is the window for the view, or for the light?" If the answer is the view, the window doesn't have to be a big one. It might be nice to be able to peek out a window and perhaps see a little sunshine.

MASS: Of course this is true if not carried to extremes. But in some of the schools I have seen advertised (and I *do* mean advertised!) in architectural magazines, the windows are the dominating feature of the building. All they show is the facade, the beautiful detailing, the floor-to-ceiling windows.

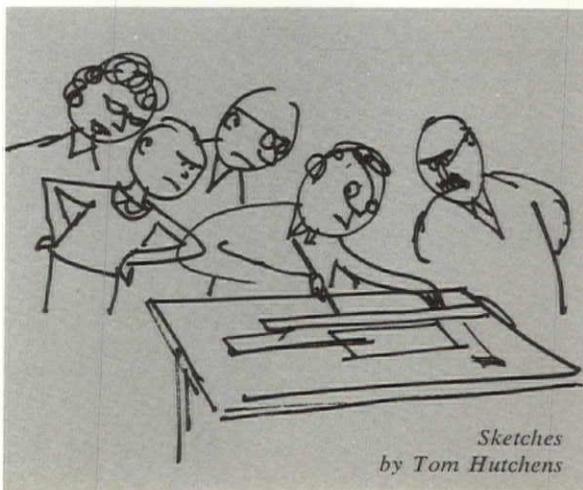
Controlled contrast is very good, but not uncontrolled.

MORRIS KETCHUM: I'm afraid, Marvin, you haven't been looking at the magazines for a while. The trend is indeed reversing, and the trend away from the glass box and back to the cave is under way. But I don't think either rule is going to be successful—no "rule" ever is.

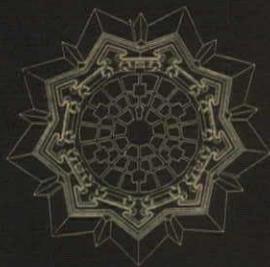


Wolf, Lone

MORRIS KETCHUM: The architect is not a lone wolf. We believe in collaboration. This, I suppose, is the summary that the program says I should make. I believe that not only do we have to believe in the organization and control of space, indoors and out, but I believe that we cannot do it alone. If we were to study successfully all the phases of architecture, and were equipped by God with all the right talents, we might be ready for practice after about 40 years (around the time we reached retirement age). Therefore, our new architectural education today takes in many things, but there should be great emphasis in that education on the art of collaboration. Believe me, it is an art—you can fail at it, and the divorce rate among collaborators is alarming. But collaboration can be very successful. ■



Sketches
by Tom Hutchens



URBAN DESIGN:

THE ARCHITECTURE OF TOWNS AND CITIES

TENTH IN A SERIES OF ARTICLES

THE PRACTICE OF URBAN DESIGN

Regulation and Control

For most architects regulations and controls are a nuisance. They sometimes prevent us from building our best designs. Grudgingly, we may admit that they are necessary—but that they should apply to the other fellow, not to us. In our profession the foremost regulations and controls are restrictive building codes and zoning ordinances. Of course, a moment's reflection reveals several more: our client's tastes, mortgage money, budget. And the "other fellow" whom we think needs to be controlled is less likely to be one of our colleagues than the process by which many buildings are built without "benefit of clergy," to borrow Frank Lloyd Wright's phrase.

In actual fact there are a great number of things that compel us to design the way we do, both in architecture and in urban design. Building codes, zoning regulations, property taxes, budget, our client's predilections, building technology, climate, site and mechanical equipment—they are but a few of the compelling forces in architecture, the "givens" of architecture. But the piece-by-piece process of building the city is accompanied by very many more regulating forces.

In this maze of architectural and urban complexity we have lost sight of what should be foremost among the regulators—the fulfillment of human aspirations and purpose in our surroundings.

The over-all implications of this problem are not limited to our profession. Indeed, here we face one of the major social and political issues of our times—the interlocking problems of public and private rights, of public and private responsibility, and of stimulating the best in individual and public initiative. Increasingly, the seemingly anonymous and growing forces which regulate these areas of action seem to multiply, to become more indifferent and less manageable.

In this, the tenth article in our twelve-article series, we will look into the factors that control and regulate our work. We will discuss the roots of our current system of controls, discuss their origins, problems, shortcomings, appropriateness and application. Our advisor for this article is Carl Feiss FAIA, AIP, who formerly chaired the Urban Design Committee and is a driving force behind this series. Joseph Watterson FAIA edits these papers. Throughout the series we welcome all critical comments. The author and illustrator of the series is Paul D. Spreiregen AIA.

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

Committee: Charles A. Blessing FAIA, Chairman, Robert L. Geddes, George N. Hall, Donald H. Lutes, Matthew L. Rockwell, Arch R. Winter, Gordon G. Wittenberg; Corresponding Members—Edmund N. Bacon, Kenneth W. Brooks, Albert Mayer FAIA, Daniel Perry, Archibald C. Rogers, Harry M. Weese FAIA

Regulation and Control

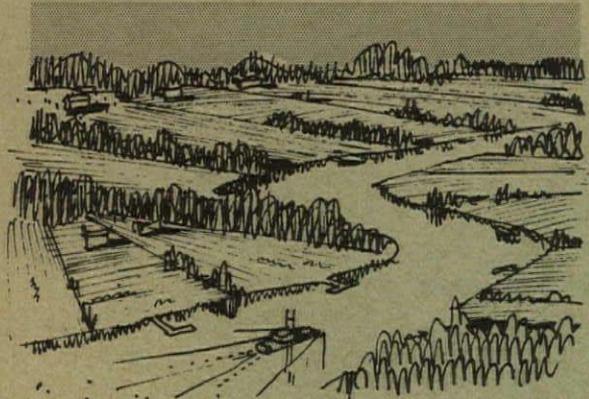
The Background of Controls and Regulations

The landing of the Pilgrim settlers marked in history the meeting of two mighty resources—the abundance of the land and the energy of the immigrants. Unlike the Indians who regarded themselves as caretakers of the land, Europeans brought with them the idea that land was the sole property of its owners, to be used any way they saw fit. Further, as much as nature was a provider, it was also cruel. Its forests were an obstacle to be overcome. The new settlers quickly came to regard land as a resource to be exploited.

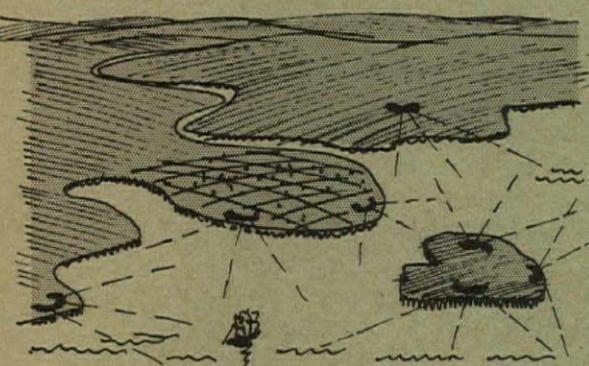
Exploitation of the land's resources was limited by the manual ability of its settlers coupled with their physical and moral endurance. The European settlers could not have been more different from their Indian predecessors whose attitude towards land was one of reverence. Over the centuries the American Indians had achieved an ecological balance between themselves and the land. The pioneers upset that balance in their early zeal, and the history of our country since has largely been a history of search to find a new balance. Scientific technology further complicated this search. There were then even more resources to exploit and less time to reflect upon the whole dynamic experience. As Robert Frost said, "The land was ours before we were the land's." These problems reveal themselves in both our urban and our rural life.

Stewart L. Udall in his book, "The Quiet Crisis," poignantly relates just how we went about exploiting the land. Of particular interest is the way we divided our western territory. It was ruled off as a series of squares to facilitate distribution and settlement. However, the land west of the ninety-eighth meridian was limited in water supply and required careful planning for water usage. It was proposed that this land be allocated on the basis of water resources, the minimum portion being that optimum area which could support an individual farm family. Our sixth President, John Quincy Adams, while serving in the Congress in his later years, proposed apportionment of land based on river basin areas rather than geometric division. With land rights were to go water rights. This was not done, and the settlers of those relatively dry lands were harassed if not often ruined by the water problem. The climax was the dust bowl of the 1930's. Farm reclamation programs of the Federal and state governments have been working on such land problems ever since.

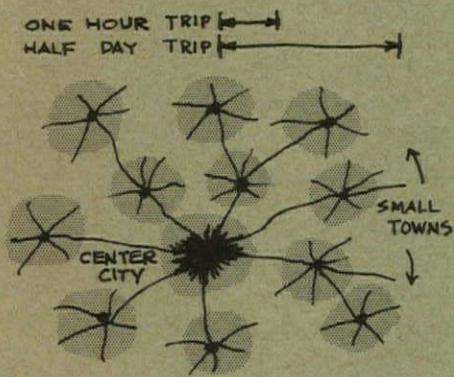
The development of regulatory measures in our cities is not so easily described. It evolved through a series of developments which does not lend itself to easy summary. However, we know of the effects of certain events. At one time, for example, civic defense required the construction of a defensive wall, which gave physical limits to the city. Some cities owned their land and so could sell it, according to their charters. The control of city land usually resulted in a simple grid layout of properties. There were no restric-



In early settlements the demands of nature and the settlers' capabilities regulated form



In early towns military necessity often regulated siting



Practical travel distances between towns and regional centers regulated regional pattern



A simple building technology regulated urban appearance

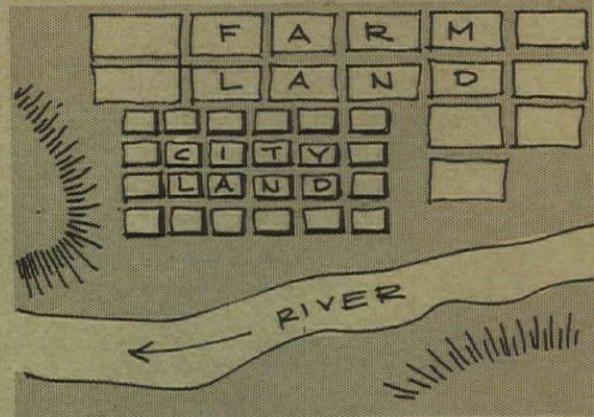
tions on the actual use of land before the nineteenth century, and well into it. No one could compel a city landowner to remove a pig or cow from his backyard.

As the city developed and intensified, the lines between the public right-of-way and the private domain became very important. Maintenance of the right-of-way for traffic, the operation of a police and fire system, sewage disposal, water supply and public schooling emerged as tasks of the government by the middle of the nineteenth century. The political and social dialogue of the time evolved a system of private rights operating hand-in-hand with public responsibilities to insure that those rights endured. Social requirements began to be major regulators.

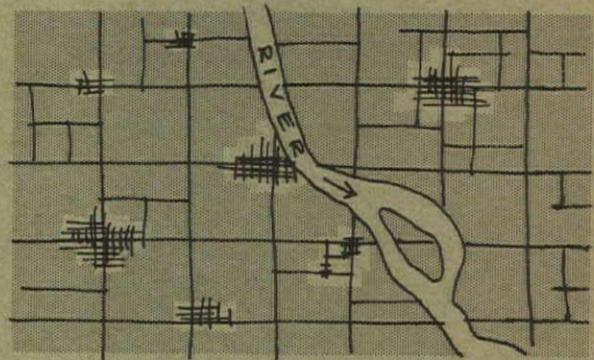
At the outset the laws of man and nature regulated both rural and urban land. In the case of rural land the man-made regulator was the rudimentary system of land apportionment. In the case of urban land, rudimentary agreement between private citizens in collective action regulated. As technology and the waves of immigration advanced, the urban problem was compounded. The nineteenth century saw the inception of many public regulatory measures. Laws were drafted for fireproof building construction after fires leveled extensive portions of several crowded cities. Measures were established for getting drinkable water and for carrying away sewage when the dangers of polluted water were recognized. Franchises were issued to public transportation companies to keep the city moving. When living conditions in crowded areas became intolerable and the public at large was aroused by inhuman slum conditions, housing codes were adopted, forerunners of zoning. The city government itself, having surrendered its landholdings to the public, and with them its source of revenue, began to tax landholders and revenue-producing enterprises. Land taxes replaced land rents. Municipal revenue regulated municipal service in accord with the public's approval.

We must not forget that we give our government powers to regulate that originate with our wishes as private citizens. So it was in 1916 when New York City adopted its zoning ordinance—a model of the kind of zoning that cities and towns over the nation were to adopt. Zoning in New York was necessitated by the threat to property values posed by the unregulated erection of tall buildings. The forty-story Equitable Building rose from the ground as a solid prism. Because it cut off light and air from its neighbors it depressed their value. Overcrowding and overdevelopment had long been of concern to New Yorkers. Sensing the danger to health and property, the public adopted zoning ordinances to stave off further threat. The legal foundation for this restrictive action was the belief that safeguarding adequate light and air was basic to public health, and zoning was therefore in the public interest. This concept was legally validated in 1925 in the Supreme Court case of *Euclid v. Ambler*. *Euclid* was a suburb of Cleveland, which had adopted zoning that would prescribe land-use districts, lot size and setback, and billboard restriction. The features of *Euclid's* zoning were typical. Thus was established the concept of the public's health, welfare and safety—the accepted basis of public regulation.

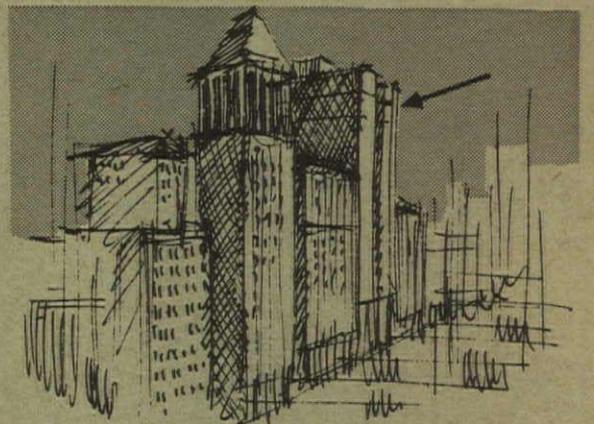
Even before zoning was taking hold here, Raymond Unwin was pointing out that there was no need to crowd. "Nothing Gained from Overcrowding" was published in 1903 in England, and Unwin's philosophy was widely espoused here. Unwin's philosophy supported zoning. By the end of the 1920's the concept of zoning had won general acceptance. It was also agreeable to real estate people because it helped maintain property values and because it



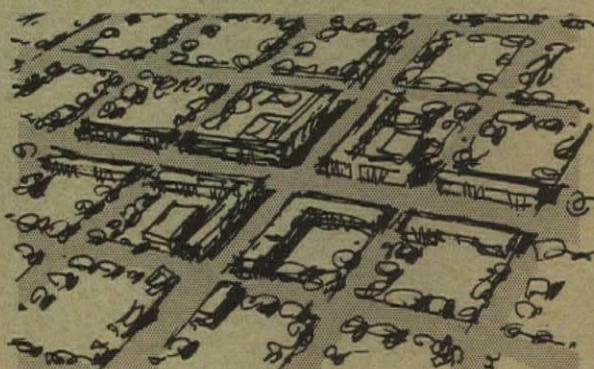
The gridiron plan became a major regulator of town form



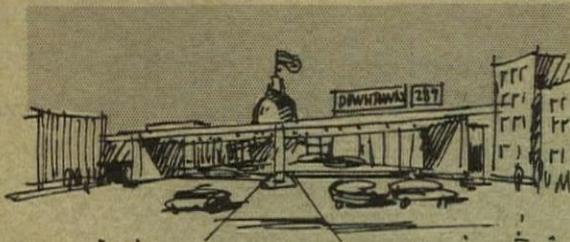
The gridiron land division became a major regulator of regional form



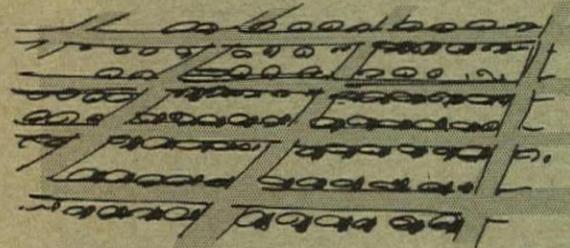
The Equitable Building (arrow) in New York exemplified the conditions of overcrowding which led to zoning



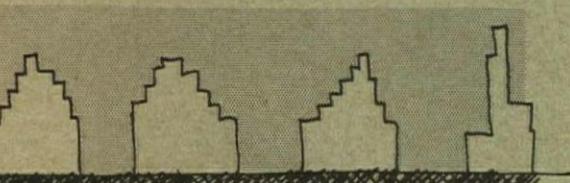
Zoning and grid became the regulators of form in most American towns



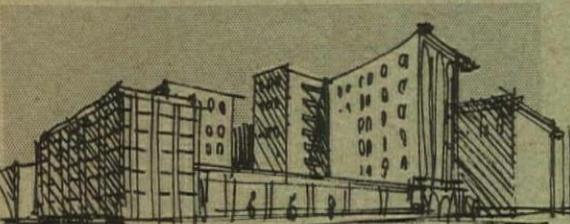
There are no regulations to preserve and protect special vistas



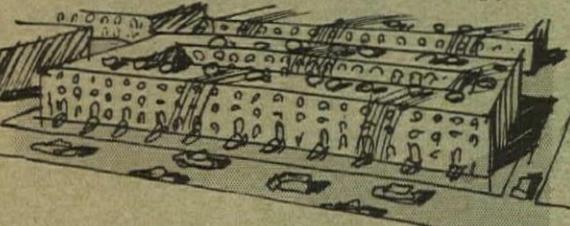
Regulations can produce monotony if used unimaginatively



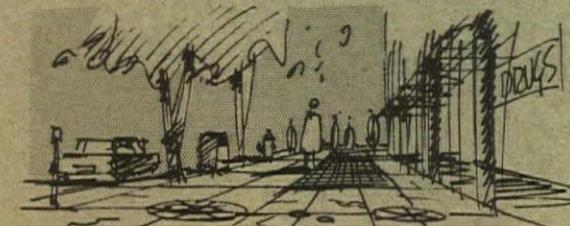
Regulations can set architectural form for better or worse



No regulations prevent the exposure of ugly rear building facades



Building codes and zoning alone are insufficient to produce good communities



No regulations insist on good sidewalk design—sidewalks are the basic urban open spaces

could, with deft manipulation, create value. Clever entrepreneurs could assemble land zoned at a restrictively low density, get the zoning changed, and overnight boost the market value of the land. Similarly, favored communities could restrict undesirable activities and people, to cast that burden on less resourceful neighbors.

But zoning is not the only regulator which was recognized. Cities were developing the present concepts of eminent domain, taxation and the enforcement of regulation. Eminent domain did not require the city to compensate private property owners in a restrictive action, but it did require compensation in a taking action. Due process of law in such cases was justified on the basis of the general public's welfare. Compliance with zoning ordinances came to fall under the police power. Meanwhile, private property owners had developed the concept of the restrictive covenant, a means to legally perpetuate their desires for their property.

In the depression it was realized that the homebuilding industry was a key to getting the country back on its economic feet. So it was that the Federal government stimulated construction by guaranteeing mortgage loans for housing. Of course, the housing had to meet basic construction standards so that the public's money was spent wisely. Pervading the standards was Unwin's admonition to avoid overcrowding. The standards coincided with the public's predilection to single-family houses on individual lots. Later, proposed modifications to these standards met with objection. Change was seen as a threat to value. Status quo, too, can be a regulator.

Since we required clear legal statements in our development of public regulatory rights, we developed a hardening of mentality toward regulations. This has created two problems: On the one hand it has become very difficult to change established regulatory laws, however obsolete they may be; and on the other, deep dissatisfaction with the concept of regulation through zoning has prevented us from adopting techniques more advanced than zoning to replace it.

Two events should be noted as landmarks in addition to the *Euclid v Ambler* decision. One was the drafting of a model document in Washington, DC, by two attorneys in 1926. Frank Bassett Williams and Edward M. Bassett wrote, at then Secretary of Commerce Herbert Hoover's request, the "Standard Enabling Legislation." This document was adopted by many of the states in zoning enabling legislations to empower their constituent cities and towns to prepare plans, zoning and otherwise. Zoning and planning were made legal on a state-by-state basis over a period of ten to fifteen years.

The second event was more recent, but equally significant in the development of community design. In 1954 the Supreme Court decided that esthetics was a just public concern worthy of support by law. In *Berman v Parker*, an urban renewal case dealing with the first Southwest urban renewal project in Washington, DC, the Court ruled that "it was within the power of the legislature to determine that the community should be beautiful as well as healthy, spacious as well as clean, well-balanced as well as carefully patrolled." Many states have followed suit.

The maze of factors which regulate in detail what to do in architecture and urban design ranges from the facts of our national economy on down to building codes, but from this maze one central fact emerges: The factor that controls and regulates most is our own attitude toward what we want of our great productive energy. Let us start by examining the present regulating factors.

Present Regulatory Factors

The Official City Plat

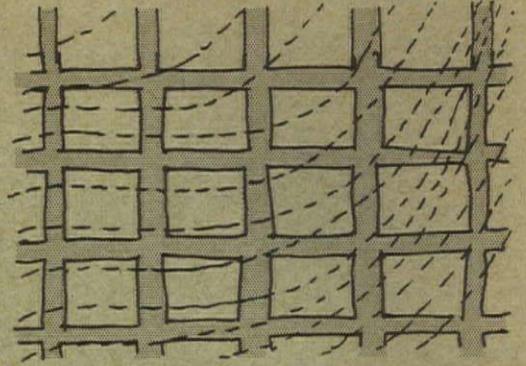
The official city plat regulates urban design directly. It is a legal document which shows public streets and private land, with dimensions. It also shows easements on private land—rights of access to alleys or underground utilities. It designates public lands for parks, police stations, hospitals, schools and libraries. The official city plat is the basis for describing private properties physically for legal documents, such as ownership titles or deeds. Some cities have compiled their plats into official city maps—over-all official maps of the city, taking in all the separate plat areas.

Once drawn and adopted, the official city plat or map is difficult to change. Actions at the scale of urban expressway building or urban renewal are required to alter it, even then with difficulty. The major difficulty with plats is that anyone can file one, even very poor ones, and once filed, they become indelibly stamped on the land. Their street patterns may run counter to topography, the block size and shape may be ridiculous, but those streets and blocks have legal status. Cities and towns all over the United States are burdened with obsolete and unusable plats. Official plats are the basis for taxation, insurance contracts and sale. For that reason they have endured as a controlling measure and are difficult to alter at this point.

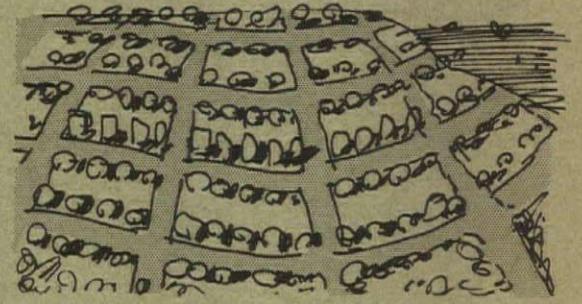
The Zoning Ordinance

Closely allied to the official city plat or map as a regulator of urban design is the zoning ordinance. It specifies the uses to which property may be legally put and the intensity of development allowed, stated in terms of floor area. A zoning plan may often specify off-street parking requirements or off-street truck loading facilities as a ratio of floor area. Zoning designations have become more and more elaborate, with numerous subclassifications to encompass evermore complex variations and combinations. The legal profession has been concerned that ad hoc administration of zoning and zoning variance requests may be subverting because it is conducted in the absence of a larger public object which is scarcely articulated. Our profession must recognize that zoning is no substitute for design and that too often it freezes the design of a city. Zoning is, by its nature, negative. It can prevent property owners from burdening the public with an ill-suited development. But it cannot plan school locations, traffic movements or parklands. Nor can it create beauty, order or amenity. Zoning is neither planning nor design.

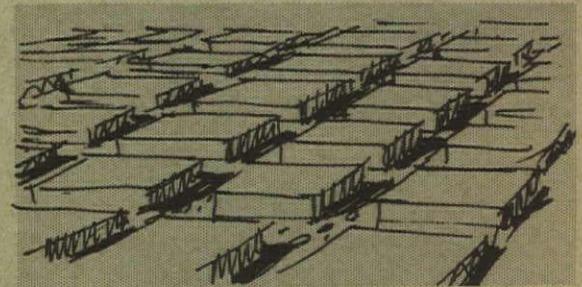
However, even as a second-best control, zoning serves a purpose. One can readily imagine the chaos that would result if all zoning were abolished. Nevertheless zoning without a full-blown plan is as silly as a set of building specifications without working drawings. Zoning falls into proper place as the legal enforcement of an over-all urban concept. For the time being we must recognize the powerful role of zoning as a control. As things now stand, it is the single most powerful factor. The appearance of Washington, DC, and Manhattan are the best evidence of the effects of zoning on the appearance of the city. Zoning ordinances for height and setback in these cities have set their urban design—for better and for worse.



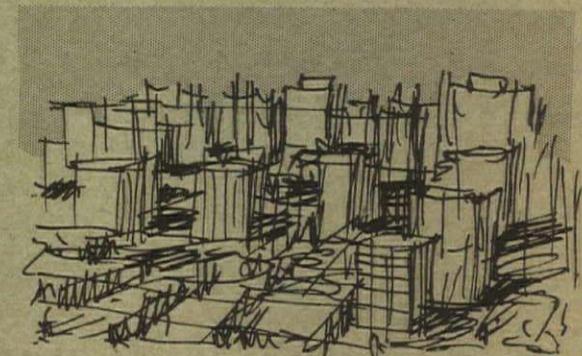
City plats are official city form regulators. . .



. . . which, if ill-conceived, may produce hardships in later development



Unnecessarily restrictive height control through zoning can result in dullness as well as uniformity . . .



. . . but most zoning controls cannot prevent disorderly urban form

Land Value

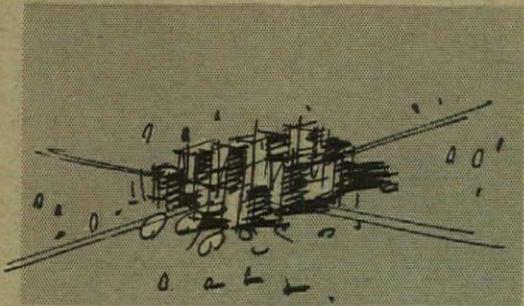
Intimately related to zoning ordinance is land value, as assessed by the city and as determined by the market. Land value is largely controlled by the use to which a property can be put according to the zoning ordinance. Of course, the particular area of a city and its general uses influence land values even more. Critics often point out the flaw that zoning is often adjusted to accommodate the changing circumstances of the market. Hence, it is less a tool for urban design than it is for speculative enterprise. Hence, as a negative means, zoning fails to maintain order since it can be changed so easily. The problem is not so much that private commerce is restricted as it is that the public has an unreliable tool for serving its ends.

Land value largely determines the uses to which land can be put. Few uses can be tolerated which are not financially feasible. Since land is sold at the highest price obtainable its market value is usually overstated. Inflated land values are one of the most restricting elements of urban design. Many central city rebuilding projects are therefore impossible without some form of cost "write-down," a process whereby some portion of the cost of land in a project is paid for by the public. The justification for this action lies in the over-all return to the city which the project brings, socially, economically and physically. This can more than repay the public at large, although the return may be difficult to measure.

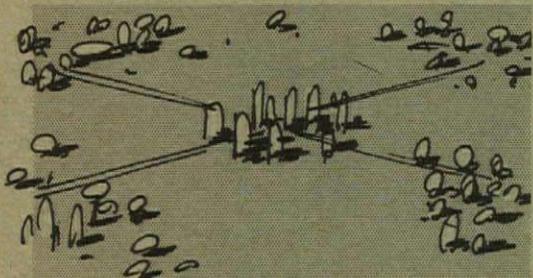
The obvious alternative to land value as a capricious determinant of urban design is public control bordering on public ownership, such as is practiced in England. This idea is anathema here. In its place we compensate private owners for their loss in a public taking when a definite program is adopted. This is a cost we have come to accept for the continuance of our attitude toward the rights of private property owners. Legal critics have pointed out that if it is fair to compensate owners for loss in value through public action, we should, by the same reasoning, assess them for value gained through some public action—such as building a new highway along a dormant property.

Property Taxes

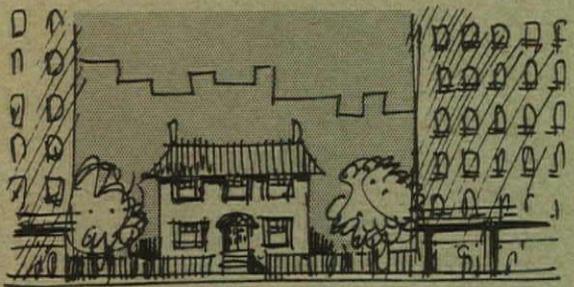
From land and building values tax revenues are computed. *Ad valorem* taxes are taxes based on some fraction of the total assessed value of a property and its building, called "improvement" in real estate language. This value is determined not on the basis of the land and its building in the total community picture, but on its market value. A profession of evaluation experts called appraisers determine market value. Profit potential thus becomes the basis of taxation. Critics assail this practice vigorously, some suggesting that cost to the city directly would be a far more equitable basis of taxation. How this would be determined it is not easy to say. Some formula would have to be developed. Still more complex would be the process of change from the *ad valorem* system to an actual cost system.



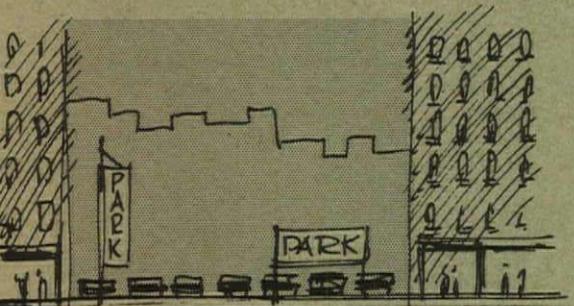
Land values can cause dense cluttering in urban centers . . .



. . . and accelerate outward movement



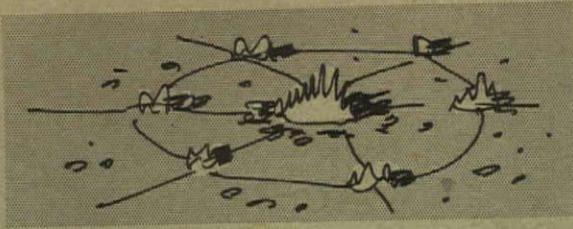
Property taxes can destroy a fine old feature building . . .



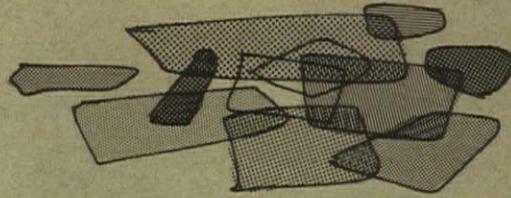
. . . replacing it with an interim surface parking lot

Property taxes on old buildings can cause decay to progress down an old street





A city which functions in fact like this . . .



. . . may be governed by irrational jurisdictions like this

Municipal Fractionalization

Causing still more difficulties is municipal fractionalization—the division of what is, in fact, a total working organism into separate pieces. This has led to inconsistency in regulations in adjoining communities. The fractionalization of the city into separate political entities is one of the chief obstacles to urban design on the scale of the whole city. At present we are trying to effect urban design programs within the framework of our current mode of operations. A large portion of our taxes goes to our Federal and state governments. They manage funds and develop technical proficiency. Where Federal and state governments supply funds the local municipalities furnish leadership. This is meant to insure technical soundness on the one hand and the fulfillment of local objectives on the other.

Several local programs are aimed at countering the problems of fractionalization. Local planning commissions have voluntarily joined together in regional planning councils for discussion and coordinated decision-making. Capital budgeting on a metropolitan basis for police, water, sewage and parks has been a forward step.

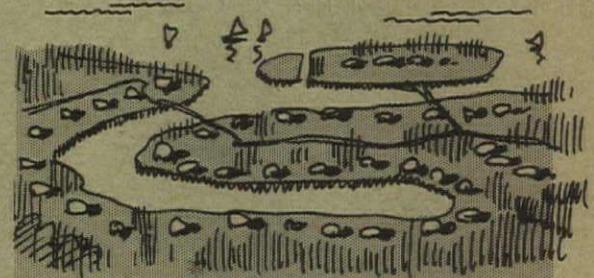
The Federal government's seven-point Workable Program for Community Improvement is a useful guide for overcoming the problems of isolated action. This program shows how to coordinate 1) codes and ordinances, 2) comprehensive community planning, 3) neighborhood analysis, 4) administrative organization, 5) financing, 6) housing for displaced families and 7) citizen participation. Although this program is intended as a way of organizing a community for HHFA urban renewal funds, some communities have used it as their guide for planning their own action using their own financial resources.

Covenants

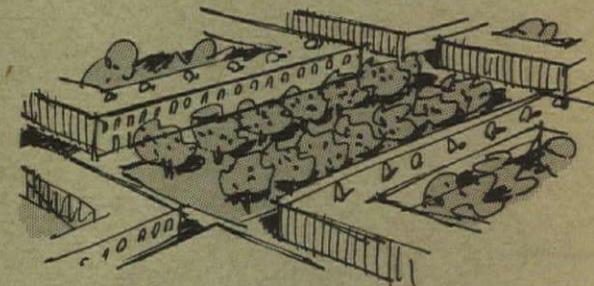
Restrictive deed covenants also regulate. These amount to specifications imposed on the use of property in its deed, or statement of ownership. Restrictive covenants have generally been negative in nature. Yet covenants have been written into deeds to insure property maintenance, sound use and, hence, community health. Property owners around Louisburg Square in Boston and Gramercy Square in New York agree through covenant to support the cost of their private parks. Suburban residents of Houston, Texas, employ private deed covenants rather than public zoning ordinances. The covenants, however, can only be imposed with the concurrence of the individual property owner or a developer, in the case of a new development project. They can work on a small community basis, but cannot come near controlling the city as a whole.



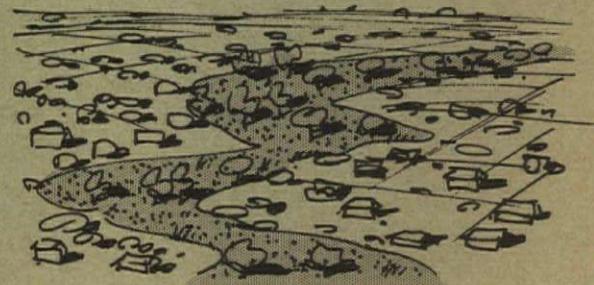
Regional park systems can interweave across numerous political boundaries



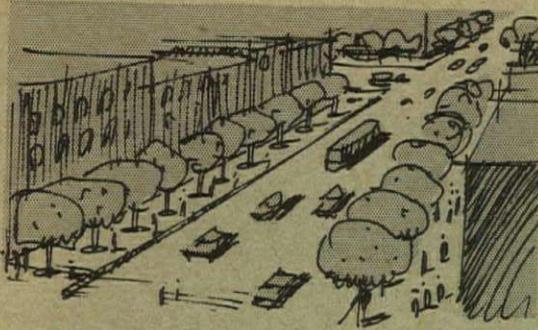
Protective covenants can assure good design in small-scale developments



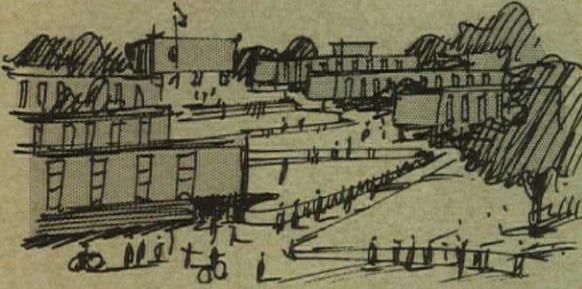
Covenants can maintain small urban neighborhood greens . . .



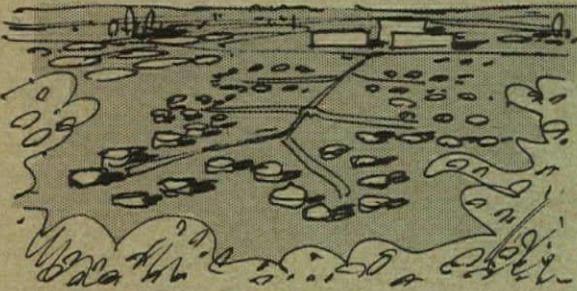
. . . and common open spaces in suburban developments



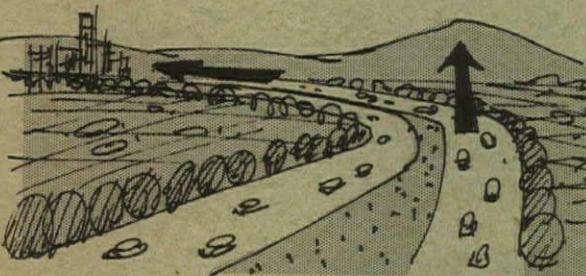
Urban design objectives must be injected into the regulations which form the street . . .



. . . which influence the grouping of buildings



. . . which influence the form of new suburban developments



. . . and which position the highway in relation to the city functionally and visually (arrows)

. . . so that we can control the total design of the city

Subdivision Regulations

Subdivision regulations are a physical extension of zoning for forming the character of an area, usually residential. Subdivision regulations state building form and community character more specifically than zoning. They specify the sizes of front and rear yards, minimum lot size and sometimes minimum house size and materials. Their great weakness from a community design standpoint is that their typical use is underwriting our suburban sprawl. Subdivision rules may flout good community design. A good house and lot design multiplied ad infinitum over the suburban landscape cannot possibly be expected to substitute for the careful over-all design of residential streets, school locations, the siting of business hubs, and the relation between quiet street and busy freeway. Yet it has often been given this role by default.

Building, Housing and Sanitary Codes

To complete the list of regulatory factors, building codes must be added. They insure the minimum satisfaction of standards to insure sound building. They also affect community design and appearance with their specifications of the use of certain materials and certain mechanical features. Sometimes they may be obsolete. Some plumbing codes, for example, specify elements in such a way as to rule out new advances which would bring cost down to a level where more modest-priced houses could be built in a community. Building codes may specify window-opening areas which do not make sense when considering the relationship between one house and another. Codes are essential in general, but many could well be examined from the point of view of the relation between houses.

The Basic Problem

The main regulators of the city's design thus include its official street plats, its zoning, its land values, its taxation plan, municipal fractionalization, covenants, subdivision regulations and building codes. Within these institutions of regulation and control operate an array of subordinate regulators. Utility layout, for example, is a by-product of the official city map. Obviously, the city's economic base and sense of civic pride regulate any actions for civic improvement. Transportation patterns regulate value in urban and suburban land. Fine arts commissions, historical commissions and ad hoc committees regulate the creation and maintenance of the city's higher values.

The missing link in our present array of regulatory practices is full consideration of urban design. Although our current regulatory measures in fact control the city's appearance, we have as yet failed to inject design into the present rules of city building. There are a number of ways to do this, which we will now discuss. Let us keep in mind, however, that all innovations must to a large extent be presented in the framework of already accepted practices. We cannot revolutionize the rules, but we can extend them to incorporate design goals as one present step forward.

Injecting Urban Design into Regulations

Preservation

A major task in building urban America lies in preserving areas that are healthy, physically, socially and financially. Preservation and rehabilitation of this stock can be achieved through sound housekeeping on an urban scale, accomplished through the judicious exercise of current regulations, while recognizing that all individual buildings are in an environmental context which has a considerable regulatory effect in itself.

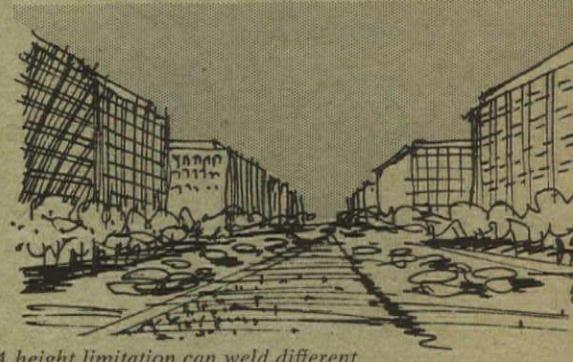
In the case of urban housing, for example, almost every city and town has a large proportion of row and semi-detached houses some two or three generations old. These are the old street-car suburbs of yesterday, the comfortable houses of the former middle-class suburbanites. Unlike the huge pre-income tax mansions, the old middle-class family dwellings can handily accommodate a contemporary family, or sometimes two. Although the heating and plumbing may not be up-to-date, it is up-to-par. The rooms are often of good size, the gardens ample although not large, and the street trees mature. It is to the interests of the community to insure that none of its policies in taxing, road building or other indirect and inadvertent practices threaten these areas, for policy largely regulates their health.

If, for example, municipal finances result in a boost in residential real estate taxes the owners of these old properties may forsake them for a suburban alternative. The result may be an increase in the city's commuter load, a reduction in public transit passengers and a decrease in responsible citizenry in the central city. If the quality of local schools in central cities is on the downgrade, one can be sure of an accompanying degree of middle-class exodus. The older areas often endure despite a barrage of insult, but there is one act they can scarcely weather—when an old residential street is made into a traffic artery. Robbed of its tranquility it soon is bereft of neighborly character, and so sentiment for it vanishes. Critics of rough-shod road-building programs who are alarmed at displacement problems should be equally alarmed at the less evident but equally destructive effects of unrelated surface-street traffic patterns. They are a main alternative to expressways. Surface-street circulation patterns should form precinctual residential islands free of through-traffic flow.

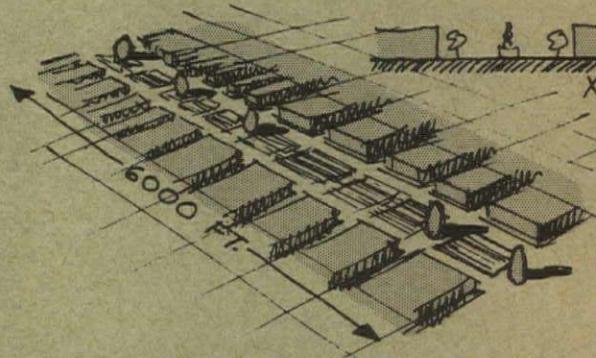
Almost all of our old cities have one or sometimes two grand avenues lined with old mansions. These were the stately homes of the rich and represent a period of the past that we will never see again. Usually, these grand old streets indicated the direction of growth for the outward expansion of affluent development. In the majority of cases these streets are in a state of decay, the mansions having been divided up as rooming houses or as often used as funeral parlors. Some cities have managed to preserve the quality of these streets; East Avenue in Rochester, New York, is one example. There is a case for municipal policy which encourages this type of preservation. Private institutions, citizens' groups, schools, small museum groups and church groups can use the old mansions. Municipal policy, through tax relaxation, could make this possible. Indeed, it might be shown through careful study that such streets with their old buildings might be the ideal place to divert low-tax-yield activities, less supportable economically elsewhere in the city. Such avenues could be attractive linear nuclei for stabilizing in-town residential development.



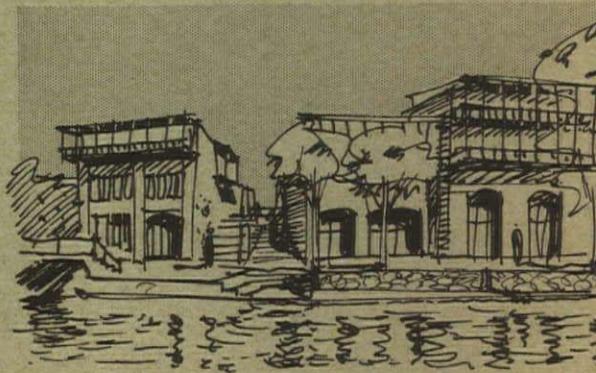
Zoning should protect all views of important historical buildings, such as this church in Charleston, South Carolina



A height limitation can weld different buildings into a cohesive whole through mass uniformity—K Street in Washington, DC



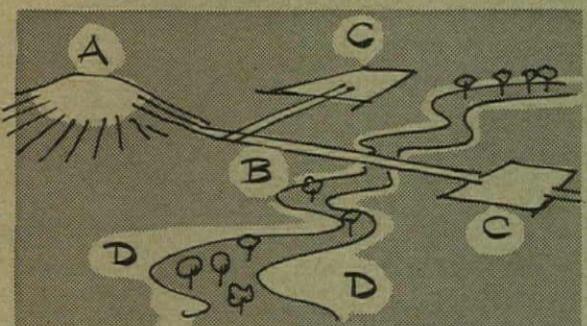
Fine streets like Monument Avenue in Richmond, Virginia, with its five memorials, need protection by regulation



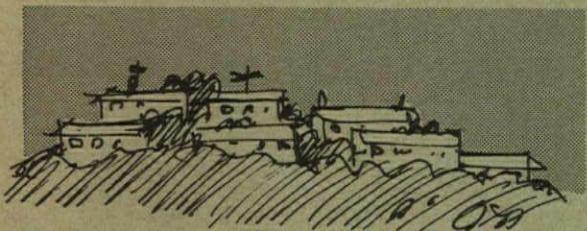
Respect for history need not mean unimaginative copying—a proposal by O'Neil Ford FAIA and Allison Perry in San Antonio in an old Texas vernacular



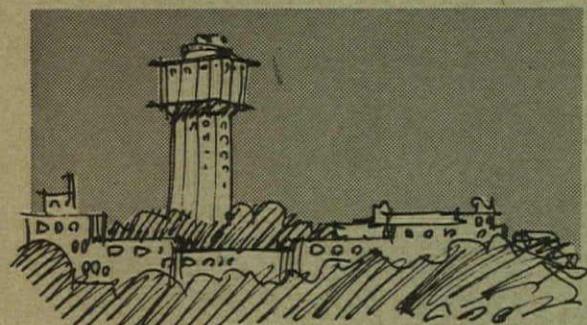
New houses can be integrated into older neighborhoods by continuing the established scale of masses and spaces. Regulations can require this



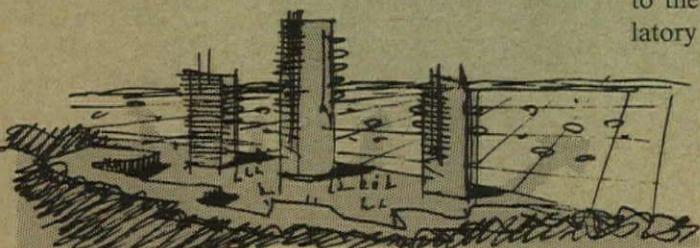
Every city and town should assess and control its special sites: (A) hilltops, (B) grand avenues, (C) special enclaves, (D) the borders of parkland



A hilltop may deserve something special by virtue of its urban prominence ...



... something that calls for special design attention and which is underwritten by special regulations



Fine views from special promontories should also be kept open by regulation

Some cities have old quarters with a pervading urban scale and character as well as grand Victorian streets. These are precious assets, for such quarters have a human scale that is difficult to reproduce nowadays. Wise communities have established special commissions to oversee these historical quarters. Special historic zoning ordinances such as those of Charleston, South Carolina, New Orleans, and Schenectady, New York, are examples.

Appearance and Design in Zoning

Thus far it has been difficult for zoning ordinances or other regulatory techniques operating through the law to effectuate appearance controls. Courts are reluctant to get into matters which they deem to be "esthetics." Esthetics must be shown to be a real community value, a real basis of property value—a status it does not yet have. Some design elements, however, can be stated in definite terms. Aluminum awnings or fake facade materials may be ruled out of an area because they are specific and not matters of subjective judgment. This suggests that "special-character areas" can be created under zoning administration. Likewise, courts are reluctant to designate historic areas—unless such areas can be shown to have uniqueness of antiquity and tourist attraction value. This limited view needs enlightenment.

Washington, DC, is one of the few cities which has an appointed body of experts to oversee the appearance of certain major avenues. This body is the Fine Arts Commission, established over a half-century ago. At that time its area of concern was designated. Recent urban growth and redevelopment has not been accompanied by the extension of this commission's administrative area, however. An example of the result is that the South Capitol Street vista of the Capitol dome is critically marred by a haphazard foreground—much of the foreground being new high-way construction. This problem is not unique to Washington.

"Special Site" Controls

Every city has certain special sites and certain special avenues; special in the sense that they serve to embody what is or could be outstanding as features of the city, and thus have a public value. Richmond, Virginia, has its Church Hill. San Antonio has many fine old houses and several fine plazas. New Orleans has been protecting the Vieux Carré with special ordinances and a special commission. Such special places deserve the best we can give them, and one step toward that end is the establishment of groups of experts who can guide their development. Once specified, these special sites can become the objects of public policy through the careful direction of regulatory policies that spur them to realization.

Every city and town with growth potential—and that includes most of them—requires this kind of scrutiny. Dormant now, the possibilities await awakening to the public's consciousness by the architectural profession, for it is we who are most able to exercise imagination. Once uncovered, ideas must be transferred to the public's trust through the medium of plans and then regulatory techniques that will assure realization.

Factors Regulating Slum Repair

Charles Abrams once suggested creating a slum surplus by rejecting all policies of slum clearance which cause further crowding. A slum surplus would cause a rent decrease, and so the poor would benefit. Landlords would begin to compete for these tenants on the basis of improved quarters. Raymond Vernon, in a study of New York City, pointed out that the practice of building high-density, high-rise public housing in already crowded areas may also be at fault. Most people, particularly low-income people, prefer small houses of their own in the suburbs, but are often zoned out.

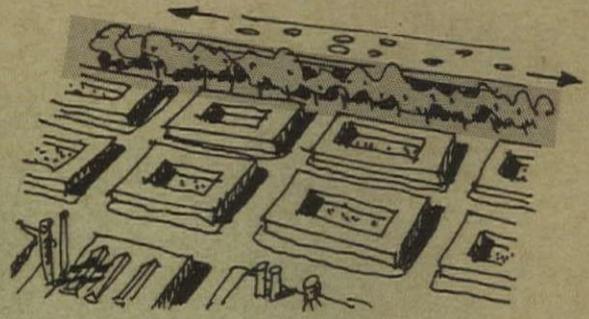
Another program for slum correction is code enforcement—to compel landlords by legal means to bring their properties up to legal standards of decency. Programs of this type are difficult to promote and maintain. Often, they can cause rent increases since the cost of repair is passed directly on to the tenant. This kind of program can be of benefit when applied not to the bottom stratum of low-cost housing, but somewhat above it, where the landlord can bear the cost of repair. An emergency measure is direct rent subsidy to the tenant himself. Special courts to enforce property repair by landlords have proven effective.

Such proposals and criticisms are all valid in themselves, but none of them can succeed in isolation. Necessarily tied as they are to public and market regulatory forces, they cannot operate effectively without a larger public policy—including a design policy.

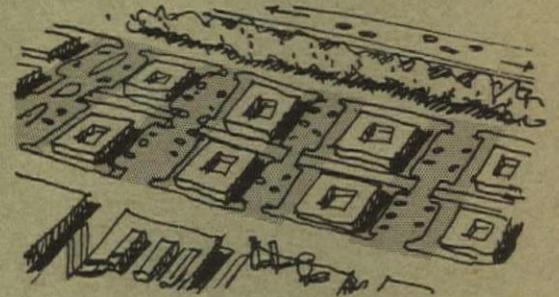
Low-income people cannot be housed in the city without public subsidy. The cost of the land is too great. The private market can only afford to house them where land is relatively cheap—that means far out in the suburbs—and then only the lower-middle-income groups can be accommodated. Obviously, the answer to poverty is opportunity for employment and betterment. It was along these lines of thought that Clarence Stein, the late Henry Wright and several other architects in their circle made their new towns proposals in the 'twenties and 'thirties.

Improving the lot of the poor is not accomplished by tearing down their dwellings, but by raising up their incomes. Likewise, in their housing, it is not simply a matter of applying more regulatory standards, but of providing better total designs. In following the sound steps of Stein and Wright in their work on this problem and hopefully carrying them further, some of our old attitudes will need re-examination.

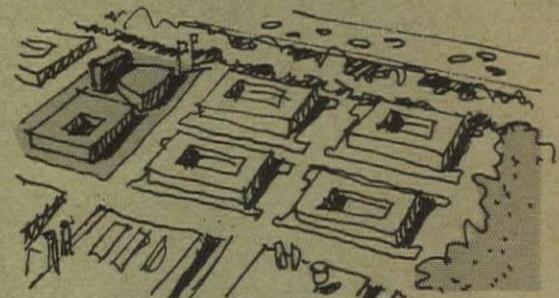
For example, we are inclined to think that low-income housing is a matter for only the central city, and so we build stark high-rise apartments in the city. It may well be that a concerted effort of creating employment opportunity and new housing out in the far suburbs or in new towns would be far more effective. But we are reluctant to promote the movement of the poor out to the domain of the affluent. It might also be that a re-examination of the minimum property standards of the suburbs would allow lower-income people to afford dwellings there. Many of their jobs are now located out of the city. A constructive regulatory measure might be the allowance of modest houses on modest lots when done in accordance with an open-space or common parkland plan.



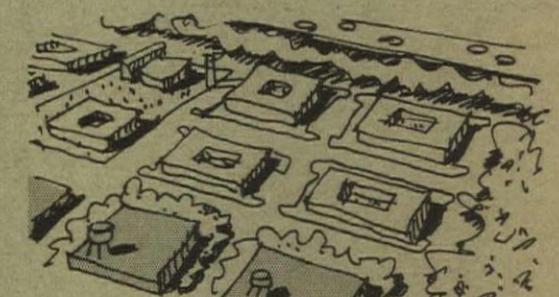
Buffers should be placed between expressway and houses



Residential streets should be protected against through traffic by sidewalk improvement

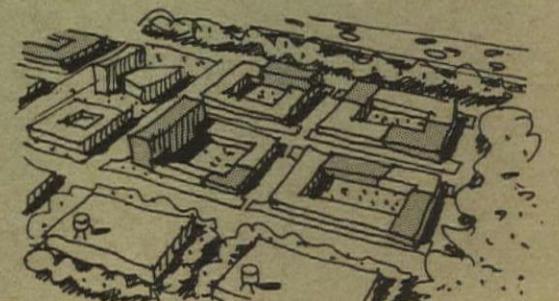


Community facilities—schools and open space—should be added



Nuisance factories should be replaced or remedied

Obsolete housing should be removed and replaced concurrently



In slum correction the forces that blight should be replaced by regulators that cause improvement. Programs should be coordinated very carefully to avoid difficulties of displacement and to insure maximum benefit from each step

Regulatory Measures in New Development

Today we have quite an array of regulatory and disciplining factors which control the building of our communities. But they are not quite the right ones. They are obsolete in terms of today's problems. They may assure the maintenance of property value and more livable individual houses, but they are not producing sounder community values or more livable cities. It would be impossible in most of our communities, under their existing regulatory laws, to re-create another Bath Crescent, Place des Vosges, or central Edinburgh. It would even be difficult to re-create a New England village green because of "mixed use." How many innovations could we succeed in building in our communities, let alone re-creating the better examples of the past? Current zoning, setback and minimum lot size regulations, in fact, dictate design. They prevent artful grouping, rhythmic spacing, clustering and relief—the essence of artful site design. How can we obtain such designs? What new slant is needed in the practice of regulatory design?

It is difficult to alter very much the regulatory factors which govern in the existing city on a piecemeal basis, but we have right now an unprecedented opportunity to write new rules for our urban America about to come. We can create regulators aimed primarily at creating truly livable new communities.

At this time we must take three steps towards realizing better design goals and regulatory techniques for our new communities:

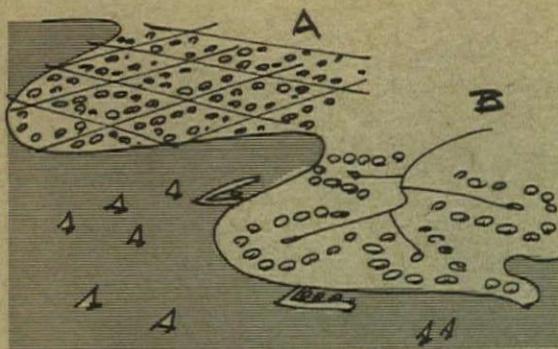
1) We must assess completely all of the factors which regulate community design. We must understand all the regulatory forces at work and their real effects

2) We must propose concepts for creating new communities. From these concepts we develop regulatory techniques, not vice versa

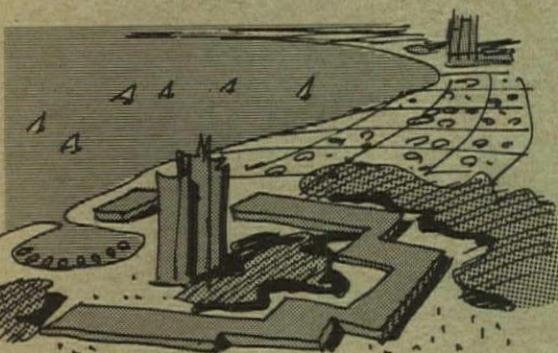
3) We can then proceed to single out the regulatory forces most relevant. We can develop new ones based on design where needed. These together become the principal regulatory tools we employ.

Pervading this approach to establishing relevant and helpful regulatory techniques must be the goal of coordinating presently isolated community building programs. No single parts of a community should be designed in isolation—out of context—any more than the mechanical system of a building should be designed apart from its structure or function. The single most important thesis to follow is that we must direct our regulatory programs around community-building lines rather than individual-house or single-building lines.

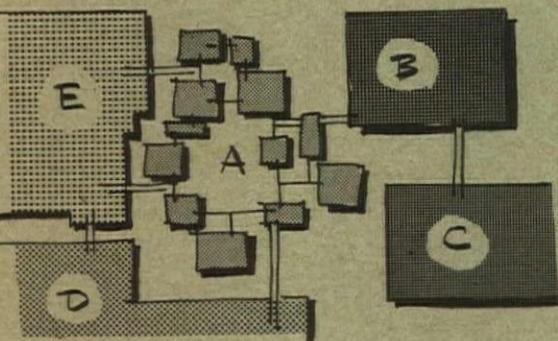
The typical operative builder works in a context determined by the fact that he must sell his house to an individual customer. The rules and regulations which govern his work all revolve within this context. The typical practicing architect also works in an individual-building context. The good architect, of course, takes careful account of his site and neighboring buildings. He reaches into the environs of his site to keep his work in proper relationship. It would be interesting to experiment with new types of covenants on an individual building basis. It is possible that they could instill requirements on upkeep that would be a community—or urban design—contribution. Urban renewal projects must be done in context with a thorough city plan. Requiring all Federally-financed urban expressways to be designed within the



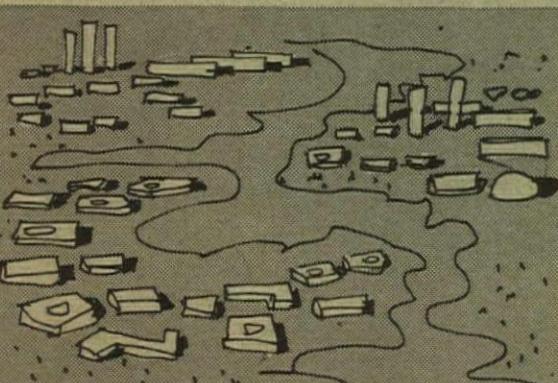
Regulations must not cause senseless monotony (A) but rather sensitive grouping (B)



Regulations must allow responsible innovation in existing communities



Regulations must allow for innovation in mixture-uses, as in a college campus (A) woven together with a research park (B), an industrial area (C), a commercial center (D) and residential areas (E)



Experiments in cluster grouping and mixture should be allowed by special regulations

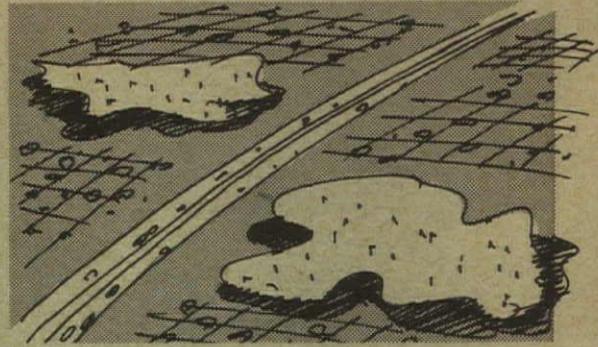
framework of a local planning activity is a sound step to insure that all such projects are related to their total settings.

We must recognize that every major element of a community building tangibly affects certain other areas of the community. Road-building programs are the prime examples. Therefore, it should be incumbent upon such efforts to relate to all the aspects of the community which they affect. In the case of road building we know that improved access means increased pace of development. We also know that we cannot easily predict the exact nature of that development. It has to be given an arena in which to develop—an arena opened by the road system. We also know that we use land at very low densities—that roads lead to development and development involves great areas of sprawl.

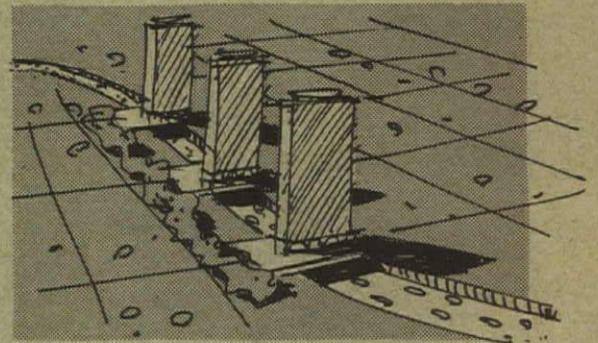
Would it not be in all our interests, then, to require the creation of open space commensurate with an accompanying highway construction? Open spaces will largely relieve whatever rash development the highway spawns. State and Federal governments created many of our splendid large parks. What will we now add to this stock? The public should, of course, pay for this, but how often does public leadership propose, for example, a bond issue for open-space acquisition? Political leaders may be reluctant to put forward such "extravagant" ideas. Perhaps an assist from the architectural professions would help remove that stumbling block.

A real forward step would be to adopt on a large scale and in many communities a new regulatory concept proposed by Carl Feiss in the Bratenahl suburb of Cleveland. In redrafting the zoning ordinance of Bratenahl, Feiss proposed special design districts. These were specified areas where developers could make special design proposals which would be judged on the basis of merit by qualified experts, architects foremost among them. If no developers made proposals, the land would be developed according to the standard zoning controls applicable to other parts of the town.

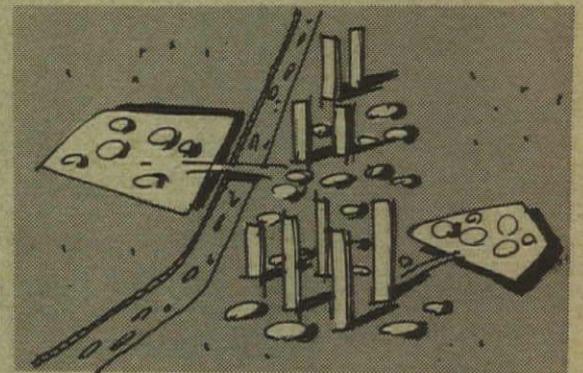
The point of these examples is that there are a number of parts of the city where the accepted regulatory controls now in practice are valid as preservatives. We hope that they illustrate, too, that the wise application and sometimes the extension of these techniques can also serve as powerful constructive tools. We must recognize that these tools do not entirely meet present needs. But most important of all, we must understand that while no regulation can ever substitute for good design, good design on a city-wide scale is impossible without sound regulations—regulations which in fact *require* good design.



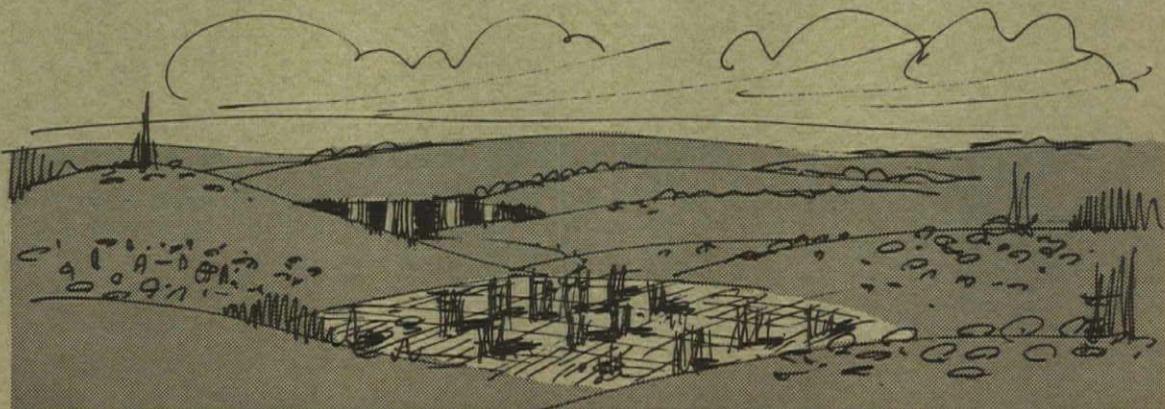
Highway construction which gives access to large extents of land should be accompanied by the creation of open space reserves by regulation



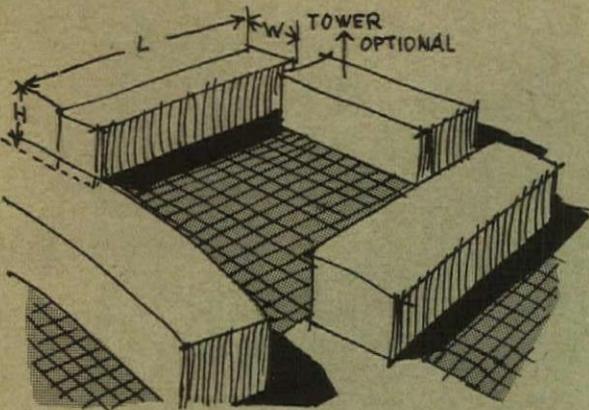
Innovation in regulation should allow us further experiments with air rights



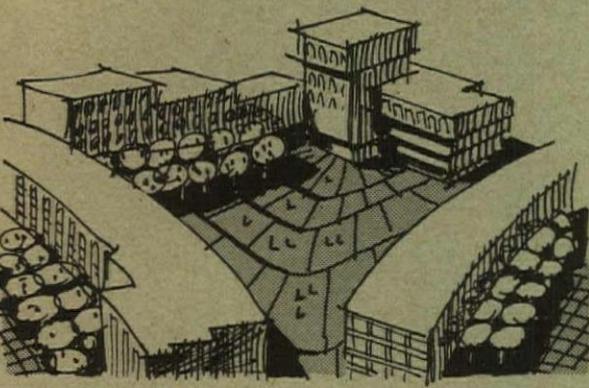
Regulations should never exclude lively pockets of vitality woven into urban centers



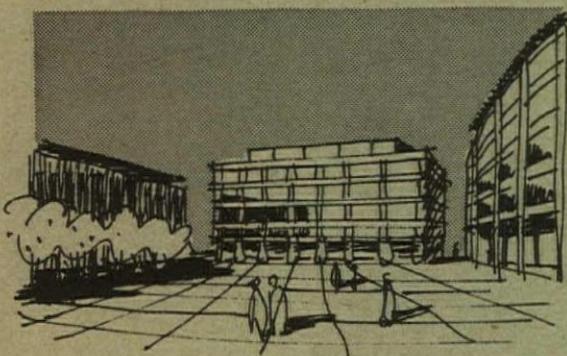
Purpose of regulations is to help us build our cities to their own best potentials and in harmonious relation to nature



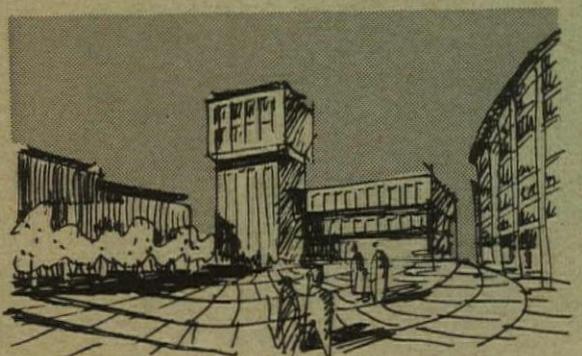
Design control at project scale can be achieved through a plan specifying building bulks and positions, public open space and circulation . . .



. . . which individual architects can later translate into individual designs



Eye-level studies should be made as part of the initial bulk studies . . .



. . . to determine the degree of allowable tolerance and variation in later designs

Current Architectural Techniques

The ever-present question for architects is just how design can be controlled in the city. There are at present a few trial examples of how this can be successfully done.

The first of these techniques is a very old one. It works at project scale, that is, in a finite area where full development can be expected to take place in a definite period of time. The controls involved are minimal—simply the specification in a general design plan of the public spaces and building bulks. This kind of plan becomes in fact a series of separate deed covenants. The builders of each building must keep within the bulk limits set for them. Thus they fill a prescribed building envelope. They are given a latitude of variation of perhaps ten feet in any direction. They may be required to subscribe to roof-profile and possibly entrance-location specifications, although this latter is usually not necessary if the public spaces are properly designed.

Intrinsic to the success of that kind of public design plan is the soundness of the public open-space and private-building design relationship. The open spaces must be most competently designed, not so monumentally large that they act as inconveniences which discourage private developers. The building bulks must also be well chosen so that they can be realistically filled by other architects working for their private clients. If some of the buildings are public and some private, the uses of the buildings and their interrelations must be carefully studied so that the different uses complement each other.

This practice has been in effect for many years in Stockholm and in Amsterdam on a city-wide basis. In this country it has worked successfully on a project basis, starting in the last century with Commonwealth Avenue in Boston and, more recently in that same city, in the Government Center Project. The design of the public open space itself is of key importance, and that may justify the design of all public open space by one very competent architect. The proper design of the public open space gives "address" to the project. It gives an air of distinction which can positively attract private developers.

A key to understanding the nature of this concept is that the concept itself must consist of elements which can easily be built, based as they are on sound market demands and current building vernacular. The Government Center Project of Boston went one step further.

Because the clients for many of the buildings comprising that center were numerous, and because there was no assurance that all clients would subscribe to the design plan, the plan itself was designed to tolerate a certain amount of abuse. Because some of the builders of peripheral buildings might choose to build high, as they later did, the central building and those forming the central open space were kept low as the minimum design plan.

This type of design control plan can operate, then, on a project basis. The design elements it specifies are open space and building mass or building surface (as a substitute in some cases). As yet it is difficult to specify materials, colors, appearance or details in component buildings. It is sounder policy to design in detail the public open spaces and, in questions regarding the appearance of private buildings, establish an ad hoc design review board. The design review board may be paid by the various devel-

opers on an advisory basis. This can be written into the development plan and the separate land titles.

A curious and interesting concept for giving visual order to the generally confusing urban scene was proposed several years ago by architect I. M. Pei FAIA. Finding the sites of his projects to be often utterly lacking in an urban design motif, he designed his buildings as simple prismatic towers. These acted as visual rallying points for their surroundings. In his Society Hill development in Philadelphia, Pei employed three such towers especially placed for their relevance to the city's skyline. This was, in fact, a fulfillment of the general design plan of Philadelphia, and so illustrates the notion of establishing key sites of great urban design importance.

Architect-planner David Crane carries this concept much further in his "City of a Thousand Designers." Crane would build all those urban elements which are the essentials of urban design, allowing the private pieces to fill in later. The public pieces are utilities, key public buildings and sites, circulation and open spaces.

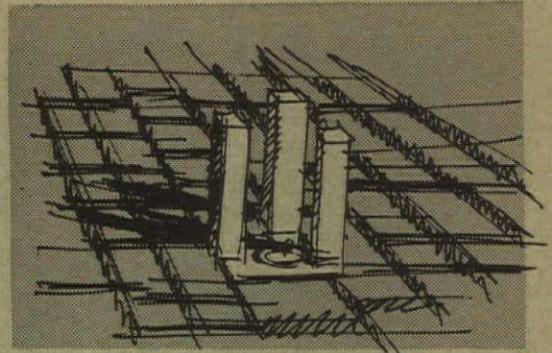
Crane and others like him are ingenious in their ability to wrest design control elements from a situation that seems to offer little but chaos. Yet there is one city-building procedure that requires design-planning by law. That is urban renewal. No other procedure we have goes so far in demanding good design in individual buildings and in plan. Urban renewal projects, however, admirable as they are in this respect, do not rebuild entire cities. The real question before us is how we can bring design to bear upon the city as an over-all whole, to practice design as cities in our times require. In answer to this we must turn to a very recent speech of a most thoughtful colleague.

Tomorrow's Regulatory Techniques

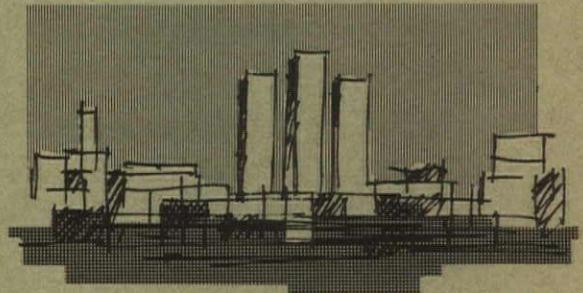
At the April 1964 meeting of the American Society of Planning Officials, Professor John W. Reps of Cornell University delivered a paper entitled "Requiem for Zoning." Professor Reps's paper is a most concise summary of the inadequacies of zoning. Not only is his paper a critique of the tools we now employ; it is also a proposal for some forward steps.

Professor Reps prefaced his remarks with the reminder that our present methods of trying to shape our cities amount to advice, controls, inducements and development. Early planning agencies assumed an *advisory* role. Many still function that way, a way limited in power. *Controls* followed—the controls we have been discussing—but they are negative instruments with limited usefulness. *Inducements* came as the city held out attractions to developers. Public *developments*—roads, utilities, public facilities—recently are suggested as the urban coordinates for shaping urban form, the basis of Crane's thinking. Public development agencies try to carry on this concept. Reps proposes that these latter tools be expanded greatly, and that zoning, although a minor tool in the scheme of implementation, needs replacement by sounder means.

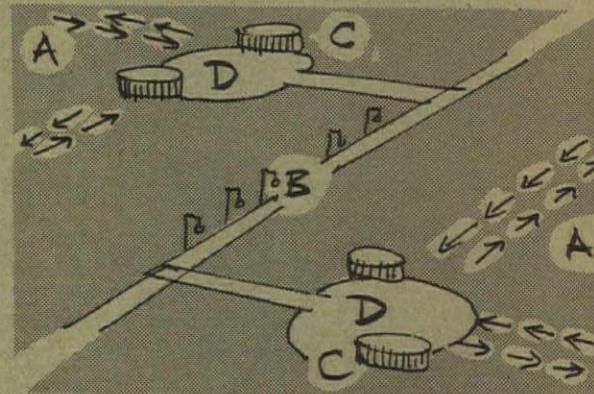
Reps criticizes zoning because of its poor compensatory procedures; because it is haphazardly applied; because it is parochial in the hands of its local administrators; because it attempts to answer controversial and difficult questions before they arise; because zoned areas have little if no rational relationship to each other; because it is not related to any community plan; because it is administered by ill-equipped officials; because regulation review



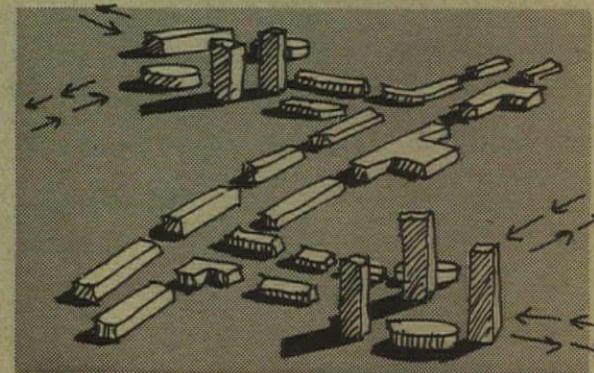
I. M. Pei FAIA proposes distinctive towers at strategic points in the city . . .



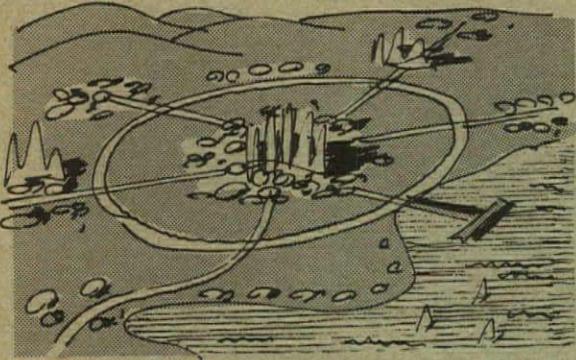
. . . to act as visual rallying points on the skyline



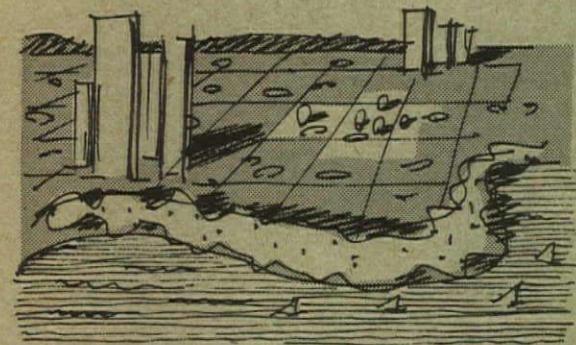
The "capital bones" network of municipal improvements: (A) circulation, (B) utilities, (C) parking, (D) clearance, etc



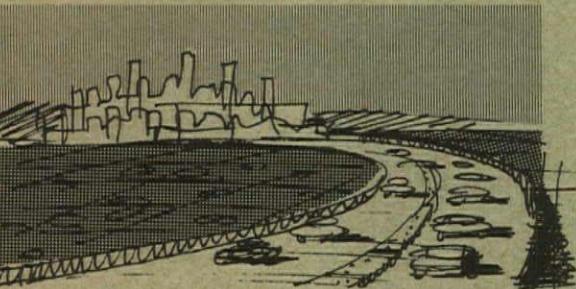
. . . establishes a framework for private development projects



Regulations for city buildings must start with a concept of what the city can become at its best . . .



. . . they should vary between the specific and the general according to the public importance of key sites and areas



. . . they should be based on the elements which actually control city form



. . . and should always be considered from the point of view of the physical results

is by judicial appeal only; and because courts are ill-equipped to make technical decisions in cases of appeal.

He answers these problems by categorical proposals: to introduce a better system of compensation and a system of betterment charge; to compel all communities to enact a system of land regulation; to place responsibility for zoning or its equivalent at metropolitan or state level; to have a regulatory system which could deal with special situations when they arose; to do away with ill-functioning districts and compatible-use districts which do not work; to consolidate all agencies which regulate into one coordinated and efficient agency; to base all statutes on a community plan; to give informed expert judgment a more important role; to institute more equitable control over larger areas; and to create state-administered appeal tribunals staffed with experts.

Professor Reps proposes that a system of "Development Regulations" replace zoning. Actually they would incorporate all regulatory tools into a fairer and more rational package. He also proposes official plans for community development with comprehensive objectives and standards to guide officials. Such plans would be mandatory and would show land-use, circulation, density and public facilities. This would advance planning to new importance. Professor Reps envisions a larger geographical jurisdiction for planning than is currently used. In fact we have such bodies working on an ad hoc basis, as metropolitan commissions and authorities. He would relate them. Responsibility for land-use can be handled rationally only on a metropolitan scale.

A main point of Professor Reps's suggestion is the drafting of a comprehensive plan in graphic form along with descriptive statements of objectives and policies. Here lies the most potential tool for urban design which we can yet imagine. An "Office of Development Review" would administer this plan. In partially-developed areas vestiges of the old systems of control would be retained, but in new areas the slate of old regulations would be erased. Developments would be judged afresh according to the large plan, as in urban renewal.

Reps contends that his system would reduce the great uncertainty involved in present regulatory practices. He fears little that his plan is radical, pointing to 1916 as a date when zoning seemed radical. He concludes his remarks with a series of questions, foremost among them the question as to whether we are yet ready to assume so large a role: Are we indeed, ready to produce the kinds of plans he describes as necessary? Is urban design thinking and knowledge up to its task?

The best cure for the restrictive regulations which we shun is to replace them with positive and creative design concepts to which the public can enthusiastically respond. We have to earn the public's respect and confidence in the design of the community as we have in the design of buildings of all sorts. The problem has to be accepted as such by controlling authorities at all levels. All architects can do their part by developing physical design concepts to arouse the public and illustrate the potential.

The architects' role, then, is to lay forth the prospects as realistic yet appealing ideas, and to understand always the relations between the forces that control and the results, so that regulations are never adopted which prevent us from getting the best results. If restrictive regulations have temporarily overshadowed us, it is because the initiative has not been taken to establish good community design as the forerunner of regulatory tools. This opportunity awaits us now. ■

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MOUNT VERNON LADIES ASSOCIATION

Its annual report, 1962

cont'd on p 126

Book Reviews

Alvar Aalto—Complete Works 1922-1960. Switzerland, Hans Girsberger (US distributor: Wittenborn & Company), 1963. English, French and German translations. 271 pp illus 11" x 9" \$16.50.

Perhaps a dozen of our contemporaries stand today astride the stream of modern architectural development. Of these a handful direct its course, alas, with wavering certainty in their later years. The late Frank Lloyd Wright's creative energy and influence tapered toward the end of his life. LeCorbusier's work can no longer be comprehended in the light of the earlier clarity which was its hallmark. Mies van der Rohe long ago conveyed the message of the master's hand in technology's product. Louis Kahn would be a latter-day Eupalinos. Alvar Aalto, in contrast, asks no polemic exercise of our comprehension. This supreme master's skill is seen completely in the genius of his designs, and that has steadily increased.

This is the third book on Aalto's work and is by far more complete than the previous two. It spans his career from his very first to his very latest efforts and reveals his scope from the design of a doorknob to a regional plan. This book follows the theme of its predecessors, to be sure, the theme of most books on architects. The book is a catalogue of architecture. That is its principal value and not a small one, for the beautiful gift of Aalto to all of us is the legacy of his work.

Aalto refrains from any elaborate philosophical statements on architecture. He says simply, "I build." But when you learn that he once advised that a window should be designed as if the girl you loved were sitting in it, the simple remark, "I build," blooms.

More than any other book of architectural works, this one deserves real effort on the part of the reader, especially in the study of the plans for the design relationships they reveal. In the plans of the Viipuri Library (1930-35), for example, all floor plans are on facing pages to facilitate simultaneous study of the different levels. This building alone is worth a good hour of examination, even sketching, on the reader's part.

For those who have not actually seen any of Aalto's work such perusal is especially important. Careful study of the siting of the Sunila Cellulose Factory (1936-39 & 1951-54) discloses an approach road which winds through Finnish forest, passes through a workers' community, crosses a bridge, swings around the factory island affording a grand view of a bay, and then culminates at the factory entrance itself. This you can discern from the drawings, through careful study. Unfortunately, the entrance of the Pedagogical University of Jyväskylä (1953-) is at too small a scale to reveal a tiny stair in the portico—the kind of detail that is found incidentally in a medieval town. But that is asking literature and illustration to be architecture.

The reader will delight himself by developing images in his mind's eye of the entrance design of the Wolfsburg Cultural Center (1959-62—these are construction dates I cite). Proceeding with such care the lessons of the block-like Enzo-Gutzeit Building in Helsinki Harbor can be understood. It is shown in relation to all its neighbors and the urban module which they establish. Enzo-Gutzeit takes its proper place in this module and is further designed to be properly seen both in its over-all setting and close-up. At close range the intricacies of its marble facade offer intimate scale. Seldom has a modern building operated so well at such opposite scales of view. Perrault's east facade of the Louvre matches it as a classical comparison.

But such analyses border on the too personal. They are offered because this kind of book may too easily lead to superficial copying when it is the content of Aalto's thinking we should emulate and which can be found through careful study of his work.

The book is to be commended for the frequent inclusion of some of Aalto's original on-site or conceptual sketches alongside a finished plan. We wish a few of his travel sketches had been included, but a preface tells us that Aalto had the major hand in choosing examples. Aalto's travel sketches would have been a big help to us for he has a unique way of seeing lessons in old architecture, particularly in Italy. We wonder if his inspiration for his recent marble facade designs came from Florence. His sketches of the prismatic towers of San Gimignano have counterparts in several of his groupings of buildings as a series of blocks. That sketch, and many others like it, are not to be found in this book.

Probably nothing short of a visit to Finland can convey the character of the Finnish landscape. We know the shapes of the lakes, that the forest landform undulates and is reflected in Aalto's elevations—but the pole-like vertical trees really have to be seen. They are as bars of regulating music to the flow of an architectural score. To really sense the approach to the Town Hall of Saynatsalo you have to close your eyes, imagine a long trip through quiet woodland with its pole-like trees and then imagine the first sight of that main facade. We seriously suggest a little Sibelius music for general atmosphere when you imagine the real character of Aalto's buildings.

It is the work of Aalto himself upon which the merits of this book lie, and that you can be sure, is as Aalto would have it. PAUL D. SPREIREGEN AIA

The Selected Letters of Bernard Berenson. Edited by A. K. McComb. Boston, Houghton Mifflin Co, 1964. 310 pp 5¾" x 8½" \$5.00

"BB," the master of all scholars of Italian painting during the fourteenth and fifteenth centuries,

died in 1959 at the age of ninety-three. Born a Lithuanian Jew, he was brought to Boston at the age of ten, graduated from Harvard ten years later, and went abroad—never to return, except for visits. Employed first by Mrs Jack Gardner to buy pictures for her famous collection in Boston, he built fame and a personal fortune by selecting pictures for Duveen, Wildenstein and other famous dealers and private collectors. In 1900 he rented I Tatti, a villa near Settignano, buying it five years later. Here he lived the rest of his long and extraordinary life, willing it, with his private collection, to Harvard University. Always an expatriate, he nevertheless always considered himself an American.

This collection of his letters is both fascinating and disappointing—fascinating in its revelation of his collaboration in his early years with Mrs Gardner, his friendship with and later marriage to Mary Costelloe and his correspondence with such assorted people as Walter Lippmann, Judge Learned Hand, Paul Sachs, John Walker and many others. (There is even one little note to Miss Jacqueline Bouvier, dated 1952, in which he advises, "American girls should marry American boys. They wear and wash better.") But the book is disappointing in that it lacks letters to Duveen, Wildenstein and other such picturesque individuals whom he helped, and who helped him, to "fame and fortune." The editor seems to have found greater interest in his subject's earlier years—although it must be said that half the book is devoted to the years since 1940, but the letters are of more casual interest.

However, to the wide world which knew of and respected BB, and to the countless visitors who flowed through the always-open doors of I Tatti, these letters will paint a new picture of the strange and brilliant man and evoke many memories of his long conversations. J.W.

The House Beautiful (a facsimile of the original). Text by W. C. Gannett, Designs by Frank Lloyd Wright. Park Forest, Ill., The Prairie School Press, 1963. 11½" x 13" \$22.50

In 1896-97 Frank Lloyd Wright cooperated with W. H. Winslow in printing on the latter's private Auvergne Press an edition of W. C. Gannett's "The House Beautiful." The elaborate ornamentation of the pages which form the real essence of the book was the work of Wright himself. Further, in the front was included a special folio of photographs of forms from nature, which had been his inspiration. This hand-printed volume was issued in an edition of only ninety copies and is quite naturally hard to come by.

Mr Hasbrouck, who has established the Prairie School Press, has chosen this typographic venture of Wright's as his second facsimile reproduction. Comparison with an original copy indicates that he has

succeeded in presenting a faithful reproduction of the text pages. As for the binding he has contented himself with reproducing the design and color only, not using leather and paper as in the original, undoubtedly a wise choice. One also should note that a "royalty" on each volume is being offered to the Robie House Restoration Fund, so a purchaser not only gets a facsimile of this interesting example of Wright's typographic work, but helps to preserve one of his architectural masterpieces. G.E.P.

The Prairie School Review. Vol 1, no 1. First quarter 1964. Park Forest, Ill, Prairie School Press, 117 Fir St, 1964. 18 pp illus, plans, 8½" x 11" \$1.50 single issue, \$5.00 per year in US and Canada; \$6.00 elsewhere

Continuing his interest in the Prairie School of architecture, Mr Hasbrouck, one of whose facsimile reproductions we have noted above, has established a review, which will be limited to the Prairie School (or Second Chicago School) of Architecture.

This initial issue contains an article about George W. Maher by J. William Rudd, plus extracts from Maher's paper "Originality in American Architecture." Also included are book reviews and news notes on items of Prairie School interest. Measured drawings are to be a feature of this publication.

Attractively presented and with quite a potential of interesting material, despite its restricted scope, one wishes this new venture well. G.E.P.

Architecture: Man in Possession of His Earth. Frank Lloyd Wright, with a biography by Iovanna Lloyd Wright. Garden City, NY, Doubleday & Company, Inc, 1962. 128 pp illus 9¾" x 12¾" \$10.00

This is a profusely and, for the most part, handsomely illustrated work, beginning with the jacket design of the much-debated but never-built Monona Terrace Civic Center for Madison, Wis. One tends to overlook some format annoyances, such as questionable layout (in a few cases type is almost illegible because of overprinting), inconsistent spacing of captions and photo credits, etc. But the book has one overshadowing fault: it really adds nothing to the already existing literature on the man.

The introductory biographical sketch by Wright's daughter obviously was written by an admiring member of the family and lacks substance from any point of view. In the second part of the book the master explains architecture in terms of its basic common materials—stone, brick, wood, glass, steel, concrete. The volume possibly can "serve as a beautiful and understandable introduction to architecture for young and old alike," but it is not, by any stretch of the imagination, "indispensable to the followers of Frank Lloyd Wright." R.E.K.

Comprehensive Architectural Services: Education for the New Role

ROBERT W. MC LAUGHLIN FAIA *

In order properly to prepare the architects of the future for architecture of the total environment, many great changes in education will be necessary

**The author is Director of the School of Architecture, Princeton University*

Architecture as practiced and as taught is in a constant state of interplay. The profession makes demands on education; education nudges and stimulates the profession. Right now our problem is not just a matter of one of these simple interactions. What we are faced with is a determination of the kind of education that might be contrived for a profession as we hope it will exist.

The profession to which we look forward (or fear as inevitable) has been described in rounded, high-sounding phrases about the architect as the creator of man's total environment. Statements have ranged all the way from the macrocosm of man's total environment to the microcosms of technical specializations, with everything between included in the architect's area of influence.

The future of architecture

In our cynical moments, we are plagued by a picture of our profession evaporating in an aura of flaming nothingness, as demands on the architect break the limits of his human capabilities. In our imaginative and constructive moments, we foresee the architect as a species to be developed with capacities well beyond those required for his present attainments: one able to deal with problems of a magnitude and variety that as yet we have not met. In our realistic moments we have to say that the exact nature of these problems cannot presently be defined.

There is nothing new about preparation for the unknown. That is what liberal education professes to do in both the arts and sciences, as contrasted with technological education which trains for more specific objectives. And let's not make the new role of the architect too mysterious by over-emphasizing the unknown. We know perfectly well, for example, that architects are going to continue to design buildings, that these buildings will have to meet human needs and aspirations and that in meeting these we will have to know a lot of specific techniques.

Breadth and depth needed

Architectural education will have to be broader and more encompassing than it is now, but it will also have to aim for greater depth and more precise understanding in specific areas. It will not be an either-or proposition. Why breadth? Because man's physical environment is wide, varied and changing. It stands between man and the universe. Why depth? Because this environment is changed through the application of precise knowledge working with forces, materials and techniques.

College, then graduate study

If architects are to be masters of the grand concept they will need the best that the universities can offer. Specifically this means going to college first and then on to intensive study at the graduate level. Law and medicine have long since come to this—a broad program first, leading to a BA or BS degree, followed by a professional degree. In architecture we do have one problem, not faced by law or medicine—our need to develop as early as possible the awareness and ability to use visual means of study and communication. While the development of verbal aptitudes is taken for granted from elementary school on, visual aptitudes are cultivated only to a minor degree. Words are the instruments with which lawyers largely work, and words are the instruments of thought and communication in most liberal arts courses. The study of history and political science leads naturally into professional study for the law. Future doctors find much in the undergraduate laboratories that prepares them specifically as well as broadly for medical school. On the other hand, there is little now in the liberal arts and sciences that involves visual communication. It is important for architects not to wait until graduate years to develop awareness and facility in visual representation through means such as drawing. For an architect to do so would be like a lawyer's waiting until after undergraduate years to develop a knowledge of sentence structure.

Architecture as a liberal art and science

The answer to this problem lies, to a large degree I believe, in the teaching of architecture during the early years of our liberal arts colleges as a liberal art and science; this means the study of what architecture is, as well as how architecture is done. We immediately enter dangerous ground that has been plowed over into maze-like patterns by some humanists and scientists who are terribly fearful of *doing* as opposed to *analyzing* and *discussing*. But a synthesis of thought and action in architecture is entirely possible—indeed necessary—and to the benefit of both understanding and doing. Architecture as a creative process has much to contribute to the synthesis, and so has the analytical study of architecture as an accomplished, historical fact. There is just as much reason for the combination of creativity with analysis in architecture as there is for combining writing with the reading of literature.

Humanism and usefulness not necessarily incompatible

We need to realize that broadening the curriculum for architects is going to raise some problems. Before getting up to our ears in academic culture, we shall want to take a good hard look at current offerings of the universities in the broadly based humanities and social sciences. How many of these offerings, presented under the noble guise of search for values, are really vestigial remains of once directly useful courses? Usefulness was once an accepted characteristic of the humanistic departments in the days before some of them became so precious in a pontifical custodianship of values. Studies of Greek, Latin or Italian can still be instruments for coming to know about Greece, Rome or Italy. Yet nowadays, in some academic circles, usefulness can be a naughty word and "instruments" categorized as courses for drudges.

There is no need for architects to waste time on the superficialities of outdated departments which have perpetuated themselves by staking claims to "values" in our society. And may we be delivered from sole dependence on Humanities I and II, those omnibus creations that try to cram the wisdom of all ages into a

couple of weekly hours. By breadth we still mean breadth of knowledge, not warmed-up opinion. There is plenty of solid stuff for us in the liberal arts and sciences, provided we look for it, and don't tumble for wordy substitutes.

Architectural schools will do well to look with skeptical eyes on invitations to combine their activities with the catchall of a "Creative Arts Program." Of course architecture is an art; and what art isn't creative? But architecture becomes an art only as we practice it: as a profession, as a science, and yes, as a business. That last, essential word scares the daylights out of most of the boys who are engaged in teaching about the creative arts *per se*. Schools of architecture will want to stand on their own feet as professional schools of first rank. Creative arts centers on campuses, like some cultural centers in cities, are too often gimmicks for make believe. The arts and culture (whatever may be intended by that term) don't thrive by being *centered*; they flourish by *pervading*.

If the broadening of the training of architects is not without potential pitfalls, we can take comfort in the great richness within the study of architecture itself. In relating the liberal arts and sciences to our own bailiwick, we can find areas of study that reach into just about every channel of human development, and avoid those academic closed circuits that begin with words—and end with words.

Early architectural training

Basically, the early years in the education of the future architect will need a solid and continuing axis of architecture taught as a liberal art, involving both doing and understanding. This axis will be expressed academically in a series of courses that will take a gradually increasing amount of the student's time through the four years. The student will elect work in those areas of the humanities, natural sciences and social sciences that relate to the central theme of architecture. Actually just about every area in the undergraduate curriculum relates to architecture, certainly to the new role of the architect. A wide degree of election will be necessary, not just because no individual can cover everything, but primarily because individuals vary and will naturally emphasize different aspects of architecture and the forces that produce it.

As the four years of the undergraduate program develop, greater emphasis can be given, during upper-class years, to architecture as the subject of major concentration. There is much evidence that most architects decide on architecture as a career by the freshman or sophomore year. Late starters seem to be comparatively rare in our profession. Where they do occur, more than the usual four undergraduate years will have to be allowed, in order to bring the student to a stage where he has been well exposed to the understanding and doing of architecture, as well as to the seasoning of a broad, liberal, undergraduate education. These are the objectives to be attained with the awarding of the baccalaureate, which will of course not be a professional degree, but will be evidence of breadth of study.

Schools of architecture as such will, I am confident, become graduate schools, and the five-year curriculum leading directly to a Bachelor of Architecture degree is destined to become obsolete.

Later professional training

Before discussing the nature of the graduate professional schools, it is important to mention a secondary but important effect

of the broad undergraduate program. By establishing architecture as one of the liberal arts and sciences in the university, it will be possible for non-architects to elect subjects in architecture. So far as I know, this is not presently true in any university. It is unfortunate that graduates of undergraduate colleges arrive in the world without having had an opportunity to study architecture as one of the important aspects of the lives they lead. They will be our clients, but will be much better clients if they have been exposed as students to some awareness of what we try to practice. We will meet them on zoning and planning boards and as corporate and governmental officials responsible for what we will advise them to do.

If the architect's undergraduate years are to be essentially characterized by breadth, graduate years will aim for depth. Throughout both periods will run the solid core of architecture viewed as a creative process.

Wide diversity in architecture

The areas with which the architect has to be familiar are so diverse that he never can be fully cognizant of all of them. Each contains a world of knowledge that is constantly expanding. Structures, environmental controls (that we used to call mechanical equipment), materials beyond counting, climate, methods of statistical analysis, the psychology of perception, lighting, the urgencies of social change the varied insistences of our more positive creative personalities, the economic facts of life, industrialization and automation—these are suggestive titles picked at random. If the future architect cannot master each of them, he will certainly have to be aware of all of them. He will have to respect every one of them and the people who do understand them. His education will have to expose him to all of them, but if his awareness is to be more than superficial, he will explore more of the areas thoroughly.

The graduate curriculum

The graduate, professional curriculum will continue in the foreseeable future to have a continuing core of design or composition, treated as the centripetal force in the synthesis that is architecture. I see nothing better ahead in this area than the present case method of specific projects, leavened occasionally with prototypes.

Courses will continue to be given in structures, the technology of environmental controls, urban theory and design, the economics of the building industry, professional administration. There is little use in dreaming up new names for them, but their content will be richer, deeper and more challenging. They will largely be taught by specialists from other disciplines who have an understanding of architecture, rather than by captive engineers, planners or economists within schools of architecture. To find such specialists with the ability to relate their specialties to architecture is extremely difficult now, because they rarely exist. Perhaps such teachers will come into being when architecture establishes itself as an important liberal art and science within the university. Perhaps engineers and sociologists will elect to study architecture as they now elect literature or history.

The success of these professional courses, now too often treated as necessary bits of pedestrianism in contrast with the glamor of design, can come from treating them not as adjuncts but as essential, if particularized, aspects of the central design process. In addition, our professional schools might well establish elective seminars where specific subjects can be thoroughly explored with

*Emphasis today on
development of knowledge
rather than education*

*Bridging the chasm between
practice and education*

research and scholarship. The nature of these subjects will depend largely on who the faculty are and what they know, as well as on the directions taken by the desires of students to learn. All schools can hardly be expected to offer all subjects; nor is this necessary.

Universities today have two stated purposes: the education of young people and the development of knowledge. The growing emphasis on the latter is indicated by the budget of my own university, for example, which now spends more than twice as much for research and scholarship as for teaching. Most of this shift in emphasis has happened within the past ten years. Schools and departments of architecture act generally as if they were unaware of what is happening in the universities of which they are a part. If we are to have a vital place in our universities, we shall have to wake up to our responsibilities for the development of knowledge, meaning research and scholarship, in our area.

We can best serve our profession in its greater role by searchings for knowledge that will enable us to solve the problems that underlie its practice. That is the job of the university and of its constituent parts. There is now a chasm between our practicing profession and the schools of architecture bridged only by tenuous bits of sentimental attachment. There is comparatively little flow of knowledge about architecture from schools to the practicing profession. A leading medical school in one state university tells its entering students that they have come for a forty-year course of which the first four will be full-time, and I am told that if you have to be sick in a country town, choose one in that state.

We need to take a hard look at our current insistence on teaching architecture as a series of contrived solutions, rather than emphasizing the knowledge and understanding that make valid solutions possible. In other words we need to emphasize the knowledge underlying the design process, making it available through carefully prepared courses which will then feed into the design process.

Graduate curricula leading to the first professional degree will ultimately require three years in addition to a broad undergraduate program with a core or major in architecture, once adequate content is available. Where there has not been study of architecture as an undergraduate, the time for graduate study will have to be longer. The necessary extensions of time had best come about gradually, since there is not now enough substance in most of our schools to extend over periods such as will ultimately be necessary. Efforts should be applied to creating content which will then demand proper time, not to creating longer time schedules that have to be filled out. There will be a danger of making too big a thing out of the academic phase of the architect's education. Plenty of time, largely in architects' offices, will be required for education beyond the university.

*Postgraduate courses to
develop varied skills*

In addition to the program for the first professional degree we will need post-graduate programs of a specialized nature. We need variety in the skills of architects. There is now almost sole emphasis on visual design, and a student without particular aptitude for this, but with other capacities, may have a hard time. We need architects with special bents for structures, urban planning, environmental controls, building organization. There should be opportuni-

ties to develop these without undue insistence on proficiency in visual matters.

Importance of urban design

Urban design should run through our curricula. Our schools have made considerable progress here. An urban planner should be an architect with a specialized knowledge encompassing the wide economic, political and social factors involved. Postgraduate years are probably necessary for this. Urban planning ultimately becomes urban design. It is a fearsome sight to see statisticians taking over planning without knowing how to compose data into three-dimensional concepts. It is equally futile for architects to try to compose such concepts without understanding the underlying social, economic and political forces.

The architect of record must become the architect of fact

We have developed here some fairly sweeping statements, but they are meant to reflect the attitudes that I believe will be necessary unless we are willing to let architects, as we know them now, become limited specialists in the major enterprise of designing man's environment. Generically speaking, an architect is anyone who determines the quality of that environment. Entrepreneurs, engineers, statisticians, politicians, industrial managers and just plain people are now making the decisions of architecture to an increasing degree, without much influence from architects as a profession. The architects *of record* are too seldom the architects *in fact*. We have fought successfully to limit, legally and technically, the use of the term "architect" to members of our profession. Now we need to expand the capacities of the profession to serve widely as architects in fact.

Implementation will be difficult. A new race of architects will have to be developed. This is not for my generation, nor probably for yours if you are crowding or have passed forty. But the opportunity of our generation is to loosen some of the bonds that limit us, for the benefit of the generations that are to come from our schools. What are those bonds—or more positively—what are the visions of the future of architecture that will destroy them?

Primarily, we had better make up our minds that we are essentially a profession serving our era, a profession that is difficult and challenging because its activities include the development and application of knowledge in the natural, economic and human sciences, as well as the creative activities that lead to composing these forces into satisfying and effective projects. Discussions as to whether architecture is essentially a business, an applied science or an art have become debilitating to our effectiveness as architects and confusing to the public—when the public bothers to listen.

Goal of architecture, and of architectural education, is service

Much of our current discussion of architecture is just as fragmented as our published performances because our individual attitudes as architects are often diverse, arbitrary and intolerant. Exhibitionism on one side and pedestrianism on the other are names called across the fence. Undue emphasis on esthetic judgments and too little regard for making things work are offset by financial opportunism and just "getting the job built." The architect will resolve all these carpings if he is honestly aiming to practice his profession for the service of his community, nation and world. We have got to advance as a real profession that aims to serve, if we are to have professional schools that will train for the new role of the architect that we hope for.

Comprehensive Architectural Services: Potential, Performance and Alerts

DUDLEY HUNT JR, AIA

The great potentials inherent in the expanding role of the architect can be attained if the profession prepares itself for comprehensive services and, with deliberation, proceeds toward the end goal of excellence in architecture

After some three years and 256 pages of articles in AIA Journal, together with thousands of conversations with architects and others involved in environmental design and construction, it is now possible to present this introduction to the subject of comprehensive architectural services—not the last word, by any means, but one more milestone along the road of evolution

What are comprehensive architectural services?

Comprehensive vs basic services?

The thousands of architects and others who have expressed themselves in one way or another on the subject of the Comprehensive Architectural Services Program have at least a couple of things in common. No two of these people are in perfect agreement on any of the details of the program; and, without exception, each questions certain other parts of the program. This is as it should be. The lack of agreement, the questioning attitude—these are signs of health and of an aptitude for growth.

At this point, however, enough time has passed since the beginning of the present program in 1962 for an effort to be made to answer some of the questions, if only imperfectly, and resolve some of the doubts, if only partially. While it is surely impossible—if not foolhardy—to attempt simple answers to complex, inter-related questions, it now seems imperative to ignore the danger and attack the impossible.

Before the present program was launched, the Committee on the Profession had come to an agreement that comprehensive architectural services include all of the activities required for the creation of buildings and other environmental designs. As set forth in the outline prepared by the Committee, these activities were divided into analysis, promotion, design and planning, construction, supporting and related services. It was never intended, or even intimated, that all of these services would be necessary for every project, or that every architect must perform every service for his clients. In fact, many of the services would not be performed by architects at all, but might be arranged for, in the name of the owner, and directed or coordinated by architects.

There is no conflict at all between comprehensive and basic services. On the contrary, basic services are actually included within the comprehensive services concept. The basic services are, of course, those listed in the B131 Owner-Architect agreement and in other AIA standard agreements: schematic design; design development; construction documents; administration of construction contracts. These are the services ordinarily performed for

every architectural project. Comprehensive services include these and also the services listed as "additional" in the standard agreements: surveys, measured drawings, etc. The comprehensive concept also includes many services not found in the standard agreements at all: site analysis, selection and assembly, feasibility studies, operational and building analysis, etc.

Basic services are the foundation of architecture, the skeleton, the central theme. The additional activities that make up the complete comprehensive services concept build on the foundation, fill out the body and clothe it, develop the central theme. Just as the automobile that the industry calls "basic transportation" can be fitted with a heater for cold climates, air conditioning for hot, the basic vehicle of architecture can be fitted with accessory services.

Why comprehensive services?

Let it be put on the record that architects did not first create the comprehensive services concept, then scurry around looking for clients who would pay for its application. Comprehensive services were created to fulfill a need—or rather many complex needs. Recognizing these needs, clients—the consumers of architecture—then began to demand that the needs be fulfilled. The basic services of architects were often inadequate for the task. Therefore, the comprehensive services concept was delineated by men who believed that architects should answer the demands. It is well known that architects do not have the field entirely unto themselves; others have also heard the demands and have hastened to answer them. Architects must be prepared to do the job better.

Is there a philosophy of comprehensive services?

The purpose of comprehensive services is better architecture and other environmental design. The services that are additional to the basic have one main purpose: to place the architect in a position central to the entire design and construction process, a position from which he can exercise better control and perform more effective services. Beyond this, there is little complete agreement among those who have studied the subject. There is no "party line" adhered to by any group within the profession; no attempt has been made to "brainwash" architects into acceptance of rigid doctrine. Instead, what exists is a philosophy of architectural services expanded to range across the multifarious activities now necessary for the proper handling of architectural and other environmental projects. There is an attempt to unify the many diverse activities into a rational, coordinated system.

What is the role of architect in comprehensive services?

The central role of the architectural profession, then, is in the performance of the basic services on a high level. Additionally, the profession must itself be prepared to perform many of the additional services in certain cases, coordinate the work of others in other instances, obtain and direct some services, and analyze or review still others. On some large or complex projects, the architect's role will often be some combination of these functions.

In all of the aspects of comprehensive services applicable to their practices, architects must have sufficient knowledge to enable them to relate all of the aspects to over-all goals or purposes of projects. Architects must be prepared to cooperate with specialists of many kinds and to cause these specialists to cooperate with each other for the good of the projects. A big role yes, but not one that expects the architect to become the whole show.

How are comprehensive services performed?

For each architect, for each office, the role will no doubt be that required by clients, that answering the needs or wishes of the individual architect or office.

Architects may provide their clients the services required in addition to the basic in a number of ways. Among these are services performed in the architect's own office by his own staff; services performed in association with other architects who are skilled in needed specialties; consultation between architects; services performed outside the architect's office by specialists engaged by the architect under extended terms of the Owner-Architect agreement; services by outside experts engaged by the architect acting as the agent of the owner and as director or coordinator; services obtained by the owner apart from the Owner-Architect agreement; services performed by the owner and his own staff. In the two last-named cases, the architect should have an advisory relationship with the owner and those who perform the services.

Fees for comprehensive services?

At the present time, because of the breadth and diversity of comprehensive architectural services, the formulation of a single method of fees for services other than the basic is impractical. According to the standard AIA Owner-Architect agreements, all services other than those enumerated as basic are extra and are subject to extra fees. These fees may be based on a multiple of personnel costs calculated to include overhead and profit; in other cases, additional services are performed for agreed-upon set dollar amounts. If services are performed outside the architectural office by consultants or other specialists, charges to the owner are often expressed in the form of the actual costs of the outside services plus some amount for the coordination or other extra work performed in the architectural office. These principles are applicable to all additional services, whether listed as such in the standard agreements or among the expanded services envisioned in the comprehensive services system.

One important point to remember is that only the charges for basic services—schematic design, design development, construction documents and construction contract administration—are included in the standard fee. All other services are subject to extra charges. However, some architectural offices have found that they can offer many of the additional services to their clients without extra charges. For example, some firms perform a degree of analysis and programming, site advisory services, etc, without charging extra, in order to extend their control over the project. In this way, they feel they can perform the basic services more effectively than otherwise might be possible. Often, they find the additional services can be performed without increasing their office costs.

How to use the present series of articles

The present series of articles is only intended to be a primer of comprehensive architectural services, a broad sketch of the principles and practice. There is not sufficient information in the present series on any single service to prepare any architect to offer that service. The article should only be used as a guide to the subject, a foundation upon which a system of comprehensive services can be constructed, a direction-finder pointed toward the development of information based on experience that can lead to the practice of the services. As a matter of fact, no two of the authors are in per-

fect agreement. Because of this and the even more divergent opinions held throughout the profession, eight alerts to the profession are discussed below. Perhaps these alerts can illuminate some of the misconceptions that creep into such a sweeping concept.

Alert No 1

A common reaction to the comprehensive services concept, particularly among more firmly established architects in larger firms, goes something like this, "What's all the fuss about? We've been doing these things for years." This attitude is, at the same time, both a great strength and a liability. One of the assets of the architectural profession is that so many architects have been doing comprehensive services "for years." Thus, there exists a vast source, within the profession, of virtually untapped knowledge on many of the services. In fact, this series of articles has its basis in this reservoir of knowledge.

At the same time, it must be remembered that until the time of the Committee on the Profession, no real attempt had been made to formulate the many services into a logical, workable system. Also, it bears repeating that no single architectural firm now—or probably even in the future—will perform all of the services. Yet even the firm that has been performing some of the services for years would do well to re-examine, periodically, the services it offers and how they are performed. The needs of clients change, as do the types of clients. Types of work change, and the size and complexity of work. In such a climate, the services of each firm should reflect a growing, changing world.

Alert No 2

Another reaction expressed, in good faith, by some architects takes some such form as, "Why are we trying to get into all of these things when we should be trying to improve the quality of architecture?" These people, for whatever reasons, have somehow missed the most important point of all. The purpose of comprehensive services is just that—the improvement of architecture.

For example, a bad site selected before the architect is retained often results in compromises in the basic services that lead to unfortunate compromises in the solution. On the other hand, if the architect participates in the selection of the site, then the act of selection becomes an integral part of the complete design process. It follows that the solution can then be improved. Similarly, feasibility, the operations within buildings, the program, etc, are all factors closely related to design. The comprehensive services concept envisions a definite role for the architect in all of these decisions, thus strengthening basic services.

Alert No 3

Unfortunately, some architects, quick to grasp the potential of comprehensive services, but unprepared, have with almost equal speed offered such services to their clients and then have been unable to deliver a high level of performance. This is both a temptation and a great danger. The offer of services without first preparing to perform the services on an effective level can only lead to sorrow for the architect and his clients and lasting ill-effects on the architectural profession.

Alert No 4

Some architects seem to have become so enamoured of the scope of comprehensive services that they sound as if they expect clients (and everyone else) to quickly deliver themselves unto the architectural profession which, in short order, will create for them

a perfect, ordered and beautiful world. A seductive dream, but one no one seriously expects to come true. It is extremely reckless to project the role of the architect as that of the all-knowing, all-powerful, all-wise and beneficent.

Needless to say, the other professionals and specialists concerned with environmental design and construction are not going to deliver themselves into the hands of the architect, then perform their work at his beck and call. The owner is never going to be satisfied with only the furnishing of the capital.

In actuality, nothing could have been farther from the minds of those who have worked closely with the comprehensive services program. Instead, what they envisioned is a system that can better unify the design and construction toward the end of better results. The intent is to improve coordination of all the diverse elements of the process, in order to do a better job. For the architectural profession, the goals are improved relationships with all of those concerned with the design and construction processes, and more understanding of their roles. Importantly, the goal is better performance among architects, based on broader knowledge, clearer vision. Certainly, these goals are possible of attainment for architects, trained as they are in the general areas of environmental design. Certainly, improvements in performance will be forthcoming as the architectural profession prepares itself better, trains its students better. Certainly, it is possible for architects to stand at the center of the whole design and construction process without the necessity of indulging in running duels with all of those with whom architects must work in real estate, in finance, in other specialties.

Alert No 5

Some architects have intimated that one of the functions of comprehensive services is to allow the profession to "take over" the others involved in the process. Nothing could be farther from the truth. Architects are not going to become real estate brokers, or bankers, or builders, but architects are going to know enough to work closely with these interests and to coordinate them for the over-all good of the projects. Many people think that one of the strengths of the existing system stems from the interplay of the varied points of view of the people representing the various interests. In any case, to be very realistic about it, architects cannot really supplant these interests, nor will most architects have any desire to do so. Instead, it will be enough if architects can influence and coordinate the over-all processes for the good of architecture and the people who use it.

Alert No 6

In some instances, architects have offered to perform under the comprehensive services concept for clients who obviously were well-prepared to perform the services for themselves. This can be embarrassing. Every architect should make sure of his ground before putting himself in such a position. This is not to say that such proposals should never be made, for numerous clients have indicated that they would be only too happy to eliminate portions of their large real estate, planning and similar departments if they found that architects could handle these functions effectively.

Alert No 7

It has been said many times that, "Comprehensive services are only for the large offices." This definitely does not seem to be

the case. A number of smaller firms have, in the past few years, reorganized themselves along the lines of the "core" office described elsewhere in the present series or on the model described many times in speeches by Henry Wright as the "compact" office. These firms have surrounded their permanent cores of architects with groups of outside expert specialists who are on call when needed. To potential clients, the "core" or "compact" firm stresses the fact that the experts are available when required, but that clients do not have to pay a share of their overhead; charges only accrue when the necessary specialists are called in for a particular service. In addition, the firm can obtain exactly the right outside expert who can tailor his services perfectly to the client's own problems. Therefore, the client is not stuck with an in-house expert who might not be exactly right for the job at hand. All in all, this makes a good story, and in many smaller offices, it seems to be working effectively.

Of course, other opportunities are available for the smaller firm: specialization by building type or, more recently, by architectural function (a few firms perform only analysis, others only design, master planning, etc); limitation of practice to less complex projects or those of medium size. One type of smaller practice, often overlooked but engaged in by a number of respected and well-known architects, is the practice of architecture in combination with teaching, consulting work, magazine editing, etc. One enterprising and hardy soul even tends bar part-time! These architects find they can assure themselves of steady, moderate incomes through their related activities and are free to be quite choosy about the commissions they accept. Their offices tend to build up in size when they have work and dwindle almost to nothing when the work has been completed.

Alert No 8

Undoubtedly every architect now recognizes that unless he is prepared to offer some degree of comprehensive services he will lose commissions to others who may be less ethical, less prepared for effective services. Often overlooked, but perhaps of even greater moment, are the commissions that do come to architects after many of the great and important decisions on feasibility, the site, financing, goals, operations, etc, have been made without the participation of the architect. In such cases, the architect finds himself bound up in a web of often unthought-out, arbitrary, unrelated decisions that may prevent the effective performance of the basic services themselves.

Where does it all lead?

At the risk of extreme oversimplification, perhaps it can be said that the response of the architectural profession to the needs and demands of clients and society has been to meet the challenge squarely, and with dedication. That response is embodied in what is now called comprehensive architectural services. With the help of all others who are concerned with the environment, with their talents, energies and abilities, the architectural profession envisions a community of efforts toward the creation of an environment that will be beautiful, comfortable and satisfying. To paraphrase Vitruvius, in the language of our time, our every action must point toward the creation of beauty, utility and value in our buildings, and in our environment, in our time.

Next page is a table of contents of the Comprehensive Services articles that have appeared in ALA Journal since the beginning of the series in April 1962, and also titles of several articles (marked with asterisks) that will become part of the projected book

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—*General Principles and Practice*

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Foreword, Dudley Hunt Jr

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- 2 Outline of Comprehensive Architectural Services (CAS)
- 3 CAS: For Small Offices or Large; Dudley Hunt Jr
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- 5 The Standards of Professional Practice *
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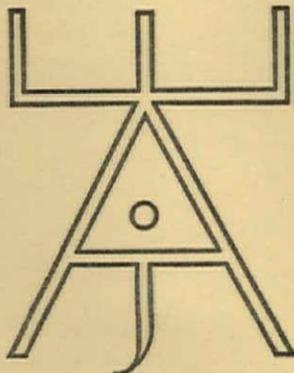
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Creativity and the Design Process

by W. Lawrence Garvin, Clemson College

In recent years it has become quite respectable, as another contributor to this issue puts it, to investigate creativity scientifically. Yet the actual process of architectural creation is still approached by many architects and educators as if it were above natural law, with success dependent upon the designer's possession of a magic carpet, called intuition, to waft him across what is sometimes called the great leap. Here W. Lawrence Garvin states the case for a method which, in his view, "tends to reduce the design leap from a precarious vault into the unknown to that of one of a series of measured steps along the path toward a clear resolution of the problem."

Last summer's AIA-ACSA Teacher Seminar at Cranbrook was a challenging experience. While some of the more experienced teachers took the attitude that they had been working with the ideas discussed, most of us thought that the differences were more than a matter of degree. The conclusions of the seminar appeared to lie near the affirmation of a fresh and different approach to design teaching rather than new twists to familiar methods.

The design process itself was the target subject, but creativity and intuition were also brought into the discussion for closer scrutiny. A definition of creativity was implied by Professor Donald MacKinnon of the Institute for Personality Assessment and Research at Berkeley. The Institute's study had first focused its attention upon forty "highly creative" architects who had been nominated by a consensus of informed architects and who were willing to undergo two weeks of rigorous examination. Other group studies have intended to clarify and enlarge the comparisons. The study suggests that creativity is evidenced by patterns of unanticipated departure from systematic development and routine.

Great architecture is equated with creative ar-

chitecture. It becomes apparent that to demonstrate creativity of this kind a building must excel in some aspects of design not similarly demonstrated by its contemporaries. That it should excel in all design aspects is not seriously considered. Thus a distinction arises between "great" buildings and "good" buildings. A design which seeks to solve all the esthetic and technological requirements of a project in a superior way, by optimizing the inevitable contradictions, may only be classed as a "good" building because it lacks this quality of the unique. In contrast, a "great" building need not demonstrate an over-all superior performance.

Dean Paul Rudolph stated the axiom clearly to the 1963 AIA convention at Miami Beach: "... The artist ignores certain problems, addressing himself to a selected few. He proceeds to solve these so eloquently that everyone understands the statement and its truly glorious solution. . . . It is axiomatic that certain problems be ignored if a great work of art is to be created, and in the hands of the artist this is justifiable, indeed necessary."

For those who find this definition of creativity too narrow, it can probably be said that any problem or task which is undertaken with an open mind has creative potential in an effective departure from routine.

Creativity might further be distinguished as either artistic or scientific. At first glance everything accomplished by artists is created and therefore creative. So casual a definition fails to account for differences in quality between artists or the differences in quality among the accomplishments of each artist. To be sure, success is measured in familiar ways: composition, balance, dynamic or not, color, the proficient use of materials, etc. However, developments within a recognizable pattern are more appropriately considered innovations, while a creation is

that unanticipated departure which is peculiar to either the artist or the work.

Scientific creativity which searches unexplored avenues of thought is the exploitation of developed perceptive intuitive capability. Intuition is variously described as instantaneous analytic/synthetic thought processes which result from a substantial background in the same area of knowledge or experience. Note that intuition is no substitute for knowledge. The uninformed cannot intuitively solve a problem for which he has no previous direct or transferable knowledge and understanding. A point to be remembered is that the successful intuitive leap is eventually verified by careful analysis. The intellectual make-up of an individual influences his capability for intuitive thought, but it is his knowledge resources that bring such thoughts to fruition.

Intuition relates to a reasoning skill which can be learned to the extent that knowledge and its structuring can be assimilated. It may or may not be creative. Creativity is the response to the sum total of the hereditary and environmental influences of the individual. Both intuition and creativity can be stimulated. The great difference in potential for change in each is implied in this explanation of difference. To this extent Dean Rudolph was correct when he said that creativity could not be taught.

If a design tradition exists today it is likely to be a remnant of the Ecole des Beaux Arts' methods. It is characterized by the elaborate development of a quickly selected scheme or big idea. Typically, having selected an approach to the problem, the student was held to it, instructed to make the most of it and penalized if he was judged to have deviated from this basic initial scheme. The program was thus used as a springboard for an "intuitive" leap to a superficial design solution. The dimensions of the leap became the measure of a kind of greatness not always related to needs of human use.

This design method does appear to correspond closely to the definition of greatness offered earlier. One result may be this sense of greatness in buildings which are relatively uninhabitable. Some of Mies van der Rohe's buildings can accurately be described as solar ovens; Le Corbusier's as social anachronisms. Fuller's domes sometimes offend the surrounding environment. At best there appears to be a dichotomy between the basic definition of architecture and that of the architecture considered to exemplify greatness.

A generally held belief among architectural teaching methods is that every student should be treated as highly creative regardless of the quality of talent he happens to exhibit. We know that few demonstrate unusual creativity. Yet in directing our teaching toward these few, known or unknown, we do a disservice to the majority whose talents require a more vigorous stimulus, development, discipline and enrichment.

There would appear to be no harm in the differences if all buildings were either great or good. But in less able hands this "great leap" design method has proliferated misguided mediocrity on an international scale. This mediocrity disenchant the populace and undermines the posture of the profession. Such practitioners are presumed to be badly informed. The resulting challenge to architectural teaching is to provide a more certain understanding and appreciation of a more thoroughly competent architecture.

The Cranbrook seminar has illuminated a design process which, as a pattern for decision making, is more likely to avoid unworthy design excesses and facilitate the integration of more design criteria into a rational system which can be instrumental in creating an optimum design solution. The source of this process is the operations research and decision theory initiated as a wartime necessity and rapidly developed since that time. The problem-solving-oriented design process exploits this new theory and in doing so places greater emphasis upon thorough problem analysis as a basis for value judgments, which collectively tend to reduce the design leap from a precarious vault into the unknown to that of one of a series of measured steps along the path toward a clear resolution of the problem.

An important difference in the problem-solving-oriented design process is its systematic analysis. Information can be more thoroughly collected, more precisely examined and more effectively applied. The alternative problem solutions which develop are more easily and accurately tested against the synthesis of this collected data and related knowledge.

The flexibility of this process contrasts sharply with the design fixation of the Beaux Arts method. It offers greatest potential to the immobilized architect or student who finds himself without a "big idea." It avoids the pattern of "coming up with something" in the necessity of time but without the care or conviction essential to good architecture. It equips every designer with an appropriate place to begin and valid criteria to measure success at every step in the progress toward a design solution.

The problem-solving-oriented design process anticipates the increasing complexity of technology and promises a more effective assimilation. Solutions won't be perfectly balanced. The value judgments which permeate the solution preclude repetitious design. The most creative architects will find their search for expression strengthened, not inhibited. By starting with analysis instead of visual expression fewer compromises and unfounded value judgments are likely. By virtue of the continual review of design analyses, progress toward a more competent and gratifying design solution is anticipated and a greater proportion of "great and good" architecture can be expected.

A Psychologist Looks at the Teaching of Architecture

by Leif J. Braaten, Cornell University

This is the text of a talk to the faculty of the College of Architecture at Cornell University given last October. In it Dr Braaten, Associate Professor of Clinical Psychology at Cornell, takes a critical look at the teaching of architecture in the light of his knowledge of the psychology of college students. He outlines the emotional problems of students in general, together with some unique problems of architectural students, and gives special consideration to the clarification of the concepts—very important to anyone concerned with the selection of potential architects—of conformity, counter-conformity and positive rebellion. The relationship between psychopathology and creativity, and some of the necessary conditions for the latter, are among the other subjects discussed.

When I was asked to come and speak to you, my first impulse was to decline because I knew next to nothing about architecture. Then I felt I could always come and talk in general about some favorite topic of mine, such as mental health, psychotherapy or existentialism. Finally, I became intrigued by the challenge involved and went to some trouble to educate myself about the role of the architect. In this I was helped by members of this faculty who enlightened me about your profession in general as well as some of your concerns connected with the teaching of architecture.

How can we better select architectural students with potential for their profession? Would it be possible to cut down the tremendous dropout percentage among our students in order to prevent a great deal of waste and suffering? Is a rebellious personality structure related to a creative performance in the field of architecture? What is the optimal balance between the teaching of basic skills and solid subject matter on the one hand and the cultivation of creative work on the other? How important is the relationship between the professor and the student for the latter's over-all professional development? What are the optimal conditions for the development of true creativity? What is the relationship between the architect's personal values and philosophy of life in carrying out a project for a client? These, I find, are some of the questions that concern you. In what

follows I shall try to present some tentative answers to some of them and share with you some impressions and reflections arising from my work as a counselor and psychotherapist with students who consult with us in the Mental Health Division of the Student Medical Clinic here at Cornell.

Personality Correlates of Creative Architects

During recent years it has become quite respectable to investigate creativity scientifically. Several significant symposia have been held, the literature on creativity has been abstracted and a few worthwhile empirical investigations have been completed. One of the most promising studies has recently been carried out by Professor Donald W. MacKinnon at the University of California on the personality correlates of creative architects. MacKinnon's definition sounds like the description of a superman: "The successful and effective architect must, with the skill of a juggler, combine, reconcile and exercise the diverse skills of businessman, lawyer, artist, engineer and advertising man, as well as those of author and journalist, psychiatrist, educator and psychologist." Obviously a young person with a narrow mind and too much modesty would not become successful in this profession.

What were, then, the correlates of the creative architect? He basically has a good opinion of himself; there is an acceptance and respect for the self. He would tend to describe himself as inventive, determined, independent, individualistic, enthusiastic and industrious. There was essentially a zero relationship between intelligence and creativity. This means that above a certain level other factors than intelligence play a more important part. In regard to psychological health the successful architect showed a little above average psychopathology but also evidence of adequate control mechanisms.

The creative architect revealed an openness to his own feelings and emotions, a sensitive intellect and understanding self-awareness, and wide-ranging interests including many that in the American culture are regarded as feminine. He would display openness to the richness and complexity of his experience and preferred asymmetrical, vital and dynamic figures. He is a perceptive type, developing

awareness through the senses rather than intuition.

The creative architect furthermore showed interests similar to those of the psychologist, author-journalist, lawyer, artist and musician. His highest values would be in the areas of the theoretical and the esthetic. He seeks both truth and beauty. Other characteristics were dominance, high achievement, spontaneity, self-confidence, freedom from conventional restraints and inhibitions, great independence and autonomy.

What are some implications of these research findings for the teaching of architecture? Assuming that your ambition is to turn out creative architects, such results will eventually come to influence both your selection procedures and your teaching approach. You ought to try to pick your freshmen from among those applicants who, among other things, have a good opinion of themselves, are individualistic, but also industrious, etc. By the same token, you must in your teaching do everything you can to foster self-respect, uniqueness and hard work.

Emotional Problems of College Students

Now, let us assume that you, in addition to the teaching of skills and subject matter, also would like to be understanding and helpful to your students as persons. What are some of the more common emotional problems of college students when they present themselves as patients in the Mental Health Division? In the following I shall draw upon the results from our own investigations.

Depression is by far the most common presenting symptom. Students feel depressed about the loss of support from their immediate family. They experience the well-known loss of self-esteem at Cornell because of what could be called the inflation of excellence here. Almost everybody coming here has been outstanding in high school: editor, big athlete, president of his class, etc. Students get depressed when they do not perform up to their expectations in college. Finally they have fits of depression in connection with disappointment in their love relationships. At times the depression is so severe that some students have suicidal thoughts, attempt suicide, or even succeed in killing themselves.

Other students have emotional problems because of an overly *rigid and compulsive approach* to work, people and life in general. They are often perfectionists who try to overcompensate through doing the details right because somehow they failed in their attempt at success in regard to the really important matters in life.

Both males and females are very concerned about their *sexual identity*. They still feel a great need to prove themselves as men and women. There are many fears of intimacy, both as persons and sexually. The males often isolate sex for fear of personal intimacy and true involvement. Females often

use sex to prove themselves as women and thereby violate their need for sex with love. Quite a few males are so fearful of females that they develop overt and covert homosexual problems. Occasionally sado-masochistic patterns are evident. Some timid males become peepers or exhibitionists. And, of course, there is still guilt and worry about masturbation for both males and females.

Both sexes show *hysterical* personalities. We rarely see the spectacular hysterical conversion symptoms which led Freud to the discovery of psychoanalysis, but there are many bodily symptoms which seem to have a psychosomatic component. Also such individuals show a fundamental repression of their sexuality connected with a fixation on the parent of the opposite sex. Such individuals often insist that their problems are purely physical and show considerable resistance when they are challenged to consider inner emotional conflict.

We see many students with *schizoid personalities* and not infrequently cases of *borderline schizophrenia*. These individuals are basically lonely and withdrawn and live a great deal in daydream and fantasy. They are basically very dependent persons who are desperately frightened about being too close because it subjectively means being trapped and losing themselves. A fairly stable schizoid person can learn to adjust and get away with it. He can often stand a great deal of loneliness and also compensate in his work. But even some of the borderline schizophrenics can be helped to stay in school with adequate professional help. When the bizarreness of words and actions or the suicidal danger becomes too evident and uncontrollable, we recommend a medical leave of absence so that such a person can be treated outside of this community. Many of these serious cases receive effective treatment and return to complete their education successfully.

Another common set of problems of college students are *psychopathic tendencies*—that is, undue anger, defiance, and “acting out” toward authority. Such individuals cannot gracefully live by necessary rules and regulations. Their predominant approach in life is to fight, to be against people. Because they feel they exist in a jungle, they live by the laws of the jungle, by the precept that “attack is your best defense.” Often fighting is the only form of interpersonal intimacy that they have known.

The most common problems of college students, then, are depression, obsessive-compulsive traits, problems regarding sexual identification, hysteria, borderline schizophrenia and psychopathic deviation. The presenting syndromes which occur with the least frequency are hypochondriasis, paranoia, social introversion and hypomania.

How is such knowledge relevant to the teaching of architecture? First, students who over a period of time display serious emotional problems ought to be

referred to professional help, both for their own sake as total persons and because serious psychopathology interferes in a negative way with a creative work performance. Secondly, I believe that sympathetic listening and understanding by the professor of the disturbed student can often go a long way toward alleviating his suffering. Some sophistication in the field of psychopathology is useful in order to be helpful toward the student in a way that is consistent with his particular emotional problems. Third, such knowledge may challenge the professor to resolve some of his own emotional conflicts, both to help himself and to prevent himself from being caught in a so-called "counter-transference trap" with certain students who seek his help. An overly rigid professor obviously cannot help a student to overcome his obsessive-compulsive tendencies. On the other hand, one with an attitude of generalized rebellion toward life would be unable to teach a student the positive value of certain limits.

Special Problems of Architectural Students

During the academic year we see 6-7 per cent of the total student population for consultation in the Mental Health Division. This amounts to 650 to 700 students per year, a total to which the College of Architecture contributes its fair share, if anything a few more than would be expected if the "recruitment" took place on a strictly proportionate basis.

I have gone through the clinical folders and test data of your student-patients from last year and would like to give you some detailed impressions of their problems without revealing the identity of any individual student. The following quotations are self-descriptive statements of a number of patients from the so-called Mooney Problem Check List: "I feel my entire existence consists of very clever acting on my part. It's not that I can't find the real me—it's that there isn't one." "A great injustice has been done to me, and the people who caused it are the victors and happy, and this infuriates me." "I am tired due to a too heavy work load. One course tended to give me headaches and stomach pains." "I prefer to take the easy way out and have others make decisions for me." "I am giving in too easily to boys." "My compulsive actions have caused me to carry a guilty feeling." "I guess that my biggest problem is homosexuality, although I do feel that I am bi-sexual." "I'm at last meeting the consequences of an earlier indulgence and sentimental attitude toward life instilled in me by my parents." "Lack of self-confidence, lack of control; I care too much what people think of me."

Conformity, Counter-Conformity and Positive Rebellion

From the several special problems of architectural students I shall single out for consideration what I would like to call tendencies toward conformity, counter-conformity and positive rebellion. It seems to me that a critical concern for the creative architect and artist in general is to strike a balance between reasonable conformity and constructive defiance of tradition and authority. In my talks with members of your faculty it is my impression that you

eagerly look for the rebel or non-conformist and would only accept a so-called conformist applicant because his over-all qualifications are just too good.

The recognized research leader on conformity and creativity is Professor Richard Crutchfield, also at the University of California. He has found that the *conformist* is significantly less intelligent than the independent person, lower in ego-strength and the ability to cope with stress, more prone to having inferiority feelings, suffers from an intense preoccupation with other people, and expresses attitudes and values that are more conventional and moralistic.

Quite clearly such a conformist person would be a bad bet for creative architecture. It is also my impression that the so-called counter-conformist would be unsuitable for training in the creative arts. The *counter-conformist* is someone who is driven to react negatively to the group, someone who has to rebel against it and repudiate its standards. Such a counter-conformist ought to be clearly distinguished from the true independent, or what I call the positive rebel. The motivation impelling the counter-conformist involves needs for defending his personal identity, becoming emancipated from the group's authority, expressing hostile impulses toward others. This is "difference for difference's sake." Through being driven to repudiate the group standards in order to serve his compulsive ego-needs, the counter-conformist is led to an alienation of his own judgments from that reservoir of group thinking that may be valuable for his own creative solutions.

Nobody in my opinion has a better understanding of the psychodynamics of the rebel than the well-known psychoanalyst Robert Lindner. He talks about an "instinct of rebellion." "Man is a rebel. He is committed by his biology *not* to conform, and herein lies the paramount reason for the awful tension he experiences today in relation to Society. Unlike other creatures of earth, man cannot submit, cannot surrender his birthright of protest, for rebellion is one of his essential dimensions."

Lindner continues, "The productive way toward non-conformity is the way of *positive rebellion*, of protest that at once affirms the rebellious nature of man and the fundamental human values. These values reside in the common treasury of humanity. . . . The outer source of instruction is more rapid and more sure. It consists of direct tuition in positive rebellion by those to whom we have always looked, and will always look, for edification: our psychologists, educators and artists."

Psychopathology and Creativity

Even today it is still a common belief that psychopathology is a precondition for artistic creativity. Such an idea is often expressed by the layman but also by intellectuals and performing artists. Logically it seems to me that there are three possibilities: 1) Neurosis and artistic talent coexist in the same person, but they are relatively unrelated. 2) Neurosis and artistic talent influence each other, but the neurosis does not explain artistic creativity. 3) Neurosis and artistic talent are causally and essentially related.

According to my judgment no one has analyzed the relationship between art and neurosis better than the well-known literary critic Lionel Trilling almost two decades ago. He certainly admits that the creative productions of the artist often are influenced by his neurosis. Some emotional power may be gained through suffering. Mental illness may be a source of significant psychic knowledge. But he still insists that it is wrong to say that the root of the artist's power comes from his neurosis. What marks the artist is his power to share the material of pain we all have. Trilling's conclusion is: "Of the artist we must say that whatever elements of neurosis he has in common with his fellow mortals, the one part of him that is healthy, by any conceivable definition of health, is that which gives him the power to conceive, to plan, to work and to bring his work to a conclusion."

A few years ago Professor Harold Anderson at Michigan State University conducted two interdisciplinary symposia on creativity and its cultivation. Among the panelists were an architect, several professors of psychology, two university deans, a couple of psychoanalysts and an anthropologist. In his critical summary of the proceedings Anderson discusses the relation between neurosis and creativity. He says: "There is essential agreement among those authors who comment on these topics, and no disagreement among them, that mental health and high utilization of one's creative potentials are closely associated. . . . Creativity is an expression of a mentally or psychologically healthy person. It is associated with wholeness, unity, honesty, integrity, personal involvement, enthusiasm, high motivation and action." Neurotic persons are creative in spite of rather than because of their emotional disorder. They are often producing below their capacity because of their problems.

In the teaching of architecture and the arts in general it would be advisable to correct the myth that neurosis and artistic talent are causally and essentially related. If you want to become truly and maximally creative, you must try to resolve your psychopathology, if necessary with some professional help. It is my firm belief that the power to create will not be lost in successful psychotherapy: it would rather be more fully released.

Some Necessary Conditions for Creativity

I shall now turn to a discussion of what I believe to be a general theory of some necessary conditions for creativity. It will be clear that this presentation will show a heavy influence from the writings of Carl Rogers, the founder of the so-called client-centered approach to counseling and psychotherapy. We believe that it is possible and fruitful to regard creativity as a unitary phenomenon, whether it is creativity in architecture, the fine arts, music, human relations, education, science or psychotherapy. Ac-

ording to Rogers creativity is "the emergence in action of a novel relational product, growing out of the uniqueness of the individual on the one hand, and the materials, events, people, or circumstances of his life on the other." Since we are here concerned about the teaching of architecture, I shall present this point of view in regard to education although I believe that it has a more general validity as referred to above.

The first condition is that the teacher appreciates that man inherently has a *tendency to actualize himself*, to become his potentialities. Such a belief has important consequences for our concept of the role of the teacher. This kind of educator can best be viewed as a catalyst for learning in his students. He is convinced that he cannot really teach them anything; at best he can only help them to learn. The motivation to grow and develop resides within the student; it cannot be provided by the teacher. Gone therefore is the concept of the teacher as the infallible authority who is pouring knowledge into passive-dependent student receptacles. But this concept of facilitating learning does not mean that the teacher is of no importance.

The second condition is that the teacher can establish an atmosphere of *psychological safety* vis-a-vis the students. The reason for developing a psychologically safe atmosphere in the classroom is that only then can defensiveness be reduced to a minimum. When our defenses are down, we can more effectively be open to the totality of our experience, both from within and from without. The teacher must therefore communicate his trust that the student can and will grow because he possesses an inherent self-actualization tendency. The student must feel accepted and appreciated both as a unique person and as a member of the class. The teacher must be especially sensitive to the student's positive rebellion which is such an essential ingredient in the potential artist. As far as humanly possible external evaluation should be minimized. Judgment from without is almost always threatening to the potentially creative person. As a compromise it may be feasible to share some of our own subjective reactions to a student product without the implication that the professor is right and the student is wrong.

The third condition is that the teacher encourages *psychological freedom*. He should try to instill in his students the spirit of freedom by example and his own enthusiasm. He should make both resources and himself available as much as possible. He should entice his students to experiment, to try new solutions, to toy with ideas, methods and materials. He should try to appeal to the individual's uniqueness from within. However, this is not a permissiveness without limits. The student must be helped to experience freedom with responsibility. He must recognize his own limits of intelligence, design ability,

etc, as well as the limits of materials and constructions. To accept limits is necessary in all our human existence. Even the genius is not God.

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Experiments in Architectural Education

I: Penn State's Term Abroad

by Philip F. Hallock, Pennsylvania State University

In this first of two accounts of experiments in architectural education published in this issue, Professor Hallock describes how the Department of Architecture at Penn State achieved and organized its Term-Abroad program, which took seventeen students to the Architectural Association School of Architecture in London in the spring of 1963. A note on the experiment as seen by a participating teacher in the guest school is appended.

The location of The Pennsylvania State University in a rural atmosphere has been criticised as preventing necessary contact by architectural students with urban structures. The Department of Architecture faced this situation in the past by providing one-week inspection trips to New York, Pittsburgh, Detroit and other convenient cities. While these visits were valuable, the faculty was not satisfied with the program and decided three years ago to make a bold venture into international education. In 1961 Milton S. Osborne, then Head of the Department, developed a preliminary procedure for a study program for the fourth-year students in London. This program was shelved because funds were not available in excess of normal fees which were required for transportation. Penn State is a land-grant university and partially supported by appropriations from the Commonwealth; therefore, its programs cannot require special fee stipulations for its students in relation to the established tuition.

During the 1962 fall term, following the success of Penn State's Liberal Arts Term-Abroad programs

in Cologne and Strasbourg, the present writer, as Acting Head of the Department of Architecture, with the help of Dr. Dagobert deLevie (Chairman of the Liberal Arts Term-Abroad Committee), developed the first of a continuing series of fourth-year student study programs with the cooperation of William Allen, Principal of the Architectural Association School of Architecture in London. The first program became financially possible following the unsolicited offer of the students' parents to pay the transportation to London and return. However, our program of instruction required two additional social-humanistic instructors who were not available from the professional architectural school. The program would have been further delayed, then, had it not been for the Pittsburgh Plate Glass Foundation which agreed to the use of its timely two-year architectural department grant for the London program.

The Penn State study-in-London program started with the charter flight from New York on March 25, 1963. Our seventeen students were combined with about 120 liberal arts students who were divided between Cologne, Strasbourg and Salamanca. After stops at Madrid and Stuttgart for the Salamanca and Strasbourg students, those remaining for Cologne and London left the plane at Amsterdam. The Channel was crossed aboard the *Duke of York* and the architectural students continued to London from Harwich by train.

The present writer, as the architectural advisor, accompanied the students and coordinated the orientation program and other travel procedures during

the term abroad. Following an initial orientation session the students were housed in the YMCA (with the exception of the one lady, who was housed in a nearby pension). These accommodations proved to be quite satisfactory since they were within a block and a half of Bedford Square, the location of the AA School. The following day, March 28, the students were welcomed by Principal Allen and the lecture series started under the direction of John Winter, fourth-year master, who was assisted by Theodore Eardley, first-year master.

In addition to the studio program, two seminar courses were conducted with visiting lecturers. Mrs Alice Hardy conducted the Shakespeare seminar which culminated with a trip to the Shakespeare Memorial Theatre, Stratford-upon-Avon, and an evening with "Julius Caesar." John Fitzgerald's seminar in political science helped the students in an understanding of the contemporary problems of the Common Market in reference to historical developments. While these programs were extremely valuable for our students, as conducted by British instructors, the desirability of taking so much time from the studio work was debatable.

The program of work in the studio was concerned with the development of high-density housing on a site in London. One of the benefits of foreign study is the acquisition of procedures under the foreign system and in an area of their specialty. A series of lectures was given by professionals in housing research and governmental control and by London County Council architects. There were four inspection trips, in London and to Sheffield, Bath and Leicester, and an extended weekend in Copenhagen. The unique relationship of the AA School and the Architectural Association and its relations with the Royal Institute of British Architects ensures the closest cooperation between the profession and the school. Hardly a day passed without a professional contact, a member delivering a lecture, serving as critic or giving a day of jury duty.

The British system of architectural education completely integrates design with the other disciplines of structural engineering, construction, fine arts, social science, landscape architecture and equipment engineering. The design program is developed in conjunction with instructors in these other areas. Following student research and inspections of related structures integration begins with lectures from specialists in the related disciplines. As the project evolves, the schedule permits the integration of these related fields into the design process at specific intervals. A panel of professional critics reviews each project formally with the student at the mid-point, and a similar panel acts as the jury at the completion of the project. This procedure develops an architectural project in depth and prevents superficial design.

The British students were eager to exchange views and information in professional discussions with ours. The value of the "tea-break" in the Members' Rooms in the process of initiating the students into British customs was apparent in the lively discussions which usually followed. At the time the Penn State students were in residence there were students from seventeen different countries in the AA School. After the study program was completed, the students traveled in Europe on their own, except for two who remained in London to work in architectural offices during the summer.

It is too early to measure the benefits of this program of study. The participating students agree that their opinion of the position of the architectural profession in society has changed and that the program must continue as a permanent part of Penn State's architectural program. The immediate reaction from fellow students is that the participating students have become cosmopolitan and attack their work in a more mature manner. This reaction was a natural result of the experience of working with the serious-minded British students.

From the Other Side

The following comment on the program is from John Winter, fourth-year master at the AA, who directed the design program:

Architectural students everywhere are extremely interested in the USA, and the AA welcomed the chance to have a group of American students working with them. A program of high-density, low-cost housing was selected—a field in which architects in Britain have done a great deal of work. It reinforced one of the objects of the Term-Abroad program in giving an urban context to the work. Moreover, human requirements in the home are not fundamentally different on the two sides of the Atlantic; hence housing is a program which can be tackled in another country without the student having to learn background information which would be useless in his later career.

In addition to two AA year masters, four AA fourth-year students were appointed as tutors. This helped to integrate the Penn State students into London student life at a time when other AA students were on vacation.

The program was introduced by a series of lectures given by experts in the field of housing, and these were followed by visits to the best urban housing developments in the country. Halfway through the program and again at the end the students presented their designs to the usual AA-type jury of architects. They were, as always, open to AA students and staff, and there was a great deal of interest for everyone in seeing how the experiment had worked out. There was much praise for the Penn State students' achievements.

The visitors spent their mornings in teaching seminars on non-architectural subjects. This severely limited the time available for working on the main program and made the arrangement of day-long visits or juries difficult. While appreciating that the Penn State University puts value on liberal studies, the AA hopes that in future this part of the program can be played down; it seemed a pity to do things in Britain that could be equally well done at home,

and thereby to lose out on experience one had come a long way to get.

The AA is as international as any place of its kind; there are people from eighteen or twenty countries in the studios constantly. But Americans, so alike to the natives, yet so different in many outlooks, are always visitors of challenging and special interest. Everyone was glad to have them, and is confident that the 1964 project will be a success too.

2: Cincinnati's Student Critics

by John M. Peterson, University of Cincinnati

The second experiment in architectural education to be described in this issue consists of allowing senior students to act as critics in freshman design. The experiment has now been repeated three times, and Mr Peterson is thus able to offer some conclusions and recommendations which may be useful to others. He wishes to acknowledge the assistance in the project of his colleagues Professors Robert Deshon and Karl Merkel and Assistant Professor Robert Williams, and also that of the senior and freshman classes of the Department of Architecture of the University of Cincinnati of 1961, 1962 and 1963.

During the past three academic years an experiment in teacher training in architecture has been conducted in the Department of Architecture at the University of Cincinnati. Though the experiment is not complete as yet, the results achieved thus far have been so gratifying that we feel a preliminary report is in order.

The experiment which will be described here consists of allowing a selected group of seniors in architecture to act as critics for a short problem given to freshmen at the end of the first year of architectural design. This is done under the supervision and guidance of the senior- and freshman-year professors.

There are several objectives which we wish to fulfill during this experiment. As far as the freshmen are concerned, we wish to determine the feasibility of making use of three well-known facts. First, students are very susceptible to the criticism and comments of other students. Second, underclassmen have an inherent respect, even awe, of upperclassmen. Third, seniors by virtue of their closeness in age and experience, can *speak their language*. It is felt that due to the combined effect of these factors, we can find in the senior a very effective teaching tool. Hopefully the freshmen will be more open, less restricted in their expression and will learn more and achieve better results during this short period. As will be pointed out later in the article, this has been the result.

Regarding the seniors, two objectives are paramount. First, by allowing seniors to act as critics, it will give them the experience of teaching in a controlled, supervised environment. This could, in some measure, prepare and encourage them in the field of architectural education. Second, the program will place the senior in the position of having to evaluate his own beliefs regarding architecture, on a very basic level, by way of a critical analysis of freshman problems. In other words, the seniors would have to think about their own beliefs more thoroughly in order to give coherent direction to the students in their charge.

The project is started long before the actual criticism begins. The seniors who will be allowed to act as critics are screened and selected by the senior- and freshman-year professors on the basis of overall record and teaching potential. Seniors thus selected are approached and asked to participate in the project. Participation is on a purely voluntary basis and does not in any way relieve the student of his normal obligations. In some cases absence from classes is permitted in order to facilitate scheduling; however, all work must be maintained. If the senior wishes to participate, he then becomes obligated to complete the project, but no grade or other overt form of reward-punishment is connected with the project. It should be pointed out that at the time of the project the seniors' terminal design problems are complete.

The seniors are given several hours of instruction in their responsibilities and in teaching methods and techniques. They are told the nature of the problems they may encounter and the nature of the questions they might expect. A complete rundown on the type of work done by the freshmen during the year is also given during this seminar.

With respect to the latter subject, it should be explained that freshman design is developed along the following general pattern. The first quarter is devoted primarily to two-dimensional design including principles of composition, color, etc. The second quarter is devoted to three-dimensional design in-

cluding principles of space-mass, structure, etc. In the third quarter, architectonic concepts such as scale, time, man in space, etc, are introduced. The experimental project described here takes place as the final problem in the third quarter.

This problem, usually the students' first *building*, is of a very simple nature. The program normally consists of one major space with four or five subordinate spaces. The function of the building is kept very simple. The sites used are flat and usually must satisfy some spatial and functional relationship to the building. External site relationships are minimal and direct. The problem is scheduled for five weeks: three weeks for design, one and one-half weeks for presentation and one-half week for juries. The program is issued to the freshman at least one week prior to the beginning of the problem.

At about this time a list of freshmen is given to each senior. A senior is assigned from six to eight freshmen. Numbers as low as four and as high as ten have been used less satisfactorily. The freshmen are listed in order of their proficiency but no record of their grades is given. If possible a full range of proficiencies is given to each senior. At this point any special problems are highlighted and suggestions are made on their disposition.

On the first day of the problem the senior critics are introduced to their groups. This is the last direct contact the freshman professors have with their classes. The seniors are totally responsible for the classes for the duration of the problem. However, this does not mean that the freshman professor completely leaves the class. Periodic checks are made by the professors, trying not to disrupt any conversation or criticisms in progress. No questions by freshmen or seniors are honored during class, but seniors may ask questions outside of class. This is done to maintain the senior's integrity and control in class.

Most problems and questions are brought to a weekly seminar, including the seniors and those faculty members involved. It is during these seminars that a great deal of exchange takes place. The seniors need little encouragement to discuss their problems. The faculty members present seldom find it necessary to make observations or corrections.

As to grading procedures, the seniors submit a grade for each student criticized. To this are added two other grades. One is from a jury made up of four or five seniors in the project. They hold an open jury for the freshmen they have criticized. This jury is monitored by the faculty, but they do not participate. The third grade is given by the participating faculty members in a closed jury. The three grades are combined to give the freshmen their problem grade.

Generally this describes the manner in which this experiment is implemented. As pointed out earlier this experiment is not complete nor has it

run long enough to provide certain data. For example, we have not, as yet, fully compiled the comparative data, nor has the project been operating long enough to show a significant number of graduates going into education. Nevertheless, in reviewing the results and reactions thus far obtained, we are sufficiently convinced of the worth of the experiment to be considering the institution of a permanent program of similar nature.

Of the seniors participating in the project more than thirty per cent go on to graduate school. Thus far several have gone into teaching, and some fifty per cent have expressed the definite intention of going into teaching. These data should become more significant as time passes.

As a result of class and seminar observation, we have perceived the development of sophistication in teaching during this brief exposure. It is also evident that this exposure causes much self-evaluation to take place. Many times the seniors reveal that they have found a new respect for their own education and their profession. The seniors also found confidence in and respect for their own intellect, if not their ideas. As by-products, all the seniors developed a thorough respect for teaching and an appreciation of the difficulty of criticizing someone else's ideas competently and knowledgeably. Generally, the reaction of the majority of the seniors is favorable; they believe that they benefit from their experience. In only a few cases are any reservations expressed.

Comparing grades given by the faculty and the seniors, the deviation from faculty judgment by the seniors is no greater than that which normally occurs within the faculty. Large discrepancies occur in fewer than eight per cent of the grades given. As a rule the senior critics were higher and the faculty lower in over-all grading. This is not surprising, though there are exceptions.

As for the results of the freshmen's work in this project, not enough can be said. The quality of their work rises quite unexpectedly. In most cases they are able to perform at least one full grade above their past grades, and in some cases higher. Whether this is due to enthusiasm for the first building or the nature of the project is not clear. Control groups with faculty only and combinations of faculty and seniors have maintained records equal to the experimental groups. The competitive atmosphere generated during this project by the freshmen is immeasurable, and in some respect explains the over-all good performance. We have no evidence to show that the seniors in any way undervalue the quality of the freshmen's work and ability to learn. The above presents substantial evidence to the contrary.

The reaction of the freshmen is, on observation, just as we predicted. The results noted above, as well as random comments by the freshmen, tend to

bear this out. The joint enthusiasm for the project is further demonstrated by the extra crit sessions held by common consent.

The general faculty reaction can best be expressed by the common wish that they had had a similar experience prior to their entrance into the teaching profession. There is also general agreement that the use of student critics, on a limited, supervised basis, is a valuable educational tool for teaching underclassmen, no less the critics themselves. The training in teaching, limited as it is, should prove valuable to anyone.

All this notwithstanding, there are several warnings and reservations which should be expressed. First among these is that the indiscriminate use of *student labor* should be carefully avoided. The results of this experiment in no way abrogate the need of professional critics. The use of student critics should be limited to specific, concise problems. Students allowed to take part in these projects should be selected with great care, given sound preliminary instruction, and made aware that they are being granted a privilege, not a means of escaping any regular academic responsibilities. Finally, this project should be within the scope of a graduate program, though not exclusively. The unique character of our undergraduate program and the lack of a similar program, to our knowledge, in graduate

schools, gives us a degree of license. Our student critics are in the last year of a six-year cooperative education program which places them on an age par with most graduate students. They also have approximately two years of professional architectural experience when they are placed in the program.

As a result of this experiment we might recommend the establishment of a course of instruction in architectural education, including the development and use of student critics. The danger of training professional educators as opposed to professional architects who teach is ever present—as is evidenced in many other areas of education. Such a course would have to be broader than that which is offered in this experiment. It should be started in undergraduate school on a limited, introductory scale; then expanded fully as an adjunct to a graduate program. The use of the word adjunct is literal in application. Such a program should not be a substitute for a substantial architectural education.

As has already been emphasized, this is a preliminary report. The author hopes that at a future date he will be able to present a fully documented report with examples of the results. This report is presented at this time in the hope that similar projects will be initiated, or that reports of similar projects and experience will be published. We feel such programs may fill a gap in architectural education.

Books

Structure in Architecture

If one were asked to name the major forces in contemporary architecture on the basis of the coverage of projects in the architectural magazines and the projects which generate the most discussion among architects and architectural critics themselves, the impact of the structural revolution on architecture would surely come high on the list. This revolution, both of form and theory, has furnished one of the basic tools for the reaction against the crisp, rectangular geometry of the International Style. In general, publicists and critics have looked upon the products of this movement with something like adulation and have tended to give blanket approval to a variety of projects which seem to have a structural basis and orientation. Yet, even when one does not consider the traumatizing effect of another spate of World's Fair buildings, serious doubts arise concerning the substance behind our new-found structural awareness and abilities. It is disturbing enough to see a mature architect of ability and quality use as design parameters for major works the oversimplifications of basic statics and ignore or minimize truly important con-

siderations; it is tragic to see these projects go unchallenged in the professional magazines.

One of the difficulties is, of course, that outstanding architects, whose abilities are generally recognized, rarely compound the errors of structural statement and behavior with errors of architectural development. The over-all quality of their work remains high, and the fact is that their supposedly structurally-oriented projects, for all their structural faults, are obviously vastly superior to most architecture produced today. But the outstanding men in our profession do not, unfortunately, dictate or even direct the over-all quality of our architectural environment. This over-all quality is determined by men and women, both architects and non-architects, whose creative abilities are modest and whose awareness of the impact of the individual building on the total environment is, to say the least, restricted. These deficiencies are usually reflected in other major errors in the architectural solution, errors which stem from lack of ability rather than error of concept. This has a debilitating effect on even the outstanding designer. Too often works by outstanding architects seem to have grown from the departure point of personal ego or

capricious shock value. In the context of the general mediocrity which surrounds them this would be difficult to avoid.

The heart of the problem is to be sought in the influence which the better or better-known architects have on the profession in general. None of the young architects emerging from even the least esteemed of the architecture schools in the country would ever, I feel confident, be led to consider the hamburger havens scattered along our roadsides as models on which to base an architectural philosophy. They are, however, enormously influenced by the giants and seven-footers of contemporary architecture who, by means of their own abilities and astute use of and by the magazines, have achieved a stature in our profession which sets them apart. Much as some of us would like to see a humanizing influence exert itself on the International Style, it must frankly be admitted that it is easier for a person of moderate talents (ie the majority) to design in that idiom and come out with an acceptable building than it is for him to work in the new structural idiom. The very range, the very freedom of the available palette makes it imperative that some kind of discipline be developed. Perhaps it is the tight control on the individual ego that is one of the strengths of the International Style. It is sad to think, however, that this form of control is the only one we are mature enough to operate under, and that one of the most exciting avenues which has been opened to architectural practice should run the risk of traveling the path it now seems to be traveling.

Our great difficulty today is in controlling the skills which the technological advances of the past fifty years have given us. The elimination of the question as to whether or not a particular structure can be built has, for one thing, tended to push into the background considerations of constructional logic. The aspect of most contemporary structurally-oriented buildings that is most disturbing is that their constructional methods are, at best, arbitrary and seem to be afterthoughts to the conception. In an age when anything can be built, it would seem that construction methods would become one of the important design parameters. It is interesting to note that the few recent buildings of major architects which have taken as one of their departure points constructional methods or a logical progression of structural statements have received consistent critical acclaim. The lack of a clear movement in architecture dictated by a rational approach to constructional methods is rather surprising.

Perhaps it is natural that our first bite into the apple of structural freedom should be a greedy one. What begins to trouble one is that there are no overwhelming signs of the development of a calm, mature judgment. It would be tragic if the only reaction to the structural exhibitionism of today were to be either

wholehearted acceptance or complete rejection.

The level of responsibility in the architectural criticism available in print today is not our main concern here. The major questions which are raised here are questions concerning the validity of the direction which structurally related architecture is taking, and the effect that this direction has or should have on the education of architects. There seems to be general agreement that architectural students must be given the ability to discriminate between the many possibilities which our structural ability has made available. In the discussions carried out by the ACSA Committee on the Teaching of Structures, while disagreements existed concerning the general technical course curriculum, there was general agreement as to how the technical gamut in structures should begin and end. It was unanimously felt that in the freshman year there should be a course which would give the beginning architectural student a non-mathematical, behavioral-based approach to structure. In the last year, a course is required which would cover essentially the same ground, but on a much more sophisticated level, and with the advantages of the perspective given by the core courses in the structural discipline. The intention of these courses is to condition the young architect to avoid the many pitfalls present with today's techniques. This becomes essential because it is clear that the engineering schools and the majority of engineers are not trained to make value judgments and do not seem to be too concerned about the situation.

Recently books have begun to appear which are aimed at giving this broad perspective to students. Four in particular, two applicable to a freshmen course and two to the terminal course, will be considered here.

"Structure in Architecture," by Mario Salvadori and Robert Heller,¹ had its inception in just such a concept of basic freshman orientation and is a worthy companion to a similar earlier book by Eduardo Torroja. Mr Salvadori has accepted the premise that beginning students in architecture cannot afford to wait for the slow leavening process of acquired information to establish some sort of *modus vivendi* with the structural content of architecture. With this departure point he has organized an admirable penetration into the qualitative behavior of structural materials, elements and systems. Whether or not the aim of the text is, as Pier Luigi Nervi writes in his introduction, "to build a bridge between the more or less conscious intuition about structure which is common to all mankind and the scientific knowledge of structure," or whether it has as its purpose the focusing of the rational processes on the establishment of the first experience requirements for developing such an intuition, can be debated. We have a tendency, I believe,

¹ New York: Prentice-Hall, 1963. \$9.75

to misuse and overuse the word "intuition." A much more valid definition of intuition is found in Mr Salvadori's concluding chapter. In fact it is a pity that the concluding chapter does not introduce the book. The only other major modification in the text which suggests itself concerns the rather secondary importance given to constructional problems. As the general statement introducing this review intimates, we are at a period of development when construction merits major consideration. It is a pity that, with the wealth of practical experience that he has, Mr Salvadori did not devote more space to this problem.

The impressive characteristic of the Salvadori book is the clarity and order with which the subject is presented. The text progresses logically from topic to topic with the author rarely forgetting the background level of the intended reader. For this reason the book is a valid departure point for a study of structural principles with either beginning architectural or engineering students. The experience of this reviewer is that most engineering students, whose predilection is toward structural engineering as a profession, could use just such a general orientation in the field before they begin the somewhat mechanistic approach to education which is characteristic of most of our engineering curricula.

Perhaps the weakest part of the book is in the illustrations. It is odd that in the discussion of the three other books reviewed in this article the question of the quality of the illustrations will also appear. Mr Heller's illustrations are by no means the worst of the lot, but they fall short of the sparkling clarity present in other drawings of similar subjects. For an example of the use of illustrations to supplement a statement of structural purpose, one thinks of Torroja's explanation of the development of the design for the Madrid Hippodrome and the accompanying drawings. In some instances, the illustrations of the Salvadori text lack a consistency and organization which would give them validity. For instance, in illustrating arch spans three different bridges are shown on adjacent pages, all drawn the same size. It is only on reading the text that one finds that one of the structures is half the span of the other two. It would seem that had the three structures been drawn to the same scale, a great deal more information could have been inferred from what was shown.

Discussion of the illustrations inevitably brings up some thoughts on the general format of the book. While the definite advantage of having an illustration immediately adjacent to the text describing it cannot be questioned, the manner in which this is achieved in this case is rather dubious. One almost gets the impression that the book has been padded to magnify the cost. Surely it would have been possible to relate text to illustration without leaving numerous pages almost blank. It can only be regretted that the illustrations and the integration of them with the text were not as carefully thought out as was the text itself.

"Concepts of Structure," by William Zuk,² is a book which ostensibly has the same object in view

as the Salvadori book. It must be said that it suffers by the comparison. Mr Zuk's book is disappointing from the viewpoint of the text, monumentally uninspired in graphic presentation. The drawings are childishly done, badly reproduced and not particularly well thought out. In fact, the entire aspect of the book is one of extreme haste, as if it had been rushed to press to meet or possibly beat the appearance of another volume on the market. One can only assume that the lack of logical progression in the text is also the result of a publication pressure. The fact remains, however that the book lacks the clarity and thoughtful organization of Mr Salvadori's. It is neither a non-mathematical nor a mathematical treatment. It presupposes neither little nor much previous knowledge on the reader's part. This ambivalent attitude vitiates the book as a whole. Perhaps page 16 illustrates it as well as any part of the text. In a discussion of "optimization" use is made of a series of illustrations which start with the simple beam and end with the cable. But, aside from the problem of considering optimal structures only as planar systems without even a prior discussion of what behavioral patterns dictate these changes, is it really valid to include the cable as an end product of this process without any statement concerning the special problem of the cable? This presupposes rather sophisticated information on the part of the reader. In a like manner, the statement of increased efficiency by means of cantilevering without any definition of a cantilever is again presupposing a high level of prior knowledge. But with prior knowledge one must challenge a statement of optimization involving a cantilever extending "beyond the supports approximately one-quarter of the main span." One-third is not approximately one-quarter, assuming that an uniform load is meant. It is this inability to choose a particular direction with some discipline that makes it difficult to accept the book.

"Surface Structures in Building," by Fred Angerer,³ is not a broad study of the complete range of structural form but—as its title announces—a study of only one of its major aspects. Because the aspect which it does consider is rather sophisticated it requires prior structural information at a relatively highly developed level to permit the reader to benefit from the material covered.

One is led to approach the text with caution by the glowing statement on the back of the book. It is, to put it mildly, somewhat questionable whether tents are primitive skeletal systems or valid membranes and therefore surface structures. This reminds one of an article on suspended structures published several years ago in a magazine by one of our leading structural engineers. In it a horizontal tree trunk supported on forked sticks at each end with a leafed shelter built upon it was given as an example of a primitive suspended system. It is surprising to see the different interpretations which can be given to simple elements. The end jacket description also states that the text is annotated by "more than 200 beautifully executed drawings." While the

² New York: Reinhold, 1963. \$5.95

³ New York: Reinhold, 1961. \$4.50

majority of the drawings are of an acceptable quality, they could hardly merit the description "beautifully executed" and suffer from not being keyed to the text, from being mislabeled and from being, in at least one case, printed upside down.

But the major weakness is that the text is a rather wordy polemic on philosophical determinations of structure which are, at best, subjective. What is more, some of Mr Angerer's structural statements can be seriously questioned. For instance, his explanation and evaluation of the spirally reinforced concrete column is somewhat confusing and his classification of concrete as a homogeneous, isotropic material is astounding.

In his postscript to the text Mr Angerer says that the book risks being too superficial for the engineer and too detailed for the architect. One can only agree that the former is the case and comment that the latter is not really the reason why the book is unsatisfactory for the architect, for whom it is intended. It fails for reasons other than complexity.

"Structure and Form in Modern Architecture" by Curt Seigel⁴ is a much better book from practically all standpoints. Not only is the breadth of subject greater but the treatment more valid than in Mr Angerer's book. This reviewer feels that had the publishing date of Mr Seigel's book been earlier, the publisher might not have offered the Angerer book. While Mr Seigel's book is again non-mathematical, it does presuppose background information and training in structural theory in the reader who is to derive full benefit from the contents. As such, it is a logical advanced extension of Mr Salvadori's book and, despite the regrettable but understandable omission of foundation problems, it covers the required ground exceedingly well. It is perhaps inherent in the treatment that, as the author points out in the foreword, exception will be taken to some of the statements in the book. Mr Seigel has strong convictions which can lead to generalizations open to question. The rather blanket condemnation of late Gothic vaulting can be debated, as can the *carte blanche* which he gives designers in the use of free forms. In addition, it seems that the author believes that the correct expression of structural behavior is a necessary and sufficient condition for aesthetic validity. Even as ebullient a structural engineer as Mr Salvadori refrains from making this statement.

The first section of the text is taken up by an extraordinarily detailed discussion of skeleton construction. If one accepts the fact that the quality of an architectural solution is recognizable, as has often been stated, by the way the corner is turned, how the building joins the ground and how it terminates at the top, then this careful presentation is entirely justified and well worth the careful attention of all architects.

One of the rather surprising things about the book is the major importance given to V-shaped sup-

ports and even the definition of what can be considered a V-shaped support. It is hard to conceive of this as a major subdivision of structural form to rank in importance with skeletal construction and space structures; but Mr Seigel's presentation of the validity and development of this form is a rather exciting excursion into the logical development of a structural expression, if the basic premise is first accepted.

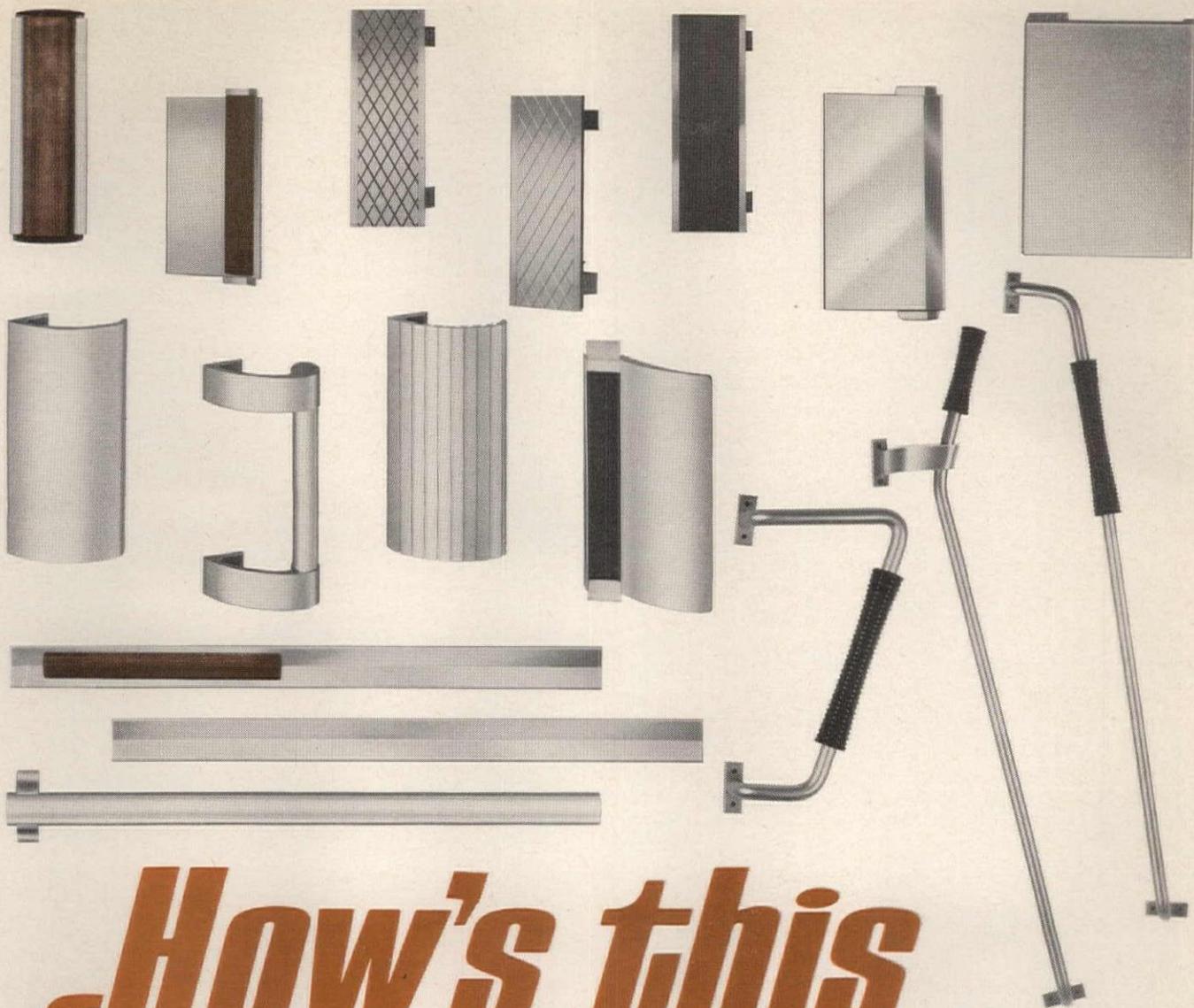
The treatment of space structures, which forms the last of the three major sections of the book, is the most interesting. While there still exists the unwillingness or inability to make value judgment concerning whether or not esthetic value is an automatic result of correct structural form, the treatment of the various aspects of space structures is never dull and consistently informative, not only for architects but also for engineers. Our engineering schools would do well to devote some time to a qualitative evaluation of structural form as a leavening agent for their analysis-oriented curricula.

The illustrations, while in general the best of those in the four books reviewed here, lack that consistency which could have made the book a rich visual experience as well as a rewarding intellectual one. One can but wonder why, in the preparation of texts of this kind, greater care is not given to the graphic content of the presentation. But Mr Seigel's book is obviously the work of a man who is absorbed in the subject of the relation of structure to esthetic content. This involvement is made clear by an absorbing text, and a thoughtful reading cannot fail to be a rewarding experience for both architect and engineer.

The four books commented upon have one thing in common: they are all considerations of structural principles aimed specifically at architects. Three are by engineers and one is by an architect. If one may risk a generalization, it would seem, to judge from past experience with similar books and the four considered here, that the subject requires the background of an engineer for a satisfactory approach. But, oddly enough, the major weaknesses of all four books mirror exactly the limitations of each professional with respect to structural content and architecture. The architect rarely has the depth of understanding and experience to generalize about structural form and behavior in a valid way. The engineer does not have that trained eye and judgment which makes each object a visual experience subject to esthetic judgment. It is rather absurd to write about structural principles applied to buildings with esthetically valid results and ignore the esthetic impact of your presentation. It is time that engineer and architect took each other by the hand and tried to see if they could find a common approach. The writing of books, and the process of education, would benefit.

CHARLES H. KAHN
North Carolina State

⁴New York: Reinhold, 1962. \$14.00



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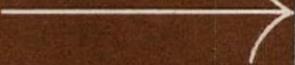
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Volume XLI

January-June 1964

Abbreviations

ED—Editorial

N—News

AA—Allied Arts

UD—Urban Design

UR—Urbanisms

SPS—School Plant Studies

CS—Comprehensive Services

OO—Octagon Observer

T—Technical

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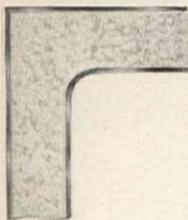
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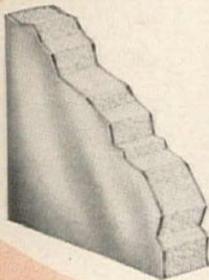
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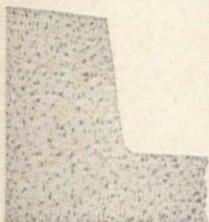
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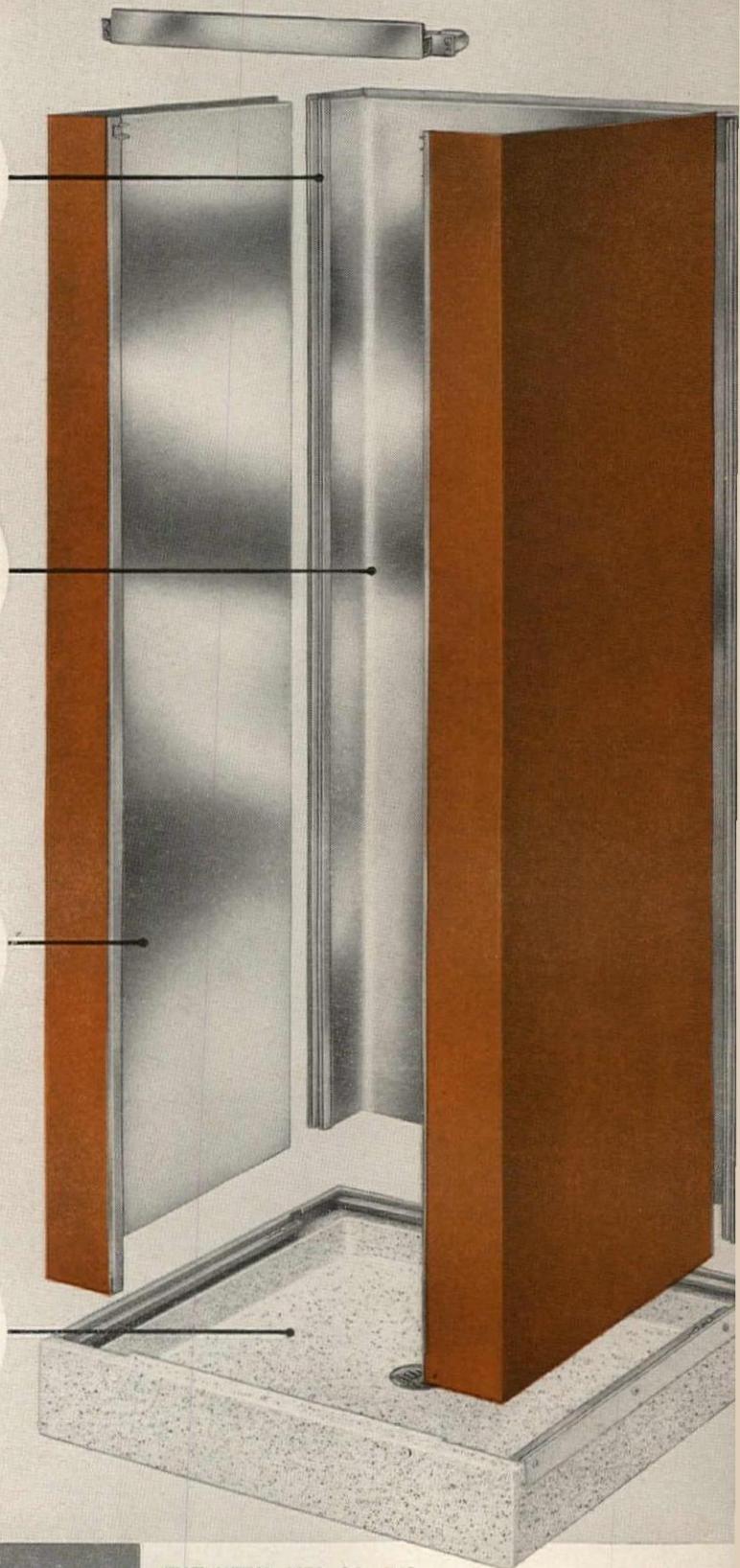


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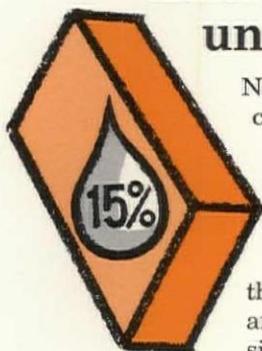
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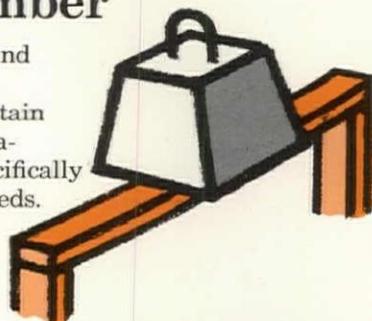


Not one piece of Engineered 4-Square lumber contains more than 19% moisture. The average is 15%. These are the narrowest limits ever established for framing lumber and are made possible by new electronic moisture controls. This uniformly dried Engineered framing can be reduced to slightly smaller thickness ($1\frac{1}{2}$ ") with no sacrifice in strength and stiffness. This is approximately the same size unseasoned lumber will attain in service.

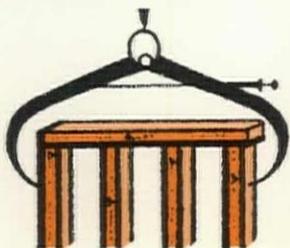
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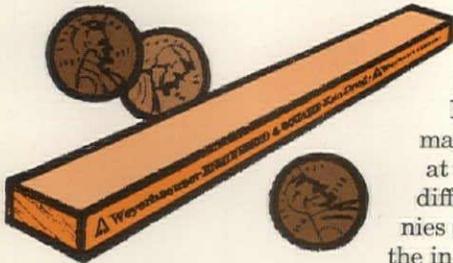
Better construction at lower cost for your clients



Engineered 4-Square lumber is manufactured to meet today's exacting needs for precisely engineered building materials. It will make better quality construction more economical and it lends itself to tightly engineered component systems.

6 Important reasons why you should specify Engineered 4-Square Kiln-Dried Lumber

1. Lower in-place costs



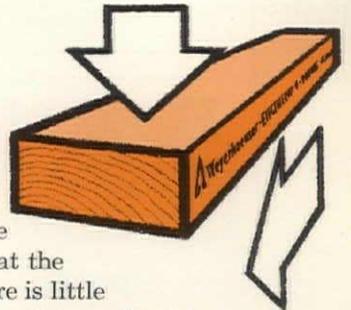
Like any quality building material, 4-Square Engineered lumber may cost a little more at the outset. But the difference is only pennies per stud. However, the in-place cost is lower

for these reasons. There is no fall down in grade, no trim waste. Every piece is usable. And there's no costly, time-consuming dry out period between framing and finish.

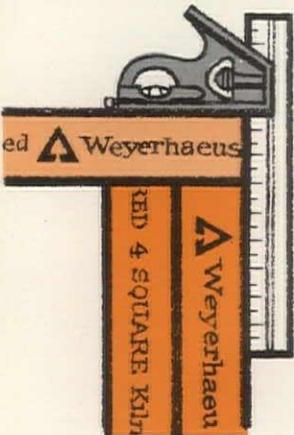
2. Greater strength and stability

Engineered 4-Square lumber at the new uniform low moisture content will carry a third again as much load without breaking as unseasoned wood and it has three times the nail-holding power. Because it is uniformly pre-shrunk at the mill it is highly stable. There is little

or no dimensional change in place on the job.



3. Engineered for superior performance



Engineered 4-Square lumber is designed for precisely engineered construction and modular building systems. Because of its greater strength and stability Engineered 4-Square lumber insures tight, strong construction and permanently solid joints. It virtually eliminates such callback problems as cracks in walls, nail popping, squeaky floors and sticky doors and windows.

4. Field-tested and widely accepted

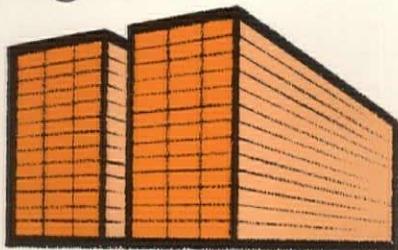


More than fifty million board feet of Engineered 4-Square lumber has been used in construction throughout the nation. It was selected as the framing

lumber for all three homes at the New York World's Fair House of Good Taste exhibit. The new size and improved moisture content have been endorsed by the American Lumber Standards Committee, the National Association of Home Builders, the West Coast Lumbermen's Association, the Western Pine Association, the United States Savings and Loan League and the American Institute of Architects.

5. Uniform size and consistent grades

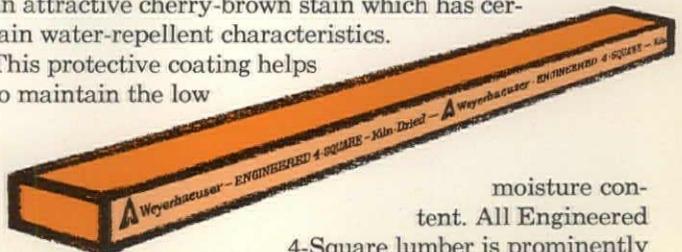
Engineered 4-Square lumber is machine surfaced and squared to an exact size after the electronically controlled drying process is completed. Therefore, there is virtually no change in dimension after it gets on the job. All grading occurs after seasoning so the grade you specify is the grade your builder gets.



6. Clear identification of quality

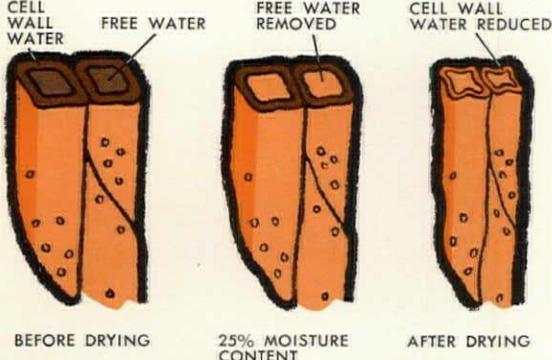
Engineered 4-Square lumber is distinctively colored with an attractive cherry-brown stain which has certain water-repellent characteristics.

This protective coating helps to maintain the low



moisture content. All Engineered 4-Square lumber is prominently edge-marked and carries the grade stamp "1 1/2" DRY."

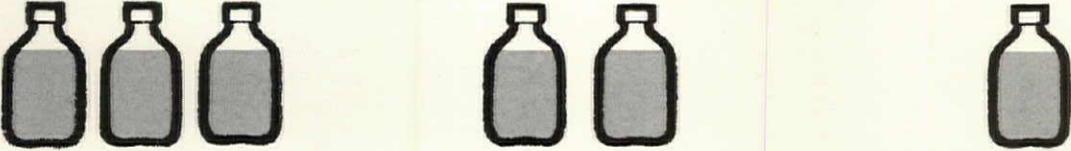
The technical story of why Engineered 4-Square Kiln-Dried lumber is your best buy



Allowing lumber that has not been Kiln-Dried to "dry-out" within the framework of a house only invites trouble. The wood cell diagrams at the left will explain our point.

As lumber dries out the "free water" between the cells leaves first, then the water in the cell wall. As the cell water evaporates the lumber begins to shrink (at about 25% moisture content). Now if you build a wall with green studs containing various percentages of water you are bound to get uneven shrinkage. The result can be warping, twisting and checking of the lumber. This is what causes uneven walls, sticking doors and windows, plaster cracks and other defects.

With Engineered 4-Square lumber the water that can cause trouble is removed at the mill. Every piece is preshrunk to a narrow margin of moisture uniformity. Nothing is over 19% moisture and the average is 15%.



Green

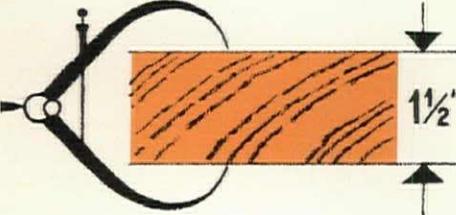
When it is first cut, a green 8-foot stud may contain as much as three gallons of water. There are about three pints of water in the same stud (at 30% moisture content) when it gets to market.

Kiln-Dried

When the same stud is Kiln-Dried to the prevailing 19 per cent average moisture content (no maximum limit) it will contain about two pints of water. This makes for good lumber, but it no longer fits today's needs in engineered-type building.

Engineered 4-Square

A Weyerhaeuser Engineered 4-Square Kiln-Dried stud will contain about one pint of water. This is close to the moisture content the wood will attain in service and it's ideal for all types of precisely engineered wood construction.



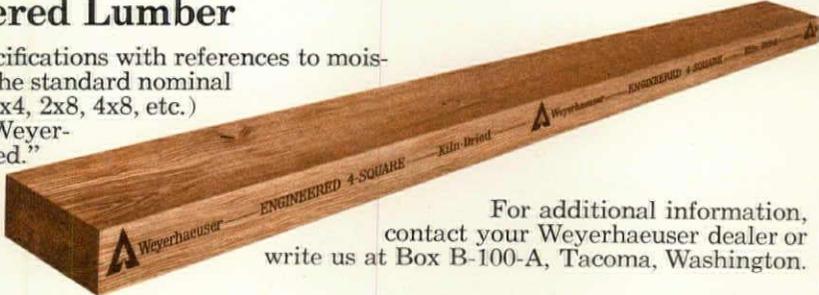
Why the smaller size?

There's a place for green lumber. Weyerhaeuser has always made it and probably always will. However, the size of a lumber framing member should be directly related to the moisture content the lumber will attain in use.

Green lumber dressed to $1\frac{5}{8}$ " will shrink down to about $1\frac{1}{2}$ " when it finally dries out. Since new Engineered 4-Square Kiln-Dried lumber is pre-shrunk at the mill it doesn't make sense to use the larger size when the $1\frac{1}{2}$ " thickness will meet the requirements of all existing span tables.

How to specify Engineered Lumber

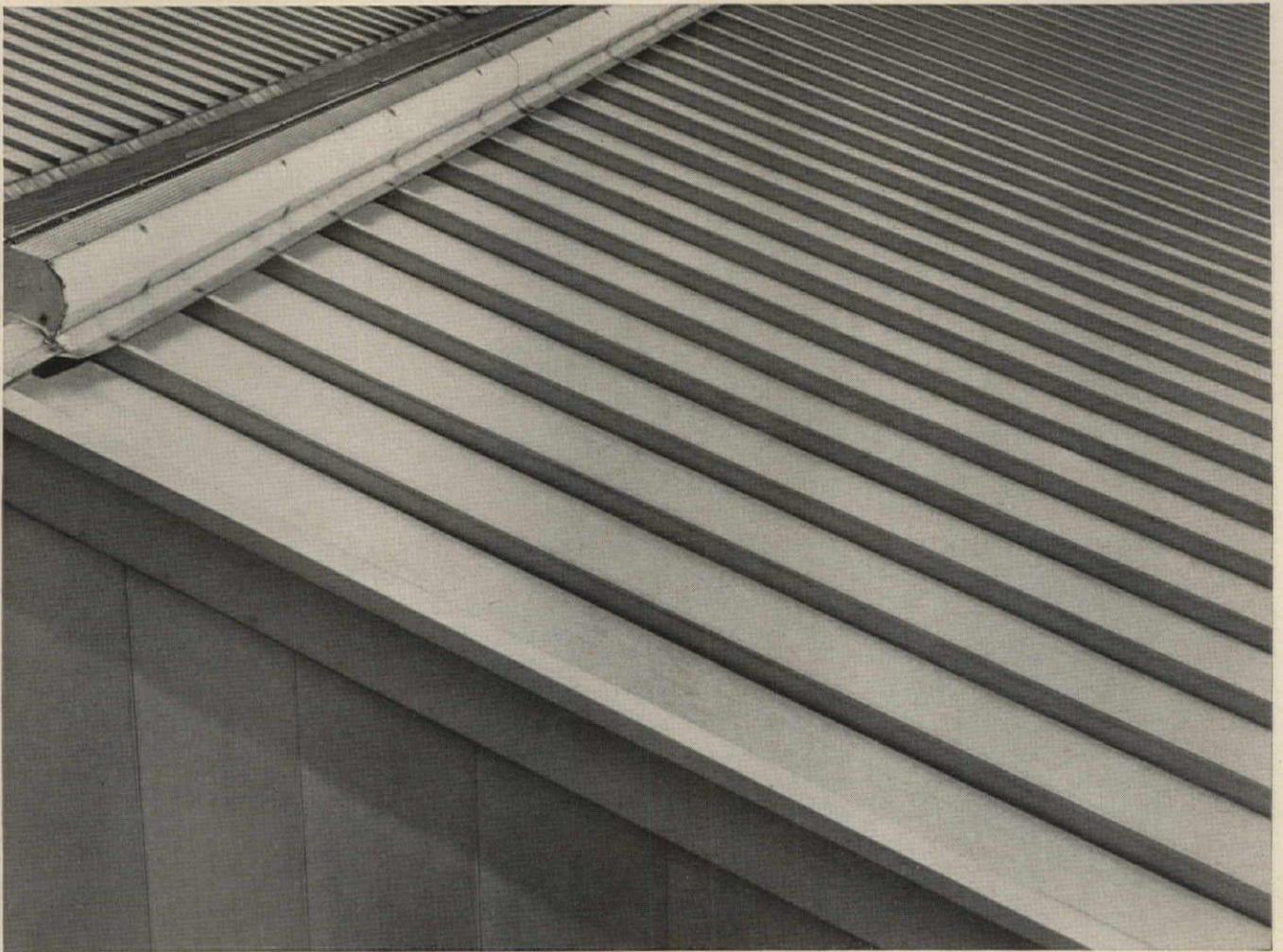
You don't have to complicate your specifications with references to moisture content or dressed sizes. Just use the standard nominal designations for structural members (2x4, 2x8, 4x8, etc.) and specify "all framing lumber to be Weyerhaeuser Engineered 4-Square Kiln-Dried."



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Why this steel roof doesn't require maintenance

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This roof, exposed in a mild industrial atmosphere, was erected in 1953. It has received no maintenance. Yet when inspected this year by representatives of four leading architectural firms, there was no evidence of rust.

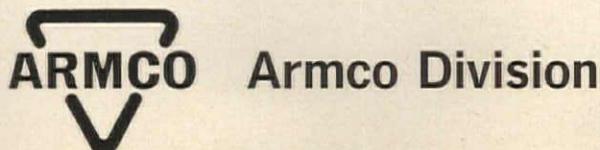
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less than aluminum. In fact, it costs only about 25 per cent more than galvanized steel, yet resists atmospheric corrosion at least four times as long without paint. In addition, it provides excellent heat reflectivity, bouncing back up to 80 per cent of incident radiant heat.

The combination of corrosion resistance, heat reflectivity, strength of steel, and economy make ALUMINIZED STEEL an ideal material for roofing, siding, and building panels. Other successful applications include canopies, back-up panels for curtain walls, doors of all kinds, equipment enclosures and many others.

For complete information on Armco ALUMINIZED STEEL, write Armco Division, Armco Steel Corporation, Dept. A-944, P. O. Box 600, Middletown, Ohio 45042.



PEOPLE / Weese Adds to His Laurels

Harry Weese FAIA, Chicago, has received a citation and a \$1,000 cash award as winner of the Prize in Architecture (Arnold W. Brunner Memorial) of the National Institute of Arts and Letters. The prize is given annually "to an American architect who shows promise of contributing to architecture as an art, the choice being determined by a committee of architects drawn from the Institute's membership."

FAME FOR ANOTHER FELLOW: The Japanese Emperor has conferred the Third Class Order of the Rising Sun upon Antonin Raymond FAIA in recognition of his "distinguished contribution of more than 35 years to the development of modern architecture in Japan." The architect, who also maintains a New York office, visited Japan for the first time in 1919 as a collaborator of Frank Lloyd Wright in the construction of the Imperial Hotel. One of Raymond's works, the Reader's Digest Building, received an award from the Japan Architects Association.

JURORS: Four architects will serve on the jury for the fifth annual Architectural Awards of Excellence program sponsored by the American Institute of Steel Construction, submissions for which are due June 10. They are J. Roy Carroll FAIA, Philadelphia, Institute

President; Leo A. Daly AIA, Omaha; Henry L. Wright FAIA, Los Angeles; and Philip N. Youtz FAIA, Dean, College of Architecture and Design, University of Michigan. The fifth juror will be a consulting engineer, Paul Weidlinger, New York City.

CBS HEAD CITED: Dr Frank Stanton, President of Columbia Broadcasting System, is the recipient of the Michael Friedsam Medal of the Architectural League of New York. The citation: "In recognition of his role in promoting, through the vast communications system he directs, the development of art in industry. His sponsorship of architecture and the fine arts has made a significant contribution to a vastly wider appreciation of the place of the arts in the life of the nation."

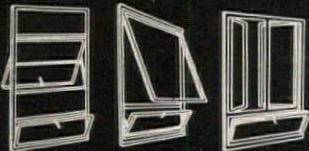


DEATHS / Otto Eggers

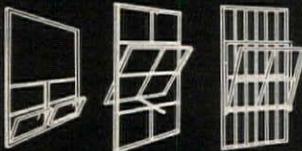
Otto R. Eggers FAIA, New Rochelle, NY, who was considered one of the foremost architectural delineators of his time, died April 23 at the age of 81. He and his partner, the late Daniel Paul Higgins, were associates of the noted architect John Russell Pope for several years, and upon Mr Pope's death in 1937, carried to completion the National Gallery

Cont'd on p 118

Basic Types of Bayley Windows



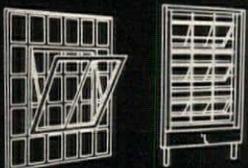
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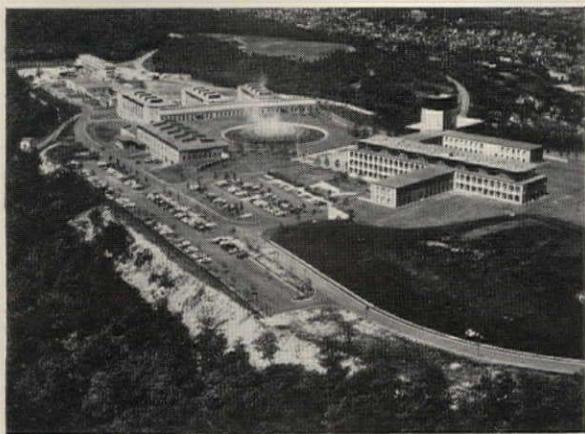
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Octagon Observer *Cont'd*

of Art and the Jefferson Memorial in Washington, DC, under the firm name of Eggers & Higgins.

Mr Eggers' penchant for perfection was such that while searching for the right marble for the 24 columns in the rotunda of the National Gallery in 1938, he traveled by mule into the Carrara Mountains near the Italian town of Chiavari to choose the massive blocks. Later, when the blocks were being turned and polished in Proctor, Vt, he went to the mill and stood on the high footbridge of a traveling crane to select the best possible matches for the columns so that each appears to be monolithic.

PLANNING / Aiding the Airports

The Airline Technical Committee, headed by AIA member Arnold W. Thompson, is providing a clearinghouse of information and skills in the airport design area as a function of the Air Transport Association of America. "As a result of our work to date, we have concluded that there is much we can do to establish uniform standards of measurement, uniform technology and consolidating terminal philosophy," says Chairman Thompson, Director of Facility Design of American Airlines.

LEGISLATION / How Far Can Germs Jump?

As an eye-opener to its April conference in Eugene, the Oregon Council of Architects AIA took a long, hard look at regulatory agencies and didn't like what it saw. Vice President De Norval Unthank Jr listed at least 11 jurisdictions which might be involved on a typical school project in the state; and just for good measure he added eight examples "of the duplicity and extravagance in protecting the public safety, health and welfare (ie, in the case of drinking fountains, germs can jump 15 inches in Oregon codes while the distance varies greatly in other states). His report urged that the OCA, through its Legislative Committee, "request the establishment of study and investigation of possible solutions to this major problem on a state level by the Governor and the Legislature."

Necrology

According to notices received at the Octagon between April 1, 1964, and April 30, 1964

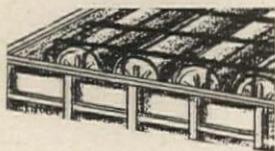
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 JOHNSON, HERBERT T., Scarsdale, NY
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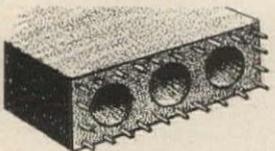
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Calendar

June 7 to 13: AIA-ACSA Teacher Seminar, Cranbrook Academy of Art, Bloomfield Hills, Mich

June 11 to 12: BRI Restoration Forum, Mayflower Hotel, Washington, DC

June 11 to 14: ACSA Annual Meeting, Chase-Park Plaza Hotel, St Louis

June 11 to 14: NAAB Annual Meeting, Chase-Park Plaza Hotel, St Louis

June 12 to 13: NCARB Annual Convention, Chase-Park Plaza Hotel, St Louis

June 14 to 18: AIA Annual Convention, Chase-Park Plaza Hotel, St Louis

June 21 to 27: International Design Conference, Aspen, Colo

June 28 to July 1: ASLA Annual Meeting, Hotel Baker, Dallas

July 1 to 4: NSPE Annual Meeting, Grove Park Inn, Asheville, NC

AIA Regional, State, Committee Meetings

June 11 to 13: New Jersey Chapter, Essex and Sussex Hotel, Spring Lake, NJ

July 12 to 13: AIA-Engineers Conference Committee, CEC Headquarters, Washington, DC

September 18 to 20: Ohio Region, aboard the *SS South American*, departing from Cleveland

Notice of Penalties for Unprofessional Conduct

Disciplinary action has been taken by the National Judicial Board against the following corporate members, listed with standards violated and penalties invoked:

LeRoy W. Johnson (Coast Valleys Chapter)—12—censure.

James E. Mantel (Kansas City Chapter)—3, 8, 12 and 15—suspension for two years beginning April 25, 1964.

Charles E. Steele Jr (Kansas City Chapter)—12 and 15—censure.

Mandatory Standards

3) An architect shall not knowingly compete with another architect on a basis of professional charges, nor use donation as a device for obtaining competitive advantage.

8) An architect shall not knowingly injure falsely or maliciously the professional reputation, prospects or practice of another architect.

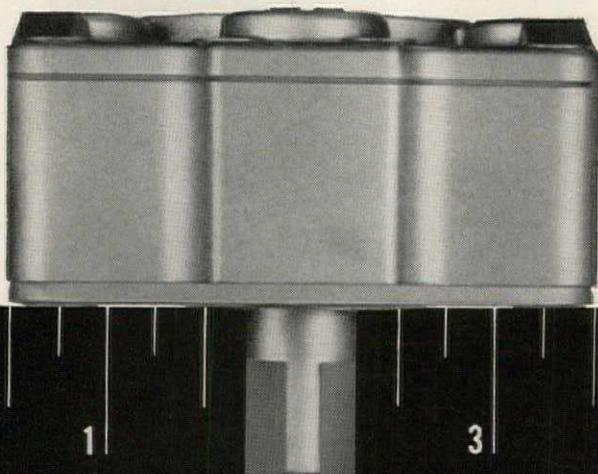
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15) An architect shall at no time act in a manner detrimental to the best interests of the profession. ■



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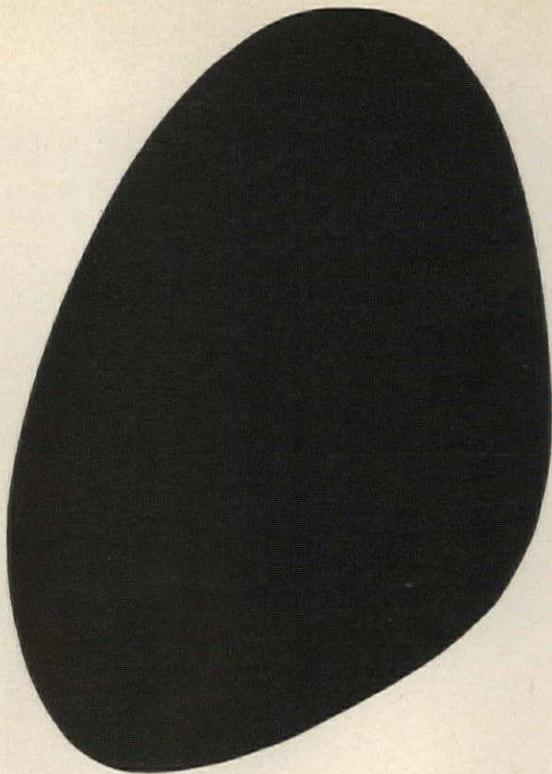


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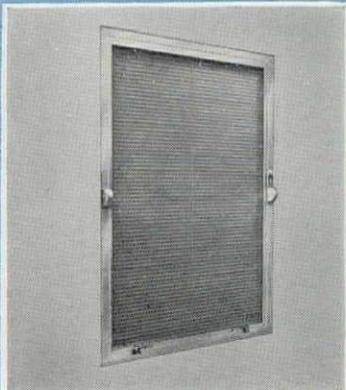
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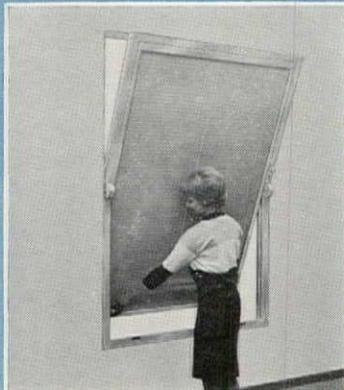
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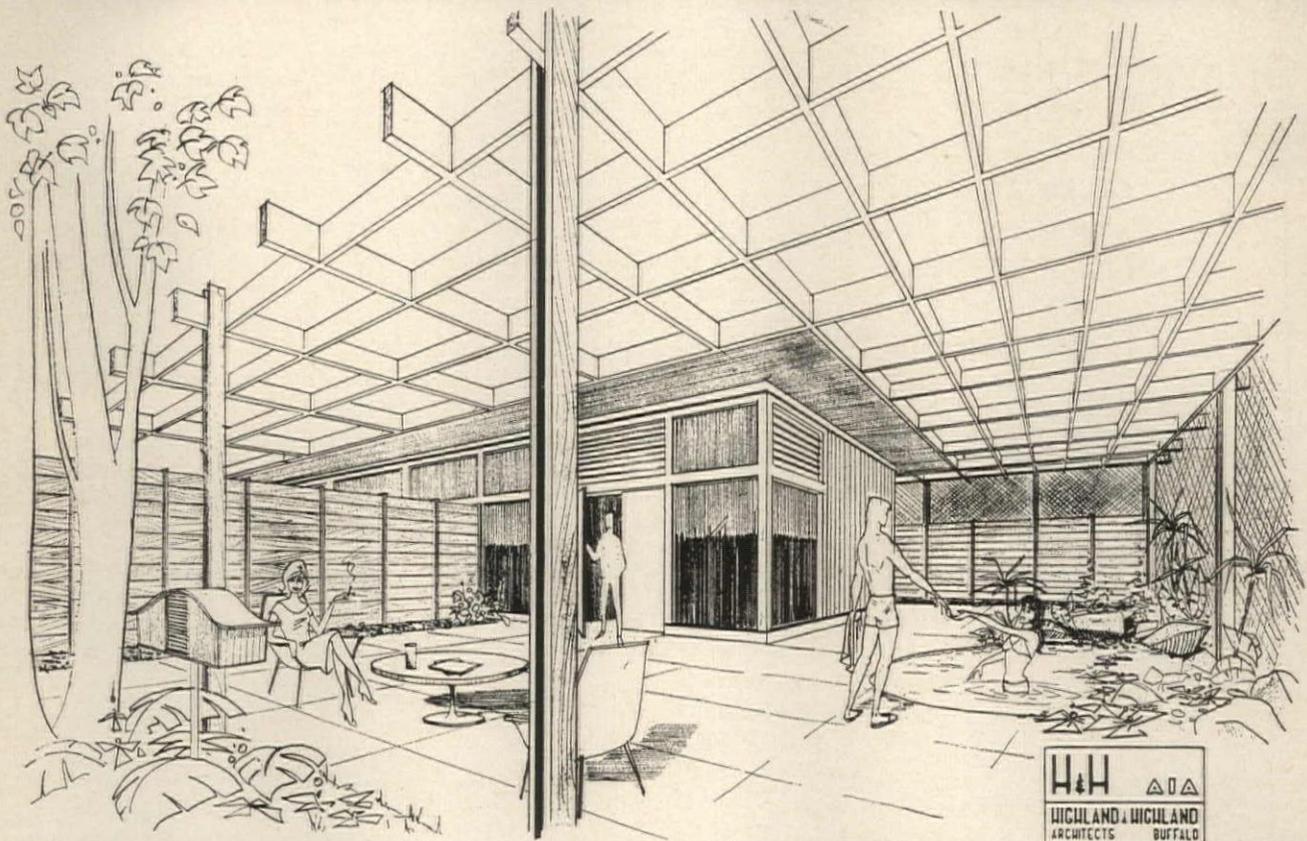
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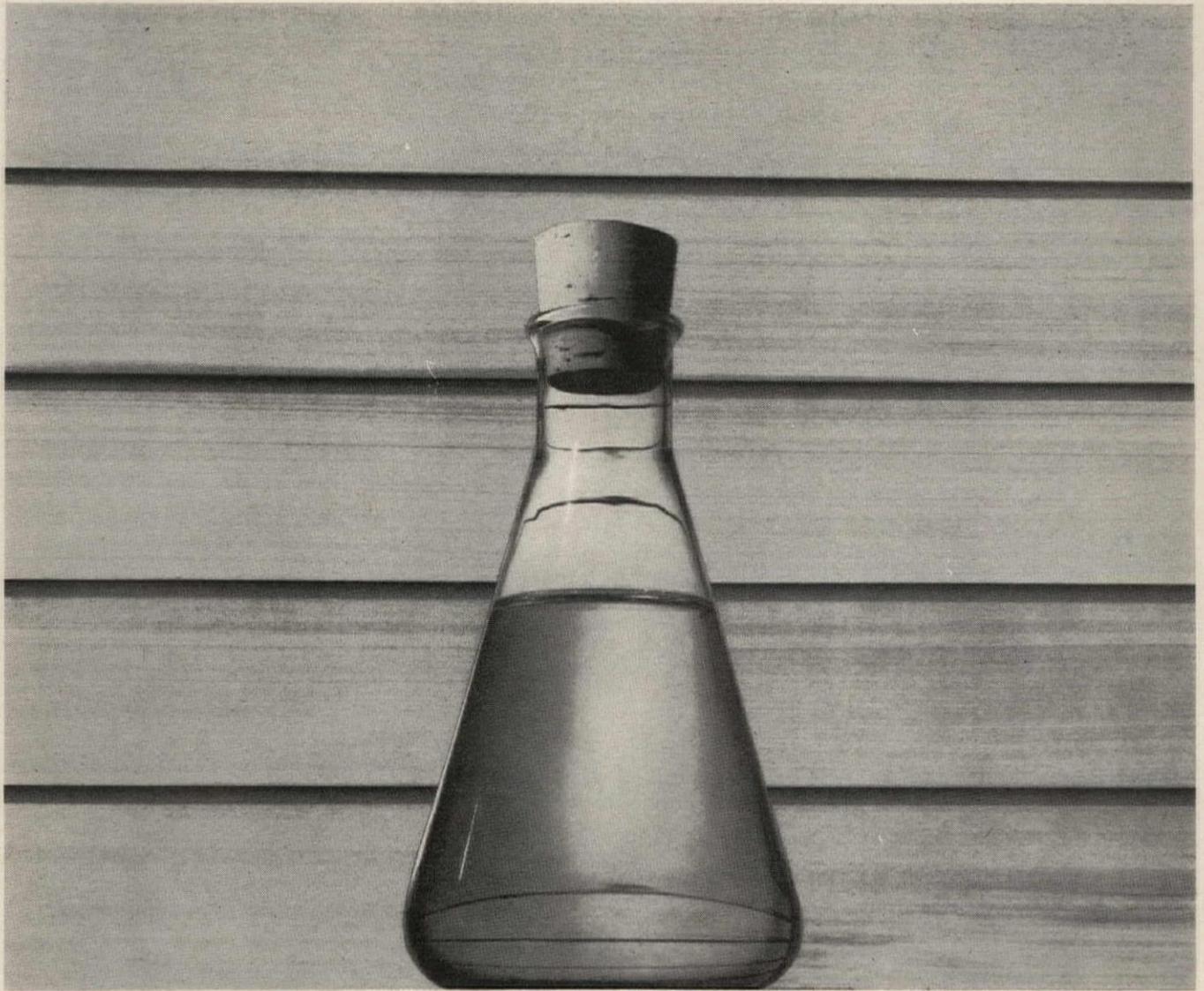
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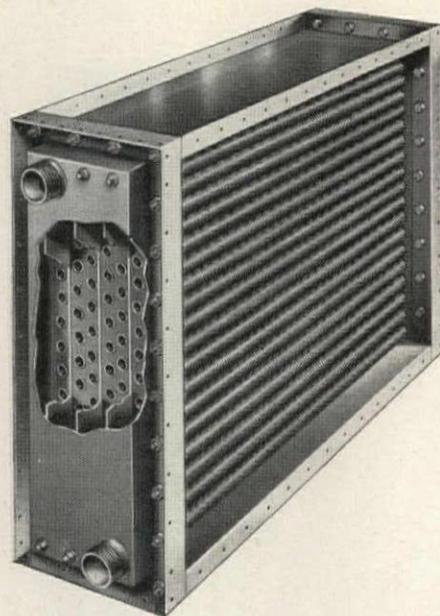
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for protection that's *silent, smooth* and *sure*

Schlegel 

WOVEN PILE WEATHERSTRIPPING
SCHLEGEL MANUFACTURING COMPANY
 P. O. Box 197, Rochester 1, N. Y. In Canada: Oakville, Ontario

BEAUTY THAT ENDURES

... plus effective acoustical control and air distribution. New Lo-Tone acoustical ventilating ceilings enable the architect to combine efficient mechanical air distribution functions with aesthetic ceiling design.

Lo-Tone ventilating ceilings often cost no more than conventional distribution installations... in most cases, much less. Large amounts of duct work may be eliminated. Plenum areas can often be fed with one stub duct. Branch ducts are seldom necessary.

Operating on the "jet theory" of air movement, Lo-Tone ventilating systems permit supply air slot velocities of approximately 1000 FPM with plenum static pressures not exceeding .06 inches of water. Mixing of primary and room air occurs above the occupied (72" from the floor) level, reducing the possibility of dirt being deposited on the ceiling surface. Small slots with concealed Control-Splines permit positive regulation of air flow from below the ceiling — at any time during the life of the structure.

Lo-Tone ventilating acoustical ceiling materials are available in tile or board... Constellation and Fissura patterns... in either regular mineral or Fire-Rated types. Application presents no special problems — jobs go up in exactly the same way and with the same components which acoustical contractors have used for years.

Lo-Tone acoustical and ventilating materials are suitable for a wide variety of design applications — perhaps ideal for the project you are working on right now. See AIA File No. 39-B in Sweet's Catalog for more information. For product samples or additional technical data, contact your local Lo-Tone Acoustical Contractor, or write: Wood Conversion Co., St. Paul 1, Minn.

LO-TONE®
VENTILATING
ACOUSTICAL CEILINGS



Section of new FISSURA pattern shown ACTUAL SIZE. In addition to ventilating tile and board, FISSURA is available in F/R tile and ceiling board, vinyl-coated ceiling board, attenuation factor (AF) tile and standard mineral tile and board.