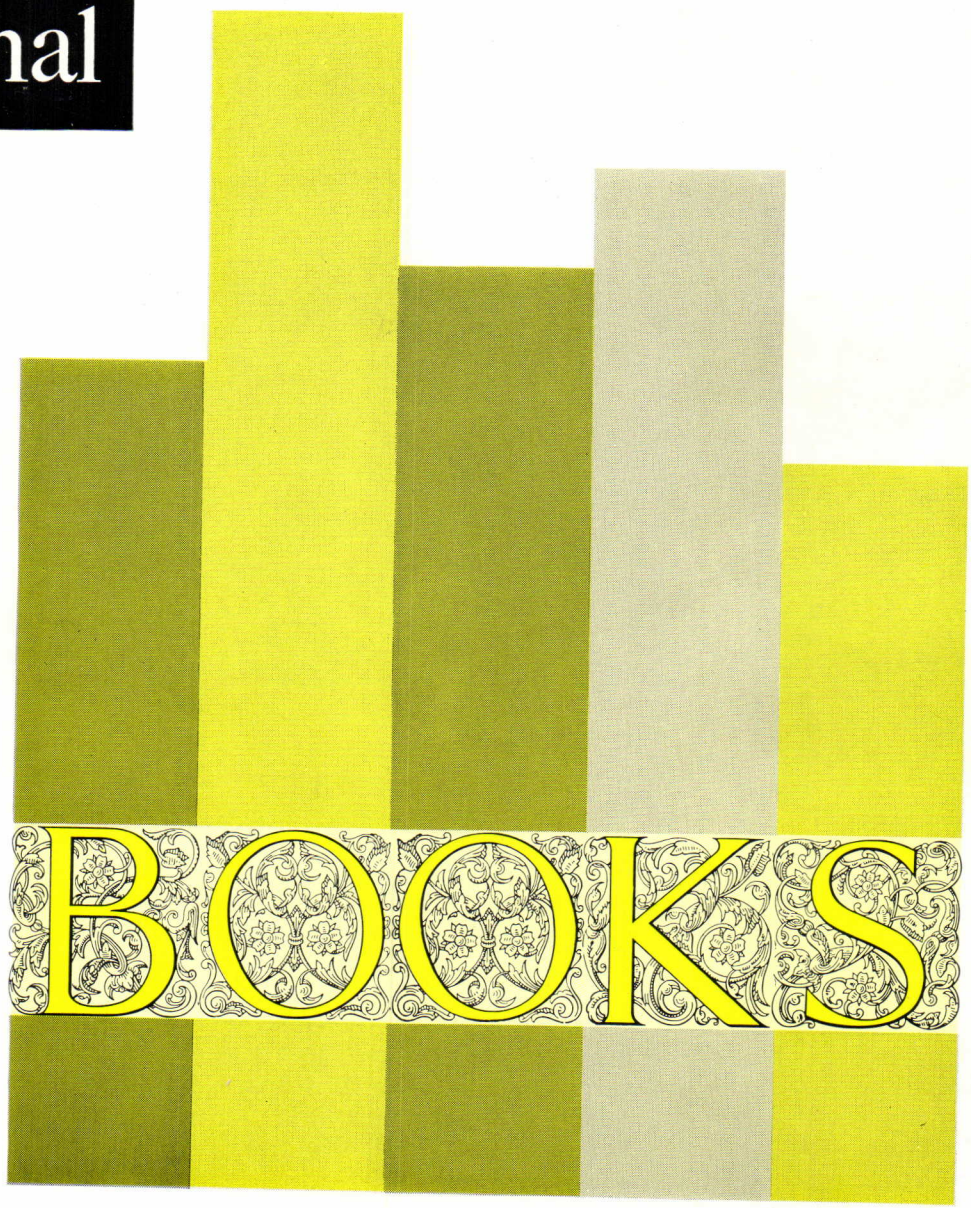
A·I·A
Journal

November 1963



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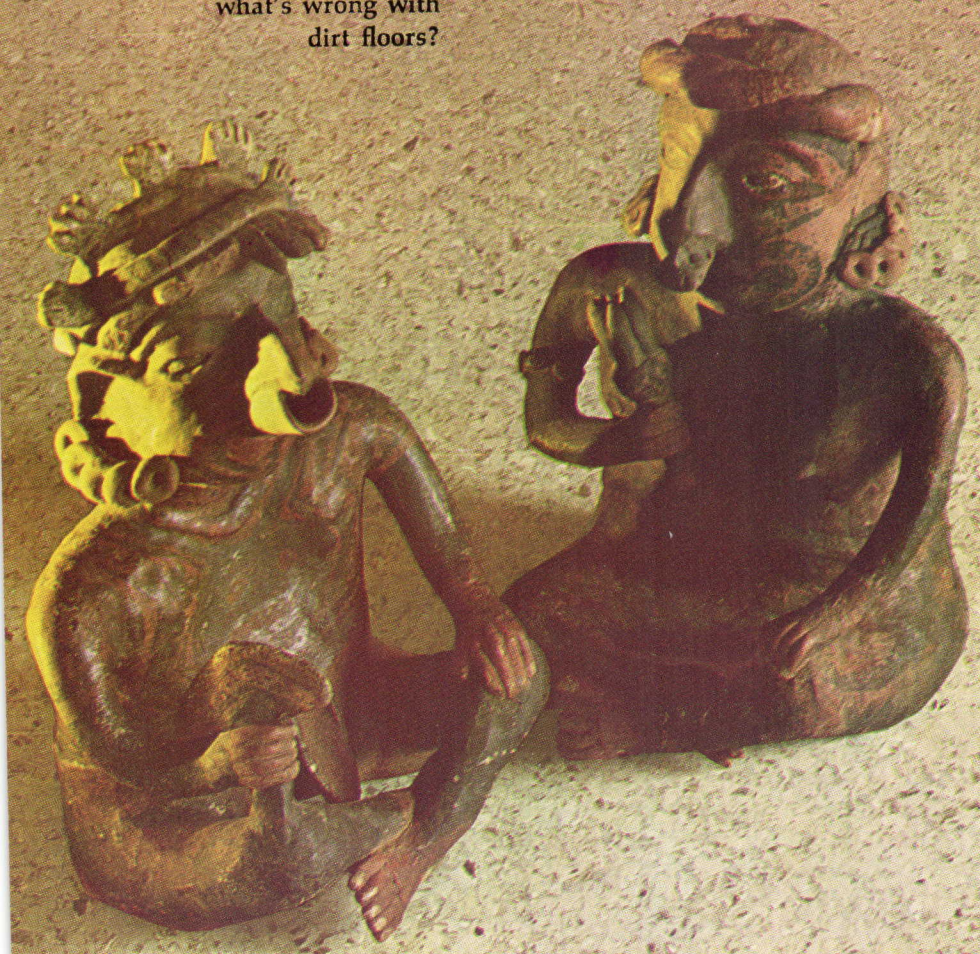

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NOVEMBER 1963
VOLUME XL, NO. 5

The Journal of The American Institute of Architects, official organ of the Institute, is published monthly at the Octagon, 1735 New York Avenue, NW, Washington 6, DC, Ex 3-7050. Editor: Joseph Watterson FAIA. *Subscription in the United States, its possessions, and Canada, $7 a year in advance; elsewhere $8.50 a year. Chapter Associate members, $4, Students, $3.50, Members of Associations of allied professions, $5. Single copies $1.* *Second class postage paid at Washington, DC. Change of address: notify the Octagon, giving both old and new addresses. Allow four weeks. Official address of the Institute as a NY Corporation: 115 E 40 Street, New York, NY. Printed in Washington, DC by Judd & Detweiler, Inc.*

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COVER: The Book Supplement makes its fifth annual appearance (p 68)

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Editor's Page

The Architect and the Press: New Directions

The Editor left for Mexico City to attend the UIA symposium and the CCAIA convention before writing this month's page and turned over the assignment to the Managing Editor.

National Newspaper Week is being observed as this copy comes out of the typewriter, to which an architect might typically reply, "So what?"

There has been a lot of talk these past few years about communication—or rather the lack of it—between the profession and the press. Architects have been bugged for a long, long while about the failure of too many newspapers to give architectural credits when they publish renderings in their news columns. Even *The Washington Post,* which engages a regular architectural critic and writer (former AIA Staffer Wolf Von Eckardt, HON AIA, who continues to write our "Allied Arts" page) and which devotes considerable space to urban-program reporting, occasionally slips up along the way. "This is an architect's drawing of a plan for the Robert Frost Library . . ." a caption began just the other day, with no mention of the architect—although it did refrain from the "artist's sketch" bit.

But getting back to National Newspaper Week (we won't get into magazines on this trip), the profession does have something to be especially thankful for this year. An AIA-supported project was initiated last fall to help the two professions get better acquainted and, even in its infancy, shows promise of developing into a mature, stature-building program. The Institute allocated a $12,000 budget and invited thirty newspapers across the country to send one man each to a working conference at Columbia University. The seminar itself, under the heading of "The Press and the Building of Cities," was conducted by the Graduate School of Journalism and the School of Architecture.

The AIA paid the entire expense, including travel, for each participant, which led George McCue of *The St. Louis Post-Dispatch* to comment: "Some of the reporters were suspicious of the motives back of such a gesture. The architects asked no favors, however; they just unrolled a lot of background material and then invited the reporters to join in the arguments as to how much of it was good, how much bad and what needed further study."

Mr. McCue, who will long be remembered by convention-goers at Miami Beach, had the task of editing the entire proceedings—a transcript six inches thick when the three days were over. A copy of the report was sent to every newspaper with a circulation of 25,000 or more, "with the earnest wish that it will be pursued by an editor or two, and then handed to the man on the staff who writes about urban building." The report also was circulated among architects and schools of architecture and journalism.

As a result of the pilot seminar at Columbia, conferences have been held at the University of Kentucky and Washington University in St. Louis, four more are in the works and several others are being proposed.

Mr McCue so aptly summed up the purpose of this seminar program in his preface to the original proceedings that some excerpts deserve repeating here:

"The need for better acquaintance with each other's aspirations and working methods, considering the role of architects in the wholesale redesigning of American cities, and the role of the press in reporting and interpreting this, is too obvious to need arguing. Yet it has not occurred.

"Some architects are aloof, some are poor communicators, some are so busy that they are hard to catch at the moment when a newspaperman needs contact. Reporters are sometimes under too much deadline pressures for the patient questioning and digging that urban-building stories require for coverage in depth. On both sides, there has been occasional plain laziness and an inclination to oversimplify and overgeneralize.

"The American press has not kept pace with one of the biggest home-front stories in American history, breaking right at the doorstep of almost every newspaper.

"This is a serious charge, but the record is in the back files. The press, by and large, has covered the bare facts but not the social, economic, civic and design implications of urban building. It has duly reported the bricks-and-mortar developments of blight, demolition and reconstruction, but has dealt in a perfunctory and often uncomprehending way with the deeper issues in the physical reconstruction of this Nation's cities.

"Newspapers need to ask questions and to know what questions need to be asked. They need to interpret and criticize—but out of observation of what has worked and is likely to work, not out of off-hand, on-the-run impulsive judgments.

"Architecture and city planning need criticism. They have never needed it more. The press criticizes movies, plays, concerts and art exhibitions. For some reason, it shrinks from the responsibility of publishing criticisms of the very things in its community that are here to stay, to gladden or offend the eye, to use downtown space to advantage or disadvantage."

"The Press and the Building of Cities" is indeed a giant step in the field of architectural communications, and this is the reason why we feel that National Newspaper Week 1963 has taken on a kind of special significance.

R. E. K.

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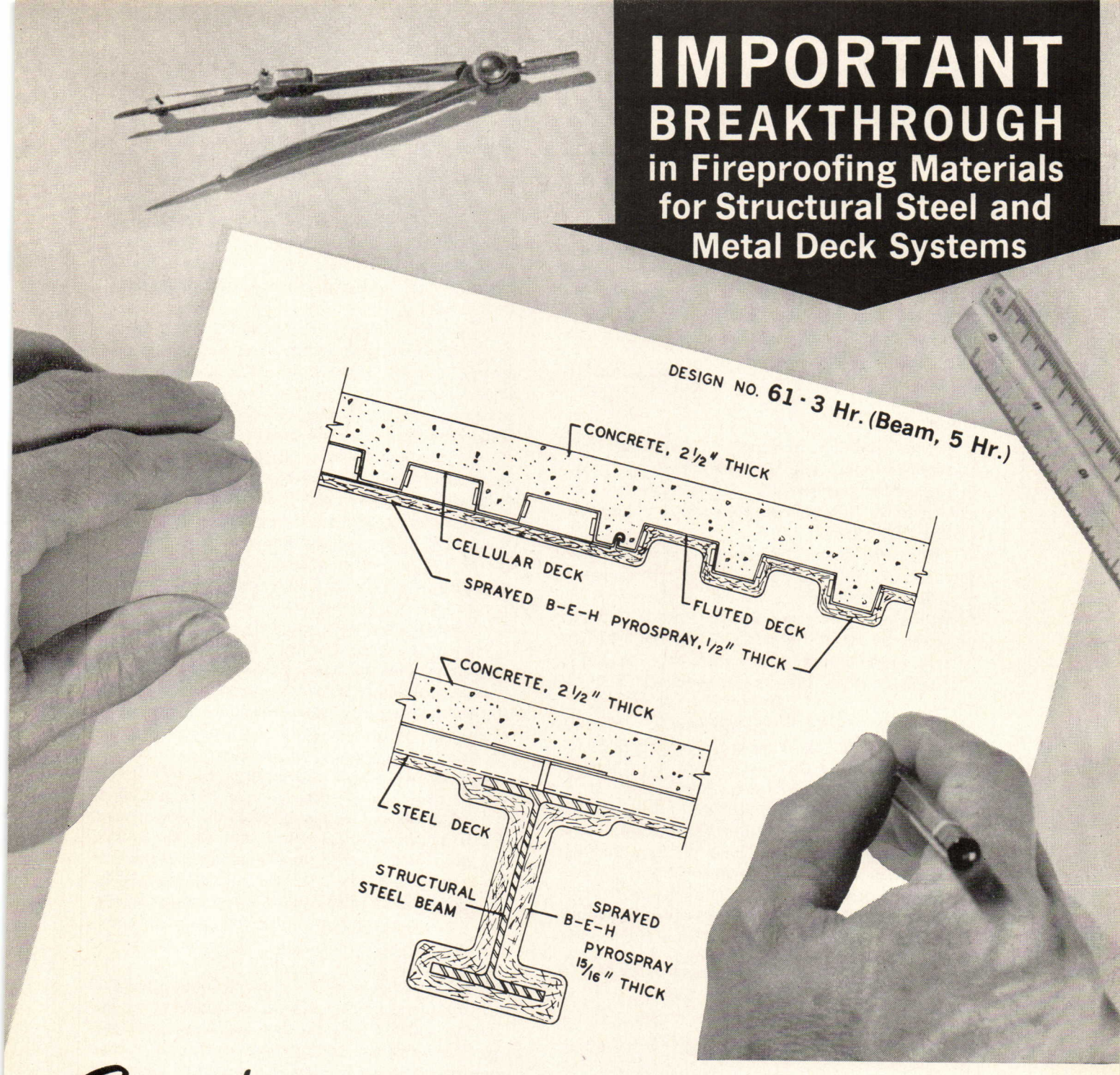

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Letters

Barrenness, Bleakness vs Beauty

EDITOR, *Journal of the AIA:*

We will have barrenness, bleakness and ugliness in architecture until we find a workable method whereby the creation of beauty will measurably increase the return on our clients' investment. Not until beauty and profit are synonymous can we look forward to a change.

HENRY SANDIG AIA
New York, NY

EDITOR, *Journal of the AIA:*

Your editorial—tremendous! If it comes to a knock-down fight, may we stand beside you? And the September *Journal* itself! Seville Cathedral piers and vaulting: forbidden as poisonous but inspiring. On the COVER too.

Then the report "Pittsburgh Perceived" with four uses of the word "beauty" and a statement to the effect that there is a "trough of disregard" between the older generation and the newer, "a period of temporary esthetic blindness." Not only this but "a respect for history, a curiosity about the past is the hallmark of a progressive, sane and balanced society."

And to complete reinforcement of your editorial position are the eloquent photographs by G. E. Kidder Smith of Chartres, Orvieto, the Theseum, the Horses of St Mark's, Santa Sophia of Istanbul, Avila, the Propylaea, Timgad Ruins and a Swiss dwelling. We thought all these monstrosities were dead and buried—verboten, and yet here they are again vibrant and sparkling with new life. It seems almost as if they were as exciting as the church with the potato-chip roof on one of your advertising pages.

More power to you and your prophetic September *Journal!*

WM. ROGER GREELEY FAIA
Boston, Mass

EDITOR, *Journal of the AIA:*

It is impossible for me to reconcile the wholly admirable perceptions in your lead editorial in your September issue with the photograph of the dormitory exterior and approving caption on page 74. How many years will it take to dispose of the disposable containers bequeathed to us by Saarinen?

GARRETT B. RATCLIFF
Urban Renewal Administration
Washington, DC

Continued Praise for UD

EDITOR, *Journal of the AIA:*

Your series on urban design entitled "The Architecture of Towns and Cities" is impressive.

WEIMING LU
Principal Planner
City of Minneapolis
Planning Commission

Stock Plans and Specifications

EDITOR, *Journal of the AIA:*

Being registered and practicing architecture in thirty states, I receive many publications from the various state and local chapters of the AIA; also, I am in contact with news articles in many states regarding school board thinking in the direction of stock plans.

I am fully aware of the general thinking on the part of the practicing architects as well as the profession in general on this point, but I wonder if we as architects are progressive in our thinking. I happen to be an architect who does no school or institutional work so I believe my thinking is quite objective.

We are in an age of centralized government and high taxation, both of which to a great extent go hand in hand. As a result of this, along with the other important factors of modern living, everybody seems to be thinking in terms of economy and, to a great extent because of our machine age, this is even being reflected in the building field by our architecture and its repetitive theme, even though I sometimes wonder if we are really practicing economy.

It seems in my opinion that the architect with progressive thinking should bear all of these facts in mind and ask himself: "What is wrong with the reuse of an excellent plan and specifications for a public school building if it proves to be a good machine for education?" It seems that the profession in studying a situation of this matter might well give thought to all of the time and effort spent by an architectural office in order to achieve the maximum in the development of this "machine for education" and why should not that effort be utilized to the maximum? It seems unfair to the public at large to have each architect study a similar problem anew, and this becomes especially true if a particular office is to execute plans and specifications for typical areas and requirements for the same school board.

It seems, again in my opinion, more logical for the profession to seek a manner of compensating the architect—and at the same time benefiting the public from the standpoint of less taxation—for all of that conscientious study by attempting to set up copyright (or other form) protection for the plans and specifications. The profession then could follow through with a fee schedule established for the reuse of these plans and specifications, with the architect to receive a minimum compensation for the plan and specification reuse, but with his protection arising in the need to retain him for the construction supervision. As a matter of fact, this is, I believe, a requirement of each state registration law.

What is the difference between this protection and the royalty protection regarding other products which are manufactured on a maximum production basis? I will grant you that esthetics are involved here, but I believe with proper study this problem too can be surmounted.

HERBERT H. SOBEL AIA
Chicago, Ill

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URBANISMS

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

Air Rights Construction

We are witnessing the emergence of what should prove to be a most significant urban form-giver: construction on air rights. Broadly stated this is simply a technique of dealing with the space above the ground surface so that several diverse uses and ownerships of such space, and their requirements, rights and responsibilities can be coordinated and equitably assigned.

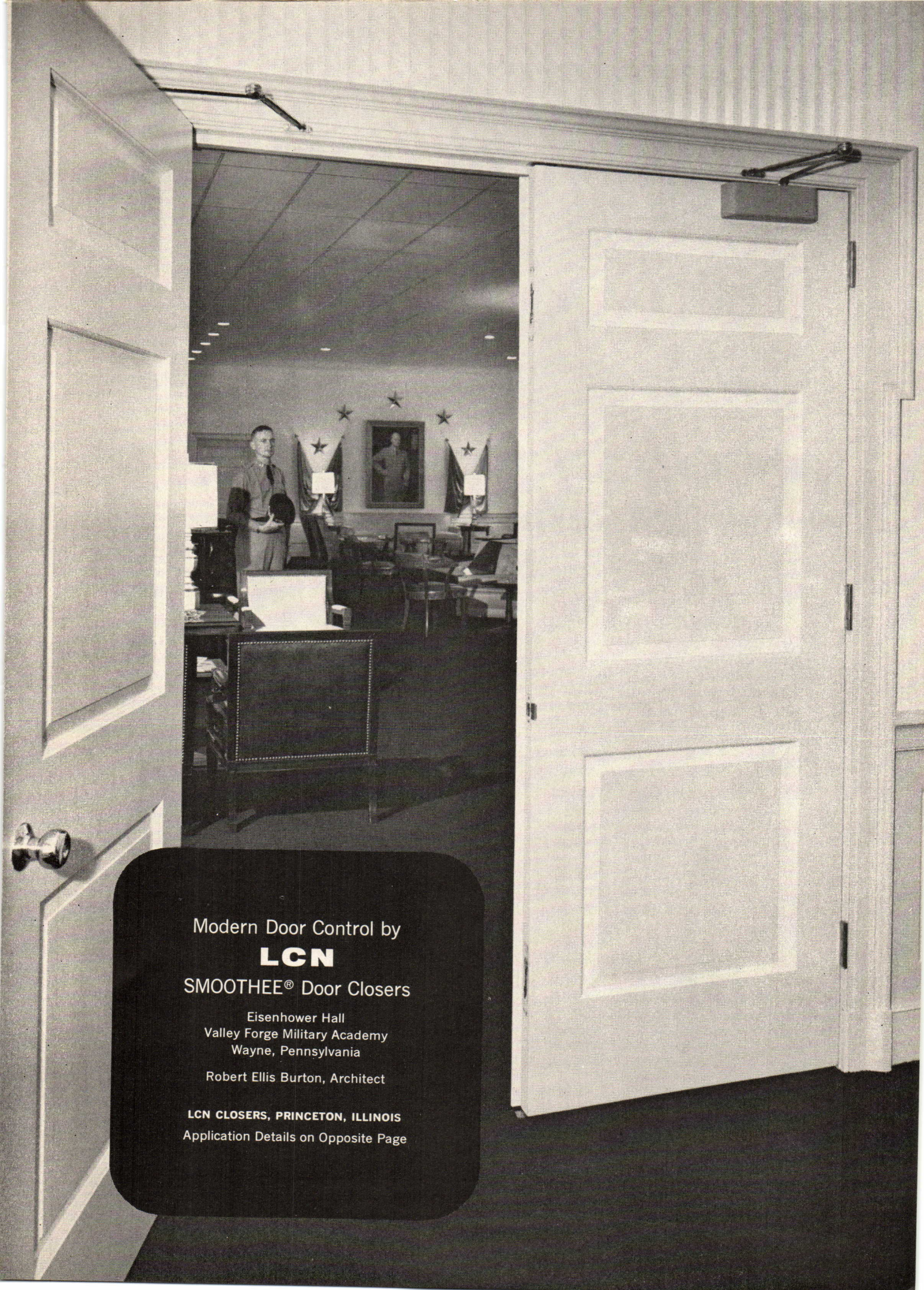
It is not a new concept. The Ponte Vecchio in Florence, New York's Grand Central Terminal complex and the Merchandise Mart in Chicago are established examples of air rights construction to name but a few. What *is* new are the contemporary economic and social pressures on the urban core that have forced detailed inventories of available building spaces, and that have caused owners of large surface tracts, principally railroads, to look for more intensive uses for their holdings.

The search for available core locations has inevitably led to the discovery of the large acreages devoted to railroad terminal and marshalling-yard uses. Concurrently, railroads have sought ways to improve their economic position. Demand and supply meet; legal and engineering techniques are developed, for instance: the leasing of air space along with the necessary land for foundations; sale of land and air space with easements to continue surface use; sale of air space with easements for foundations; three dimensional subdivision of air lots and geometric parcels of land and space (including subspace, or space beneath the surface) for caissons and supporting columns.

These basic concepts, when extended to construction over *any* surface use, open up enormous potentials for urban form. Automobile expressways might be erected in air space over the railroad ROW. Monorails likewise could be constructed over railroad or expressway ROWS. Helioports or VTOF facilities, subway terminals, multi-level parking decks and rapid transit/bus terminals might be built into interchanges as appropriate.

The stacking of transportation facilities into multi-use corridors and nodes would radically alter our view of, and approach to, many urban design problems. Condemnation, acquisition and relocation problems attendant to expressway design would be simplified through the use of existing railroad ROWS. Noise, air pollution and lighting glare sources would be concentrated, facilitating their control or elimination through designed devices such as cut and fill-earth masonry deflectors, periodic washdowns and planting strips. City sectors, long defined and well established by existing railroad ROWS, would not

Cont'd on p 22



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be fragmented by new expressway construction; the transportation corridor would strengthen the division between sectors; landscape design would improve the sector's frayed edges abutting the railroads (railroad ROWS should be landscaped and maintained the same as highway ROWS). Finally, the multi-use corridor would provide an urban focus so lacking since the decline of "union" station by terminating in a complex of warehousing and distribution facilities, parking decks, passenger terminals and such other public uses arranged in surface and air space as required.

Many opportunities for employing these design concepts in the Interstate Highway Program have gone by the board. On the other hand, the program is far from complete, and it is to be supposed that the present program is but the first of many such undertakings. Mounting public interest in mass transit, expressway location and planning and terminal automobile facilities will cause restudy of the details of many urban sections of the Interstate Program yet to be built, and the techniques of air rights construction ought to play a large part here. Out of this activity will come an increasing familiarity with an acceptance of air rights construction in our urban areas. The potential uses for the air space over docking facilities in river and harbor cities are obvious. River crossings with suspended commercial and recreation promenades, the bridging of streets with building construction at appropriate visual transitions in the street corridor, school and university uses constructed over commercial-retail facilities, automated warehousing and supply facilities erected over trucking transfer locations, overlooks built over expressway interchanges, pedestrian arcades and bridges hung from the upper floors of downtown retail facilities are a few of the more obvious possibilities.

Eventually we may develop techniques for exterior elevators, escalators and moving sidewalks that move between, over, under and through core structures; public corridors in easements that penetrate private holdings and service a variety of private and public uses each constructed in its own three dimensional air lot. Such "public" corridors exist already in a sense in the lobbies, vertical transportation facilities and corridors of private buildings but these require that one always descend to the ground in order to move from one building to the other.

The design complexities involved in air rights construction are immense but they will be solved by the imaginative architect. Also, the legal and engineering tools of description and conveyance of air space properties are at hand. What we really know very little about are the zoning considerations involved in this technique. With very few exceptions (airport zoning for instance) use zoning is strictly two-dimensional "land-use" zoning. Architects and others interested in air rights construction must give their attention to solving the riddles of "air use" zoning before this technique can be fully used. ◄

A·I·A
Journal

A Tale of Two Cities

College Hill and Downtown Providence 1970

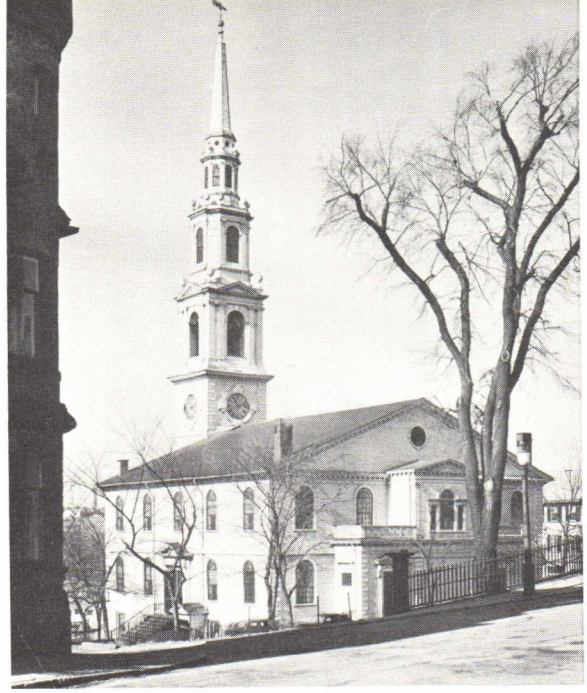
DIETER HAMMERSCHLAG AIP

Deputy Director, City Plan Commission
Providence, Rhode Island

When the Providence City Plan Commission published its handsome report on the College Hill study some four years ago, it was widely acclaimed —and received a citation at the 1960 AIA convention for "leadership . . . for all to see the possibilities of restoring to a city some of the amenities of man's environment, lost for a while, but still recapturable by a resolute community." Here is its story, together with its accompanying project Downtown Providence 1970, told from their inception to the construction stage start.

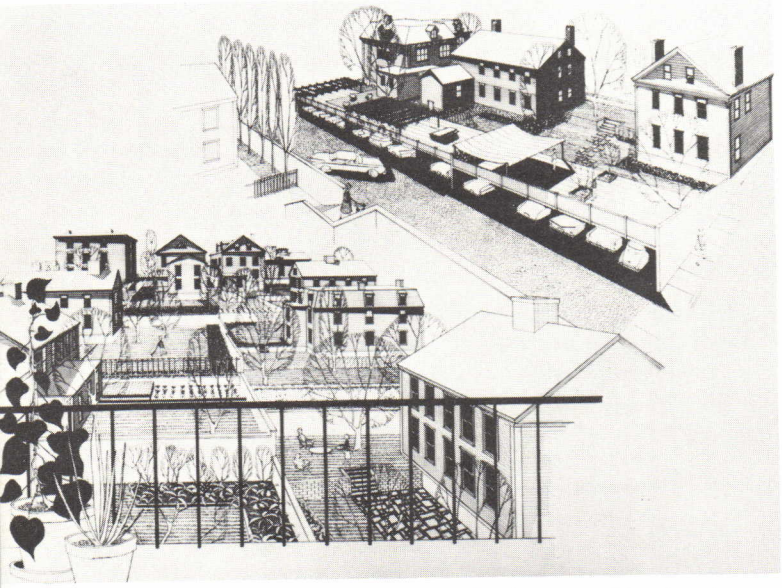
THE IDEA that cities are living organisms with an indefinite life-span has been accepted for a long time. That they need constant attention to stay healthy is a relatively new thought. A really serious effort in this direction—called urban renewal —has been under way for only about fifteen years.

Much has been said about the size of the problem and our inability to remove slums as fast as they seem to grow. Redevelopment has been blamed for all sorts of basic errors, most of which are avoidable. The early projects often attempted to cure a condition that is essentially contagious without removing the cause of the malady. Redevelopment projects were executed without an over-all citywide program or sometimes the respect for excellence that should be a prerequisite for any public undertaking.

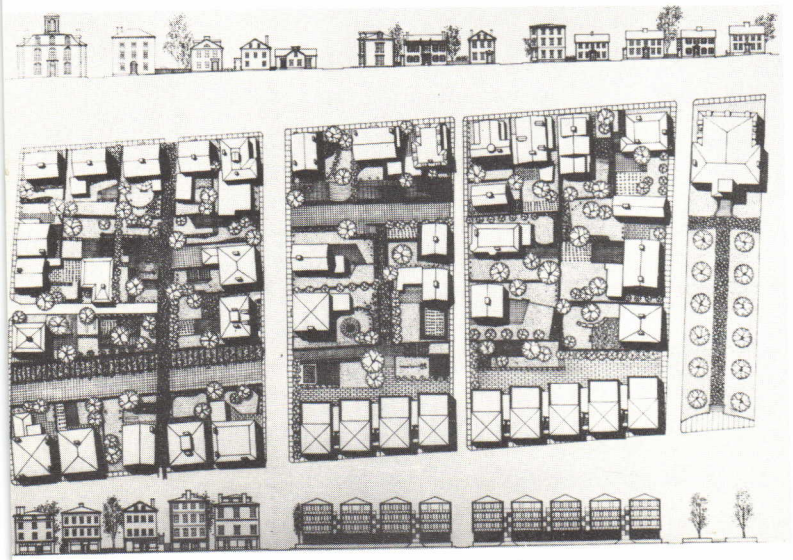


TILLY PHOTO

First Baptist Church, 1775



College Hill study: example of suggested treatment



In Providence, city planning has provided a guide for change since 1945 and redevelopment has been under way since 1947. It is not my purpose to review in detail the half dozen projects undertaken during the first ten years.* Progress was slow due to legal challenges, but a thorough and ambitious program was under way by 1957. As technical proficiency in the urban renewal process grew, it became more and more apparent to certain people that something important was missing—that intangible ingredient: character.

A city has a character, a personality, something which is unique in the region or the country or possibly even in the entire world. Some are lighthearted and gay, or grim and depressing; some are railroad towns or harbor towns or university towns. They can have wide open streets or narrow canyons that twist and turn. Their pattern varies from gridiron to linear to radial concentric. It is vitally important that we recognize the natural underlying characteristics that make each city a really distinct place.

In an old city like Providence, with a rich historical heritage and a strong physical configuration, the link from the past to the future can be used as the basis for the design plan and as its strongest feature.

We were fortunate to receive approval for two demonstration grants from the Urban Renewal Administration in 1957 that enabled us to undertake two such studies and subsequently prepare—with infinite pain—three-dimensional images for "College Hill" and "Downtown Providence 1970." In tracing the objectives and results of both, it is hoped that a significant factor of success will be better understood.

College Hill

College Hill is one of the few neighborhoods in the country where properties bordering a central business district have been held in continuous residential use and where descendants of the original settlers are still living. The mixture between priceless early American architecture, overcrowded slums right next to them and the pressure of the expanding educational institutions (Brown University and Rhode Island School of Design) called for an equal measure of bold planning and sensitive architectural treatment.

The study developed a system for rating historic architecture; techniques for integrating areas of historic architecture into proposed redevelopment programs; a master plan for the growth of College Hill, in which plans for the historic portions are embodied; and a comprehensive method of historic area preservation.

* A complete review of the Providence Renewal Program is being prepared by URA in a special brochure

After its distribution in 1959 the College Hill report received national acclaim.

The AIA at the 1960 convention cited the "Providence City Plan Commission for its leadership in effecting the College Hill Demonstration Grant Study whereby there has been held up for all to see the possibilities of restoring to a city some of the amenities of man's environment, lost for a while, but still recapturable by a resolute community."

Accomplishments

Several things have happened as a result of the study:

· Providence now has a formally designated historic district within which a Historic District Commission reviews all construction. In doing this the city is protecting the structures of special architectural and historic value and guiding the new ones so they are in harmony with the area. Good modern architecture is encouraged provided it respects its neighbors.

· A four-hundred-acre $20,000,000 East Side Renewal project is translating into action many of the recommendations of the study in regard to conservation, rehabilitation and spot clearance. Earlier projects in that section of the city were inactivated and after the conclusion of the College Hill Demonstration Grant were merged into one new project.

· The Preservation Society, the original group backing the study, has assumed the responsibility for publicity, educational and informational services, including the encouragement of private investment and consultant services to homeowners seeking advice on restoration.

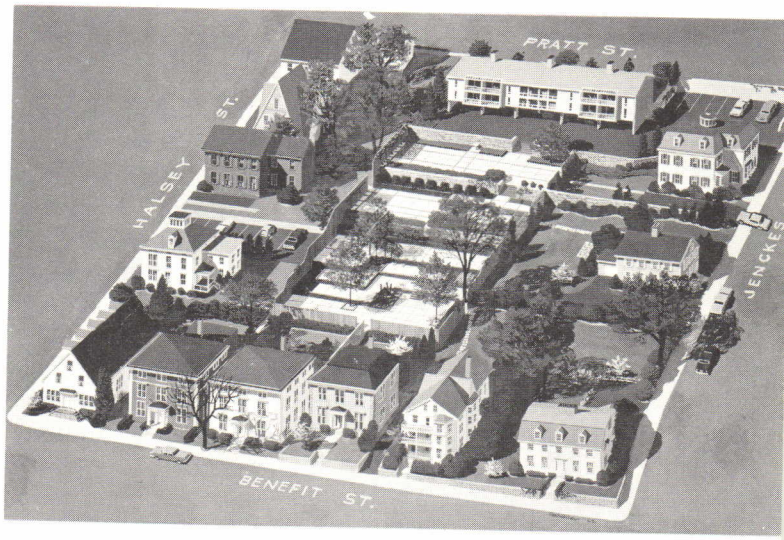
· Some fifty pre-1840 houses have been or are being restored. When this is done on a coordinated block basis and with a full range of professional advice, the results are startling. It may well be that the quality of in-town living here achieved surpasses that of the original development.

This process of private restoration is based, in large part, on the faith of the owners in the stability of the hill assured in turn by the prospect of public investment in the removal of blight. It can be seen then that if we have a sound plan, success can be triggered even in advance of urban renewal.

To sum up: An area master plan and architectural design plan are being carried out by urban renewal or public action and by the persuasion of individuals or private action in parallel fashion.

Of course, this cannot be done everywhere. College Hill has unusual qualities—history, prestige, a view and a strong group of people with roots who care about their neighborhood and the architectural heritage of the nation. However, without the special analysis of character—past, present and future—which was provided by this

M. RAYMOND BALL



College Hill restoration before and after

MARTIN ADLER

Fire escape

study, the public and private cooperation in serving the area would not have occurred.

The intimate scale of Rhode Island urban development tends to hide the fact that Providence is the second largest city in New England. It is, at the same time, the capital of the state, the county seat and the core of a metropolitan area containing about 800,000 persons.

The difficulties faced by a nineteenth century downtown area trying to survive in the twentieth century are many, but it was especially the loss of retail trade and hurricane-driven seawater flooding most of downtown in 1938 and 1954 which spurred the civic and business groups to face the challenge. The revitalization of the center of the city was the subject of the second Demonstration Grant Study. It may be well to step back for a moment in defining the problem.

Planning Philosophy

Probably the most difficult task for the urban planner in the complex civilization of American democracy is to secure genuine acceptance of a set of goals for and by the community. The formulation of these goals based on an inventory and analysis of all the facts and a clear determination of the direction toward which we wish to go is the first step. The results will vary according to our professional education, experience and personal philosophy. The goals of the architect-planner will be stated somewhat differently from those of the sociologist-planner, etc, but their possible solutions are shared by all. The real difficulty arises with the second step when planning goals are expanded into goals which the community can and will endorse. The planner competes for attention with national and international goals. Furthermore, the array of business and personal motivations shaping our lives has up to now left little time for consideration of carefully stated civic goals. Putting it another way: Everyone knows that the downtown areas of most cities are a mess but few really care. Insofar as success in downtown renewal depends on complete understanding and joint effort of business groups and government, planners must somehow obtain genuine acceptance by a wide range of people with a wide range of interests.

Goals

At this point it may be well to divide our goals into three groups:

Economics—1 The first group is based on our system of economics. The greatest concentration of activity develops the highest demand for land and creates its highest value, and this in turn supplies the highest tax yield to the community. A thriving downtown is one of the main factors supporting the economic health of a community.

A diverse number of proposals for downtown thus can be considered steps in one general direction: the strengthening of the downtown community's economic position within its area of dominance.

Order—2 The second group is based on a basic law of the universe—order. The city is the most complex entity of our civilization, and downtown, in turn, is the most complex part of the city. Without order, there is chaos and inefficiency. A number of major downtown planning goals are thus derived out of a desire for order. Without accessibility, downtown cannot be reached efficiently. Good internal circulation distributes the people and goods so vital to the life of downtown.

Westminster Street after Hurricane Carol's 1954 visit

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This should be done with a minimum of friction and by separating the different types of traffic as much as possible. Compactness is an indispensable asset of downtown. It enables one to reach any one part of downtown from any other part as a pedestrian. It is clear, after fifty years of motorization, that in all but the very largest cities the only way to preserve downtown is by re-emphasis on walking for the distribution of people.

And finally: Within a compact downtown area there should exist a functional separation of the major land-uses. Not only will this facilitate individual daily activities, many of which depend on a close interrelationship within certain uses, but a downtown grouping will permit a separate and more sensible approach to the problems of each sub-area.

Beauty—3 If order is a basic law of the universe, then beauty is a basic goal of man. Our senses are not only providing us with a continuous sequence of impressions, but each impression is given a stamp of approval or disapproval. What we smell, hear and see will displease or please us. The satisfaction of this urge to be pleased is a powerful motivation to man—however diffused this simple truth has become in our attitude toward the city. Advertising has used and spread this knowledge in its approach to the merchandising of almost every product. Downtown planning has rediscovered it in the last ten years. Translated into specific objectives, this means that the visual environment of downtown, as well as the aural and olfactory to a lesser extent, are fully as important as its functional efficiency. Very often the two are inseparable. The separation of uses into functional groups will also give visual identity to the parts within downtown. A hierarchy of scale from the monumental down to the smallest element, a clear order of movement with significant buildings in key places, a distinct variety of masses and colors within an accepted order, a contrast of texture and surface, of water and grass within a sea of stone—all of these design goals contribute to a pleasing visual environment. And if the city has strong ties to history and unique physical features are reflected in its development, these should be respected and enhanced.

Historic Continuity

In Providence, historic continuity, literally as well as in scale and emphasis, provides a living link with the past. The geographic setting of downtown Providence, at the head of Narragansett Bay and surrounded by several hills, plays a most important part in making the area distinctive and unique. In planning, great care must be taken not to lose sight of this factor and destroy or compromise this uniqueness.

It is obvious that all three groups of goals have a mutual interaction and that there are also inherent conflicts. The attainment of beauty in an old city—after a century of neglect—is far more difficult, than a similar goal for a new city. However, the wise protection and emphasis of the special character resulting from age can well aid in avoiding the esthetic sterility found in so many present-day redevelopment projects. Beauty does have a commercial cost. It is here that the planner has to perform his most difficult and challenging task. The importance of esthetics to the long-term success of a plan must be stated with such clarity and persuasion that the community understands and accepts this goal, even if it conflicts with short-term considerations.

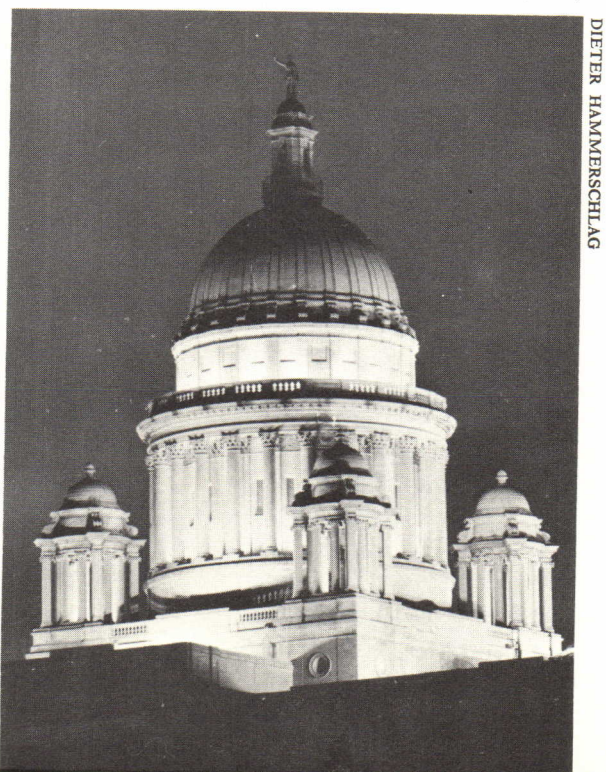
Downtown Study

In 1957 the City Plan Commission agreed to make a pilot "study of the extent to which the civic and business groups interested in the downtown area can participate practically and constructively with an official planning agency and city government in developing plans, policies and programs for the renewal of the downtown area."

The resulting study "Downtown Providence 1970," as an experiment in planning with citizen participation, has had three principal objectives:

To make a ten-year development plan for the downtown area of a medium-sized American city; to use the highest degree of cooperation between private citizens and public officials—in planning as well as implementation; and finally, to employ imaginative urban design in restoring a measure of order and beauty to the city's heart.

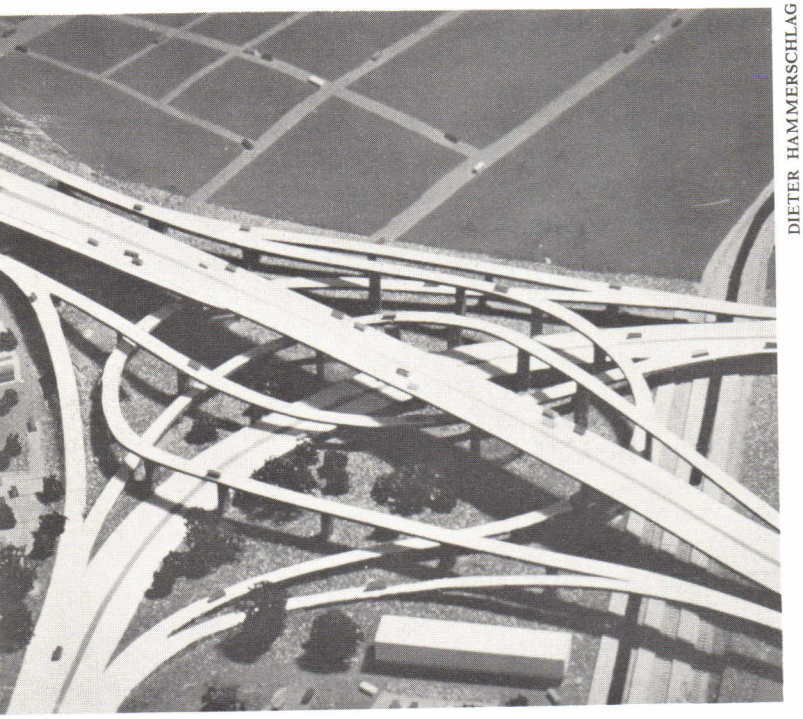
Capitol dome: McKim, Meade & White, architects (1900)



DIETER HAMMERSCHLAG

All three of these goals have been important in their contribution to the success of the project.

The Plan—1 The plan itself consists of a series of illustrated proposals for an all-inclusive renewal of the entire downtown area, much of it based on the success of the major proposal: the relocation of the New Haven Railroad tracks and terminal. They also include an interstate freeway interchange, a double opposing loop system of streets, a bus terminal, heliport and walkways, a



DIETER HAMMERSCHLAG

Downtown Freeway Interchange Center of RI system

complete parking system, a civic center, convention and sports center, some office buildings, a shopping mall and an in-town housing sector.

Citizen Participation—2 In order to fully test the second goal of the study, citizen participation, a most ambitious organizational framework was created. It consisted of a Master Plan Advisory Committee made up of members of the sponsoring organization (Downtown Business Coordinating Council), which had given $20,000 toward the study. In addition four functional citizen task forces in the field of human relations, public relations, design, and law and finance assisted the staff during the life of the project.

How well did this process work? The answer to this question was the primary reason for Federal participation in the project. The following observations are relevant:

· The remaking of the heart of an existing city over a period of years requires the complete cooperation of private interests with government.

· Urban planning is an involved process. In order to obtain what we call "consumer acceptance" for its end product, ie, a Downtown Master Plan, we have to find a way to convince the public of the need for and logic of the plan. The best method of accomplishing this goal is to secure close cooperation with one or several interested citizen groups or task forces, over the full length of the project. This avoids an all too common difficulty: the presentation of a plan, however, refined, to an indifferent public.

· Citizen participation, although it delays the technical work of the planners, can make valuable contributions in several ways. Experts can advise on matters which are beyond the experience or special abilities represented by the staff. Interested citizens can assure that plans are realistic, where, as it sometimes happens, the designers have been too ambitious.

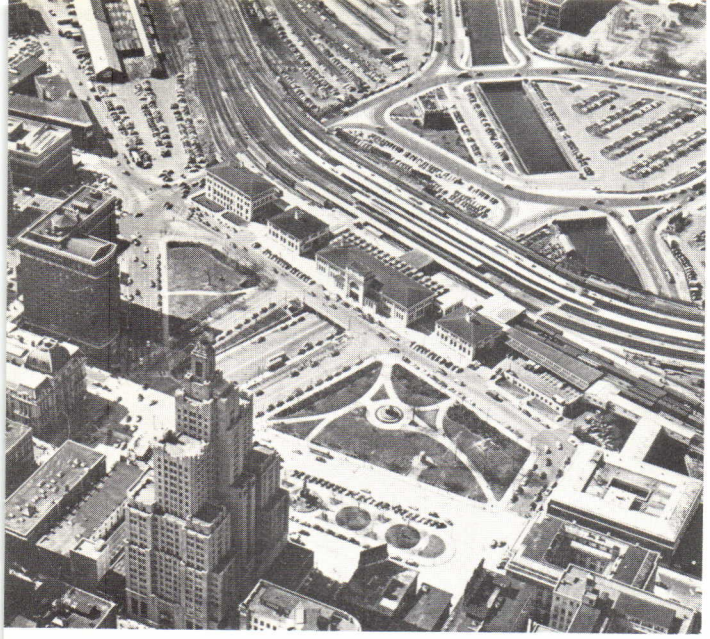
· The design process, which is at the heart of making a Master Plan, finds it difficult to accommodate group advice. The late A. Whitney Griswold of Yale University put it this way: "Could Hamlet have been written by a committee, or the Mona Lisa painted by a club? Could the New Testament have been composed as a conference report? Creative ideas do not spring from groups. They spring from individuals. The divine spark leaps from the finger of God to the finger of Adam. . . ."

This does not belittle the value of an advisory design group, but asserts that it is the exception rather than the rule, for such a group to come up with an original contribution.

The interest of the Legal and Financial Task Force in the implementation of the plan was so great, that it provided the nucleus of IMPACT, RI, which was incorporated seventeen days after the public presentation of the Master Plan.

This task force, of the four which assisted the project, illustrates the most important aspect of citizen participation. By creating a special group of local citizens of stature and influence, who were exposed to, and were indoctrinated in, the potential of urban planning, and who in turn gave freely of their own advice to this planning process, it was possible to make a smooth transition from a concept to the concrete realization of the project. Unquestionably, this is the most important positive result of this Demonstration Grant, as far as citizen participation is concerned.

Urban Design—3 The third goal, good design, is a vital and important objective of its own. The attainment of urban beauty attempted in this project was considered as an integral part of the task. These were the goals:



Downtown Providence today

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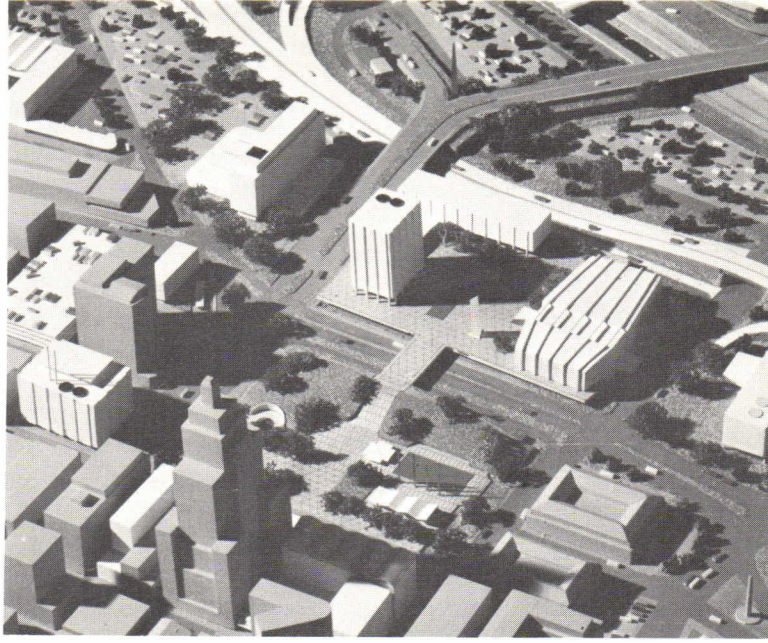
JERRY LANNON



Downtown Providence after railroad relocation, with Civic Center in place of New Haven terminal

· To achieve order and visual identity in the city, where there is chaos and sprawl today

· To satisfy a basic human urge for beauty through the design of buildings and open spaces and their relation to each other

· To provide a hierarchy of scale, a variety of masses and colors; and a contrast of textures and surfaces to create a pleasing visual environment

· To demonstrate that good design of and careful attention to signs, lighting, street furniture, paving and landscaping is essential

· To respect what is distinctive and unique, and to protect historical continuity where it exists.

Target Date

Finally, after much deliberation, 1970 was selected as the target date for completion of the plan. A ten-year period is sufficient to rebuild downtown, and yet it is short enough so that most of us expect to still be here and share in the pleasure of seeing it accomplished. Furthermore, rapid technological changes—in transportation, communications and construction—make detailed planning for periods of twenty-five to forty years rather hazardous.

In spite of the most comprehensive citizen participation and the most imaginative plan, there is always the danger that short-sighted, timid action will produce only parts of the plan and thereby sacrifice what is perhaps its greatest value, coordinated change. To be sure, half-a-loaf is indeed better than none, and limited redevelopment would unquestionably be welcome. The point is that a master plan is not completely comprehensible through its parts, however sound each part may be.

This places a special obligation on the governmental and private agencies involved, to take extreme care not to undermine the over-all structure of the plan by expedient or politically motivated decisions taken in the name of "practicality."

Accomplishments

Three years after the release of the plan, the following public and private action has taken place:

· Downtown declared a redevelopment area by the City Council in December 1960

· Resolution passed by the Council in March 1962 to do everything possible to carry out the objectives of the plan

· Weybosset Hill Redevelopment Project—submitted to URA October 1960, approved March 1961, sponsor selected January 1963, condemnation expected spring of 1964. Anticipated private investment $15,000,000, Federal grant $11,000,000

· Convention and Sports Center—part of Weybosset Hill project area, feasibility study 1962, separate application for planning funds under title 702 in preparation

· Railroad Relocation Project—submitted to URA May 1961, approved October 1961, condemnation expected in 1965, Federal Grant reserved $11,000,000

· I-95 Interchange—$10,000,000 approved by state and Federal governments November 1960, construction started May 1963, main line expected open for traffic by end of 1964

· Westminster Pedestrian Mall—$345,000, Mall Act passed by RI General Assembly May 1962, City Council approval August 1963, possible opening date, fall of 1964

· Dexter Manor—$3,000,000, 200-unit apartment building for the elderly built by Providence Housing Authority with Federal funds opened April 1962

· Interstate Bus Terminal—$1,000,000 private investment, opened April 1963

· Garage Program—Majestic Garage, 435 cars to be available spring 1964; Outlet Garage, 438 cars, $1,200,000, opened July 1963; Sheraton Garage, site cleared and available for ground-level parking August 1963, garage status uncertain.

This means that more than sixty per cent of the area is moving toward the 1970 goal. Those who are familiar with the intricacies of urban renewal in this country will appreciate the significance of this statement.

William L. Slayton, Federal Urban Renewal Commissioner, said: "The record of Providence moving forward with its plan for the renewal of the city core should be an inspiration to other cities afflicted with the myriad problems of blight and obsolescence."

Quality

We have the plan, and we are carrying it out. What about the third goal, quality? To obtain excellence of urban design is far more elusive and difficult than mere quantity of renewal. But without it we cannot justify the effort. The years and millions put into rebuilding the city will be tested in the future not by how long it took or how much it cost but simply how good it is.

It is much too early to make a conclusive statement about this, but several elements of the plan are far enough along toward realization to be examined.

On an equal basis with the economic, traffic and functional considerations that went into its making, a great deal of emphasis was placed on the perceptual framework.

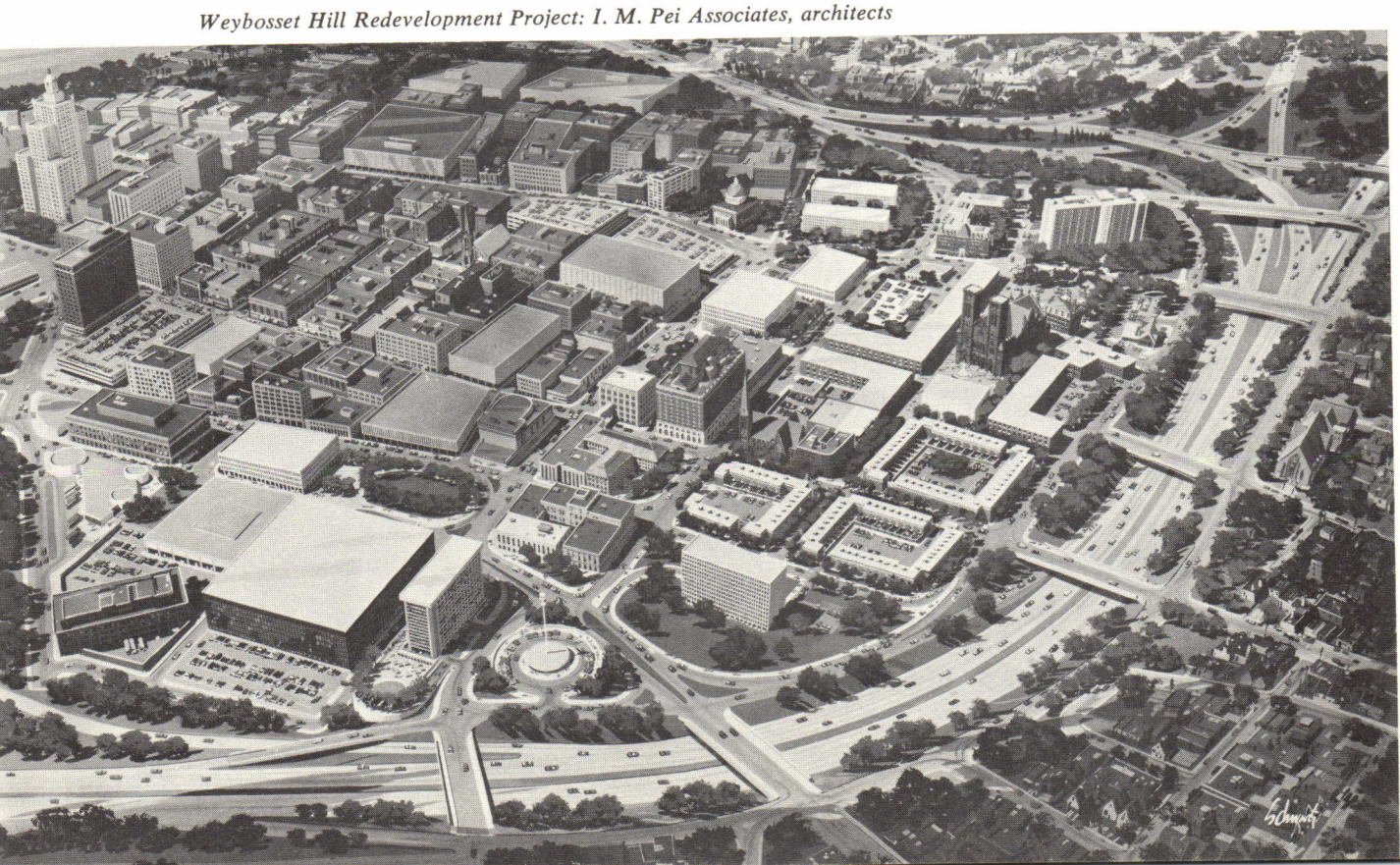
The form of the city can unfold meaningfully only if it is reinforced by a coherent system of streets, walkways, arcades, buildings, parks and squares; of open and closed spaces arranged in a proper sequence, creating a visual framework for all the significant focal points.

The most important of these organizing elements is the Westminster Mall. It bisects downtown for some 2,000 feet making an ideal pedestrian spine with the financial and office sector at the lower end, the retail in the middle and the new in-town housing at the upper end. The renewal project plan for that upper part of downtown called Weybosset Hill was prepared by I. M. Pei Associates during the last two years and is predicated entirely on the objectives outlined earlier in the Downtown Master Plan.

Weybosset Hill

The walkway system has been strengthened by a cross-axis, which intersects with the end of the pedestrian mall in Cathedral Square. The creation of this square in front of the Cathedral of Saints Peter and Paul, forming a pedestrian oasis, attractively paved and embellished with sculptures, a fountain and trees was considered by I. M. Pei as an exciting design opportunity. Much was done by the consultant to establish careful standards in

Weybosset Hill Redevelopment Project: I. M. Pei Associates, architects



Cathedral Square and Westminster Mall: I. M. Pei Associates, architects

the design of structures and the design of space between them. This sensitive treatment considerably enhanced the quality of the square beyond what was originally suggested in the master plan. The establishment of design objectives for each parcel in the redevelopment plan as a guide to the developer constitutes a new approach, that has been tried for the first time in Providence.

A sponsor has been committed to construct some $15,000,000 of housing and commercial buildings according to the plan. It appears that we will have an urban environment in Weybosset Hill in a few years, which is the product of city planning, redevelopment and architecture all in the right sequence and complementing each other. We are confident the result will be worthy of the effort.

Westminster Mall

A second element in "Downtown Providence 1970" deserves to be mentioned in answering the question of how good the end-product of all this planning will be. The Westminster Mall is also progressing from the planning stage to actual construction.

A completely different set of circumstances applies in this case. Where Weybosset Hill depends on much clearance of blighted buildings, leaving only a few large significant structures, and thus permits the creation of a new pattern, the Westminster Mall requires the opposite approach. All buildings along the street are left in place, the traffic is rerouted and the existing space is transformed into a space for people on foot. The long, narrow street is divided into a series of interconnected rectangular spaces, which are formal and precise in character. These are created by the trees which are planted at the intersections of streets. The other elements are few and simple. There are colored paving, flush brick islands around the trees and quarry tile rectangles on which the benches and display cases are placed. Specially designed lamp poles will project over the street and imply a roof.

During the last year the City Plan Commission and its engineering consultant have been developing working drawings and specifications for the Mall. The challenge here is to integrate all utility features so necessary in the city completely with the esthetic ones. This calls for new design solution in handling drainage inlets, hydrants, mail boxes—in fact all street furniture and the adaptation of planting islands and dishes to vaults, conduits, water mains and the countless other things under the surface.

Here there is another facet of urban design, minute review and deliberate redesign of the smallest elements in the city, in the scale of the individual on foot.

We hope to have this Mall established on the main shopping street of Providence by the fall of next year—without any compromise in quality. Extensive underground utility work will have to be completed first, but the downtown business community and the city administration are solidly behind the project. When it is built, a great step forward will have been accomplished in the revitalization of the retail core and the downtown area.

Providence, one of the oldest cities of its size in the country, will be the only one with a pedestrian promenade of this significance.

Conclusion

It seems that there is a factor of success which is vital to the rebuilding of a city, but which has often been missing. Between the broad guidance provided by the land-use and circulation plan for the city as a whole and the individual redevelopment projects there has to be a design-oriented, three-dimensional image. This may not be so important in the gray areas of the city, but it is essential for those parts of the city that are in any way "special." In the case of College Hill and downtown Providence the two Demonstration Grants gave us the means to trace the character, establish the methods and develop functional and design goals at the highest potential within the city's reach.

If the promise thus held up is not compromised, we will be able to say in 1970, not what it cost or how long it took, but that it is good. ◄

Cranbrook 1963

THE EIGHTH ANNUAL TEACHER SEMINAR, sponsored by The American Institute of Architects and the Association of Collegiate Schools of Architecture, was held at the Cranbrook Academy of Art from June 9 through June 19 and attended by fifty-four teachers of architecture from schools in the United States and Canada. The subject under discussion was (for the first time in the Seminar's history) "The Teaching of Architecture"; half-a-dozen educational psychologists as well as educators and practicing architects were among the guest speakers.

During the eight full working days of the Seminar, more than 200,000 words were read or spoken in the general sessions alone. Most of those which were spoken, as distinct from those which had already been committed to the typed page, were recorded on electronic tape. The editing of such abundance presented certain problems.

However, the problems were simplified, in a strictly relative sense, by the decision to give to the papers delivered by the guest speakers the permanent form of a book.* This suggested that whatever appeared here should be based mainly upon the recorded discussions.

* To be published by the Commission on Education of the AIA Department of Education during the winter

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Wayne State University
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College of Environmental Design
University of California
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Dept of City and Regional Planning
College of Architecture
Cornell University
David R. Krathwohl, PhD, *Chairman, Psychological Foundations of Education*
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Donald W. MacKinnon, PhD, *Director, Institute of Personality Assessment and Research*
University of California
Wilbert J. McKeachie, PhD, *Head Department of Psychology*
University of Michigan
Philip J. Meathe AIA
President, Detroit Chapter AIA
Richard Myrick, PhD, *Research Psychologist*
The George Washington University
Walter A. Netsch Jr, AIA
Skidmore, Owings & Merrill
Chicago, Illinois
Edward L. Walker, PhD, *Professor*
Department of Psychology
University of Michigan
Philip Will Jr, FAIA
Perkins & Will
Chicago, Illinois
Karel Yasko AIA, *Assistant Commissioner for Design and Construction*
General Services Administration
Washington, DC

Teacher Participants
Robert K. Adams
University of Illinois, Navy Pier
John Andrews
University of Toronto
Paul Charles Bailly
University of Southern California
Richard E. Baringer
Columbia University
Charles G. Bartell
University of Idaho
Curtis Besinger
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University of Washington
Keith H. Christensen
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Jeffrey Cook
Arizona State University
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Syracuse University
Charles W. DeKovic
Iowa State University

An Anthology of the AIA-ACSA Teacher Seminar

EDITED BY MARCUS WHIFFEN

Commission on Education, Donald Q. Faragher FAIA, Chairman
Committee on AIA-ACSA Teacher Seminar, Buford L. Pickens AIA, Chairman

Most of those who attended the Seminar probably find that their memories of those discussions tend to group themselves under certain key words or concepts. It seemed possible that a treatment of the material which took that into account would prove an appropriate means of conveying something of their range and tone to those who were not there. Hence this Anthology, as it has been called. Perhaps it is not absolutely the right word, insofar as it may suggest that all—and only—the best things have been gathered into it. Glossary was the first term that came to mind for what was planned, but it did not really fit. (And Cranbrook is, after all, in Bloomfield Hills.) Those who may feel that their most profound observations or wittiest remarks have been unaccountably left out are asked to consider two things. The first is that this anthologist was sometimes more concerned about the shape of the bunch than the perfection of the individual blooms. The second is that the tape-recorder, though quite selective, has little taste; it greatly prefers the casual cough, the passing plane or—above all—the sound of ashes being knocked out of a pipe to the spoken word.

The greater part of what follows, then, has been transcribed from the tapes of the discussions. But not all, for in order to clarify the subject in some instances and in others to introduce a sub-

Louis J. Dellaport
Idaho State College

A. J. Diamond
University of Pennsylvania

J. Michael Everett
Ohio University

W. Lawrence Garvin
Clemson College

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Texas Technological College

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Sim Van der Ryn
University of California

G. K. Vetter
University of Colorado

Stuart A. Wilson
McGill University

Observer

John W. Wade
Tuskegee Institute

ject of importance about which the tapes, for one reason or another, did not have much to offer, some brief excerpts from the papers have been included too. What comes from the taped record is distinguished from these by the use of quotation marks. In recognition of the fact that the spoken word is no less expressive than the written, though different from it, the editing has been kept to a minimum, usually amounting at most to the insertion of consistent punctuation. Finally, it should be noted that although they may sometimes be read as a dialogue, the remarks quoted under any one subject heading, with a few exceptions, were not made in direct answer to one another, or necessarily in the order in which they appear.

Angry Young Man: see *Young Man, Angry*

Architects

Our study was of three nationwide samples of architects. The first of these groups, which we have called Architects I, is comprised of forty architects, each of whom had been nominated by a panel of professors of architecture at the University of California for the unusual creativeness with which they practice architecture. They were forty out of a larger sample of sixty-four invited to submit themselves to intensive study in our Institute at Berkeley. They came, ten at a time, spending three days with us, participating in a series of experiments, psychological tests and interviews covering their life histories and professional careers. . . . To sample the profession more widely, Dr Wallace B. Hall, co-director of the study, searched the "Directory of Architects" (1955) for two additional samples, both of which would match the forty highly creative individuals of Architects I with respect to age and geographic location of practice. The first of these supplementary samples, which we have distinguished as Architects II, is composed of forty-three architects, each of whom met still another requirement, namely, that he had had at least two years of work experience and association with one of the originally nominated creative architects. The other additional sample, which I shall label Architects III, is composed of forty-one architects none of whom had ever worked with any of the nominated creative architects.—MACKINNON

"All Architects, I, II and III, tend to have a very good opinion of themselves. When we asked them to describe themselves by checking adjectives most salient out of a list of three hundred adjectives, all architects, Architects I, II and III, checked fourteen adjectives; or at least fourteen adjectives are checked by eighty per cent or more of all the architects in our three samples. Now the adjectives that are checked are these: they all claimed to be imaginative, active, honest, idealistic, civilized, conscientious, intelligent, reasonable, fair-minded, capable, cooperative, friendly, healthy and serious. . . . What I want to report is the adjective that is checked most often as self-descriptive by Architects I is the adjective imaginative, the adjective checked most often by Architects II is civilized, and the adjective checked most often by Architects III is conscientious."—MACKINNON

Breadth

"The one variable that turns up most often as closely related to success in teaching is a variable which is variously expressed by the students; it's the breadth of the man, what their perception is of how well educated, how broadly educated he is, and this has a very high correlation with his success. . . . Don't look at it as a diversion to point out a relationship between what you're really talking about and something which might never occur to the student; *you* see the relationship. Maybe this is one of your major functions as a teacher—to point out a relationship which the student wouldn't be able to see, is not mature enough to see, but you can tell him it's there, or introduce him to the fact, so that he can begin to look for it."—WALKER

Cleavage

"It's harder to straddle a cleavage than it is a fence."—CARVER

Computer

"Somebody said that he was not optimistic about the use of computers, and there was a chuckle through the audience. I *am* optimistic, and I feel obliged to answer that point. . . . Other people who are involved in decision theory find that it gets to be a kind of handy tool they can't do without even for some fairly simple decisions. We make very complicated ones without the computer."—SPRING

Creativity

The key word in the definition of design, it seems to me, is *creative*. Routine or standard solutions to problems, we do not usually think of as design. Finding a quotient by dividing one number into another is not customarily termed design or creative. What we are concerned with as practicing designers is becoming more creative. As design educators we are concerned with developing creativity on the part of students. We are not alone in this quest. Many in other fields are searching for the keys to creativity also. A pertinent passage occurred recently in an editorial in *Science* (October 12, 1962):

The imaginative and original mind need not be overawed by the imposing body of present

knowledge or by the complex and costly paraphernalia which today surrounds much of scientific activity. The great shortage in science now is not opportunity, manpower, money or laboratory space. What is really needed is more of that healthy skepticism which generates the key idea—the liberating concept.

Here the editor was describing a recent, extremely important breakthrough in the field of chemistry. That is unimportant. The breakthrough came because of a creative act. A man had a liberating concept which permitted him to see

Speakers Esherick and Krathwohl al fresco

something readily perceivable that no one else had seen before. He looked at a problem differently, and a solution became apparent. The question we are all concerned with is how to find a way to the liberating concept and how to help others find the way also.—JONES

"One of the barriers to creativity is a tendency to be satisfied with a solution which is just different but which doesn't really accomplish anything."—MCKEACHIE

"It seems to me that the architect likes to think that he is engaging in creativity all the time. But he isn't; he's making simple analytical decisions that have nothing to do with creativity ninety per cent of the time he's in operation, or more. And this kind of decision-making can be done by tools, and the architect can conserve his energies and his God-given creative talents for the part of the operation that really counts."—MACKESEY

"The end product towards which we have directed our design sequence is an unknown quality called creativity. Yet all the evidence seems to indicate that this is precisely the end that any formal educational process cannot insure or predict. MacKinnon has studied creativity from the normative view; until we have a substantive description of the properties of the creative process we cannot predict with any certainty the instructional means which will stimulate the creative process. Our obsession with teaching creativity in design, without the means to match this goal, has been bought at the expense of teaching the other 99.9 per cent of our students anything useful that might result in better architects and higher levels of architectural professional competence. Frank Lloyd Wright made abundantly clear what he thought of architectural education for the likes of him; instead of heeding his advice we have put our faith in a curriculum which attempts to do just that which it cannot do—produce the creative or insure the production of the creative or intuitive genius."—VAN DER RYN

Critique

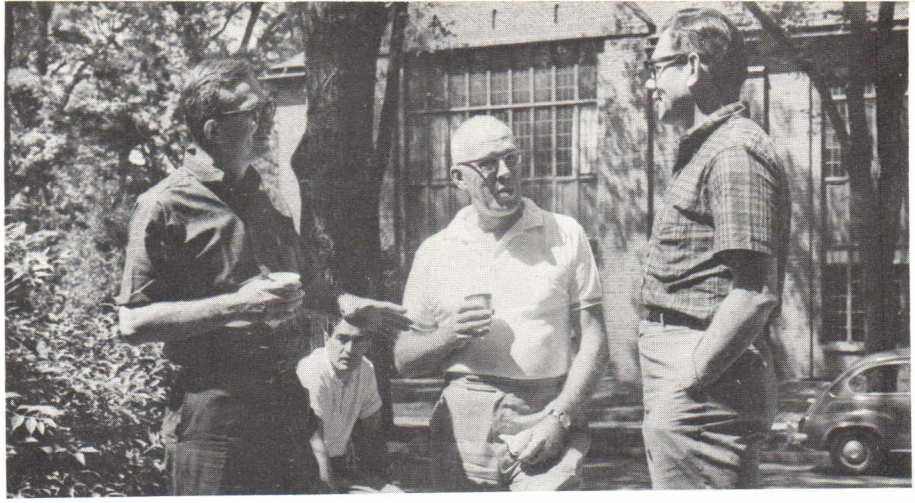
"It seems to me that many of the goals and purposes of the critique are not addressed to the student particularly; they are addressed to other aspects—formation of criteria. If you cannot state your criteria clearly then the best you can do is to get some experts and show it to them and say: "Experts, is this good or bad?" If they all say it's good, then it's good; that's all there is to it. It doesn't make any difference whether somebody can specify why it's good or not. If they say it's bad, then it's bad. That's all there is to it because these are the experts, this is the criterion, that's what you mean."—WALKER

Design

I feel that the kind of systematic approach to design processes that is given by decision theory has major implications for architectural education. By defining the design process in an orderly way and identifying its essential elements and characteristics, the situation the student is faced with becomes clearer to him. The nature of the problem is clarified as are the criteria for a good solution. The kinds of steps that must be taken to solve the problem are made manifest. The kinds of behavior as a decision-maker and designer that will result in a satisfactory solution to the problem become clearly indicated. It not only becomes possible to learn design, it becomes possible to teach it.—JONES

"We need to bear in mind that the psychologists who come to us look rather admiringly on this process; they say we have something rather unique as a teaching resource and yet I share, I think, the suspicion that the design laboratory is not a particularly effective use of the students' time; we don't seem to get as much mileage out of all those hours spent as other people seem to get out of the other hours spent in other disciplines."—GARVIN

"In preparation for this meeting I thought I'd get the catalog of the College of Environmental



Coffee-break discussion: Participants Krider, Sweet, and Olencki

Design and just see what the sequence of courses was for the architectural student, and I was just appalled to find that the architectural student has one semester Design 1, then Design 2, then Design 3, then Design 4, then Design 5 and on and on and on. Maybe it takes this much time and you have to be this repetitive, but I rather doubt it; I think there is a tendency for all of us academicians to highly perfect our own enterprise and to think that this is terribly important."—MACKINNON

Dog

"It's a little like the dog in the modern house; he doesn't know whether he's inside or outside."—MYRICK

"There is a question which often occurs to me at these seminars, the question whether you can really teach old dogs to do new tricks."—PICKENS

Drop-outs

"We all know about drop-outs . . . and these drop-outs are not the slobs. The tragedy—if it is a tragedy, and I'm not sure that it is—the fact is that many of them are top-flight students who are simply bored to death by the kind of exposure that they get in the university."—MACKESEY

Education, *architectural*

The current rate of technological progress is such as to be the despair of educators with the trade school approach. My own professional education acquired during the late 'twenties was supposed to be one of the best then available. Yet, except for history, few of the facts I was taught are still true. It leads me to the conclusion that the only real value of true education lies in that which remains after one has forgotten all that one once knew.—WILL

"I happened to return to school for a year after twenty-five years away from that same school—I'm sure I got what was considered a very good architectural education at that time—and things had changed immeasurably, and immeasurably for the better. It's my firm belief—again I speak as more of a practitioner than a teacher—that architectural education has improved probably more rapidly than the architectural profession."—CARVER

Effort

"This brings up an interesting question that I have pondered: Which is better, from the standpoint of training an architect? When he has made a good effort and failed, should he be rewarded for his effort? This is related to questions like: What happens in real life when he is practicing? He has spent a long time working on a building; it has turned out to be a turkey; but he has put in a lot of good effort."—MYRICK

Environmental Design

In past writings I have attempted to challenge my colleagues (including those who teach) by defining the mission of the profession of architecture: to assume responsibility for nothing less than a nation's man-made physical environment, an environment in harmony with the aspirations of man. This is stirring language, and I hope has helped to cause some to question the meaning and purpose of their work. . . . Mature reflection suggests that the key concepts to a proper definition of a mission for architects derive from the words *design* and *space*. These are meaningful words and their understanding has always been the core of architecture. Perhaps we should be more modest and simply claim that our professional concern is for *the shaping, finishing, equipping and complete environmental design of space to the use and delight of man.*—WILL

"I don't believe in Mr Will's conception of the architect as next to God; he's one of the *many* kinds of environment designers."—VAN DER RYN

Ether Professor

"It's like the ether theory in physics. You see, you spend a hundred years building up a very complicated model, and you have a whole series of professors whose vested interest is in maintain-

ing this model, and then what happens? A guy like Einstein comes along and says: 'Boys, it's very simple.' Now where are the ether professors of physics today? I for one don't want to be an ether professor of architecture; I for one am rejecting all the nonsense, at least in words, that people tend to use—sensitivity, articulation, positive and negative space. That's the ether theory of architecture, and it's not for me."—VAN DER RYN

Examination

"The examination gives feedback of *two* kinds. If the examination is conducted correctly it's feedback to the student in that you ask him to do something which he is now supposed to be able to do, and if he does not do it, you mark it, you explain what's wrong, you give him a low grade. It tells him your judgment of the quality of what he has done, and if you feed the exam back as you should to the student so that he really knows why he got a C on this, then he has a corrective feedback on his behavior. It is also feedback to *you,* because it tells you how well you have done or how well you have succeeded in accomplishing what you set out to do."—WALKER

Experimentation

The terms "experimentation and research" mean many things to different people. To some they mean trying something out to see how well they like it. To a scientist they portray careful work and precise methodology. "Research in education" too often takes on the connotation of the former rather than the latter. There is considerable difference between merely trying out a way of teaching and observing its effect and the careful comparison of teaching methods we expect in research. . . . Education has been trying things out and discarding old methods and materials for years on an informal basis.—KRATHWOHL

"It's not that I dislike experiments; it's that I dislike calling things experiments which are not experiments. This kind of misuse of words results in a meaningless language, and communication becomes difficult at best. As educators we have been 'experimenters' for quite a long time. . . . The prime example of experiment in architectural education was the great revolution in methods of architectural education that took place back in the 'thirties. So-called antiquated methods were thrown out and great improvements were made and the millennium was to arrive soon if not instantly. Now, twenty-five years later, give or take a few years, we are beginning to realize the results of the numerous experiments that followed in the wake of this revolution. Obviously the millennium has not arrived, and the sweet dream has gone sour."—BESINGER

Feedback

There is an early experiment in the literature of psychology carried out by Edward Thorndike. He asked students to draw three-inch lines, freehand. One group drew many such lines without feedback. They did not improve. Another group was informed, after each line was drawn, exactly how long it was. This group progressed steadily toward high accuracy of drawing lines exactly three inches long. The illustration is trivial, the principle is not. Fastest improvement in the performance of the student occurs when feedback on the quality of his work is immediate and continuous. The longer the feedback is delayed, the slower the improvement.—WALKER

"In a lot of critiques there's plenty of feedback, but students don't really know what the goal is that they're seeking."—VAN DER RYN

Fence: see *Cleavage*

Flexibility

The kind of systematic approach that I have suggested has great flexibility. It requires identification and comprehension of all of the elements that are relevant to a particular design problem. Each problem is unique, and a different outline must be developed for each. Many important considerations and pieces of information that are ordinarily left out of the design process will be brought into it thereby.—JONES

"I think the point is that if you are setting up any educational program you have to make some kinds of generalizations, the best generalizations you can, in systems and requirements. But there are exceptions which do come along, and what I was saying between the lines of my paper certainly, I hope, was that you ought to be very flexible with respect to the requirements you lay down, and if the student is obviously the exception you don't force him into certain kinds of group activities or the usual requirements; you give him individual treatment. What I think one has to do is to be flexible with respect to the generalizations which one makes and realize that there will always be the exception. In this regard I must say that I had somewhat ambivalent feelings about Frank Lloyd Wright not participating in our studies. . . . It would have been a perfectly wonderful thing to have him come, although I am convinced that the very first evening he would have said: 'To hell with this!' and walked out; and all the architects, although they are quite independent spirits in most situations, probably would have walked out with him. Furthermore, if we had had an opportunity to study him, particularly given his age at the time, we couldn't have treated his results with the others."—MACKINNON

Goals

The primary task facing architectural educators today is that of defining the design process. We must find an orderly and systematic way of establishing what the process is, what it consists of, what it includes and what its limits are. To do this, we first have to describe the process that actually exists and find a way of representing it schematically. Then we must determine what the goals of the process are. It either has goals or it is an aimless activity. In establishing its goals we just possibly may end up redefining the scope of architecture. Redefining may be a generous word, since it presupposes a definition exists. When we have identified goals we will be able to establish criteria. We will be able to determine whether or not goals are being accomplished in a given instance. A basis for the evaluation of solutions will exist. Even more important, we will be able to specify successful ways of performing the process.—JONES

"The point that I think we are weakest in is that in teaching design, either basic or architectural in the upper division, we need to develop much better articulated goals for what each individual critic is trying to achieve. Often we give a problem, then we give another problem, and we have our juries and we just keep bumbling along. Each critic I would think would be much more useful if, in presenting his material, he outlined at the beginning the goal he was trying to achieve to the students—and not only to design a bus station or a house or a church but also achieve some other goal which was very vital in his own personal interest."—EVERETT

"I was trying to stay away from goals for a bit, because that's *your* problem."—WALKER

Grades

"The thing to do is to administer your grades in such a way that you reward those who are doing the things that your curriculum is set up to achieve."—MCKEACHIE

"With respect to high school grades—and this has implications, I think, for your admission of students—high school grades showed no correlation at all with the adjudged creativeness of the architects. It has been also characteristic in our social sciences to find that college grades do not correlate significantly with the rated creativity. But the one exception, interestingly enough, is the sample of architects; here, there was a low but nevertheless positive correlation between course grades and rated creativity—a correlation of plus .27, which is not high but nevertheless significant. Now this raises an interesting question: Why do we get this correlation with architects but not with engineers or research workers or others? Is it that there are requirements laid down for students undergoing architectural training that force them to show some measure of creativity and that there is an awareness of this on the part of the instructor, so that you have got this low but nevertheless positive correlation? . . . When people come to us for assessment we don't know what the outside judgment is, but usually there's a pretty good correlation between our readings of our subjects' originality and creativity and that of the outside experts. Yet in the case of engineering students our rating of their creativity after a weekend of assessment was correlated zero with the professors' rating of their creativity. And so this raises an interesting question: What are the professors responding to when they rate their engineering students as being creative? The only thing that these professors' ratings corresponded with were the grades which the engineering students had received. So it looks as if the engineering professor is saying to himself: 'The student who gets good grades is a creative student.' "—MACKINNON

"One of the dangers we get into in grading is that we want to be fair about our grades. Now, with a good Calvinist background I don't want to say that you shouldn't be fair, but I would say that it is probably not so important to be fair in the absolute sense as that the students should think that you are grading them on the things that you want to achieve. I don't think we can grade things like creativity very objectively . . . but I don't think this is really as important as that the students should think that this is what you are trying to achieve. . . . I put much more emphasis upon grades in terms of their effect upon the students' attitudes and the students' learning than I would upon grades as evaluative devices which are perfectly accurate representations of what each student achieves. I wouldn't worry whether they are accurate; I would worry much more about what the students think about them and how they are affecting their attitudes."—MCKEACHIE

Ideas

"To hell with going on to six or seven years and you're going to teach them more structures and you're going to teach them more this and more that, and get back to that very basic fundamental which the English did and that Hutchins talks about and that makes man the great god he is—his ability to come up with ideas."—YASKO

"As a practitioner I'm tempted to agree with Mr Meathe when he suggested that the schools have not produced one idea which is important to architecture. As a teacher, I am tempted to ask Mr Meathe the same question. The only idea that I can see that architecture has come up with

in the last fifteen years is the sort of infamous coast-to-coast roast of our glass curtain-wall building. And all these things come about because we do not deal in ideas or methods which have anything to do with the realities or potentials of practice today; and this is all because we are wedded to the genius model of design education, which says: 'Deliver to the student the minimum of information, the maximum of unprogrammed time, and pray.' "—VAN DER RYN

Incomplete Dynamic

"We have attributed to the Greeks at a certain period of time a kind of perfection. In fact it wasn't a kind of perfection, it was an incomplete one; and this kind of perfection in any case is no good for us now. What we want is an incomplete dynamic."—DIAMOND

"This matter of the incomplete dynamic. I think this is a very important point that you made and it is something which I didn't report this morning, but we have many tests which show quite clearly that the creative individual is attracted to the incomplete, that which is in imbalance, that which is complexedly asymmetrical, just because it does create tension. It isn't that he likes disorder, but the disorder challenges him to do something about it, and without this kind of incompleteness one doesn't have the kind of enduring motivations which are so characteristic of the highly creative individual."—MACKINNON

Information Overload

A number of psychologists have studied the human as an information processing system. One problem within this area is the problem of "information overload."—WALKER

"I think we reached the information input overload somewhere around 1850."—JONES

Intrinsic Reward

"The basis of the intrinsic reward is that it's tied up with the problem of evaluation. In other words, what you are trying to do is trying to make a task which can be evaluated by the person who is doing it."—MYRICK

Intuition

"If we study, as we have, outstanding research scientists, if we study mathematicians, they also tend to be intuitive types. Scientists make their hypotheses, check out their hypotheses in experimentation, and therefore I don't think you can excuse the architect for not doing more basic research because he is an intuitive sort of person. I think you are not going to develop any kinds of hypotheses worth testing in any kind of research without having a good deal of intuition."—MACKINNON

"I hate to call it intuitive; there is nothing like that, you know. There is certainly intuition after you have gone through a very lengthy process of study, a very lengthy and deep study of the matter, when all of a sudden things begin to shape up in your view without necessitating the process of analysis—but certainly not before. There is no way to teach structures but to really get down to facts and analyze; I know that there is no emotional quality involved at all."—SEELER

"Intuition . . . I think of an individual being able to make leaps from here to there, without being able to specify the actual steps, the actual bases, for them which he makes. He is always oriented to something beyond whatever is presented, to something behind this, or beyond it—its implications and its possibilities. I think that what is involved is that the highly creative individual is the individual who has easier communication with the less conscious levels of the mind, one might even say unconscious levels of the mind. In other words the intuitive individual is an individual who is not so restricted, not so hindered, not so anxious, not so afraid of being wrong."—MACKINNON

Moderator Mackesey

Jury

"Juries have a quality that I thought was great, in having the practicing architect in them to be a member of this team who are criticizing these projects, because I have heard that students tend to make this distinction between teachers and practitioners: 'This is what the teacher said. When I get out and become an architect (which *he* didn't), I can do this, you know.' Well, here is a practitioner who came in and criticized exactly the same things as the instructor had been criticizing, so that it served to reinforce the instructor's authority on these issues."—WALKER

At the present we give the student problems which we are incapable of defining or evaluating. We cannot specify in advance what the characteristics of a good solution will be. We say to the student and to each other that while we cannot tell him what a good solution will be like, if he

comes up with one, we will be able to recognize it. When the solutions are in and we have judged them, we cannot articulate to the student, or for that matter, even to the other members of the jury, in any really satisfactory way what the criteria were for concluding that the solution was good, bad or indifferent. We frequently end up in a shouting contest as though goodness or badness depended upon which verdict was said either the most loudly or the most emotionally.—JONES

"In most of these situations it would seem apparent to me that the instructors are on trial as well as the student. The student is representing himself and he is also representing somebody on the staff and possibly somebody sitting on that jury whom he has modeled himself after; and so the critique that is operating here is not that you're criticizing the student but also really the instructor at the same time."—WALKER

Kindergartners

"Even if you could teach design to kindergartners, this may not be the best place to begin it."—MCKEACHIE

Kinds of Thinking

"The distinction has been made that there are two kinds of thinking, convergent and divergent thinking; convergent thinking focuses upon a specific problem, keeping wholly to those things that appear logically to be related to the solution, whereas the divergent thinker on the other hand allows his mind to wander more freely, with greater fluency of association, bringing in even the most fantastic of ideas as it might seem in the first instant."—MACKINNON

Knowledge

"There is a correlation between knowledge and creativity, and in this regard it is interesting to compare the record of architectural education and education in the physical sciences. While none of the acknowledged creative geniuses of our profession—Wright, Corbu, Aalto, Mies or Kahn—were nurtured by formal architectural education (except for, maybe, Kahn—and it looks as though it took him thirty years to recover from it before he could do anything), all the Nobel laureates at Berkeley, for example, are products of formal scientific education; and the Nobel prize is probably a better index of creativity in science than MacKinnon's Group I is a measure of creativity in architecture. Yet the interesting thing is that the object in the sciences has not been to train the rare creative genius but rather to impart a body of information, and tools to manipulate this information, without which creativity is impossible."
—VAN DER RYN

Lecture

Some studies have not found significant differences in effectiveness between lecture and discussion. Those studies which have found differences, however, make surprisingly good sense. Two studies have found differences favoring the lecture method. Both of these used tests of *knowledge of subject matter*. Six experiments, however, have found significant differences favoring discussion over lecture. All six used measures other than final examinations measuring knowledge.—MCKEACHIE

"What I was trying to say was that a lecture is specially useful for particular kinds of goals—like developing concepts, for instance, talking about things that are not available on paper yet, shaping attitudes, or communicating interest and excitement. . . . The things you are trying to do in a lecture are not exactly what appears on the surface, which is the transmission of this information out of my notes into your notes or into your head; it has a more complex function."—WALKER

Literacy

"The man who graduates from college at the present time is supposed to be literate in English, he's supposed to be literate in math; but there's no requirement that he be literate in the visual arts—that he learn to see with his eyes—and to me this should be a basic requirement for any degree which presumes to produce an educated man in any field. Hopefully one day the universities will make this a required part of their curriculum, along with English and math; and when that happens maybe we'll have a public."
—WILL

Motivation

"In good education theory they always begin on page one by telling you: 'The student is already motivated.' And this isn't a bad starting point; you assume he is already motivated, and you might ask yourself: 'Maybe I've done something that has somehow wrecked his motivation?' And you might ask yourself: 'How can I give him back his motivation?' "—MYRICK

The work of Atkinson at Michigan has been particularly helpful in understanding motivation for success. His theory and research suggest that maximal motivation is produced when the probability of success at a task is about fifty-fifty. This would suggest that assignments and critiques should be continually paced to the student's background and ability. Giving students very difficult or complex problems early in learning may thus be detrimental to motivation and (from other evidence) to learning as well.—MCKEACHIE

"In architecture you have a most unique opportunity and that is that when people do a design problem, then you've got a great big bulletin board about fifty yards long. You put everybody's drawings up on it, and these things then are available to all to see. Now compare this with, say, a department of history. Somebody writes a long paper that's a big effort, and what happens is that it lands in a big pile on a desk and it receives no publicity and no public acclaim or disclaim. So you have a magnificent opportunity here in the public aspect of your work. I might say that once I attempted to teach psychology this way, in which people did experiments and I said: 'Now I want you to draw them up as if you were an architect, and we'll post them on the board.' And this was marvelous for increasing enrollment in my section, because the students a year behind thought: 'Oh what interesting things they do in that class!' This is one of the real built-in motivators you have in the field of architecture."—MYRICK

Notes

I believe rather firmly that when an audience is required to take notes on what a lecturer is saying, it is a sure sign that he is subjecting them to an informational input overload.—WALKER

Objectives

There is no simple answer to the question, "What teaching method is best?" As this research indicates, we have to counter the question with "Best for what?" If our most important objective is transmitting information, then we should probably use lectures or reading assignments rather than discussion. If, on the other hand, we are primarily concerned about teaching creative thinking, attitudes, values or other complex objectives, I'd bet on discussion as the method of choice, and in architecture values and creativity seem to be particularly important.—MCKEACHIE

"The role of setting clear objectives is part of the design process. I think we have to realize that this can be done, and has been done, without any kind of system at all, and our best people have always done this. The only important thing about the system is that you can't use the system without this step; so when you go through this systematic analysis you are obliged to set objectives, which you can avoid otherwise. . . . One of the by-products of systematic analysis is forcing a person to think clearly about his problem, and it obviously follows then, to set objectives."—SPRING

"It was a very good point that Spring made about the fact that we have been able to set objectives in the past and make some attempt, at any rate, to accomplish them without assistance. The point of the system is that as our problems become more and more complex the likelihood of this being accomplished is diminishing, and as a result creative work seems to be relegated only to the smaller-scale problems."—JONES

Orientation

"I think that maybe it is important that we become problem solving-oriented rather than solution-oriented."—TANIGUCHI

Participative Teaching

The participative teacher assumes that the student has somewhere within him a small spark which if properly fanned will reach the full flame of a creative architect. Further, he thinks that external control and the threat of punishment are not very effective means for developing an architect. The participative teacher considers as his most valuable asset the student's own motivation to do a good job. This motivation he rarely questions. Even in a situation where his student repeatedly fails to demonstrate any dedication to his work, the participative teacher is likely to ask himself, "What is wrong with my relationship with this student? What is there in this teaching relationship that prevents this student from unleashing the full weight of his enthusiasm upon his work?" The participative teacher assumes that his student is eager to be responsible for his own work and wants to do a good job. He does not need an outside authority to force him to do his best.—MYRICK

"Some people feel uneasy when handled in a participative manner; they've got terrific anxiety. I've been a participative teacher and the students have a way of saying: 'What's going on around here?' . . . Some of you might go along with the participative method, and you wouldn't be happy using it, and so on that ground it would break down. Secondly, and especially this is true if you happen to be a fairly junior person in your department, let me give you a word of warning. If you feel that the rest of your department is being handled along traditional lines, for heaven's sakes don't go in there with big participative push. You'll be setting up a little cell, a little revolutionary cell different from everybody else; and the students will like it, and they will spread the word to the other members of the faculty; the Dean will hear about it; he will ask you: 'What are you doing?' The environment where you use this method is very important, and the nature of your personality, the nature of the students, the kind of material, how much substantive material there is in your course. If it's a history course for example, where there's a lot of substantive material,

I would have my doubts about it. There are a good many factors you have to consider before going in for the participative approach."—MYRICK

Potentialities

"It seems to me that what is most characteristic of Architects I is that they have, more than the other architects, realized their potentialities—maybe had more potentialities to begin with, but they are individuals who seem to have had somehow the drive to actualize their potentialities and have succeeded in that to a large degree. I am inclined to think that any kind of educational environment or educational influences which will tend to develop as fully as possible the potentialities of the students is the right kind, and I think that the right kind of educational program ought to be valuable for Architects II and III as well as for Architects I. This is not to lead you to expect that all architects who graduate from your schools are going to end up in our studies as Architects I, but I would be inclined to think that the same kinds of influences, the same kinds of forces, the same kinds of experiences that would nurture the creativity, the potential creativity of those individuals who will become Architects I, would be helpful in nurturing the potentialities of those individuals who will remain Architects II and III."—MACKINNON

Prestige

"I think actually the prestige of the profession has never been higher than it is today."—WILL

Praise

"The reward being intrinsic to me means that the reward stems immediately from the job that is done. But praise comes after the teacher looks at it, decides it's good and then tells the student that. That is why I call it extrinsic; it's more roundabout, it has got this dependent relationship in it, where the student is depending on the teacher, when the teacher says: 'Now you've been a good boy; here's a cookie for you.' "—MYRICK

Question

"I have been wanting to ask a question for the last hour."—ADAMS

Required Course

"I will not teach a required course. I think that the motivation the student brings to the course is the key to the problem. If he's required to take it, even if it's good he doesn't like it because he's required to take it. Anything you can do to make the student think that he's choosing to do this rather than being forced to do it is all to the good."—WALKER

Research

All research is a chain of reasoning. A strong research plan reflects this by its structure and its internally consistent plan from section to section. Like any chain, a weak link—an inadequate measure, an inappropriately applied statistic, an improperly drawn sample—weakens or sometimes destroys the chain of reasoning.—KRATHWOHL

"People who don't really do research think that this is something which you just decide to do. Well, this is equivalent to somebody who doesn't know much about architecture thinking that this is something he will decide to do—that he'll go and design a building. . . . If you want to build up a research literature in architecture the way to start doing it is to get somebody who is a real research man on your staff—there are a few around in architecture who are doing research—and have him start teaching the students to do research; and the way to teach them to do it is to have them do it, so that they are doing research of one kind or another all the way through their curriculum. If you did this, you would then end up with many of the members of your architectural profession who would be trained in research, who would be doing research, and you would begin to delve out a body of facts and material that is relevant to the problems of architecture. . . . I can cite kinds of research that might be done. It seems to me peculiar that no one has ever systematically—so far as I know this has never been done—explored the reaction of people to buildings. Why don't you set up a research project, after a building is built, in which you systematically find out how people have reacted to that building? Furthermore, why don't you keep on doing it, or why don't you do it in such a way that you get the reactions of people who have used it for a long, long time, because I think the reaction would be quite different between those who had experienced the building briefly and those who had experienced it a long time? This is behavioral science type of research, but it's the kind of problem that arises out of architecture and therefore is an architectural problem, and I don't know of any behavioral scientist who would be particularly interested in *that* problem, while an architect might. However, architectural research can be *any* kind of research into any problem arising out of architecture to which you don't know the answer and you want one. Research techniques are available. They have been invented by other people; physical scientists have developed a great number of them, social scientists have developed a great number of them. I

Chairman Pickens and Secretary Franchini

Editor Whiffen playing the tapes

wouldn't be surprised if there were special techniques to be developed for special problems in architecture."—WALKER

"I think that possibly the biggest problem is how to apply the research, the knowledge, the information that is available to us. I certainly don't expect to go out and try to develop a formula for another high-tensile steel. And I don't expect to go out and try to develop the reaction of people to color; I know that there are books on that." —SWEET

Role

It is probably the nature of the informal relationship you establish with your students that is going to be a key determining factor of your effectiveness. The nature of your informal relationship to your students, and I will call this a "role," is complicated because it is not always clear what this role should be. Sometimes you are a giver of information. Sometimes, and I suspect this may be one of your favorite roles, you are a fellow student. . . . Sometimes you are a judge. . . . Several factors serve to complicate these roles. You must realize, if you are to get along successfully with your students, that when you are playing one of these roles, your student is supposed to be playing a reciprocal role. For example, if you are playing the role of a judge, your student must be playing the role of the person who wants to be judged. If you are playing the role of a co-worker, then the student must be playing the role of a worker.—MYRICK

Sandpile

"I'd like to speak about a course that we call Sandpile. It's known as Sandpile by everyone except the Registrar, who calls it Architectural Craft."—COOK

Scale Factor

"I suspect maybe all of us are troubled a little bit by the simple examples that were cited, although it was stated that they were chosen for their simplicity. . . . In other words, is there a scale factor here which makes a different kind of problem when it gets to be the full-scale problem? We have this in many other fields; you see it in sculpture; the little model is fine but when you get the whole thing at full scale it's a different situation. And so I suspect that the design process is this way—that the kind of problem we're dealing with when we take out little pieces is a completely different kind of problem, not just different in size but different in quality and different in type, when you have a combination of all the factors that go into the design process."—SPRING

Sequence

"It is my feeling that the design sequence often is out of sequence and is just related to an abstract theory that you start off with little buildings in the second year and get a little more complicated the third and a little more complicated the fourth and then you've got a thesis. (You know I've heard this.) And history may come in the third year, and you give them an archaeological problem in the second. I think there just could be a greater attention to sequence as something which is across the board, and I do think our real problem is to build up a background sum of knowledge which allows them to attack with as much information and procedure at their disposal as we can give them, and I don't think this is what the curriculums as a rule do."—NETSCH

Sex

"It's true not only of creative architects, but true of all highly creative groups, that they came to sexual expression much later than some of the other groups we have studied. Architects, for example, we find quite retarded in comparison with Air Force officers. But the distinction should be made between the age of first intercourse and the kind of sexual vitality, if you will, that overlaps

Participants Seeler and Besinger in the seminar room, with Chairman Pickens beyond

with a kind of psychological vitality; and I think that there is a great deal of this kind of vitality in these creative individuals. But I think there is a sense in which a great deal of their sexuality, or pregenital sexuality to use a Freudian term, gets sublimated into their work. I think one may say that highly creative architects seem to be wedded to architecture. We were quite impressed by the number of the creative architects who were divorced when we saw them, and I have been following the newspaper reports since and I am quite impressed by the number who have been divorced since."—MACKINNON

Specialist

"As I see it, we must develop an education curriculum and a professional training period which will develop outstanding practitioners in the special disciplines which the profession of architecture now requires. We must stop the practice of developing the so-called complete architect and start developing the specialist who is part of a team, and who knows he is part of a team."—MEATHE

All that is known about the functioning of the human mind and about group process and problem solving suggests that architecture practiced by teams of narrow specialists will not exhibit the level of creativeness which can be achieved by broadly trained generalists or by teams of generalists or by generalists working together with specialists.—MACKINNON

"I want to bring up a distinction which it seems to me will clarify the issue. We haven't talked about technicians and the division between technicians and specialists. These are two different types; instead we have been lumping them together, a source of some difficulty. In engineering science each worker needs four to ten technicians to support him; it is a well-known thing. We can expand our educational opportunities by opening up new facilities for training people who haven't got the means for the entire professional program. These are technicians. On the other hand the specialists, it seems to me—and these are people in *any* profession—are those who have gained competence in all areas of the profession, *then* go on to additional training school, to specialization."—SPRING

Student

The very personality of the potentially creative student is almost ideally suited to self-instruction. At this suggestion I can hear protests that it is just the creative student with his disposition to separateness and aloneness who needs for his own sake and for his healthy development the special personal ministrations of another human being, his instructor, and more association with his peers if he is to develop into a well-rounded person. To this I can only answer that many of the highly creative persons we have seen are not especially well-rounded. They have one-sided interests and sharp edges to their personalities and marked peaks and dips in their personality-test profiles. We will not create our able students in the image of the highly creative if we always insist upon their being well-rounded.—MACKINNON

"I do think there is a tendency for us, as experts, not to recognize the gap between what we know and what the student knows . . . not to recognize that what seems fairly commonplace to us actually represents an insight on the part of the student. . . . I have a notion that in many cases what we think of as interesting problems are not interesting problems to the students because they don't see the broad picture. I am not very optimistic that you can achieve in a freshman course an over-all view that will make as much sense to the student as it makes to the teacher."—MCKEACHIE

"I must say that I am a little bit disturbed by what appears to be a trend towards requiring one or two years of liberal arts work as preparation for the professional courses and professional studies in architecture. It seems to me that this does not take into consideration one of the most significant of educational advances of the last few years, and that is what is happening in the high school. We are getting students now who are so much better prepared, not only from the high-powered preparatory schools but from the good public high schools, that there is really no comparison between the level of preparation now and ten or fifteen years ago."—MACKESEY

Teaching Machines

The "hottest" tool in education today is the teaching machine and programmed learning. It is "hot" in terms of appearing to be new. It is "hot" in terms of the investment publishers are making in it. It is "hot" in terms of the amount of controversy there is concerning the value of the technique. It is difficult to find someone who is truly objective about the merits or limitations of the technique.—WALKER

My first assumption is that, in our search for better educational programs, we are not looking exclusively for major "breakthroughs" which are supposed to "revolutionize" the educational process. Instead, we welcome any small increment in teaching efficiency or effectiveness. I would like to suggest the possibility that some kinds of teaching can possibly be done more efficiently by programmed machines, thus freeing the teacher for the more creative aspects of the educational process. I hasten to add that there is no evidence to suggest a potential "revolution" or "breakthrough" in the educational process, but rather a tiny step forward.—AMBINDER

Television

The most widely publicized solution to the problem of teaching greater numbers of college students has been the use of closed-circuit television to enable a single teacher to reach several classrooms. With support from the Fund for Advancement of Education and other sources, a number of institutions have experimented with TV. Although some experiments were not well enough designed to permit evaluation of their results, there are more good comparisons of television and live instruction than of any other teaching methods. The results are also much more consistent than are any other comparisons. Of the twenty-six experiments in which there were adequate controls, twenty resulted in greater learning in the "live" classes than in those taught by television. Most of the differences were not statistically significant by themselves, but their consistency is statistically significant. This may be a little surprising to those of you who've read publicity releases reporting that television has proved to be as effective as conventional instruction. The publicity releases illustrate a fallacy well known to logicians and statisticians. One essentially says, "I have failed to prove to complete satisfaction that a difference exists generally; therefore no difference exists."—MCKEACHIE

"Suppose you had an outstanding guest architect; I think TV is a marvelous way of bringing him to the whole student body. Of course you can do this in a large lecture-room or auditorium. But some people in the creative fields are not good lecturers. . . . Well, television enables you to handle him in an interview situation, or a situation where he is illustrating his techniques or something in a much more informal manner."—MCKEACHIE

Ugliness

"If we talk about an ugly environment, and this chaos and we've got to change it, I think we have to identify whose values we are talking to and whose values we want to implement. Are they our values or the values of society? I myself am not clear about what sort of mission we have in this regard, to eliminate ugliness as it were."—VAN DER RYN

Values

One of the important kinds of information that we need is concerned with values. As yet we have not been very successful in acquiring this information, at least in usable form. However, great strides have been made. Philosophers, economists and sociologists have been concerned with values for a very long time and have done a great deal of work with them. Certain kinds of problems concerning the identification and manipulation of values no longer pose any great problem to us. On the other hand, there are many problems we cannot even begin to handle at present. The physiology and psychology of perception is basic to many of the kinds of values we are concerned with. Great advances have taken place here recently, and it remains for us to learn how to use them. Psychometric methods have been developing in this area also. Psychological economics and survey research techniques show great promise here also. Direct applications of some of these methods, which constitute a field I call esthetometrics, have been proceeding modestly.—JONES

"Keep your value judgments separate from your research. Do your research on what actually happens, and then judge this."—KRATHWOHL

Words

"We as practicing architects, and you, as educators, I believe have hidden behind words so long that the best ones of our profession have already gone and we really are on the road to death. This death in my opinion is just."—MEATHE

Young Man, Angry

"Phil Meathe is an angry young man and a man in a hurry, and I think he's wonderful and I honor everything he said, but I confess that I am far less discouraged about the future of the profession than Phil is; and maybe he was exaggerating a little bit to make his point."—WILL ◄

This Series is a Project Financed by Your Supplementary Dues

Comprehensive Architectural Practice: Operations Programming and Planning

LOUIS DEMOLL AIA

Because function is one of the most important determinants of architectural solutions—in schools, the educational process; in hospitals, patient care; in stores, marketing; in factories, production—the programming and planning of operations within buildings are integral parts of comprehensive services

Processes in building are architectural determinants

No architect—not even Louis Sullivan himself, judging from his work and writings—ever seriously took the position that "form follows function" *alone*. At least not for very long. And not if the word "function" refers only to the processes that take place in and around buildings. On the other hand, it is probably safe to say that architects are generally agreed that such processes constitute *one* of the essential determinants of architectural solutions. In many cases, they constitute a *major* determinant; and in some buildings, such as those for industrial production, the processes often constitute the *main* determinant.

If such is the case, the building program must surely grow out of the process program, and the building design out of the design of the process. It then surely follows that if the architect is to control the architectural solution effectively, he must first control—or at least be involved in—the process solution. This is true of many building types—schools, hospitals, shopping centers, laboratories, etc. As an illustration, perhaps it will be sufficient to describe here how these services are performed for one building type—industrial.

Operations programming and planning defined

In industrial architecture, the definition, analysis and solution of process problems have come to be called "operations (or operational) programming and planning." In other fields, the same terms are sometimes used to mean something quite different. For building types other than industrial, even the terms used may be different; for example, in office buildings, similar activities are often called "space analysis" and "space planning."

While operations programming may mean different things in different fields, in industrial architecture it has come to be a term applied to the analysis and programming of the operations to take place within the building and on the site which are necessary to the processing and manufacture of the products which the facility is to produce.

Operations programming, then, involves detailed study of the entire manufacturing process and its requirements; this is absolutely necessary before the programming of the building itself can be accomplished effectively. There is no reason why the knowledgeable architect cannot include work of this sort in his services —if he prepares for it.

How operations programming services are performed

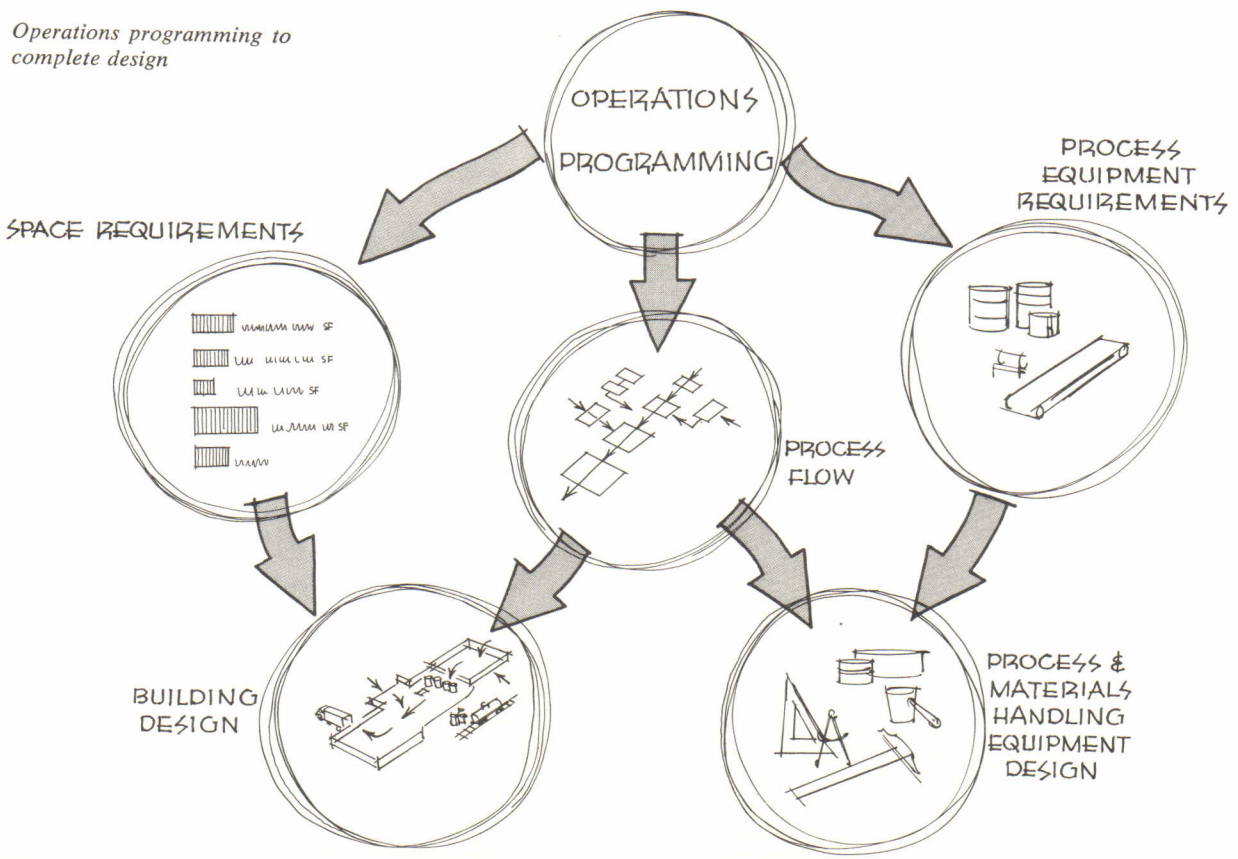
Operations programming for new or expanded facilities for industrial manufacturing may be handled in any of several ways. Larger industrial clients, in many cases, have engineering departments that perform such work. Other companies retain outside consultants whose services are used whenever there is a need to rearrange or expand their facilities.

Many smaller concerns, however, in spite of their managers', or even their plant engineers', apparent knowledge of manufacturing processes, do not have the know-how or ability (or time) to adequately program their operations. In some cases this is because the manufacturer and his staff have never found the opportunity or time to think in terms of ideal process layouts. Often the manufacturing process will have grown haphazardly over a period of years with the result that the processes will have been squeezed into spaces which actually are neither adequate nor suitable. The operation may be housed in a building which does not have sufficient clear height, one that has been chopped up into segmented sections or one in which receiving and shipping facilities are not adequate. Haphazard growth can even lead to a process flow that is exactly backwards.

Disorderly growth of plant operations

Our firm was recently called in on one project in which all material, after having been received at one end of the plant, was lifted by an overhead crane, carried over the processing area the full length of the plant and stored at the opposite end. From there materials flowed back in the other direction, through the manufacturing process, only to be lifted again to be carried back across the plant to shipping. The plant engineer of this company realized that this was a complicated arrangement and that labor-saving improvements were possible. But the plant had been this

Operations programming to complete design



way when the plant engineer first came to work with the company. Additions to the building had subsequently been made at various locations, and the engineer had never found an opportunity to conceive of a better arrangement. The current problem was that the plant was running out of space. Several thousand square feet were needed at one end of the building, the only place to add because of site limitations. At this point the company decided that before investing in additional building construction, it needed to know if there were any better way of rearranging the existing facilities. The problem of building design was a very simple one. There was only one place to locate the addition and, since it would fill the remainder of the site, only one shape was possible. The client's real problem was one of operations programming and planning.

Four methods for solving operations problems

In many cases, small industrial clients, such as the one mentioned above, will not know which way to turn in order to obtain good advice on such a problem. Actually, there are four paths that may be followed by such a manufacturing client. He may engage the services of an architect who has had a degree of industrial experience; he may contact equipment manufacturers who offer advice on equipment layout; he may hire a special industrial engineering consultant; or he may use the design and construction firms (often called "package dealers") that offer services of this type.

Past experience has shown that usually none of these methods is completely successful. The architect, in many cases, will not devote the time necessary for thorough analysis of the complete processing arrangement. The equipment manufacturer will ordinarily have only a limited understanding of the processes other than the applications of his own equipment. The special consultant, although he may be quite capable of analyzing the processes and making good recommendations, probably will not have sufficient knowledge of building construction, code requirements, etc, to do an effective over-all planning job. In addition, his fees will often be quite high, and it will still be necessary for the manufacturer to utilize the services of an architect for the design of the building and a builder for its construction.

For the reasons named, the services of a design and construction firm may often seem to the manufacturer to be just what the doctor ordered. Among the advantages often cited in its own favor by such a firm are apparently capable staff of engineering specialists, knowledge of construction problems, costs and scheduling and experience on similar projects. On top of all this, the design and construction firm often offers programming and layout services at a low fee as a "come-on" in order to obtain the later construction contract with which it is actually most concerned, and in which it expects to make sufficient profit to enable it to cover any losses on the programming and planning work.

It is interesting to note that the operations programming and planning done by outside consultants or by the engineering departments of large corporations are often boons to the design and construction companies. Once a manufacturer has a final process layout in hand, his attention will be almost completely focussed on the total costs of the equipment and of the building

shell which must protect the equipment. At this point, he may be strongly tempted to turn to a design and construction concern from which he can obtain a complete firm proposal for the design and construction of the project. Then, with operational layout and schematic building plans in hand, a guaranteed maximum price for design and construction and a firm construction schedule, he is ready to go to his board of directors for prompt approval of the project.

Role of the architect

If they are to avoid being supplanted by such design and construction firms, architects must be prepared to offer similar services, with similar guarantees and *perform the services better.* And architects must be prepared to convince such industrial clients of the dangers of the conflict of interest present when the design and construction functions are performed by a single organization.

If an owner turns to an equipment manufacturer or special consultant for operations programming and layout before going to an architect, the final building may be harmed in one of two major ways. The layouts produced in this way are often so fixed and detailed that they are essentially schematic plans of the proposed buildings. If this is the case, the architect will be so rigidly controlled that the architecture will suffer. Even though the architect may develop ways of improving the layout as the design of the building proceeds, he ordinarily will not have an allowance in his fee—or the time—to go back and redo or even question any of the operations programming or planning that will have gone before.

The second harmful result of an owner having operations programming and planning performed before hiring an architect is that the schematic plans prepared will often be so carefully laid out that the owner will feel that he is then in a position to go directly to a builder for construction of the building. With a schematic plan in hand, which indicates the layout and shape of the building and the mechanical requirements, the owner may well assume that the building design is now simply a case of final design of structure, walls, floors etc. To the unknowing manufacturing client it may appear that, at this stage, he already has an architectural solution. Therefore, why should he bother with the services of an architect, especially when great numbers of builders are telling him that they can readily develop final drawings and proceed immediately with the construction?

How need for operations services can be met

Surely, at this point, it has been demonstrated that there is a need for architects to become involved in operations programming and planning of industrial plants. How can architects meet this need? For highly complex projects, certainly most architectural firms are not equipped to undertake, without the use of special consultants, services in operations programming and planning. Far more harm to the profession can result from architects undertaking such services for complex projects that are beyond their capabilities than from frankly telling prospective clients that their firms are not prepared to offer services in these areas. However, there seems to be no apparent reason why an architect cannot undertake such a commission, even if he feels it to be somewhat beyond his own personal capabilities, if he advises his

client in advance that he will use qualified special consultants where required.

Some processes are relatively simple, though apparently complex

In spite of the fact that many industrial processes appear, on the surface, to be highly complex, in a surprisingly large number of cases architects can perform operations programming and planning services very well if they will devote the necessary time to work closely enough with their clients to develop a knowledge of the processes involved. For many of the simpler manufacturing processes, this can be done without any prior knowledge of the methods of manufacture of the particular product.

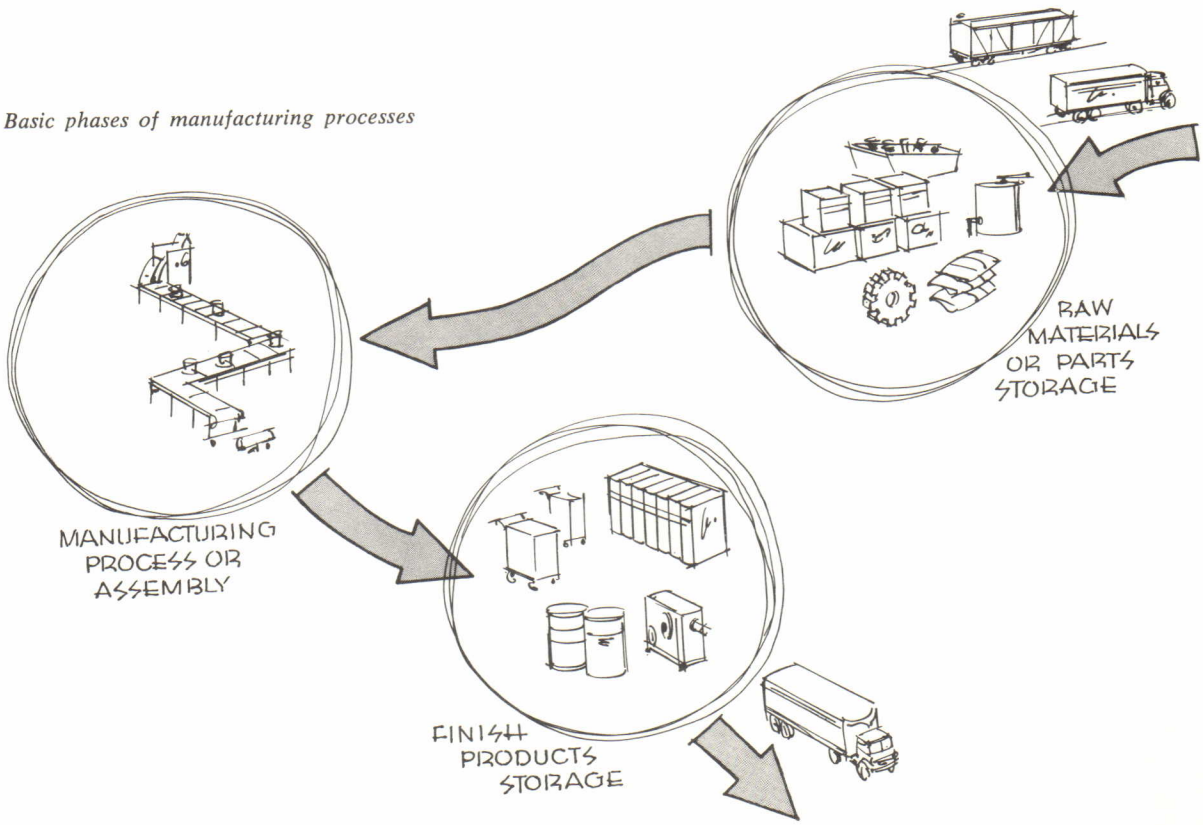
Basic elements of operations programming and planning

Operations programming and planning services, no matter how complicated the manufacturing process or what type of product is being processed or assembled, are composed of certain basic elements which vary only in detail. The three basic elements or phases are: 1) receipt of the raw materials or parts, 2) processing or assembly operations and 3) distribution of the finished product. Sandwiched in between each of these three basic elements there is always storage in some form. Such storage varies from simple surge areas at the end of processing lines to vast warehouses for finished products.

The receiving phase of a manufacturing operation may require space for the storage of raw materials in liquid, bulk or bags, or space for parts packaged in large or small quantities. Receipt of material may be by rail or truck or some combination of these.

Processing or assembly areas, elements of every manufacturing operation, vary widely in their requirements, depending on the types of operations to be performed. Such operations may involve light assembly, complicated heat treatment or processing.

Basic phases of manufacturing processes



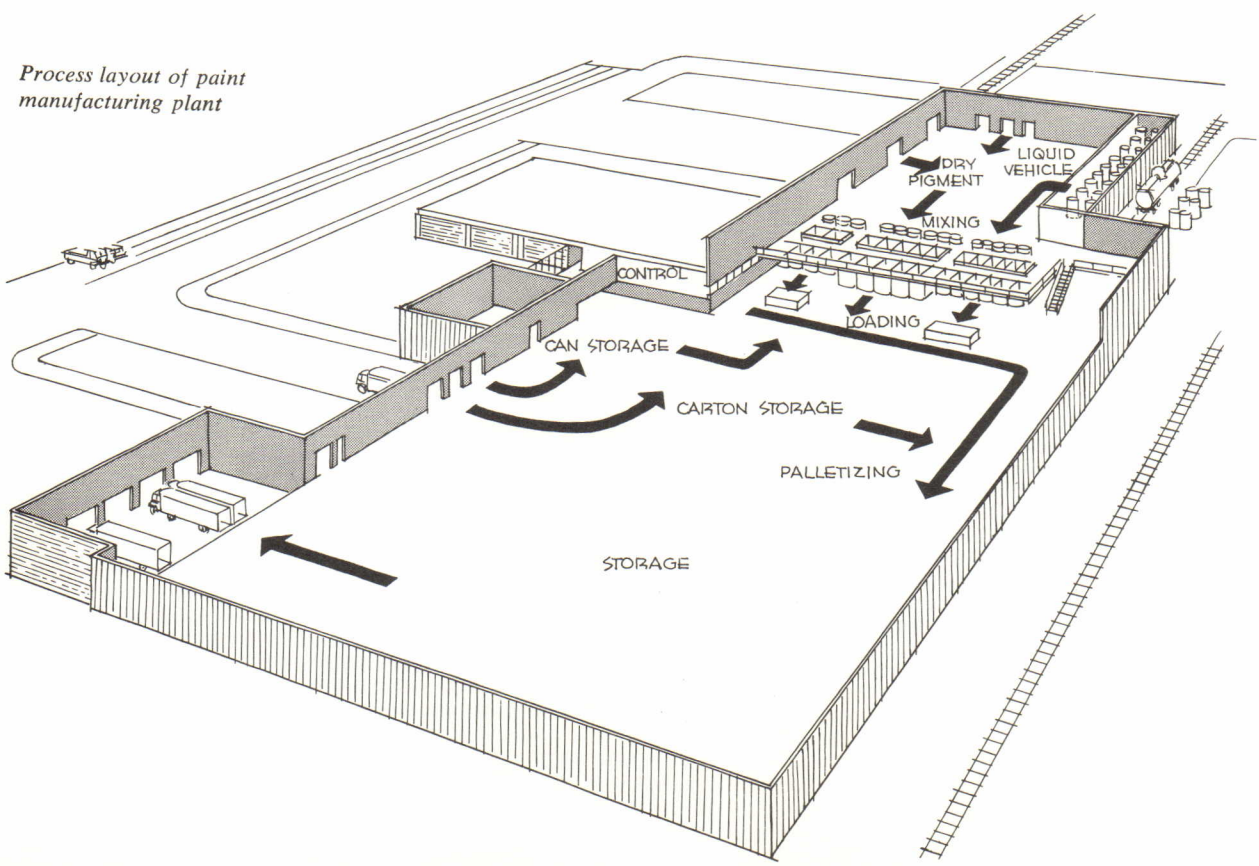
The operation may be noisy or it may involve only the quiet assembly of small parts. The operation may be a combination of any of these types of processing or of others.

The shipping phase of the operation may require a considerable amount of storage for finished products in the form of packaged light parts, heavy equipment or bulk products in tanks or large drums. But no matter how widely the operations vary from plant to plant, each of the three phases—receipt, processing and distribution—will always be present in some form. Operations programming, then, is involved with detailed analysis of methods required for the flow of material from one of the phases to the other. Operations planning is involved with the layout of the phases and flow.

Operations services for a paint company

As an example of how these services are performed, it may be helpful to take a look at the operations programming and planning of a recently completed paint manufacturing plant. The basic requirement of the company was that it wished to manufacture two lines of paint in the proposed plant. Through a series of meetings with the project engineer of the client, the architect developed a complete program of the processes involved. Two types of materials were to be received and would go into the end product. These consisted of certain types of liquid vehicles and dry pigments. With the help of the client the volumes of finished paint to be produced were established. Next, the architect determined the number, size and variety of batches that had to be mixed, the production time required and the frequency of mixes. This information made possible a determination of the volumes of raw materials—liquid vehicles and dry pigments—required. First, the liquid vehicles, the method of their storage and the num-

Process layout of paint manufacturing plant



ber, size and types of tanks required had to be established. In order to determine pumping and heating requirements, the viscosity of the liquid had to be known. Also affecting the operation was the method and frequency of receipts of the liquid raw material and the fire hazards involved in the receiving and storage of the materials. From analysis of such data, the optimum spacing, size and arrangement of tanks were established, as well as the building requirements for the liquid storage phase of the operation.

In the case of the dry pigments storage area, the number, size and variety of batches determined the quantities of raw materials that required storage. The quantities, type of packaging, methods of stacking and handling of the materials and method and frequency of receipts were then analyzed. Similar analyses were then made for all other phases of the operation.

Building requirements must follow from operations requirements

Only after operations analysis and programming of each of the individual parts of the total operation can the building requirements of each be determined. Only then is it possible to establish required floor areas, optimum building shape, clear heights, column spacing, and lighting and heating requirements. In the case of the paint manufacturing plant discussed above, it proved to be possible for the architects to establish criteria such as those listed without a detailed knowledge of the actual chemical process involved in the manufacturing of paint and, as a matter of fact, without even a detailed knowledge of the actual operation of all of the machinery. Of course, it was necessary for the architects to understand and analyze the basic steps in production: receiving, processing or assembly and distribution.

Contributions of the architect

Undoubtedly the plant engineer, in this case, or a specialist in process layout, working independently, could have come up with an acceptable operations program and plan for this manufacturer. However, the architect, in guiding the program with his own process engineering specialists and materials handling consultants, offered many advantages to the client. Architectural disciplines, which might otherwise have been overlooked, were considered during the initial operations programming phase of the project. The transition from operations programming to the final plant layout and design was handled without lost motion. In fact, it would be almost impossible to determine the exact point where one phase of the services changed to another. It was particularly important to the client in this case that the project proceed smoothly and without interruption, since the schedule allowed only ten months from the start of the operations programming phase to partial occupancy of the finished building. At the time the building program had been established, schematics had already been developed to a point that allowed a preliminary contract to be let for site grading. Construction, including excavation, pouring of foundations and ordering of structural steel, was started while the building details were still being ironed out. Construction continued while mechanical, electrical and process equipment designs were getting underway.

How to promote their services in industrial operations programming and planning is, at best, a difficult problem for architects. This is particularly true because many manufacturers are not convinced that architects are capable in such areas. It is

doubly hard for architects to convince manufacturers that they can perform such work when they have no examples to show of similar completed commissions. Architects can, however, team up with consultant-specialists to offer prospective clients combined proposals for more rounded and complete services in such areas. Of course, larger architect-engineer firms often have staff specialists for such services; and these people work closely with the architectural staff members.

Fees for operations services

It is sometimes difficult to establish proper fees for operations programming and planning services. Quite often, the time spent in these phases, particularly when rearrangement of existing facilities is involved, will be quite expensive, proportionately, when compared to other phases of the design and construction. As a consequence, it is often preferable for the architect to work on a cost-plus basis. In such cases, the client will be charged for the architect's direct salary costs plus a percentage or multiplier to cover overhead and profit. A prospective client, however, invariably demands a guaranteed maximum cost or, at least, an estimate of total charges. At the same time, the architect must keep in mind that his competition in this field almost always comes from design and construction firms and special engineering consultants. To make things even more difficult, design and construction firms as mentioned earlier often offer such programming and planning services at a very low fee as a "come-on" in order to obtain profitable construction contracts.

Fees are related to scope of work

As an example, of what is involved in the establishment of fees for operations programming and planning services, it should be useful to describe the scope of such work for one project. In this particular project, a study is to be made of an existing soap manufacturing facility in order to establish future expansion requirements. The layout of the existing plant must be analyzed and programmed. The final report to the client must contain recommendations on relocation of equipment and departments within the existing building, production-cost comparisons of various types and layouts of equipment and recommendations for new building areas that will be required to meet anticipated production goals. Although up to 100,000 square feet of new construction may be recommended, the actual design of new buildings is not a part of this particular study. In a case of this sort, it is obvious that the professional fees can only be set by estimating the time required for the study. It is beside the point, but interesting nevertheless, that the competition for services on this project involved only a single architectural firm, but two design and construction firms.

In operations programming and planning work, the scope of services varies considerably with each project. Therefore the establishment of any type of standard agreement for services would appear to be impractical. Further, in order to avoid later misunderstandings, the architect, in his proposals, should be quite explicit about all of the services which he intends to perform. At the same time, he should clearly define the responsibilities of his client as well as his own.

In summary, programming and planning of the operations of industrial facilities is a fascinating, but complex, study. In these

Operations services can lead to better architecture

phases of a total project, many of the major decisions that affect the final outcome of the building are made. In order to properly relate the building design and construction phases to the operations decisions, the architect must be deeply involved in the making of these decisions. Only in this way can architects assure their clients of completely successful—and total—solutions to their problems.

Outline of Services

Operations Programming and Planning of Industrial Buildings:

I Research

By means of study and exploration with clients, equipment manufacturers and others, determination of data such as:

A Total production goals

B Quantities of raw materials required

C Methods of receiving, storage and handling of these materials

D Equipment and methods for processing or assembly of products

E Methods of packaging products

F Materials required for packaging products

G Production quantities to be stored

H Methods of storage

I Mode of shipments

J Frequency of shipments

II Analysis

A Analysis of present operating methods and space utilization

B Analysis of data gathered through research in order to determine, for each phase of the operations, the optimum rack or storage spacing of materials, arrangements and spacing of equipment, aisle widths, clearance heights and other important factors from which computations may be made of floor areas and other building and site requirements

C For additions to existing facilities, analysis of important factors such as existing utilities

III Programs and Plans

Preparation of operations program and plans, describing present and future needs, in written form and in the form of equipment layouts and flow diagrams

IV Cost Analysis

A Estimates of costs of equipment for manufacturing, materials handling and storage

B Comparisons of labor-cost savings possible with new equipment as related to costs of recommended new equipment

C Estimates of the costs of complete new facilities or alterations to existing facilities (together with the costs for mechanical alterations and moving or replacement of equipment).

Fifth Annual Book Supplement

NOTES ON OUR REVIEWERS

Waldron Faulkner FAIA was formerly the Chairman of the AIA's Sub-Committee on Color, and is Chairman of the AIA delegates to the Inter-Society Color Council. He is a member of the firm of Faulkner, Kingsbury and Stenhouse of Washington, DC.

Walton Green is a free-lance writer with an interest in architecture and the arts, presently engaged in research for a biography of Richard Morris Hunt. He lives in Brooklyn Heights.

George E. Kassabaum AIA was formerly Chairman of the AIA Committee on Housing for the Aging, and is a member of the President's Advisory Committee on Housing for Senior Citizens. He is a member of the firm of Hellmuth, Obata and Kassabaum Inc, of St Louis.

William J. Murtagh is Director of the Department of Education of the National Trust for Historic Preservation. He recently made a preservationist's trip to Japan.

Eric Pawley AIA was formerly Research Secretary of the Institute and Technical Editor of the *Journal*. He is presently Professor of Architecture at the University of Southern California, where he directs USC's program of research in architecture.

It has long been customary for book reviews prepared by members of the AIA staff in the Washington Headquarters to be signed only by their initials. It would seem that this is a fitting occasion to introduce them—whether or not they have the good fortune to appear in this issue:

R. K. D. is Rockwell K. DuMoulin AIA, Program Director of the Pan American Congress of Architects 1965 and formerly Chairman of the Division of Architecture at the Rhode Island School of Design.

R. E. K. is Robert E. Koehler, Managing Editor of the *AIA Journal*, and formerly Editor of *Architecture/West*, of Seattle.

M. E. O. is Mrs Mary E. Osman, Assistant Librarian of the Institute, a professional librarian of wide experience, most recently with The Fund for Adult Education. As can be seen by her reviews, she is an exceedingly well-informed lady, with broad interests in architecture and planning.

G. E. P. is, of course, the Institute's Librarian, George E. Pettengill HON AIA, who has served since 1951. Before coming to Washington he was Assistant Librarian of the Franklin Institute in Philadelphia.

W. V. E. is Wolf Von Eckardt HON AIA, who is actually no longer a member of the Institute's staff, but who continues to write the popular "Allied Arts" page in the *Journal*. He was formerly Public Information officer of the Institute and Art Director of the *Journal*.

J. W. is the Editor of the *Journal*, Joseph Watterson FAIA, who turned his Long Island (NY) practice over to his partner in 1956 to come to Washington to re-create a "new" *AIA Journal*.

IDEAS AND INTEGRITIES: A Spontaneous Autobiographical Disclosure

BUCKMINSTER FULLER

Edited by Robert W. Marks. Englewood Cliffs, NJ, Prentice-Hall, Inc, 1963, 318 pp illus 9½" x 6½" $6.95

The amazing Bucky Fuller has written a most amazing and fascinating book. Loosely an autobiography, it is a biography of his mind, of the incredible flow of his ideas—but there has never been anything loose about Buckminster Fuller. His life has been a compact, tight program—not carefully planned in advance, however, for he has been kicked around by fate as much as any of the rest of us. But no matter what his surroundings or activities, his mind was always following lines of thought which may have taken thirty years to fulfillment—several lines of thought going on simultaneously. He has questioned everything, and come up with some profound answers; he has tried to improve on everything, and has usually succeeded. In every job which he undertook, he seems immediately to have visualized it in the broadest world-wide conceptual frame, and then set to work to think through what was basically wasteful and philosophically wrong with it. He can never look at a part without seeing the whole.

It is not a book to sit down and read through—although it is hard to lay down, once commenced. It is rather a book to pick up and start reading anywhere, any time—and be captured and stimulated by the breadth of his thought. Evidently some chapters were delivered as addresses, and are thoroughly readable, almost breezy—for Bucky. Others are a tightly compacted torrent of multi-syllabic words which have to be read and re-read to grasp their meaning.

The pattern of his personal life is but obscurely told. A boyhood incident or two to show the early development of his particular type of mind; an admission that he was dropped from Harvard (later invited back and dropped again), not because his grades were poor, but just because it didn't seem important to him to attend classes; an account of his venture into big business during the middle 1920's, based on one of his inventions, and of his loss of the business to his more avaricious associates. It was at this point that he faced suicide—broke, a new baby, the loss of confidence in his friends, nothing but his own experience. He tells of standing by Lake Michigan "on a jump-or-think basis." Then, true to the Bucky Fuller in him, he started to ask questions and give them the only possible true answers; thus he argued himself into a belief in God and that "You and all men are here for the sake of other men."

Life with a genius is never easy. For two years he didn't say a word to anybody, including his wife, because "I thought I would see if I could force myself back to the point where I would really understand what I was thinking and be sure that when I made a sound that I really meant to make that sound." He adds "All this was pretty difficult for my wife because we were in Chicago and didn't have any money." As to making a living: "I must forsake altogether the idea of priority of the necessity to earn a living . . . I decided just to leave that to luck. I didn't know anything else I could do about it. I was confident that the one thing I had to do was think."

And think he did. Through five years in the "home-improvising world," he discovered the waste and inefficiency of the building industry: "I resolved to apply the rest of my life to converting my pattern sense, through teleologic principle

into design and prototyping developments governing the pertinent, but as yet unattended essential industrial network functions, necessary to removal of such housing chaos by physically effective and lasting technology." He became concerned with the weight of building: The weight of the *Queen Mary* and of the Boeing 707 were calculated with infinite care, but nobody gave a thought to the weight of the Empire State Building. Yet all that building material had to be transported, hoisted, handled and supported by the steel frame—and much of it was bought by the pound. He is convinced that ". . . space can be enclosed . . . with approximately one per cent of the weight of resources at present employed by the conventional building arts for a given task. . . ."

As a critic he is incisive: "What convinced me that the Bauhaus international designing was of secondary rank and limited to interior furniture sculpture, fabrics, and bric-a-brac pattern variations, and to exterior redecorating to reveal structural facts that had been insinuated behind the old-time facades, was the fact that their designing consciously limited itself to formulated employment of the component items manufactured by the going old-line building materials world." Bucky, of course, would have (and to a large extent, has) redesigned all the components—piping, plumbing fixtures, heating system and all. Since no client will ever employ an architect to do the basic research necessary to introduce true efficiency into the building industry, he proposes that the profession pool its abilities and resources, and through the cooperation of the universities, "foster and support comprehensive research and development . . . where society has arranged for five-year sojourns of selected, high-capability, comprehensive-prone youth."

From the small boy in Maine, who with the daily task of rowing two miles to the mainland and back to get the mail, devised an umbrella-like contraption on a pole which opened and closed as he pushed and pulled it through the water, to the Bucky of today with his geodesic domes and his theory of "comprehensive design" as the only way to cope with the expanding population, our twentieth century Leonardo has followed a consistent pattern of "concern for what is basic in society and cosmology." To him, "microcosm and macrocosm are inseparable." J. W.

CENTURY 21: The Story of the Seattle World's Fair, 1962

MURRAY MORGAN

Seattle, Acme Press, 1963. 160 pp illus 8¾" x 11" $12.50

As a former Seattleite who witnessed the Seattle World's Fair grow up in his backyard (the monorail makes its turn around the apartment house in which he lived during the entire construction), this reviewer eagerly pursued this handsome book. There had been others, of course, but for the most part they concerned themselves with one specific aspect of the exposition, the Space Needle, for example.

But here was another matter—a documentary on how the Seattle World's Fair came to be, written by one of the Pacific Northwest's foremost authors and historians; and to complement his work, the author had chosen the wonderfully exciting photographs of Steven C. Wilson who, although he lives on neighboring Bainbridge Island, is better known professionally on Madison Avenue than he is in the Puget Sound country.

This is indeed a well-documented story of Century 21—as far as it goes. In fact, some of the details become a bit tedious, and at times Mr Morgan sounds like a press agent for some of the fair promoters. But it seems incredible that in a book of this stature the architects are hardly given lip service.

To be sure, the personnel listing in the front of the book includes the name of the primary architect and the designers of official projects. Beyond this, there are only a handful of references to the significant role that the architects played in this venture: the pioneer work of the Design Standards Advisory Board, the master planning of Paul Thiry FAIA and so down the line. Seldom has the architectural profession displayed such leadership and exerted such community-felt influence as in the case of the 1962 exposition. It is a story in itself which has never been adequately told; one that should be told in its entirety by someone, someday!

The candid photographs, a number in color, of the fair-goers are so enticing that even the most satisfied visitor is bound to reflect that he hadn't realized the show was so much fun, and educational to boot. Too bad Murray Morgan doesn't fulfill his part of the bargain. R. E. K.

BABYLON IS EVERYWHERE:
The City as Man's Fate

WOLF SCHNEIDER

New York, McGraw-Hill Book Co, 1963. 400 pp illus 5¾" x 8¾" $7.95

A history of cities, 7,000 years of them, is a very ambitious undertaking and one which could be exceedingly dull or very stimulating. The author of this information-crammed book has managed to keep up such a high pitch of interest that one finds it difficult to put the book down. Although the book is arranged chronologically from Babylon-on-the-Euphrates to Babylon-on-the-Hudson, his thoughts range all over the calendar as well as all over the globe, so one can swing from Machu Picchu to the comparative heights of skyscrapers of the world in a page or two.

According to the publisher, the author is the political editor of a leading German newspaper. Certainly he has been a thorough student of the "city in history"—one can only hope that his vast display of facts and details is as accurate as it is fascinating. He writes on whatever aspect of the life of a city interests him, or what he thinks might interest his readers—such as fertility rites, marriage customs, plumbing and drainage, the burning of Moscow and the destruction of Stalingrad, the depraved antics of Messalina, the third wife of Claudius, and the bleak adventurousness of Brasilia.

It is a free-wheeling tale, but a good one. We who have a special interest may be inclined to resent such a popularization—but if all the non-readers in this country were to read this book, impossible though that may be, the architects and the planners and the visionaries would find they had an informed and sympathetic public. There is no special emphasis upon planning, although plans of most of the ancient and medieval cities are included, but there is great emphasis upon the city as a place to live. The author is constantly pointing out that no matter how filthy and crowded their homes were, no matter how utterly they were destroyed—either by war or by earthquake—people always have clung to their cities and will not let themselves be transferred to "better" housing. We hear much today of the exodus from the city, but that is a class matter; numerically, what is siphoned off at the top flows in double at the bottom.

Well-informed as Herr Schneider is on the cities of the past, he makes some amusing statements about the cities of the USA, such as "Entire sections of American cities and Russian industrial cities are being built up with uniform houses, according to standard plans, using parts that come off the conveyor belt." But he also states, " . . . we have to face some facts: at present, seen on a world-wide scale, the many model cities, exemplary city districts and redevelopment projects, do not keep pace with the growth of the 'tin-can cities' and the slums. The wretched city of mud and sheet-metal shacks will be to a great degree the 'city of tomorrow,' and . . . it is to be expected that Calcutta—now the world's largest concentration of misery and sorrow—will be the ever-recurring city type of tomorrow."

A discouraging note. Later on he is pessimistic again: "No more romance, no cathedrals and palaces, no splendid avenues, no monumental buildings without a practical function—this is a rather sad perspective. The city planner cannot be blamed for this state of affairs, but he has to take it into account and therefore is forced to use a certain restraint in what he is doing; it goes without saying that he must also have great respect for the magnificent remains of an era that created cathedrals. Be that as it may, we should be rather suspicious if someone promises to build an ideal city for us—especially since he no longer can decide about the most significant elements of a city."

J. W.

TWO BOOKS BY RICHARD NEUTRA

Reviewed for the AIA Journal by Walton Green

LIFE AND SHAPE

New York, Appleton-Century-Crofts, 1962. 374 pp illus 5½" x 8½" $7.95

and

WORLD AND DWELLING

New York, Universe Books, Inc, 1962. 160 pp illus 8½" x 12" $15.00

The only similarity between these two books by Neutra is their pretentious titles. "Life and Shape," his autobiography, is worth note; "World and Dwelling" is a puff. The latter photographically documents about twenty California houses that Neutra has built in the last quarter-century or so. Supplementary obeissance is also paid to several of his schools, shops, hospitals, etc, in the introductory pages. This book regrettably but inevitably falls into the category of arty, coffeetable, picture books, and is a reasonably bad performance, at that. Its photography is slick and self-conscious, though in all fairness it illustrates well, and the captions are unbearably sententious. Its composition, as mentioned, is an arty, sans serif typeface and the printing, of course, perfect. What text there is is a pallid imitation of "Life and Shape."

Here, Neutra laces, with sinewy philosophical observation, anecdotes from a strenuous half-century in architecture onto the skeleton of his autobiography. He moves from his native, deeply cultured, *ante bellum* Vienna, through the World War and years of professional frustration in this country, to his "psychotope" (p 278) in southern California.

It is not an easy book to read. But for those who have the endurance to find the wisdom and humanity in this introspective narrative, it is there, buried in a disconcerting mixture of involuted Germanic syntax and slangy Americanisms.

Neutra strives to be "a compassionate and sensitively understanding architect of happiness," and denounces the "proud utilitarian fanatics" in his quest for the common denominator of that happiness. He brings the clinical attitude of an experienced medical man to his relations with clients, whom indeed he calls client-patients.

In examining the physiological impact on man of his surroundings, either natural or man-made, Neutra comes to the conclusion that structure, order and form are a foundation of "the articulated memory retention, on which the continuity of our conscious existence, our lasting self-identity, depends so much." "Man," he goes on, "has been conditioned to form and molded by consistently shaped Nature for a million years;" his own inner nature relates naturally to it, is recognized and gratified by its forms. Architects and planners have now the considerable responsibility of creating, artificially, these biologically bearable conditions for mankind.

Where, Neutra asks, is a Pure Food and Drug Act for the senses, to protect the public from "the avalanche of visual horrors" which surrounds it? There is a faint unspoken pessimism in Neutra's answers to this and other questions that he poses. "Mine," he concludes, "was a constructive twilight period of a culture, sandwiched between other cultures, past, and," he adds wistfully, "possibly in the offing."

GREEN DAYS IN GARDEN AND LANDSCAPE

DESMOND MUIRHEAD

Los Angeles, Miramar Publishing Company, 1961. 272 pp illus 6¼" x 9¼" $7.95

By an active landscape architect and planner. A brief, illustrated foreword introduces the lay reader to garden traditions and history, selection of professional services and a few comments on costs. The main part of the book is devoted to eight sections, excellently illustrated, with concise practical comments.

These sections cover: character, terraces, etc., recreation, enrichment, construction, plant materials, maintenance, streets, cars and special buildings—each section is explored in from four to sixteen aspects (one or two pages devoted to each). A final dozen pages tabulate some dos and don'ts give references and an index of plant names.

This is experienced, competent, clear.

THE EVOLUTION OF AN ARCHITECT

EDWARD DURELL STONE

Reviewed for the AIA Journal by Walton Green
New York, Horizon Press, 1962. 288 pp illus 8" x 10"
$15.00

Edward Durell Stone is indeed entitled to visit upon his readers a book of "nostalgic and highly personal recollections," but not, as he pleads in his opening, because of the license due a man of his advanced years. It is rather because his recollections are so charmingly served up, with a light sauce of humility and humor, and some two hundred crackerjack photographs and drawings.

His modesty in describing the achievements of a lifetime in architecture is as disarming as was non-existent that of his acknowledged hero, Frank Lloyd Wright.

In low-keyed prose, Stone tells a gently picaresque tale which carries him from boyhood in that "hotbed of tranquillity," Fayetteville, Arkansas, to his present position as one of the most successful architects of our day.

He muses on such diverse subjects as Wright, Santa Sophia, the International Style, the California Redwoods, Bucky Fuller, Queen Hatshepsut's Tomb and of course upon most of his own buildings.

The development of his architecture seems to have been punctuated, or propelled, by revelation. At eighteen, he had been led blindfolded from the subway onto the Brooklyn Bridge, where his first glimpse of New York City was, "the towers of lower Manhattan seen through the diaphanous strands of the bridge—one of the world's fabulous sights. It marked me for life."

Likewise, Stone's abandonment of the International Style and a protracted romance with indigenous materials and modular wooden construction were the distillate of a 1940 automobile trip across the country. Then, in 1953, the latest and apparently most radical revolution in his work was born of a chance meeting on an overnight flight to Paris, with a spectacular brunette beauty . . . the brightest and most captivating young woman I have ever met."

Stone proposed over the English Channel, and about a year later he and Maria Elena Torchio were married. As he puts it, "Maria's fine Italian hand began to show in my attire and in my work: both began to move toward elegance." *Cherchez la femme.*

Now this has undeniable charm, but does, indeed, a sharp change in the style of a ranking architect occur so simply as that? The evolution of Stone's building toward classical symmetry of plan and increasing fancifulness, and, for instance, the development of the oriental filigree work which has become almost his hallmark, are not overly documented in the text. From a technical standpoint, his unassuming manner becomes almost non-committal.

Of his celebrated, even controversial, grillwork, for example, he says little more than, "It was inevitable that such a simple, inexpensive and practical device would immediately become part of the building vocabulary and would have wide and indiscriminate usage."

Apart from this niggling criticism, the book is well worthwhile: even if it weren't delightful to read, which it is, it would be valuable as the most complete (indeed the only) published collection of Stone's work.

By the way, ignore the squib on the book jacket: besides making at least one factual mistake, its cerulean prose is enough to turn your stomach.

SURFACE STRUCTURES IN BUILDING

FRED ANGERER

Reviewed for the AIA Journal by Eric Pawley AIA

New York, Reinhold, 1961. 142 pp illus 5½ x 8¼" $4.50

In 1959, the AIA Committee on Research for Architecture held a pioneering cross-discipline conference at Ann Arbor with five areas of interest: architecture, planning, sociology, psychology and structural design. The member who represented structural design on the steering subcommittee, which spent a year planning this meeting, was Professor Myle Holley of MIT. This wonderful little book seems almost an answer to his statement-of-need for interpretation of new structural forms to the architect and communication of new potentials in design.

The book is not a mathematical text but relies on lay language with generous graphic presentation in excellent ink-line drawings. A few chapter headings give an idea of coverage, as follows: Elements of Surface Construction, Girders, Shells, Vaults, Folded Structures, Problems of Form (flat, shells, folded), Composite Action.

For the most part the text is clear, a translation made in England, but there are a few awkward places—what do we do with ". . . *unwindable*, singly curved shells . . ." (p 15)? The context, referring to the use of a sheet of paper for demonstration, indicates the apparent meaning to be "incapable of warping." "Downstand" or "upstand" beams (p 24) is perhaps British terminology. We would think of these structural elements as either of two types of spandrel beams, one below and one above a panel it supports but please don't ask us which. We believe an important negative was omitted (p 46) and that one passage should read ". . . a practice which is *not* possible with a vault . . ." Surprisingly few typos—but it should be Frei Otto, not Otto Frei in the references. On good non-reflective paper, the two-column text is clearly printed and easy to read.

The final sections on architectural form of these new structural means demonstrate that the author (who prepared this book originally as an academic dissertation for the Technische Hochschule in Munich), has a fine grasp of contemporary architecture as well as structure.

GUIDE TO MODERN ART IN EUROPE

EDITED BY DOLORES B. LAMANNA

New York, The Museum of Modern Art, 1963. (Dist. by Doubleday) 120 pp illus 4¼" x 8" $1.50

A really useful little pocket-guide for the art-minded traveller. There are many museums in small towns and lesser-known museums in the larger cities of Europe which contain very fine examples of modern painting and sculpture. The cities are listed alphabetically, grouped by country; the name, address and telephone number of each museum is given, with its hours and admission fee. A few lines tell the traveller what he might expect to find there.

INTERIORS BOOK OF HOTELS AND MOTOR HOTELS

HENRY END

New York, Whitney Library of Design, 1963. 252 pp illus 12¼" x 9¼" $16.50

Although this book serves its purpose of introducing the interiors of hotels and motor hotels, it has limited use for the architect. The introduction and the opening chapter on the hotel "Heritage" are promising, but the illustrations and the commentary upon them do not fulfill the promise. The illustrations are photographs of recently built and renovated hotels and motels. Documents are selected from America and abroad.

No new insights into the nature of the physical design of interiors are provided by this episodic photographic essay. The visual encounter verifies the traveler's experiences today. New hotels and motels are pretty much the same throughout the world. Interiors are repetitive within the establishment and among cities, whether it is Athens, Copenhagen, Pittsburgh or San Juan.

The concluding chapter is concerned with "Prospects," but it does not explore nor evaluate the trends influencing hotel and motel construction today. The book is a statement of the statics rather than the dynamics of hostelry development.

Hotels and motels have become the modern "agoras" or meeting places of automobile and airborne Americans. And not only Americans, but people from all parts of the world are reflecting the impact of the jet age and the increasing standard of living with the money and time for recreation and travel. There is a new era of hotel and motel building ahead, with a need for a book which recognizes the nature of the new mobility and which, in turn, investigates the nature of an architecture to serve it. Hotel and motel are symbols of the modern mobile age and surely ought to command more than an adequate architecture.

M. E. O.

THE ROOTS OF JAPANESE ARCHITECTURE

YUKIO FUTAGAWA AND TEIJI ITOH, FOREWORD BY ISAMU NOGUCHI

Reviewed for the AIA Journal by William J. Murtagh
New York, Harper & Row, 1963. 208 pp illus 10¼" x 14" $25.00

This outstanding volume on Japanese architecture is much more than just a history of architecture, but, as the title implies, it is a search for the roots of the building forms in Japan. It attempts to illustrate in 128 photographs and accompanying text the how and why questions of the genesis of traditional construction in that country. Thus, one of the great contributions to architectural achievement in the world is traced to its origins in the philosophy and religion of the country.

In the foreword, the eminent American sculptor and garden designer, Isamu Noguchi, comments upon the magnificent use of photography in the volume and the development of the technique of photographic language in Japan, where photography is sometimes handled like Japanese painting, often making detail more revealing than the broad picture.

The text is developed by Mr Itoh, Special Research Fellow of the Institute of Industrial Science at the University of Tokyo, in an introduction in which the philosophy of Japanese architecture is laid down and its evolution from the pillar, or natural tree, lays the groundwork for a point-by-point visual and written discussion of some of the salient characteristics of Japanese architecture and the meaning behind these forms.

Since Japanese architecture is predominantly an architecture of wood, it is no surprise that the discussion begins with the uses of wood in Japanese building, followed by a short discussion on the uses of stone and earth in structures in that country. The concepts of limiting infinity through the use of enclosed or walled gardens, a discussion of the garden as a miniature of the universe, the link of Japanese architecture with nature through the use of verandahs and vistas from the building, a short outline of the use of the pillar and the *tatami* mat in creating the modular approach in Japanese structures, the Tea House, the uses of bamboo, the Japanese practice of borrowing space to enlarge the visual impact of their structures, the importance of building up vertical planes, and finally the roof, as the symbol of the link between Heaven and Earth in the Japanese philosophy of architecture, are all considered in turn. This is followed by a lengthy series of commentaries on the plates, an index of plates and a list of plates.

The volume is a handsomely bound book with interesting end papers of cryptomeria, a wood used since ancient times as one of Japan's favorite building materials.

The text, while sublimated to the pictorial material in the volume, is informative and well written. It presents, for example, the Japanese metaphysical concept of *mu*, the philosophy of nothingness or nonrelativity of the identity of opposites. In the short explanation of this philosophy, for example, one gains a clearer insight into the Japanese approach to beauty and ugliness. But it is in the photographs wherein lies the magnificence of the volume, either to the initiated and uninitiated, to the casual page-thumber, or to the serious advocate of Japanese design. The photographs are of continuing excellence, not only from a technical viewpoint, but in the choice of angle and the selection of detail emphasizing the inward beauty which the inquiring mind constantly seeks out. There are a number of tipped-out sheets affording the reader a recurring enlarged scope of visual impact. One extremely useful arrangement is the tipping out of the last page which lists the plates contained in the volume. Thus, any plate throughout the book can immediately be identified next to the plate as the pages are turned. This is a most convenient method of identifying the plates on one sheet rather than on the individual sheets themselves and forms a convenient way for the reader to make ready references.

It is especially exciting to find in these pages, through the selective photography of Mr Futagawa's camera, magnificent comparisons with abstract art which many of the plates conjure in the reader's mind. Unfortunately, like any other book on Japanese architecture the outstanding quality of the photographs, the text and the handsomeness of the subject matter, all fail to communicate the great sense of scale which is one of the outstanding qualities of all Japanese architectural and gardening endeavor. It does readily get across, however, the sense of textures and pattern by which the use of nature's materials so greatly enhance the architecture of the Japanese.

TWO BOOKS ON COLOR

Reviewed for the AIA Journal by Waldron Faulkner FAIA

COLORS FOR INTERIORS

FABER BIRREN

New York, Whitney, 1963. 224 pp 200 illus 16 pages of color chips 8¼" x 10¼" $16.50

This book surveys graphically the traditional use of color from earliest times to the present. Divided into two sections, it also shows how color can be used functionally to solve problems in lighting and design.

The first part covers the history of color both in the classical and the creative traditions. Beginning with the symbolic use of color among the ancients, as exemplified by the Egyptians, the Greeks and the Romans, the author traces its evolution through the Renaissance in France, in England and in America down to the present day. The colors used in each historical period are illustrated by means of a page of color chips.

The second section of the book is devoted to modern principles in the functional use of color as applied to hospitals, schools, industrial plants, offices, stores, restaurants, hotels and theaters. Here Mr Birren explains in detail the latest theories on illumination and its relation to color. He bridges the gap between the lighting engineer and the interior designer in a practical and logical manner.

This book would be of value to architects, to interior designers and to all those who are interested in questions of color and illumination. Although the charts are helpful in showing specific colors found in the historic past, they are less impressive when used as suggested solutions to modern decorative problems. The chief contribution made by this book is the clarity with which basic scientific concepts are explained in the light of a full awareness of the stream of artistic history.

COLOR—A SURVEY IN WORDS AND PICTURES FROM ANCIENT MYSTICISM TO MODERN SCIENCE

FABER BIRREN

New Hyde Park, University Books, 1962. 223 pp 250 illus 7⅝" x 10½" $15.00

A logical sequel to others by the same author, such as "State of Color" and the "Monument to Color," this volume goes further in depth than either of its predecessors.

Like ancient Gaul, it is divided into three parts. Under the heading "The Mysterious Beginnings," Part I deals with the use of color from prehistoric times to symbolize such ideas as man and his gods; the earth and the universe.

Part II, entitled impact on "Science and Culture," traces the evolution of man's thought from early superstitions to modern concepts of vision, sensation, music and painting and their relation to color.

"Implications for Modern Life" are covered in Part III. These describe color in nature, including the reactions of the human body, mind and emotions to color.

Although this material is not altogether new, it is presented in a fresh and up-to-date manner. Perhaps the best feature of this volume is that it again makes available to the general reader factual information contained in earlier books by Faber Birren that are now out of print. It is a good story well told.

THE DOMESTICATED AMERICANS

RUSSELL LYNES

New York, Harper & Row, 1963. 308 pp illus 6¼" x 9¼" $6.50

Mr Lynes is a brilliant writer, as well as a penetrating observer and a thorough scholar. We have come to expect both wit and wisdom from the author of "The Tastemakers." In his newest book he has not disappointed us. It is a book for all civilized Americans to read—especially those who had a "nice" bringing up—and it is particularly a book for all American architects to read. Although ostensibly a history of social mores, it is essentially a history of the house, in its many varying forms from the simple and straightforward to the elaborate and outlandish, as well as of the life that went on within the house, which also varied from the simple to the grotesque. It is more the story of how we shaped our buildings, rather than of how our buildings shaped us.

To those readers old enough to remember white tablecloths and linen napkins, the ornate cast-iron coal-burning stove with its fearful hot water boiler, and tea in the afternoon on the verandah, it will bring many a nostalgic pang for *temps perdu*. Mr Lynes begins with the Greek Revival, "a sort of domesticated house of the gods," and follows through what he calls the "picturesque" period of the Gothic Revival cottage and the Tuscan villa, and the "quaint and artistic" era of the Queen Anne house—"better suited to the age of the bustle than it seems to be to the age of its mechanical counterpart the tail fin"—into the age of the French chateau, the apartment house and the bungalow. He finds some good in the bungalow, "a maximum amount of space at a minimum cost with a minimum of maintenance," and "the bungalow had more to do with how suburban Americans live today than any other building that has gone even remotely by the name of architecture in our history."

He goes through the house, room by room, tracing the development of each—the rise and flowering of the dining room, its disappearance and its contemporary though altered re-appearance. He notes, with a touch of lament, the passing of the verandah, ". . . the cool verandah, with its informality, its comfortable rocking chairs and swings, was one of the most docile and pleasing of rewards." His comment on today's houses is discouraging, but too true, "Today's housing is part of a package—house, lot, neighborhood—all precooked and deep-frozen, so to speak, and its relation to architecture is very nearly nonexistent." Quoting a *New York Times* article, he finds, however, that architects themselves prefer to live in "brownstone houses with eleven- to thirteen-foot ceilings, tall staircases, and dining rooms that open into small back-yard gardens." He visits Westover, on the James River in Virginia, "perhaps, I thought, the most splendid piece of domestic architecture in America," representing the "vanished idea of the house built for the great-grandchildren."

As to the contemporary house, he says "Every conscientious effort on the part of Americans to establish a permanent domestic architecture has failed. We have groped our way from one style to another hoping that we would hit on something that might suit us, but how could we expect to find it when we were neither willing to stay still in one place nor on one social level?" And, later: "It seems to me interesting, now that there are no more real physical frontiers in America, that it should be the architecture of impermanence that has won out. The architecture of the economic, spiritual, and social frontier has replaced the architecture of the physical frontier. Even when there is no place to go, we have elected not to settle down."

Mr Lyne's book reads fast and easily, but it seems to suffer from a sort of over-all "grayness"—he hammers facts and comments at us so fast there are no breathers. Although he is at his usual best with the quick turn of phrase, he builds up to no climaxes and drops into no sloughs—in other words, if read aloud, it would seem to have to be read in a sort of monotone. (This is less so in the latter third of the book—perhaps he warmed up more to his material.) He is better when he opines than when he merely relates. One thing is certain, and that is that the book represents an enormous

amount of research, and exhaustive reading of books, magazines, newspapers and manufacturers' catalogs of the times, as well as accounts by travellers and observers both foreign and domestic, such as Charles Dickens, Harriet Martineau, Captain Marryat and Mrs Frances Trollope, all of whom he quotes freely.

Although he traces the various stages of the development of the American meal, he throws no light whatsoever upon the origin of the barbarous modern custom of serving, and *eating*, the salad first. When this reviewer was a boy, and later, the salad was served in its proper place as a light refresher after the heavy meat course and before what was usually a heavy and sweet dessert. Mr Lynes' menus from 1890 show the salad in its proper place. Now, in even the best of restaurants and even in private homes, the salad is plopped down in front of you the minute you finish your soup, or before—where it must stand, getting soggy, limp and inedible, until a gourmet is ready for it. This heathen practice seems to have crept in within the past twenty years or so. How come, Mr Lynes? J. W.

BUILDINGS FOR THE ELDERLY

NOVERRE MUSSON AND HELEN HEUSINKVELD

Reviewed for the AIA Journal by George K. Kassabaum AIA

New York, Reinhold Publishing Corp, 1963. 216 pp illus 8½" x 10½" $15.00

Over the past four years, much thought, research and experimentation have gone into the search for the best solution to a problem unique to our age—quickly creating a new and proper environment for large numbers of older people. In this new book, the authors have efficiently and effectively collected and summarized the best thinking of today and have attractively presented it to all who are interested.

For the uninitiated, there is suggested an orderly schedule of events that, if followed on all projects, would help relieve the sometimes painful process of defining, understanding and satisfying a client's desires.

To the experienced professional, this step-by-step description of each phase of a project occasionally reads like a mere check list and, therefore, might sometimes seem a little tedious. However, as the book is aimed at laymen, sponsors, administrators, etc. these parts should be turned over to present and future clients, for they constantly stress the above-normal contribution that an architect can make if brought in at the beginning rather than after the land is bought and the project conceived. Now all the profession needs to do is prepare itself so that it is ready to supply the services and counsel that are promised. This book can help do just that.

Actually, there is much here that every architect should think about again and again, regardless of the nature of his project of the moment. But especially for those who are approaching, or are in the middle of, planning specialized housing for older people, this book has much to offer. Sixty per cent of the book is devoted to a description of 55 projects of all types—congregate, proximate and combinations—and is, therefore, the best available collection of what can be done. Also, there is sufficient technical data to greatly simplify the research that each architect should undertake if future mistakes are to be avoided.

The architect, sponsor and administrator are repeatedly challenged to think of the needs of the individual who will live in the building rather than of the convenience of the janitor who will maintain it or the efficiency of the administrator who will run it. This gets into the philosophy of the architect and the book is generously sprinkled with the authors' personal feelings. Whenever this happens, disagreements on specifics are bound to occur, but even though a few statements can certainly be argued, the reader is given a sound base from which to deviate in detail if he wishes.

A great deal is being written on this subject today, and much of it is so general or so repetitious that many hours of well-intentioned research can be wasted. For those whose time is limited, but feel the need to know more about this specialized field, this book should be in their library.

TWO BOOKS ON THE CITY

FACE OF THE METROPOLIS

MARTIN MEYERSON, WITH JACQUELINE TYRWHITT, BRIAN FALK, PATRICIA SEKLER

Sponsored by ACTION. *New York, Random House, 1963. 249 pp illus 11¼" x 8¾" $7.50*

The stated purpose of this book is "to stimulate a wider and more sophisticated interest in urban design and architecture." Unfortunately, the physical design and the contents of the book fall short of this purpose. Most of the well-known architectural arrangements of recent years in the United States and abroad are assembled. Several pages of text and photographs are devoted to each case history. The preface regrets that there is a "lack of lay criticism and appraisal," but, in turn, the book does not reveal a critical approach in its interpretation of the American architectural scene; neither does it provide new perspectives for the emerging urban scene.

The book opens with a verbal and pictorial essay into the esthetics of urban development in America. The essay emphasizes the manner in which an increase in scale in all aspects of activities has affected architecture and architectural articulation. Although the essay evaluates some of the forces changing the cityscape, the probe is not a deep one. It would be helpful to have a deeper understanding of the trends and tendencies working a transition in the nature and the function of "metropolis."

Public and private policy makers will require a more profound perception of the principles of urbanism before they can make the design decisions for it. This book does not suggest canons of criticism nor does it propose essential elements upon which to build an architectural or urban esthetic. The concluding chapter, "Constraints and Possibilities," is inadequate. The cost of good design and the absence of education in the appreciation of design are mentioned as "constraints." These factors have long been identified, and the necessity is for a new approach to the advantages of good architectural and urban design. Increase in the scale of building provides the "possibilities" for an urban esthetic, but it would have been helpful to show how the center city, the middle city and the outer city can be tied together through interconnections among the civic components mentioned. Imageability in the city, as Kevin Lynch has demonstrated, depends upon knowing the nature of the connections among the parts, and their relation to the whole.

The book bids for the use of architecture and urban design as informed instruments of public and private policy. Certainly, ACTION is correct in asserting that the discipline of design is the urgent need of the urban age ahead of us. Esthetics, however, is not a part of politics, rather it belongs to philosophy. A criticism of the book is that it does not provide such a philosophy.

This book is not likely to serve the stated hope "that our appraisal and exposition will help the reader become a more informed critic . . ." If there are solutions to urban problems inherent in the nature of urban design, they lie in the future rather than in the past. This book deals with the city of the past rather than the city of the future.

M. E. O.

THE EMERGING CITY

SCOTT GREER

New York, Free Press of Glencoe, 1962. 232 pp 6" x 8½"

In this book, Mr Greer considers the possibility of the city becoming obsolete. He attempts to reformulate a perspective of the city, breaking away from images he feels reflect unreal problems. As he sees it, the basic problem of the modern city is twofold: intellectual and moral—in that order. By explaining the city on the basis of a theory of social change that emphasizes the increase in organizational scale, he reveals certain uniformities behind urban change. He asserts that lack of awareness of these uniformities lies at the root of most urban problems and discusses an "emerging society," rich in time and money, affecting the form and quality of urban life now and in the future.

TESTAMENT OF STONE

EDITED BY MAURICE ENGLISH

Evanston, Ill, Northwestern University Press, 1963. 228 pp illus $6.50

The subtitle, "Themes of Idealism and Indignation from the Writings of Louis Sullivan," immediately puts this anthology in its proper perspective. And because of "a revival in Sullivan's work and thinking," as the editor reminds us at the outset, this volume should find an enthusiastic audience, not only among architects but among any serious-minded readers who are interested in learning more about the architect's thoughts on a variety of social and philosophical subjects.

Mr English set out on a noble task when he collected the "neglected works" of this great master, who wrote with the same passion with which he practiced architecture. The writings come from such sources as unpublished manuscripts, convention addresses, letters-to-the-editor and the architectural press. Among the latter is the *AIA Journal*, most notably represented by "The Autobiography of an Idea," which appeared serially during the years 1922–23.

"These writings are of varying importance to Sullivan's career and convictions as an architect; they all, however, have much to say on the larger issues of democracy, education, man's destiny in America and in the Cosmos," Mr English hastens to add. "This volume of selections is explicitly focused on Sullivan the social thinker and prophet. So true is this that his finest single piece of writing, 'The Tall Office Building Artistically Considered,' is not included in these pages; it says little on the great themes he considered when he was not dealing with the art of building."

But Mr English has done more than simply collect these works and catalog them into three sections. He has prepared a seventeen-page introduction which is, in essence, a penetrating critique of Sullivan's literary efforts; in addition, he has set the stage for each individual piece or related pieces, as the case may be, with a concise preface that adds much to the value and enjoyment of this book.

In digesting Sullivan's prose in one grand banquet as opposed to previous piecemeal servings, the reader is struck with the range of the architect's literary competence. First and foremost a poet, he can reflect the romantic beauty and calm of the glimmering moonlit lake or the overwhelming power of the roaring sea; sometimes his words

are but part of the babbling brook or again of the cascading stream that never ceases to churn.

Despite the literary vehicle he uses, Sullivan stays on the path of his democratic ideal: that we Americans must find the roots of our architecture or whatever it is we produce in our native soil, there to be nurtured by social justice and the human dignity of mankind.

Having read this book in galley form, this reviewer cannot comment on the ornamental drawings done by Elizabeth G. Stout, who adapted her designs from details of three Sullivan projects. But in summing up, he can endorse Mr English's statement about the why of the book: "This Reader has been selected, then, not to illustrate Sullivan the architect, or the prophet of modern architecture, but Sullivan as Jeremiah, and also as the herald of a time when New York and Chicago might be rebuilt in the image of the City of Man. In this latter role, he attempted as a writer (no less than he had as an architect) to be the catalyst from which the Western traditions of the classic and the romantic world be merged into a new 'organic' synthesis: the art—and social order—of democracy." R. E. K.

THE ARCHITECTURE OF FANTASY

ULRICH CONRADS AND HANS G. SPERLICH

Translated, edited and expanded by Christiane C. and George R. Collins

New York, Frederick A. Praeger, 1962. 187 pp illus 11¼" x 8¾" $16.00

The spirit of this book is caught up somehow in a description of Bruno Taut (Martin Wagner, *Bauwelt*, XI, Heft 46, Nov. 11, 1920): ". . . He sketches the most remote harmonies, which he hopes will be built by people who find their happiness in architecture."

In a time when imaginative architecture appears to be frustrated by public taste and thwarted by official policy this book fulfills an important task. It considers both realized and unrealized "architecture of fantasy" in individual buildings and in urban units. Since it deals with the "fantastic" and the "utopian," a serious study of the illustrations is indispensable.

The authors state that their sole aim "is to shed light on those tendencies and ideas that are off the beaten track and are therefore neglected and overlooked." The book demonstrates how architectural imagination has shattered the forms of and provided the fundamentals for twentieth century architecture. The book accomplishes its purpose through an excellent text and a fascinating arrangement of photographs and drawings. By a consideration of the unusual and the visionary, the authors, historians of art and architecture, give evidence that creative fantasies, although seemingly eccentric and isolated phenomena, reveal interrelationships and logical trends and tendencies which cannot be ignored if one would understand the architecture of this century. It is clear from a study of these fantasies that the architect has conceived magnificently. He has been daring and imaginative in structure and symbol.

The book is valuable for its text, for its illustrations and for the source materials included. The documents are almost altogether translations of statements, letters and contemporary critical comments from the Berlin Expressionist architectural movement and provide a provocative complement to the illustrative materials and commentary. An amazing amount of "fugitive" material has been arranged in this book, most of it never available before in English.

The subtitle, "Utopian Building and Planning in Modern Times," might be somewhat misleading since a considerable amount of the architecture has been built. The works of such architects as Antonio Gaudi, Erich Mendelsohn, Bruce Goff, Bruno Taut, Felix Candela and Buckminster Fuller are included along with projections by Oscar Niemeyer, Frei Otto, Antonio Sant'Elia, Le Corbusier and others.

It should be noted that *L'Architecture d'Aujourd'hui* in its June-July 1962 issue carried a similar study of "Architectures Fantastiques," and makes an interesting companion to this book. This endeavor reinforces the argument of "The Architecture of Fantasy" that a rebirth of Expressionism is having an impact upon contemporary architecture.

In conclusion, high praise is given to Christiane C. and George R. Collins for the excellent translations and informative notes. M. E. O.

THE TURNING POINT OF BUILDING

KONRAD WACHSMANN

New York, Reinhold, 1961. 239 pp illus 9½" x 10½" $15.00

The subtitle of this elaborately illustrated book is "Structure and Design." It is an argument for a new esthetics based on science and technology.

Beginning with Paxton's Crystal Palace, the great Firth of Forth bridge and the Eiffel tower, Wachsmann leads us through studies of various traditional and contemporary modules, and studies of surface, joint and connector treatments, to his concept of industrialized architecture. This seems to depend upon a delight in complex ferrous anatomy for its own sake—much as if Leonardo da Vinci in his pursuit of art had never gone beyond his drawings of dissections of the human body.

ART IN LATIN AMERICAN ARCHITECTURE

PAUL F. DAMAZ

New York, Reinhold, 1963. 232 pp illus 8½" x 10½" $15.00

By "art in architecture," the author does not mean the artistic aspect of architecture, and he certainly does not mean works of art merely situated in, on or near buildings. His precise meaning is the integration of the arts with architecture. This synthesis is the subject of his search in the lively area from the Rio Grande to Cape Horn, on the Arnold Brunner Scholarship.

The book includes a preface by Oscar Niemeyer, an excellent bird's-eye view (by a bird so microscopic as to be able to put it in three columns of print) and good, succinct chapters on sources of culture, the Pre-Colombian and Colonial heritages. The remaining bulk of the book is a critical review of specific projects with brief comments and many illustrations. There are over 400 of them, 16 in color. One wishes that the author had reduced the number and increased their size, and that the publishers had brought out the richness of the illustrations with a greater contrast of values.

Mr Damaz has a sympathetic understanding of the strong Latin American response to color and plastic form, in contrast to functionalism, but his sharp eye is not dazzled by great names and famous works.

In view of the present emphasis on art in our commercial and public buildings, the increasing interest in Latin America and the general unawareness of what is being done there, except for the spectaculars, it's indeed a timely book. R. K. D.

NEW FRONTIERS IN ARCHITECTURE

OSCAR NEWMAN

Reviewed for the AIA Journal by Eric Pawley AIA
New York, Universe Books, 1961. 224 pp illus 9" x 11" $15.00

Announced as the first of a new series: "Documents of Modern Architecture," edited by Professor Jürgen Joedicke of Stuttgart* and published simultaneously in five countries. This edition is mostly in English, some brief parts in French and German, with all captions in English and German.

This is a curious report of the 1959 meeting, possibly the last, of the International Congress of Modern Architecture (CIAM), in Otterlo, Holland. Always a grab-bag of personalities, this CIAM meeting of about forty invited architects and planners was no exception and it apparently blew up in self-realization. The procedure for the eight days was for each of many participants to present a specific architectural or planning project and then the season was open for brickbats from the rest. The Americans invited were Louis Kahn FAIA, who made a considerable impression with what seemed in this report a good old-fashioned stream-of-consciousness lecture, and Wendell Lovett AIA, of Bellevue, Washington, who was unmercifully clobbered by the Smithsons, the British inventors of New Brutalism, for presuming to defer to his client's program for a residence. One gathers the impression that these attacks were preceded by a now-watch-us-be-beastly-to-the-young-American glance around the group. Earlier, Lovett had expressed a concern for individual values lost in the common denominator approach of certain old hands in CIAM, making him as welcome as a skunk at a picnic.

There is a lot of interesting material here. Kenzo Tange, Ralph Erskine, Aldo van Eyck and others made valid contributions. We sense a tremendous amount of capable work in transcription, selection, editing and presenting all this disparate material and both Newman and Joedicke deserve credit for their constructive part.

The CIAM exists now only as a postoffice box in Rotterdam. So went another try at architectural criticism ending in a traffic circle with forty radial streets.

*We reviewed his fine "History of Modern Architecture" in the *Journal* March 1962 p 71.

FUTURISM: The Story of a Modern Art Movement, A New Appraisal

ROSA TRILLO CLOUGH

New York, Philosophical Library, Inc, 1961. 297 pp illus 4½" x 7½" $6.00

A historical and critical account of the aims, methods and theories in literature, architecture, art and music of the Futuristic writings. Beginning with the violent death of King Humbert of Italy (July 29, 1900) a new era of social and political pacification came into being. It was a reawakening of Italian political and cultural activities out of which grew Futurism. Mrs Clough based the book on the manifestos and articles in *La Voce* and *Lacerba* and the books of Boccioni, Marinetti, Soffici and other critics, also presenting and interpreting the ideas of writers, artists and critics who in the past twenty years have made a study and re-evaluation of the movement.

Thirty Years of HABS

CHARLES E. PETERSON FAIA

Pete is known around the country as "Mr Preservation"—as well he should be. for it was he who originated the idea of HABS and got it started. He recruited its first staff in 1933, directed the work of the St Louis field team in 1940 and the work in the eastern states from the Philadelphia office from 1957 to 1962

IN NOVEMBER of 1933 a memorandum proposing the Historic American Buildings Survey was offered to Arthur E. Demaray, Associate Director of the Office of National Parks, Buildings and Reservations (before then—and since—the National Park Service). This outlined a project to employ a thousand men for six months in preparing a collection of measured drawings augmented by photographs and other data. In support of the idea it was stated that:

The comparatively few structures which can be saved by extraordinary effort and presented as exhibition houses and museums or altered and used for residences or minor commercial uses comprise only a minor percentage of the interesting and important architectural specimens which remain from the old days. It is the responsibility of the American people that if the great number of our antique buildings must disappear through economic causes, they should not pass into unrecorded oblivion.

A broad range of subjects was suggested:

The list of building types should be almost a complete résumé of the builders' art. It should include public buildings, churches, residences, bridges, forts, barns, mills, shops, rural outbuildings and any other kind of structure of which there are good specimens extant. The lists should be made up from the standpoint of academic interest rather than of commercial uses. The largest part of individual effort spent so far in measuring antique buildings and recording them seems to have been given with an eye to adapting historic styles to modern commercial architectural practice. Much good has certainly resulted from this motive, though whole classes of structures have been neglected.

This was in the opening days of the Franklin D. Roosevelt administration, and the planning offices of the Federal government were encouraged to propose work programs for the unemployed. The six-month limit was standard to all these programs.

This memorandum won the quick approval of Director Arno B. Cammerer of the National Park Service, Secretary of the Interior Harold L. Ickes and Federal Civil Works Administrator Harry L. Hopkins.

The opportunity of cooperation in this promising venture was offered to—and promptly taken up by—Edward C. Kemper, Executive Secretary of the AIA and Dr. Leicester B. Holland FAIA, the latter acting both as chairman of the Institute's Committee on the Preservation of Historic Buildings and as head of the Department of Fine Arts of the Library of Congress. The Park Service placed its Thomas C. Vint, Chief of Plans and Design, Washington, in charge of operating the Survey. By the end of the year thirty-nine district officers nominated by the AIA had been appointed in centers ranging from Maine to California and an apportionment of men and money had been allotted to each. An Advisory Board was named by the Secretary of the Interior consisting of Dr Holland, chairman, and Dr Herbert E. Bolton (Berkeley, California), Dr I. T. Frary (Cleveland), Miss Harlean James (Washington), Dr Waldo G. Leland (Washington), John Gaw Meem FAIA (Santa Fe), William G. Perry FAIA (Boston), Albert Simons FAIA (Charleston) and Thomas E. Talmadge AIA (Chicago).

Such an activity was quite new to the American government, though measuring programs had been developed in Philadelphia and New York as unemployment measures and before that in Eng-

land. But it was congenial to the architects. In a burst of enthusiasm for the new work, field measuring parties were recruited and put into operation. By April of 1934 it was possible to open a country-wide exhibition of the new drawings at the National Museum in Washington. A few months later it could be reported that over five thousand sheets of drawings and over three thousand photographs had already been made.

The small staff in Washington assisting Mr Vint consisted mainly of Thomas T. Waterman, well-known architectural historian, John P. O'Neill and Frederick D. Nichols. With the notable assistance of Board members Holland and Perry, they developed standard techniques of recording, received and checked the drawings, photographs and written material which were then processed for transmittal to the Library of Congress.

The success of the program was generally acknowledged and its was renewed in most districts at the end of the six-month period. Steps were soon taken to endow it with a formal charter. On July 23, 1934, a memorandum of agreement was ratified by The American Institute of Architects, the Library of Congress and the National Park Service. This three-party contract declared that the Survey was "to be considered as a permanent plan for approval and disposition of all future graphic records of historic American architecture, whether such reports be made at the expense of the Government or upon individual initiative." In the following year Congress, in the "Historic Sites Act," specified the conduct of the survey as a regular duty of the Federal government.

As the 1930's wore on and economic normalcy gradually returned, unemployment decreased and many of the field offices went out of business. Where there were district officers of outstanding energy and persistence—such as Frank Chouteau Brown in Boston, Herbert Norris Moffett in New Jersey and Richard Koch in New Orleans—the program continued to operate longer than in other areas.

To conserve travel money the early work projects had to be confined generally to localities where the architectural personnel resided. Subjects chosen were therefore mostly those in or near the larger cities—to the neglect of whole regions full of old towns and rural architecture. Then for one year, 1940, under a Public Works appropriation, in order to distribute the coverage more widely, four mobile field parties were set up headquartered in Boston, Washington, St Louis and San Francisco. Each was equipped with a station wagon and a travel allotment. They ranged far and wide and added a diversity to the collections.

By the end of the year hostilities in Europe had become more threatening, and funds and manpower were withdrawn from the Survey, which virtually ceased when World War II began. In the following years only a few additions were made to the Survey collections, but early in 1941 the new HABS catalog could report records of 6,389 structures recorded on 23,765 sheets of drawings and 25,357 photographs in the Library. It was an impressive record for less than eight years of pioneering work.

In retrospect the most original feature of the Survey was its efficient arrangement for use. Nationally distributed catalogs list the contents of the collections. Negatives of both drawings and photographs were furnished the Library so that copies could be provided promptly and economically to all comers. For ready consultation, books of prints were placed in the reading rooms and each subject was recorded on a master card index at the Library. It was rewarding to learn from each of the Librarians of Congress since the program was started that more copies are sold from the HABS collection than from any other in that vast treasure house.

One of the important products of the Survey was an increased awareness generally of architectural values. Owners and occupants were often surprised to learn that they were using buildings significant enough for the Library of Congress to want its plans. The certificates awarded for each building were generally framed and hung with pride. There is no question that the preservation movement was encouraged by the Survey.

Under Mission 66

By the middle fifties, when the nation had resumed something like normalcy, Director Conrad L. Wirth of the National Park Service set about rehabilitating and modernizing the Parks which had suffered neglect during World War II and the Korean War. An effective program known as "Mission 66" was inaugurated and resulted in more adequate annual appropriations by Congress. This made possible a resumption of HABS by 1957.

The first campaign began in the Philadelphia architectural field office of the Park Service. The geographical coverage of the material at the Library of Congress was studied and plotted on maps. It could be pointed out that large areas of the country—even whole states—had never been reached at all. Then, too, very few buildings put up after the Civil War had been recorded. It was believed that good ones have been built in all periods and certainly history is always making landmarks of more. Late-period buildings had been omitted in the 1930's because very few historians had ever studied them or their architects. A quarter of a century had now passed and a great deal had been learned in that time about

American architecture. The founding of the Society of Architectural Historians (1940) and the National Trust for Historic Preservation (1949) reflected the growing interest in Early American buildings. Academic and professional schools had people working in the field with contributions being published. The result was an increasing appreciation of Victorian architecture and efforts to understand it.

The resumption of HABS in the fifties had to meet entirely different problems. Architectural manpower was by then in short supply. A program for employing architectural students during their summer recess had been started at the Independence Park, Philadelphia, in 1951. This was extended to the new historical park at Harpers Ferry, West Virginia, where a considerable group of unrecorded buildings were about to be restored as a setting for the John Brown episode of 1859. The program spread to other areas not under government ownership. Projects were subsequently undertaken by the Park Service architectural office in San Francisco and, finally, Washington, DC. At the national level a mark was made in the business of training architectural students and new talent has been recruited out of the younger generation for the important and exacting work of the architectural restorationist. Among other things the myth heard from oldsters that "the kids can't draw anymore" was disproved. Many of the new drawings made by undergraduates compare very favorably with those of professional veterans.

Because of the scarcity and cost of architectural manpower it was evident that many buildings could be reached only by photography. A steady drive was made to increase the quality of camera work and a remarkable collection of negatives were begun by such outstanding architectural photographers as Fritz Henle of New York and the Virgin Islands, Cervin Robinson of Boston and New York, Jack Boucher of Northfield, New Jersey, Cortlandt V. Hubbard of Philadelphia and Louis J. Schwartz of Charleston. Selections of fine salon prints have been shown in leading public galleries and they are still available for exhibition purposes.

A recording technique of special value new to this country was introduced to HABS through Professor Perry E. Borchers of the Ohio State University. That is architectural photogrammetry by which it is possible to quickly record on stereographic glass plates elaborate or remote structures such as church spires. These records can be converted to accurate scale drawings at any time by the expert use of plotting machines resembling those that produce contour maps. Extensive samplings were made of this technique, the last of which was the recording of certain early skyscraper buildings in Chicago last summer.

In recent years, at the urging of the National Trust, an abbreviated form of individual record now called the Historic American Buildings Survey Inventory (HABSI) was inaugurated. This uses a one-page form with small photographs which is well adapted to broad-scale surveys. Notable results were achieved by Charles St George Pope AIA, in the San Francisco Bay area. The program is promoted energetically by Earl H. Reed FAIA, of Chicago.

Altogether the Survey has installed at the Library of Congress (in what is now the Division of Prints and Photographs) over 27,000 sheets of measured drawings and 37,000 photographic negatives of over 10,000 structures. These are under the care of Dr Edgar Breitenbach assisted by Miss Virginia Daiker and others. Records are now coming in from Montana, Idaho and Hawaii, the last of the fifty states to be represented. Architect James C. Massey directs most of the field work in the East, Charles St George Pope in the West and Charles W. Lessig in the Washington, DC area. The whole program is now administered by John B. Cabot, Chief Architect of the National Park Service.

HABS was originated by architects and was launched on a nation-wide basis by the profession. Its field parties were captained by—and its records prepared by—architects. They were first arranged in the Library of Congress under the close direction of an architect and its comprehensive catalogs compiled by architects. The whole movement was sponsored by the Institute from the beginning and its support was authenticated by the "Tripartite Agreement" signed in 1935 (revised 1962).

The original approved proposal set up a national Advisory Board, the majority of whom were architects. We were fortunate enough to enlist the active support of such leaders in the field as William G. Perry of Boston, Albert Simons of Charleston and Richard Koch of New Orleans. Outstanding enthusiasts like Frank Chouteau Brown of Boston, Charles M. Stotz of Pittsburgh and Earl H. Reed of Chicago became District Officers. Experts in their own regions were developed like Richard W. E. Perrin of Milwaukee and Samuel Wilson Jr of New Orleans. These men and their colleagues, without competing with more conventional historians, created a monumental archive which is still growing. HABS was—and is—a movement generated by architects, and the Institute should keep in close touch with it, helping whenever possible.

We join with the great Seminar on Preservation and Restoration held in Williamsburg in September which resolved in favor of HABS the hope that it would continue and expand its efforts "as a service to the American historical community." ◄

Hear What They Say

THREE EVENTS in the annual AIA calendar offer exposure to the thinking of the coming generation of architects: the Student Forum in Washington, the Student Seminar at the convention and the AIA-ACSA Teachers' Seminar at Cranbrook. Not all of the teachers are young, but this is generally a young crowd. They are closer to students than the profession at large and influential upon student thinking.

I will call all of these men "young architects" though only the teachers include many who are registered. All are committed to careers in architecture. Naturally these young architects have much in common and, since they are exceptionally intelligent, display much individualism as well.

The idealism of the young architect is very much in evidence in these meetings. They like any kind of program—speech, seminar or old-fashioned bull session—about design. One day at Cranbrook a debate began to develop on "great architecture." It seemed that the term meant little less than that achieved by the Gold Medalists.

This fellow across the room criticized one of our famous architects (not a Gold Medalist) for not creating a great building every time! My own impression of this distinguished architect is that his home-run percentage recalls Babe Ruth but, unlike the Babe, he has no companion record for strike-outs. Then somebody added that a great piece of architecture need not be an equally good solution of the client's problem (I think I heard him right!), and that the great architect's client should tolerate some structural defects. How many experienced practitioners would go along with that premise?

Obviously some of these young architects consider most practitioners to be quite pedestrian in design. They will dismiss as alibis for poor design any reminders of the practical obstacles to great architecture in daily practice.

Actually this "shocking" viewpoint is most reassuring to me. It proves that young architects today possess the same healthy intolerance my generation had when we looked to Mencken and Fitzgerald to say what was wrong with society. We weren't quite as able to express our intolerance in terms of architecture, being somewhat distracted with Fitzgerald's ideas for liberating American women from the shackles of prudish conventions.

In the student meetings one type of individual who shows up is the Big Man on Campus. He is president of something-or-other, engages in extracurricular activities and may be earning his way through school. Some of the intellectuals seem to question his right to be present. Hooray for the BMOC too, I say. After nineteen years away from teaching, I have seen fifteen classes of former students grow up professionally. Many of the BMOC type have turned out to be leaders in their communities and great salesmen for good architecture.

The net result of acquaintance with this coming generation is a good feeling that youth doesn't change and that everything the profession needs is there—intelligence, curiosity, idealism, talent, ambition, leadership—in different degrees—in each individual. The hard knocks of life will blunt the cutting edges so the sharper they are before thirty, the better.

Our conduct of these meetings is developing more opportunities for these young architects to talk rather than be talked to. The speakers would do credit to any convention program. It's interesting to note how much these distinguished participants enjoy the opinions of the young architects.

Of course, one of our objectives with these meetings is to foster the concept of professionalism as espoused by the AIA. Another is to expose students and teachers to the views of prominent architects on education and practice. One hoped-for result is that the oldsters will understand even the most esoteric aspects of education and the young architects will see that the profession really wants more than draftsmen from the schools.

A successful liaison with young architects is perforce an exercise in liberal thought and is most rewarding if you open your mind and hear what they say. The chapters could do more of this kind of thing.

W.H.S.

Visual Benefits of Polarized Light

H. RICHARD BLACKWELL PH D

Director, Institute for Research in Vision, Ohio State University

IN RECENT YEARS, research studies of the operating characteristics of the human visual sense have provided a new basis for evaluating lighting in terms of its quantitative effect upon vision. Thus much, if not most, of what used to be considered *illuminating engineering* is becoming recognized as *vision engineering*. The design of efficient equipment for producing and distributing light remains the province of illuminating engineering, but evaluating the effectiveness of lighting in stimulating human vision must become the function of vision research specialists, not of electrical engineers. Vision engineering provides a quantitative method for evaluating all aspects of lighting which have been designated *quantity* and *quality*. Visual criteria include ease of seeing, comfort and pleasantness.

Development of this new field has been made possible by research studies conducted in various laboratories in recent years. Perhaps the cornerstone of vision engineering is the work completed by the author in 1958,[1] which defined the visual effectiveness of illumination quantity. The second most important portion of the work may well be the author's 1963 study of the visual significance of reflected glare.[2, 3] Taken together, these studies provide a quantitative basis for evaluating ease of seeing provided by lighting systems differing both in quantity and quality.

The recent study of reflected glare showed that well-designed lighting systems can increase ease of seeing to a substantial extent and can substitute lighting *quality* in place of considerable increases in lighting *quantity*. Effective lighting is describable in terms of size and placement of illumination sources, spatial

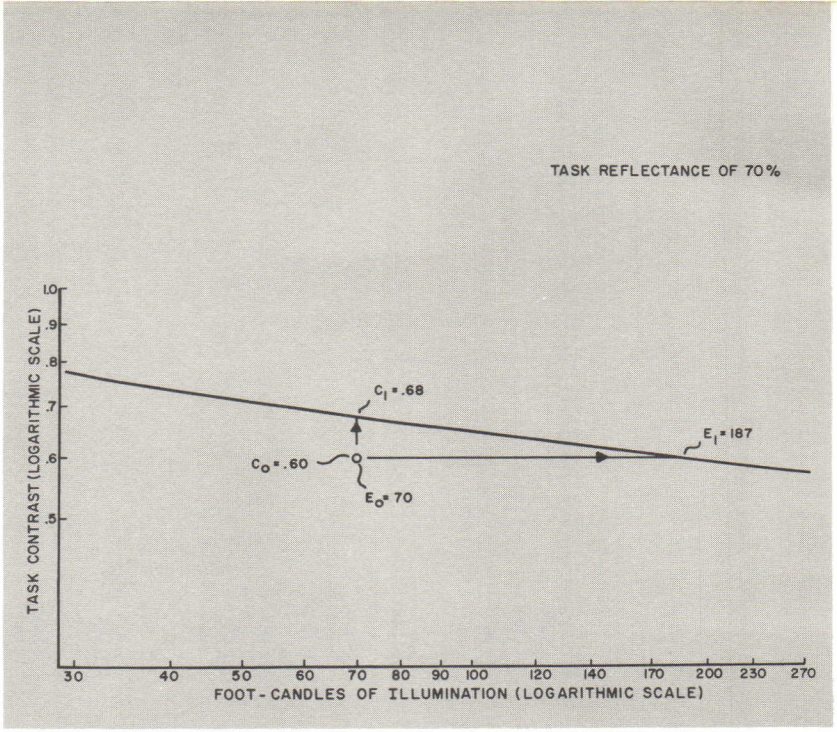


Fig 1:
Operating characteristics of human vision, demonstrating the large quantity of light needed to improve the ease of seeing as much as improvements in task contrast due to high-quality lighting

light distribution from each source and degree to which the illumination is *vertically plane-polarized.* Since this last characteristic is somewhat unfamiliar in the field of lighting, this article will describe the general principles which govern the visual effectiveness of polarized light. More detailed quantitative data on this new dimension of modern lighting will be found in a series of articles describing vision engineering.[8] Let us begin with a brief description of the physics of the subject.

The Physics of Polarized Light

We may all remember dimly from school days that light does not really travel in straight lines, but consists of complex waveforms propagated through space. If we could stand at one point in space and watch light waves pass by in slow motion, we would see that light traces out wave patterns, describable in terms of the spacing between successive waves. Light waves which are widely spaced are called *long* and look red to the eye, whereas narrowly spaced light waves are called *short* and look blue. Thus, the wavelength of the light pattern, viewed lengthwise of the beam, defines the color of light. If we stood right in the path of the oncoming light and watched it approach, we would see the light beam trace out transverse wave patterns. The mathematical character of these patterns viewed head-on defines the polarization of the light. Together with the quantity of light, polarization and color are the fundamental attributes of light.

The simplest kind of polarized light is called plane-polarized, which means that the waveforms viewed head-on represent vibrations in simple planes, rather than in cylinders or more complex patterns. Pure horizontally plane-polarized light would be seen to vibrate only left and right as it approached, whereas pure vertically plane-polarized light would vibrate only up and down. Most light would vibrate to some extent in all directions, and thus could be described by a vector analysis as being partially horizontally and partially vertically plane-polarized.

Light reflected directly from solid flat surfaces tends to be predominantly horizontally plane-polarized, whereas light which is first absorbed and then reflected will generally be unpolarized. The light which is directly reflected tends to hide the properties of the material behind a veil of light, as we have all seen in the case of the strong reflections of light from water and snow. We may greatly reduce this veiling reflection by the use of "polarized" sunglasses. The principle is simple. The reflected light is predominantly horizontally plane-polarized. The sunglasses absorb horizontally plane-polarized light and hence dim the veiling reflection considerably, enabling us to see behind the light-veil, using the vertically plane-polarized light emitted by the objects. Actually, the eye cannot detect that light is plane-polarized. In the case just described, nature produced a light-veil of horizontally plane-polarized light which was absorbed by correctly designed sunglasses, thus revealing what was otherwise hidden behind the veil.

The physics of polarized light is somewhat different when polarized sources are used for interior lighting. If we place a sheet of sunglass material over a ceiling-mounted source, the emitted light will be plane-polarized, but the plane of polarization will be different at different points in the room. In one position, the light will vibrate in a plane which may be described as the vertical, but at a position 90° away, the light will vibrate in the horizontal plane. In visual tasks located on horizontal surfaces, horizontally plane-polarized light tends to be reflected from the surface in the form of a light-veil, whereas vertically plane-polarized light tends to be absorbed and re-emitted. As in the natural scene, the reflected light-veil conceals the characteristics of materials, whereas the light which is absorbed and re-emitted reveals these characteristics. Thus, use of vertically plane-polarized light from the source tends to reduce the

light-veil and reveal the characteristics of the visual task, in a manner similar to that by which the polarized sunglasses reveal the characteristics of the outdoor scene. The difficulty is that sunglass material has a beneficial effect at some locations in the room, and an equally deleterious effect at other locations in the room. This is no doubt a good reason why sunglass material has never been adopted for ceiling-mounted light sources, although there are several additional reasons. Sunglass material achieves plane-polarization by absorbing the light of opposite polarization, which amounts to nearly half the total light. Also, this material is not attractive, since it is tinted a rather unattractive greenish- or brownish-gray and is transparent, revealing the bare sources.

In 1959, Marks [4] announced the invention of a radically different polarization material which had none of these disadvantages when used in ceiling-mounted light sources. This material is the multilayer polarizer, which achieves plane-polarization by reflection rather than absorption. Light reflected from a flat surface will be horizontally plane-polarized; hence, light transmitted will be preferentially vertically plane-polarized. The selective effect may be magnified by piling up reflecting surfaces, and nearly pure vertically plane-polarized light can be achieved in this manner. Little if any light is lost, since the light which is reflected horizontally plane-polarized may be depolarized by a suitable back plate and reflected for another and yet another chance to pass through the multilayer sheet. This is known as the "reflux principle."

The multilayer polarizer can be made without tint, and it can be diffused so that it is translucent but not transparent, allowing light to be emitted without allowing the light sources to be seen directly. Most important, this material provides vertically plane-polarized light at all points in the room. The light emitted from each source may be thought of as consisting of cones having the same degree of vertically plane-polarized light. The extent to which the light is vertically polarized depends upon the diameter of the cone. Light coming down from a source in a cone of small diameter has the least vertical polarization. The maximum degree of vertical polarization falls in a cone whose radius makes an angle of about 60° with the source.

Let us consider the visual benefits which result from the use of these new multilayer polarizers on ceiling-mounted light sources. We will consider their effects upon the ease of seeing, the comfort and the pleasantness of lighting.

Polarized Light and Ease of Seeing

We have already suggested that vertically plane-polarized light increases the ease of seeing by removing to some extent the veiling reflection produced by ceiling-mounted light sources. As reported in detail in Reference 2, this beneficial effect occurs for all visual tasks studied thus far, regardless of details of the lighting system or the angle at which the task is viewed. Thus, we may say simply that vertically plane-polarized light increases ease of seeing with respect to unpolarized light, ray for ray. We may next demonstrate the method for evaluating the visual significance of this increase in the ease of seeing.

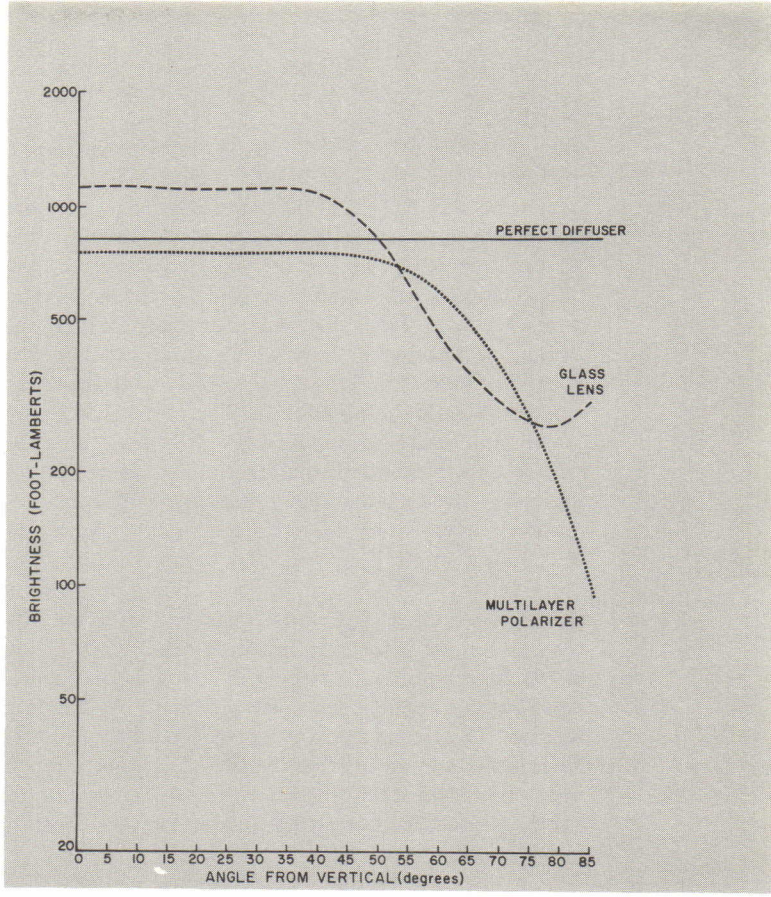


Fig 2:
Brightness characteristics of lighting panels, showing wide-angle brightness reduction of both glass lens and multilayer polarizer panels

The author's 1958 study resulted in a general curve which describes the operating characteristics of human vision, presented as the curved solid line in Fig 1. This is usually called the "standard performance curve" and is the basis for the recommended foot-candle levels adopted by the IES in 1958. Additional illumination increases ease of seeing by enabling the eye to see with less contrast, where contrast is the percentage brightness difference between the task detail and its background. The curve tells us how much illumination we require to see tasks with different physical contrasts. The scales are logarithmic, which means that equal distances on the curve axes correspond to equal percentages. At the levels of modern interior illumination, nearly 15% more illumination is needed to see a task with 1% less contrast. Thus, additional illumination is an ineffective way of improving the ease of seeing, but until the author's recent study of reflected glare was completed, it was considered the *only* way. The recent work has shown clearly that different lighting systems actually produce considerably different values of task contrast. This means that lighting can affect ease of seeing in two ways: by the *direct* effect of producing more task contrast; and by the *indirect* effect of altering the operating characteristic of the eye, to allow it to see less contrast.

The two methods of increasing ease of seeing are shown by the two arrows in Fig 1. Assume a lighting system that produces task contrast, C_o, and illumination, E_o. The open circle shows this combina-

tion as falling below the standard performance curve, indicating that the task is too difficult visually. To reach the standard level of vision represented by the curve, we may either increase contrast to the value C_1 (as represented by the vertical arrow) or increase illumination to E_1 (as represented by the horizontal arrow). Now, from the point of view of ease of seeing, a lighting system which produces contrast C_1 and illumination E_o is equal to one which produces contrast C_o and illumination E_1. Therefore, the quality of illumination which increases C_o to C_1 has the *visual effectiveness* of illumination equal to E_1 although a foot-candle meter reads the illumination level E_o. The *Visual Effectiveness Factor* (VEF) of this illumination is E_1/E_o. The system has a Contrast Factor (CF) equal to $C_1/_o$. When the CF is 1.087, the VEF is 2.000. This means that a lighting system which is able to increase task contrast by 8.7% increases ease of seeing as much as one which *doubles* the foot-candle level provided by the first system. This arithmetic is fully accepted by lighting engineers [5] and means that *quality* of lighting is much more important than *quantity*, even so far as ease of seeing is concerned. An 8.7% increase in task contrast

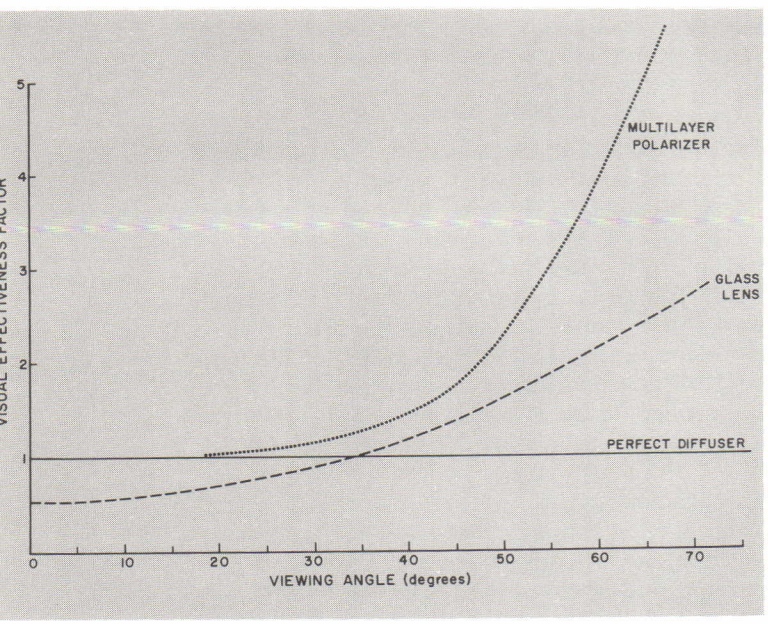


Fig 3:
Visual effectiveness of lighting panels when illuminating a pencil task viewed at different angles from straight down

is actually not very obvious to the unskilled observer. But then, neither is the change in ease of seeing produced by doubling the foot-candle level. Thus careful laboratory and field methods are required to evaluate the ease of seeing produced by various lighting systems.

We may next consider what principles of lighting can be used to increase task contrast. Task contrast actually depends upon the strength and polarization of each light ray, and therefore depends upon location and size of ceiling-mounted light sources in a complex manner. An adequate treatment of this problem will be found in other articles by the author.[8] Here, let us consider only what effect lighting *materials* have upon task contrast.

The light rays which produce the *least* task contrast are those which come from what is called the specular angle. That is, there is a point on the ceiling which is the terminus of a line directed downward from the eye to the task and reflected as by a mirror upward toward the ceiling. Task contrast can be improved by minimizing the amount of light coming from this point and from neighboring points on the ceiling. This means that the spatial distribution of light coming from each element of the ceiling will influence task contrast to a different extent for each angle at which a task is viewed.

We can analyze the visual effectiveness of materials with known spatial distribution of light by computing the task contrast they will provide.[2] Fig 2 shows the spatial emission characteristics of three translucent lighting panels. The curves show how the panel brightness varies with the angle at which the panel is viewed, when zero represents looking straight up at the panel. These data are convenient for use in computing the task contrast produced by illumination from these panels. The solid curve is a perfectly diffuse panel which has equal brightness from all angles. The dashed curve is a well-known glass lens panel which cuts off light at wide angles in order to reduce glare discomfort. Essentially the same characteristics are found with plastic lens panels. The dotted curve is a flat multilayer polarizing panel which is available in different plastics such as vinyl, styrene and acrylic. Although this panel was designed primarily to produce vertically plane-polarized light, it also possesses wide-angle brightness cut-off.

Fig 3 shows values of the Visual Effectiveness Factor (VEF) for these materials when used to illuminate a visual task consisting of medium soft pencil on matte white paper. Values are given for various viewing angles, with zero representing the observer as looking straight down at the task. The value of VEF is taken as unity for the perfect diffuser at each value of the viewing angle to serve as a standard of comparison.

Consider first the values of VEF for the lens panel. When the task is viewed straight down, the VEF is about .5. This means that twice as much illumination will be needed with these panels as with perfect diffusers, for equal ease of seeing. The value of VEF increases with size of the viewing angle, reaching unity at about 34° and increasing upward to 2.0 at 58°. This means that when the task is viewed at 58°, only half as much illumination is needed with these panels as with perfect diffusers. Clearly, the light distribution produced by these panels greatly *reduces* ease of seeing for small angles of view and *increases* seeing ease for large angles of view.

Consider next the values of VEF for the multilayer polarizer. The values are about equal to unity for all angles of view up to 18°, and increase markedly to a value of 2.0 when the task is viewed at 47°. The value for 60° viewing is nearly 4.0. This means that for viewing the pencil task at small angles the

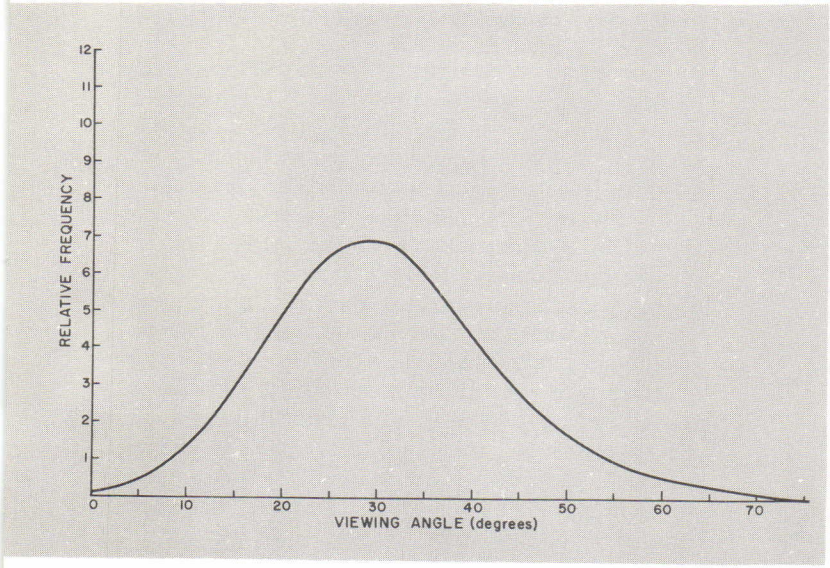


Fig 4:
Frequency of viewing at different angles

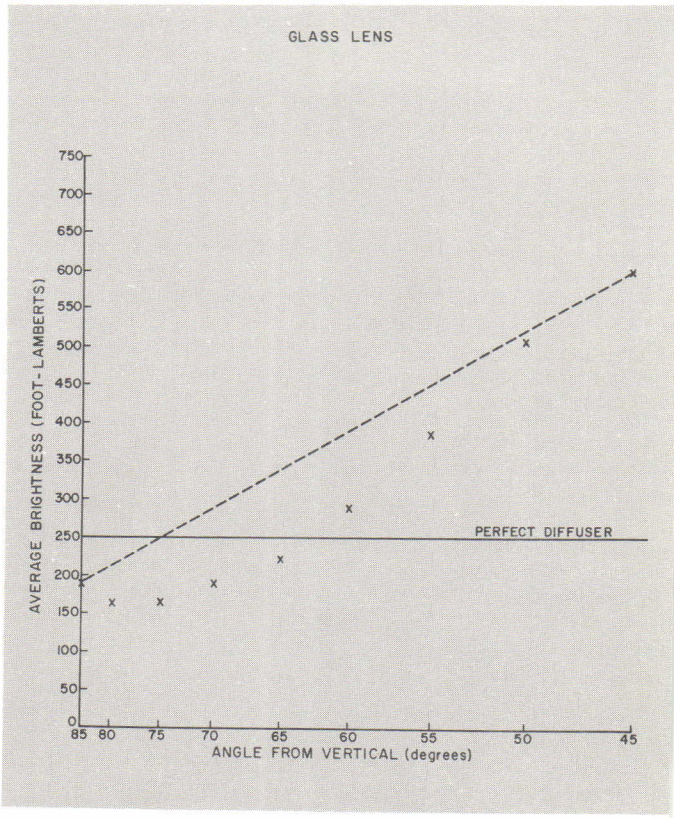


Fig 5:
Brightness characteristics of glass lens panel to meet the Scissors Curve criterion for the reduction of glare discomfort. Dashed line and data points are for the glass lens

illumination level required with these panels is about the same as for perfectly diffuse panels, but only half as much illumination is needed for viewing at 47° and only one quarter as much is needed for viewing at 60°.

Comparison of the data for the lens and multilayer polarizer panels shows rather well the effect of polarization as such, since the two panels have wide-angle brightness cut-off. The effect of polarization is sizable for *all* viewing angles. In effect, when the viewing angle is small, the beneficial effect of polarization is offset by the deleterious effect of the spatial distribution of light (which does, however, reduce glare discomfort).

Fig 4 demonstrates the frequency with which different viewing angles are used.[6] We note that angles are used from 0 to more than 70°, with the mode between 20 and 40°. Thus, the lens panels reduce ease of seeing at the very angles at which vision most frequently occurs. The multilayer polarizer does not improve ease of seeing much for many viewing angles which are frequently used, but it does increase seeing ease substantially for other commonly used angles. If the frequency of different viewing angles is used to weight the values of VEF for the multilayer polarizers, a value of nearly 2.0 is obtained when four different visual tasks are considered and when weight is given to the greater need for improved ease of seeing for tasks viewed at the wider angles.[3] This means that illumination from perfectly diffuse panels would have to be doubled to produce the over-all improvement in ease of seeing made possible by use of multilayer polarizing panels. The interesting and important point to emphasize about the multilayer polarizing panels is that they improve ease of seeing as indicated, without any appreciable loss in luminous efficiency. The visual effectiveness of such panels, and their efficiency in converting lamp lumens into foot-candles, are revealed jointly by the adjusted VEF. This is an index which for the first time summarizes the effectiveness of a lighting material in aiding vision, taking account of both the *quantity* of illumination provided, and the *quality* of this illumination as measured by its ability to provide good task contrast.

Polarized Light and Visual Comfort

The degree of comfort to be expected with lighting systems involving different materials may be evaluated in terms of the Scissors Curve.[7] This curve reflects the fact that the eye can tolerate a greater brightness directly overhead than across the room, the latter being nearer the horizontal line-of-sight. To reduce brightness near the line-of-sight, the material must have the wide-angle brightness cut-off illustrated by both the lens and multilayer polarization panels in Fig 2. The Scissors Curve sets an upper limit on the tolerable brightness at each angle, as shown by the sloping lines in Figs 5 and 6, requiring that a light source be dimmed until it falls below the allowable brightness at *all* angles.

Expressed in these terms, we can only say that a light source does or does not violate the limitations

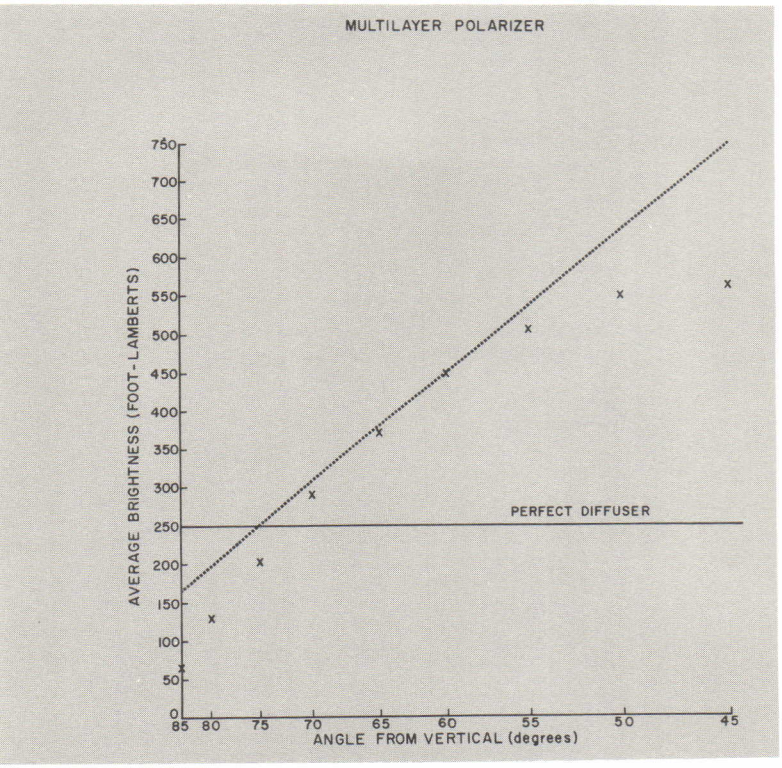


Fig 6:
Brightness characteristics of multilayer polarizer panel to meet the Scissors Curve criterion for the reduction of glare discomfort. Dotted line and data points are for the multilayer polarizer

set by the Scissors Curve, but we cannot compare the abilities of two materials to reduce glare. Of course, we want to provide illumination *without* producing glare discomfort. The author [8] has developed the Index of Comfortable Illumination (ICI), which rates how much illumination a material can provide without discomfort, using a perfectly diffuse panel as a basis of comparison. The values are 2.44 for the glass lens and 2.36 for the multilayer polarization panel. This means that these panels are both so effective in reducing glare discomfort that nearly 2.5 times as much illumination may be used without discomfort as may be used with perfectly diffuse panels. It should be emphasized that the multilayer polarizer has achieved almost as good control of glare discomfort as the glass lens, without losses in ease of seeing for tasks viewed at small angles.

Polarized Light and Pleasantness

As indicated earlier, vertically plane-polarized light always reduces the amount of light-veil reflected from the surface of materials, and therefore reveals to an increased extent the patterns of texture and color in materials. The light-veil is an unfocused image of the light source. Thus, vertically plane-polarized light brings out the essential character of materials from behind the veil contributed by the light source. This effect occurs for all surfaces in a visual environment and for all angles of viewing involved. The use of vertically plane-polarized light therefore increases the purity of colors, particularly those with great saturation, and increases the richness of textures.

To summarize, vertically plane-polarized light produces a fundamental improvement in the ease of seeing, comfort and pleasantness of the visual environment, without appreciable loss in luminous efficiency. The primary effect of vertical polarization is to reduce the light-veil formed by surface reflection of light from ceiling-mounted light sources, thus improving the visibility of task detail to increase ease of seeing, and improving the apparent saturation and textural richness of materials to increase esthetic pleasantness. These effects occur for all ordinary materials used in visual environments, for all surfaces and all viewing angles. As an additional benefit, flat multilayer panels which produce vertically plane-polarized light reduce panel brightness at wide angles, which markedly reduces glare discomfort. No other lighting material produces a comparable increase in task detail, apparent saturation and textural richness for all materials, surfaces and viewing angles. The class of lighting material (the glass or plastic lens panel) which produces a comparable decrease in glare discomfort by means of a wide-angle brightness cut-off decreases task detail and decreases ease of seeing at the viewing angles most commonly used with tasks mounted on horizontal surfaces.

As with any class of useful products, multilayer polarizers may be made with high or low effectiveness. Multilayer polarizing panels should be certified with respect to the Visual Effectiveness Factor (VEF) and Index of Comfortable Illumination (ICI), as well as with respect to their effectiveness in providing illumination from lamp lumens.

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Commission on Public Affairs, Reginald Roberts, Chairman
Committee on International Relations, Robert W. Cutler FAIA, Chairman

International Relations

UIA Working Commission on School Buildings Hamburg—May 1963

ERIC PAWLEY AIA

IN CONTINUATION of the Institute's active interest in international architectural affairs, we participated in Reunion IX of this important working commission of the International Union of Architects (UIA). Its meetings are held each year in a different country at the invitation of the "National Section" of the UIA—the national association of architects in that country.

In this case, the meeting was in Hamburg at the invitation of the *Bund Deutscher Architekten* (BDA—Association of Architects of Federal Germany) May 12-19, 1963. As official representative of the AIA to this Commission, I had spent several months getting exhibitions of technical data lined up in answer to Commission requests, sending background material to Commission members, and in preparing myself to report on vocational and technical education—the principal theme of Reunion IX.

The following persons attended the meetings, representing twelve national sections of the UIA:

Jacques Marozeau, Rapporteur Général and Acting President (Chairman) (Morocco)
Professor Günter Wilhelm, Secretary and Delegate to UIA Executive Committee (Germany)
Enrique Vergara, Alternate, representing Pedro Ramírez Vázquez, President (Mexico)
Jean-Pierre Cahen (Switzerland)
Ciro Cicconcelli (Italy)
Roger Dhuit (France)
J. P. Kloos (Netherlands)
Carlos de Miguel (Spain)
Eric Pawley (USA)
Professor W. Schütte (Austria)
Andrei Tchaldimov (USSR)
Michael Powell (UK Alternate)

UIA visit to Ahrensburg Castle. Group at left is not inspecting painting but is a Russian-speaking huddle

Messrs Campbell (UK), Hedqvist (Sweden), Gaspari (Yugoslavia), Reidy (Brazil) and Schranil (Czechoslovakia) were absent; but the Commission greatly benefited from the presence of Pierre Vago, Secretary-General of UIA from Paris.

In addition to the above, the following observers were admitted and participated in the sessions:

Pierre Bussat, Director, International Center for School Building (CICS, Lausanne)

Jorge Tarriba, architect, Coordinator of Latin American Regional Center for School Building (Mexico)

Enrique Estrada Cuesta, engineer, in charge of construction program for vocational education (Mexico)

Claude Verdugo, architect for Center for Vocational Education of Nador (Morocco)

Ina Kholklova, interpreter (USSR)

Italia Morayta, interpreter (Mexico)

Danielle Wolfowitz, interpreter (Mexico) and numerous German colleagues and assistants from time to time during the meetings.

In the course of the first working session of the Commission, Jacques Marozeau, who was appointed Acting President in the absence of Pedro Ramírez Vázquez, recalled the death of our colleague and friend, architect Dov Karmi of Israel, soon after our meeting in Mexico. A minute of silence was observed in his memory.

Danielle in felt slippers: "We saved them a lot of work—polishing that fancy floor for them!"

Official opening of Reunion IX took place on May 12, during a reception at the Atlantic Hotel, where most of the meetings were held. Architect Wichtendahl of Augsburg, President of the BDA, graciously welcomed the members of the Commission. Vice-president Wedepohl of Berlin and my old friend BDA Executive Director Gaber from BDA-Headquarters in Frankfurt were also present. (Dr Gaber was most helpful to the AIA exchange team in 1953.)

Thanks to the generous and careful planning of the BDA, its local members in Hamburg and Lübeck, and the authorities of the City of Hamburg, Commission members were able to visit a considerable number of specialized schools and to see some tremendous accomplishments of reconstruction and replanning.

At the time of this reunion, Hamburg also was host to a gigantic International Garden Exposition (three years in preparation), and to an exhibition of French impressionist painters in a new municipal art gallery. The BDA had also prepared a fine comprehensive exhibition of architecture by its members throughout West Germany (1945-1962) with a handsome illustrated catalog. It was also possible to see a performance in the new opera house and, when my interest in theater planning was made known, a special backstage tour was arranged for me. One day was set aside for a bus trip to the ancient Hanseatic city of Lübeck, with its new vocational schools, and en route the Commission was able to visit Ahrensburg Castle, a quite charming Danish Renaissance structure—white-painted brick exterior, reflecting moat, rows of poplars—with an unusually fine collection of porcelain, period furniture and interior woodwork.

A special meeting of the UIA Working Commission on Urbanism was being held in Hamburg at the same time and members of both Commissions participated in certain events and meetings. A considerable honor was paid both Commissions by a reception offered them at the city hall by the Senate of the Free City of Hamburg.

During the closing dinner, Acting President Marozeau responded to the address of Professor Wedepohl, BDA Vice-President, to express the gratitude of all the Commission members to our German colleagues and to all those who had worked so hard to prepare for this reunion and who were so generously helpful during its course.

Agenda—*Designation of a New President*

The Commission deeply regretted that its President, Pedro Ramírez Vázquez of Mexico, had had to resign before his term ended because of official duties given him by the President of the Mexican Republic. The UIA Executive Committee, meeting at St Moritz (March 1963), made him delegate of this Commission to the UIA Executive Committee.

Famous twin-roofed gate to the ancient Hanseatic city of Lübeck. Note what happens behind elaborate curved gables

In order to assist him in this new assignment, the Commission suggested that Enrique Vergara, who has served as a skillful and effective alternate to Pedro Ramírez Vázquez on several occasions, be designated Adjunct-Delegate. The Secretariat of the Commission has also been moved to Mexico.

Professor Wilhelm, long-time Secretary to the Commission and former Delegate to the UIA Executive Committee, declined the Presidency because of increased professional duties, and Past-President Marozeau agreed to act in this capacity until the next regular meeting of the Commission (Lausanne 1964). At that time, Jean-Pierre Cahen, who has worked so hard and with such respected leadership in the Commission and the International Center for School Building in Lausanne, will assume the Presidency.

Procedure for Work Sessions

In order to make best use of limited time, the Commission decided to divide into subcommittees, each charged with one or more items of the agenda as follows:

Subcommittee I: analysis of theme projects on exhibition: training for skilled workers (Vergara, Chairman)

Subcommittee II: International Center for School Building (CICS)—Lausanne (Cahen, Chairman)

Subcommittee III: preparation for Lausanne reunion 1964 work-program (Kloos, Chairman)

Alternate sessions of subcommittees and plenary meetings permitted more effective discussion and reports to the full Commission so that all members were able to participate. For lack of time, certain agenda items were discussed informally and reported briefly in the final plenary session. These included:

UIA Congress in Havana (September 1963)
UIA International Symposium on Architecture, Mexico (October 1963)
UIA Charter for School Construction
International glossary of school planning terms

Résumé of Subcommittee Reports—*Subcommittee I: Institutions for training of skilled workers* (Vergara)

Thirteen projects were submitted for exhibition by national sections of the UIA from following countries: Germany, Austria, Spain, France, United Kingdom, Greece (2), Morocco, Mexico, Netherlands, Sweden Switzerland, United States.

The Commission was very grateful for the work of the German section, under the direction of Professor Wilhelm, which prepared these projects for exhibition in comparative form (plans and views plus analytical tables of data). It was noted, however, that the project is not quite complete. Diversity of works exhibited included some which departed considerably from the precise theme. The Commission recognized of course that this diversity is explained by the very great economic and social differences of the countries considered. The heavily loaded program for this reunion did not permit spending the time which would have been necessary for a serious individual or group analysis of exhibits. Accordingly, the Commission agreed that:

It accepted with appreciation the proposal of the Mexican section to complete the project, and the comparative tabular "grille" for analysis of projects should be completed with data showing more precisely the economic and social conditions of the various countries—for example, population growth, employment (lack of labor or unemployment), in-

dustrialization, degree of development of general education and relation of urban and rural population. The grille completed by the Mexican section was to be sent to each member before August 31, 1963. Each member should then complete his part or send a new submission to the Mexican section (before December 1, 1963) which will conform more precisely to the theme of institutions for the training of skilled workers.

My report is based upon translation of the official UIA minutes from French—it is obvious, from participation in two reunions of the Commission and the ensuing mass of reports and correspondence, that a certain amount of confusion inevitably results from translation. In French, for example, the theme for this reunion was stated as *formation professionelle primaire* although the meaning was "skilled labor." This emphasizes the urgent need of work on the international glossary of school-planning terms proposed by this Commission and only partly finished. (See additional notes on this project later in this report.)

The Mexican section will develop a synthesis of the different projects similar to that used last year for comparative presentation of information on rural schools of Morocco and Mexico.

It appears desirable that this synthesis be sent to members of the Commission before April 1, 1964, to permit exchange of individual viewpoints at the time of the reunion in Lausanne without taking time for an official session on this subject.

Subcommittee II: International Center for School Building CICS-Lausanne (Cahen)

The International Conference on Educational Buildings (London, July 1962) recommended that UNESCO study, in close consultation with UIA, the preliminary conditions for erection of an International Center for School Building. The General Conference of UNESCO (Paris, November 1962) was not able to effectuate this recommendation which was consequently held over for the next General Conference (1964).

Under these circumstances, the Commission agreed that the Lausanne Center, while continuing to seek collaboration with UNESCO and preparing with all possible support to follow its objective of becoming this "International Center," should continue to work for the time being as an independent organization.

The Commission recommended that its members lend their maximum support to the Center in the following manner:

- by gaining new dues-paying members for the CICS
- by informing all national delegates to the UNESCO General Conference (1964) of the existence of CICS and the noteworthy work it has already accomplished and has under way.

During the Hamburg meeting an excellent description of these activities was presented by Pierre Bussat, Director of CICS. This report on general progress was supplemented by a slide-presentation of a specific case-study on prefabrication. It was agreed that the Center (and indirectly the UIA Working Commission on School Buildings) was most fortunate in having such a capable director for the Center. The Commission urges that the General Secretariat of UIA pursue the conversations begun with UNESCO in connection with the recommendation of the London Conference.

Subcommittee III: Preparation for Lausanne Reunion (1964) (Kloos)

The Commission agreed to take as principal theme for work at Lausanne, the study of the following premises and their architectural effects on school buildings:

- development of educational methods, application of new methods (for example: audio-visual)
- evolution of construction techniques (industrialization, prefabrication, etc)
- economics—research for criteria and limits
- social role of the school, integration in the urban scene (desirable collaborative study with UIA Working Commission on Urbanism)

Members of the Commission are requested to send (before December 31, 1963) a report on these matters relating to their country to: Pierre Bussat, Directeur, Centre International de la Construction Scolaire (CICS), 25 Place Chauderon, Lausanne, Switzerland.

It is proposed that a synthesis of these reports be made by CICS and sent to each Commission Member before March 31, 1964. In the course of the meeting in Lausanne, Commission members will be invited to present designs, photos of projects or other types of illustration for reports on any of these subjects.

Agenda items studied informally and reported briefly in final meeting included:

UIA International Symposium on Architecture "Journées Internationales de l'Architecture"
(Mexico City October 6-12, 1963)

The Commission noted the following points:

- a general report concerning Commission activities, since its beginning, should be presented to all partic-

ipants in the "Mexican Days." A draft of this report has been made by Jacques Marozeau, Rapporteur Général of the Commission, and sent to each member for comment.

· a special report will be presented by the Mexican Section on the theme of the *UIA Charter for School Construction*. Application of this comparative procedure will be made for the Mexican rural school program.

· each member of the Commission will have an opportunity to present a project or report on some theme of special interest.

UIA Charter for School Construction

This tabular outline of school planning elements with accompanying notes forms a useful "grille" or organization for comparative data so that essential parts of school projects can be indexed, analyzed and compared on a similar basis. The Charter was originally published by the UIA in 1959 and used as a comparative tool for the rural school programs studied in Reunion VIII of the Commission (Mexico 1962). It was republished at that time by the Mexican Section, but members of the Commission have felt that it needs improvement. The evolutionary character of the Charter was pointed out in its preamble —and thus the necessity for periodic revision. Members of the Commission, and more particularly new members who did not participate in its first edition, are invited to send concrete suggestions for modifications. These proposals should be sent to the new Secretariat of the Commission: UIA Comision de Construcciones Escolares, Avenida de las Fuentes 170, Mexico 20, DF, Mexico.

The Director of the Lausanne Center was also invited to send suggestions. An accumulation of these will be sent to each Commission member and to the CICS for careful study with the objective of a complete revision of the Charter and publication of a new edition by the UIA General Secretariat.

International Glossary of School Planning Terms

Work on this project was interrupted by other Commission duties given to Professor Wilhelm. The Hamburg reunion gave an opportunity to assign development of work, hardly begun, on the English and Russian sections. These have been assigned to Commission members Pawley and Tchaldimov. The presence at Hamburg of M Calsat for the meeting of the UIA Working Commission on Urbanism afforded an opportunity to discuss the complete master glossary project. Calsat is Secretary of the Joint Committee on Vocabulary (UIA plus housing and planning organizations) and coordinator of all those who are cooperating in the master glossary project (urbanism, housing, public health, schools). An exchange of alphabetic lists of school planning terms has begun with members of this Commission. The CICS will also cooperate in this project.

Preparatory work by the School Commission will be limited to alphabetic lists of terms with their definitions in each language. Coordination, translation and classification in a systematic glossary will be directed by M Calsat.

Professor Wilhelm will stay in touch with all correspondents charged with parts of this project. At the end of 1963 and before the reunion in Lausanne, he will make a progress report to the Secretariats of the Commission and the UIA.

Vocational and Technical Education

In preparation for Reunion IX in Hamburg, in addition to the material sent for exhibition which will be discussed in a later article, I sought additional background on the specific theme of the meeting—the training of skilled workers. Our long-standing collaboration with the US Office of Education made it possible for me to find and to send to UIA Commission members before the meeting a considerable amount of official US printed material. With the generous assistance of Marvin Johnson AIA, of the North Carolina State Department of Education, we also sent data on an active state program for industrial education.

It became obvious in this preliminary study that there were some controversial differences in point of view—not only in our own country (particularly concerning Federal programs) but differences between countries already industrialized and those countries which were beginning to industrialize. These differences were reflected in educational programs which have the effect of substituting technical training for education. A number of cogent quotations from authoritative sources on this subject were assembled and the final statement of Enrique Vergara's report for Subcommittee I made a perfect introduction for them. The following is from my tape-recording of that part of the discussion: (Vergara) ". . . training of skilled workers, basic problem of our mechanistic society, must be integrated with a complete educational ensemble in order to avoid a feeling of social segregation among students, to give them the assurance of a possible future for their studies and to permit utilization of expensive equipment by other sections. . . ." (Pawley) "I should like to speak to this because in preparation for this meeting I collected a series of quotations from different sources.

I realize that our mission is to study the examples themselves and not the whole philosophy of technical education, but I believe that as a responsible international organization, the UIA Working Commission on School Buildings should not issue a statement on the training of skilled workers without recognizing that this type of education must not be so specialized that we lose sight of the purpose of education as a whole. If I may, I should like to read two brief quotations on this point.

"The first of them, by an interesting coincidence, comes from a Mexican philosopher: 'If schooling is good only for the instruction of material techniques, that means it is preparing individuals to be devoured all the more easily by civilization. This is indeed a monstrous concept of schooling. In contrast, education must be thought of as the vigor of life itself, fighting off the civilization which by converting men into foolproof automatons creates the illusion that it has adequately prepared them for life. . . .'

"This quotation is from Samuel Ramos in his essay entitled 'Profile of Man and Culture in Mexico.' It was written about thirty years ago.

"Now in contrast to that, but in agreement with it, I have a more brief quotation from an American physicist of today—a scientist in the area of physics —who wrote as follows concerning education for developing countries. (I am not at all sure what a developing country is—we are all developing!): 'We should be even more concerned than we are to help them in the improvement and development of education in all its aspects, as distinguished from simple training for specific jobs. Training will not stand long as a substitute for education. . . .' Francis Dart, Professor of Physics, University of Oregon, in an article in *Foreign Affairs* January 63:368. I would like to offer these two quotations for use as you see fit for this Commission report." (End of tape-recorded excerpt.) These two quotations were summarized by the interpreters for other members.

A few other quotations which follow, for which we did not have time in the meeting, lend other authority to this point of view. ". . . current expansion of knowledge would seem to require that the few years we devote to adolescent schooling should be given to general education (some of the nation's largest employers agree) . . ." ". . . schools cannot afford to keep up with technological change, so most school shops are equipped with obsolete machines . . ." ". . . even the largest vocational schools can teach only a few dozen of the 50,000-odd occupations existent in this country . . . a vast majority (probably more than eighty per cent) of all jobs can be learned on the job in less than a school year's time . . ." ". . . in no other world power have apprentice programs been given such a brush-off as in the US . . ." Calvin Grieder, Professor of School Administration, University of Colorado (The Administrator's Clinic * —a regular feature of *Nation's Schools*, April 1963).

"Since scientific methods, technology and increasing complexity of organization form the basis of economic and social development, the need for a high standard of general education, for as many people as possible, should be recognized. As a greater proportion of children continue beyond the primary level, the education provided, particularly in the later years, should assist in meeting the needs of society. . . ."

"Technical and vocational education should be an integral part of an over-all system of education and, as such, due consideration should be given to its cultural content. . . ."

"In view of the evolution of technology, the need for an adequately broad background of general education before specialization at any level and continuous with it should be recognized. . . ."

"Premature specialization should be avoided and in all programs of study the proper balance between general, scientific and specialized subjects should be maintained without increasing the amount of subject matter taught. . . ."

"The responsible authorities should insure that the students receive a comprehensive general education. They should lay stress on developing the personality and reasoning power of the students, as well as their sense of moral, social and professional values and responsibilities. . . ." (Quotations selected from the twenty-page document "Recommendations Concerning Technical and Vocational Education," adopted after the General Conference of UNESCO, Paris, November 1962.)

The International Center at Lausanne

I participated in two sessions of Subcommittee II on the International Center for School Building, with Cahen as Chairman and Bussat, Schütte and Tarriba. Señora Morayta was present as interpreter. Discussion centered around the need for international support to make it an institution with a future and to encourage UNESCO to take it over. USSR cannot participate unless it is part of UNESCO.

In discussing UNESCO, Señora Morayta, from her broad experience in international conferences, including UNESCO meetings, made the point that delegations need to be *expert*—to be well-briefed beforehand and to have their own conference expert available. Consent is so easily engineered and the key posts assigned and decisions influenced by those who have experience. The significant decisions are made before the conference sessions begin. Support for the Center can come from national agencies, organizations or individuals on a sliding scale ranging from $500 to $50 per year. A separate article on the CICS and its program is planned in this series on International Relations. It is an important effort for cooperation in this field, with the unique advantage that it is a joint effort of *architects and educators,* with no commercial or big business interests to control or to bias its program or findings. The direction is exceptionally competent and dedicated. This Center is worthy of wide support by any organization, group or individual architect concerned with the present and future of educational buildings. As our future article will describe, the potential service of the Center to its members will be well worth the fee. ◄

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GEYSER GRID SYSTEM
COSTS

The following cost data (Chart A) is reproduced from the Geyser 1964 Sweet's Catalog Insert 3a/Gey. The aim in presenting this information is to acquaint the designer with the relative importance of the costs of eight components that make up a Geyser window or wall. Within our realm of experience the cost variations quoted are common and by no means a maximum.

Component costs of a typical one-story wall with 40% panel area (at $2.30/sq. ft.), 60% glass area (at $1.00/sq. ft.), and 15% ventilated area (at $4.00/sq. ft.) are shown in the column after Chart A.

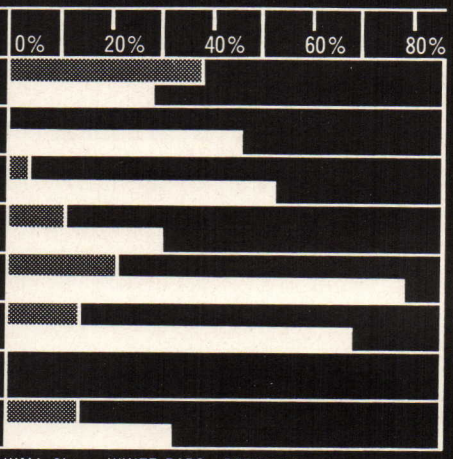
The gray bars in the graph to the right show the percentage of the component costs to the total cost of the typical wall. The white bars show the percentage of cost variation (computed from Chart A) to the total cost of the typical wall. Note that although the cost of the grid system represents a major portion of the total cost, the greater potential for affecting price lies in categories 2, 3, 5, and 6.*

*In calculating the potential cost effect: 50% ventilation area is used as the extreme; panel area and glass areas, 100%; cost of panels is figured net of $.60/sq. ft. minimum glass cost.

CHART A

COMPONENT	COST VARIATION	TYPICAL WALL COST
1. Grid System and Gaskets	$1.25-$2.50/sq. ft.	$1.60
2. Special Fabrication, Extrusions & Formed Metal	0-$2.00/sq. ft.	$ .00
3. Special Finishes: Alumilite, Anodic Color	10%-50% of (1 and 2)	$ .16
4. Erection	40%-20% of (1 and 2)	$ .48
5. Panels (installed)	$2.00-$4.00 per sq. ft. of panel area	$ .92
6. Ventilators (installed) Glazing Gaskets Included	$3.00-$6.00 per sq. ft. of ventilated area	$ .60
7. Doors, Frames, Hardware (installed)	$100-$500 per leaf	$ .00
8. Glass & Glazing	$ .60-$2.00/sq. ft. of glass area	$ .60

GRAPH



GRAY BARS—COMPONENT COST, TYPICAL WALL % WHITE BARS—POTENTIAL COST EFFECT %

The principal observation and recommendations to be made with respect to economy in the eight categories of Geyser Grid System costs are:

1. The Grid System and Gaskets. The grid system itself can be designed into a building in an extremely wide variety of ways without effecting a high price. Unit grid costs ($ per sq. ft.) for small openings are higher than those for large openings.

2. Special Fabrication. Use Geyser standards where applicable; forego special fabrication on small or low budget projects.

3. Special Finishes. Special finishes can be a major wall cost. Color finishes that require special alloys can be very expensive. Consider methods with which selected grid members may be finished to accomplish the desired end.

4. Erection. See 1 and 2 above.

5. Panels. Consult Geyser Catalog 3a/Gey for comparative panel costs. Use standard (numbered series) panels.

6. Ventilators. Include ventilators only where ventilation is required. For window cleaning from inside, compare ventilator cost with cost difference between interior and exterior window cleaning. Maintain quality standards of ventilator construction; poorly constructed ventilators can be a major source of maintenance expense.

7. Doors and Frames. Let doors, door frames, and hardware be supplied and installed by one supplier to eliminate confusion involved in the coordination of these items when they are supplied by different people. When selecting doors, consider the hardware which is offered as standard and, where applicable, use door manufacturer's standard hardware.

8. Glass and Glazing. The recommended method of making seals in the Geyser Grid System for the past four years has been neoprene gasketing. This method of sealing has proven to be 10¢ to 25¢ per square foot less expensive than methods using glazing compound and thiokol beading. With gaskets the amount of remedial work necessary to clear up errors and oversights in workmanship of glazing has been effectively eliminated. The $.05/sq. ft. maintenance costs of the glass and panel seals mentioned in Mr. Koppes' article can be avoided by specifying long-life neoprene gaskets. Note: Where reglazing is a factor of maintenance, the reglazing time of gasket-set glass is one-third that required with compound-set glass.

E. K. GEYSER CO.
915 McARDLE ROADWAY
PITTSBURGH 3, PA.

What *do* Walls Cost?

WAYNE F. KOPPES AIA, *Technical Director, Metal Curtain Wall Division*
National Association of Architectural Metal Manufacturers

In its September 1958 issue the AIA Journal *carried a well-documented article prepared by two staff members of the Structural Clay Products Institute, entitled "The Ultimate Cost of Building Walls."*
It was widely circulated and aroused much comment in building circles.

We invited the Metal Curtain Wall Division of the NAAMM to prepare a "rebuttal," and asked metal curtain wall manufacturers to cooperate with advertising related to it. This article has been very carefully prepared by Mr Koppes, and has been read by John R. Roehm, former President of the NAAMM

THE COST OF EXTERIOR BUILDING WALLS has been the subject of much study and controversy during recent years, and it's not surprising that some architects find themselves confused in this area. It is the purpose of this article, therefore, to take a fresh and objective look at this matter of wall costs and their significance. After considering first the relative importance of cost among the factors influencing the choice of wall construction, we shall examine in some detail two differing cost concepts and then see how, in general, the costs of some common wall types compare.

To view the matter in its proper perspective we must first recognize that the choice of a wall system is often determined by considerations *other* than cost. Economic values are of course important, but seldom is the type of wall for a building selected on the basis of cost alone. The exterior wall is in fact an integral part of the building itself, serving as its outward expression; it's not merely a separate covering, to be chosen entirely on its own merits. In modern non-residential buildings the entire cost of the exterior walls represents, on the average, only from 8½% to 10% of the total cost of the building—a rather small part of the building budget.

Usually the architect chooses for the building's exterior those materials which he considers most appropriately in character with the general design concept. If he wishes to express mass and solidity, he probably is not considering the use of large expanses of glass and metal; if a light and open effect is his objective, he is not likely to be thinking in terms of masonry. He is concerned, too, with the proportionate amount of glass needed for functional reasons. Large glass areas are most logically framed with metal, but if windows are to occupy a third or less of the total wall area the traditional use of masonry may seem appropriate.

Esthetic and functional considerations are therefore basic in the choice of an exterior wall system. Few architects, however, are privileged to work without budget limitations, and economics also must be considered in designing walls, just as in designing other parts of the building. The character of the building, its esthetic effect and the desired glass ratio may substantially influence the choice of wall materials, but in most cases the costs involved have much to do with the designer's decision, too. To make this decision intelligently an understanding of costs is obviously essential.

Differing Concepts of Cost

Much of the confusion and controversy regarding wall costs is due to the fact that we are not all thinking in the same terms. Traditionally, the "cost of a wall" has meant its cost of construction—its *initial cost*. But even this means different things to different people, because we have no precise definition of what it includes.

The *initial cost* is essentially the amount paid for the wall at the time of its construction, and it includes no charges subsequent to its acceptance by the owner. Even so, the scope of this cost varies a good deal in practice. Sometimes it covers the cost of such items as waterproofing, radiator enclosures, drapery pockets, interior painting and the contractor's overhead and profit; sometimes it doesn't. In some cases even the effect of the wall design on the cost of heating and cooling equipment is taken into account in pricing it. Because of these inconsistencies, published initial costs lack specific meaning unless their scope is clearly defined.

During recent years another concept of cost has received wide recognition. This is the *ultimate cost*—the total life-long cost of the wall. This is quite a different concept, as is generally recognized, yet it seems that in many discussions of wall costs, initial and ultimate costs often become confused. The ultimate cost of course *includes* the initial cost and, in addition, all other costs directly and indirectly chargeable to the wall during the life of the building. It is necessarily a theoretical cost, based to some extent on assumptions, and is predictable only as a close approximation. Unlike the initial construction

cost, the ultimate cost is not subject to verification, but it does provide as accurately as possible a prediction of the probable over-all expense of the wall construction.

Which Concept Has the Greater Significance?

It would appear that the ultimate cost, representing the *over-all* expense of the wall, with all factors taken into account, would be the more important and meaningful index, and that this cost, rather than the initial cost, should be of major concern to the owner. This assumption is valid, though, only for the owner who expects to retain ownership of the building indefinitely. Much of our commercial building is done on speculation, with the intent of selling at an early date, and many entrepreneurs are unfortunately interested only in initial costs. Some long-term owners, too, may prefer to skimp on initial costs, even in the face of anticipated high maintenance costs, because their operating costs are tax-deductible.

Both concepts therefore are valid, and both are important. Each must be clearly defined, and the distinction between initial costs and ultimate costs must be understood, before costs can be intelligently considered. The initial cost of one wall is of course not comparable with the ultimate cost of another, and if ultimate costs of different wall types are to be compared, the various factors influencing these costs must also be comparable. In this discussion we propose to examine carefully both concepts of cost, particularly as they pertain to walls using different materials and techniques.

Initial Costs

If initial costs are to be comprehensive, they should include both direct and indirect costs. As usually quoted, only the direct costs are reflected, and even these may not be complete. To be fully representative, and provide a standard basis for equable comparisons, the *direct* initial costs should cover the following items:

a) Masonry work
b) Secondary framing, anchors and supports
c) Windows, frames and glazing bars
d) Panels (wall, spandrel, fascia, etc)
e) Exterior trim
f) Glass and glazing
g) Caulking and sealing
h) Flashing
i) Waterproofing and dampproofing
j) Insulation
k) Vapor barriers
l) Built-in louvers, grilles and sun control devices
m) Lath and plaster
n) Interior trim
o) Painting, exterior and interior
p) Scaffolding
q) Permanent window cleaning equipment
r) Contractor's overhead and profit

The *indirect* initial costs are more nebulous in nature but may be just as significant. These are the costs *affected* by the wall design—the credits or extras to be considered when comparing the merits of alternative wall designs. They should include the addition or deduction resulting in the cost of:

a) Building frame and foundations
(as affected by the weight of the wall being carried)
b) Heating and cooling systems
(as affected by the amount and type of insulation and glazing)
c) Lighting systems
(as affected by the amount and type of glazing)
d) Financing
(as affected by the speed of erection)
e) Rentable floor area (when building occupies full permissible area)
(as affected by the wall thickness)

These indirect costs are usually more difficult to determine than the direct costs, and may have to be approximated as accurately as possible. They are real and valid costs, however, and should always be taken into consideration in comparing the costs of different wall types.

The *direct* construction costs of many types of walls *without windows* are quite readily obtainable from professional estimators and reference handbooks, or in the case of metal walls, directly from the manufacturer. Case history costs of metal walls *with* windows are fairly accessible, too, because the complete wall installation is often bid as a "package." This is not true of fenestrated masonry walls, however. The cost of wall masonry work is usually buried in the total cost of masonry work for the building and can only be estimated on a pro rata basis. Consequently even case history costs of such walls, as a rule, are calculated costs rather than actual bids.

Drawing upon the various sources indicated, the direct initial costs of a variety of masonry and metal walls are provided in Tables A and B following. Those in Table A are believed to be complete direct costs, as defined above, for several types of insulated walls *containing no windows*. These are walls of essentially similar quality, the cheaper varieties of both types being appropriate for use in industrial type buildings, and the more expensive walls being suitable for use in commercial and institutional work. With the exception of the prices given for the "grid-and-panel" type metal wall, which were bona fide bids by three leading metal wall manufacturers, all of these costs were provided by an independent cost authority.

Direct construction costs of fenestrated walls may be closely approximated by reference to case history examples, but these are not likely to provide a wholly valid basis for comparing costs of differing wall types, because of the variables involved. Never, for example, do we find two cases which are identical in all respects other than the material used for the opaque areas of the wall. Several such studies have been made from time to time, one of the more recent and authoritative being that produced by H. T. Noyes, Chief Engineer of the Turner Construction Company in 1956, and later updated in 1961. With the author's generous permission, the information resulting from that study is reproduced in Table B. In this

listing the buildings have arbitrarily been arranged in order of increasing wall costs. It should be noted that these costs are not as comprehensive as the costs for windowless walls given in Table A, since some items of direct cost are not included.

Table A—Direct Initial Costs of Insulated Windowless Walls
For industrial and Commercial Buildings

(U-value of 0.13 or better)

	New York Area *	*National Average* **
Brick Masonry Walls		
a) 4″ face brick, 2½″ cavity poured insulation, 4″ lightweight block, 2 coats of paint	$2.96	$2.58
b) 4″ face brick, 2½″ cavity, poured insulation, 4″ common brick, no plaster or paint	3.40	2.96
c) 4″ glazed face brick, 2½″ cavity, poured insulation, 4″ common brick, no plaster or paint	4.17	3.63
d) 4″ glazed face brick, 2½″ cavity, poured insulation, 4″ salt-glazed structural tile	4.72	4.11
e) 4″ face brick, 4″ common brick backup, 1½″ wood furring, 1½″ blanket insulation, gypsum lath and plaster, 2 coats of paint	3.90	3.49
f) Same as e), but with 4″ glazed face brick substituted for 4″ face brick	4.67	4.07
Industrial Type Metal Walls		
a) .032″ 1″ x 4″ ribbed aluminum sheets, 2″ insulation, 20-gage corrugated galvanized lining, 6″ channelgirts	1.89	1.65
b) Same as a), but with 20-gage stainless steel 1¼″ ribbed sheets substituted for .032″ aluminum	4.05	3.53
		Bid Prices (National Average)
Grid-and-Panel Metal Curtain Wall		
Grid framing of 1-hour anodized aluminum extrusions, with 4′ x 12′ insulated panels having a U-value of 0.12. Panels to have porcelain enamel outer face and galvanized steel inner face. Interior wall face to have smooth painted finish, with no metal extending through the wall. Installation to include extruded coping and sill and all flashing.		$4.40 to 5.20

* Cost authority (March 1961): McKee-Berger-Mansueto, Cost Consultants, New York City

** Proportioned on the basis of Engineering News-Record Building Cost Index.

The figures in these tables provide reasonably accurate information as to the cost *ranges* of the various wall types. It should be noted, however, that no indirect costs are included, and even certain direct costs have not been taken into account in Table B. Although none of these figures, for those reasons, represent precise or comprehensive initial costs, they are quite adequate for purposes of general comparison. They show, for instance, that approximately the same wide range of initial cost applies to both metal and masonry walls. For average quality walls *without* windows, this range, neglecting indirect costs, extends from about $2 to $5 per square foot, and would of course run higher for stone masonry. The cost range shown in Table B for walls *with* windows is much greater, extending approximately from $4 to $14 per square foot, but this includes walls of the highest quality in both categories.[1] The costs of the windowed walls are seen to bear no relationship, however, to the proportion of visual glass contained, indicating that the general quality of construction rather than the amount of glass used probably accounts for their higher costs. Since both metal and masonry constructions are represented over essentially the full cost range in both tables, it appears that neither the masonry nor the metal wall has significant inherent cost advantages and that no "typical" initial cost can be assigned to either type. Their construction costs may be relatively low or high, depending on the grade of materials used, and either type may be built to satisfy a wide range of cost and quality standards.

Ultimate Costs

In deriving the theoretical ultimate cost of any end-use product all of the factors affecting this cost must of course be taken into account. Many of these factors are charges, increasing the cost, but some are credits, which reduce it. A competent and comprehensive study of the ultimate costs of building walls was made several years ago by the Structural Clay Products Institute,[2] and the basic principles established by that study may well serve as the background of this discussion.

The factors which determine the ultimate cost of a building wall, as defined in the SCPI report,* may be listed under three categories as follows:

Initial Costs:

1) Construction cost (all *direct* costs)

2) Support-of-the-wall charge (the cost of building frame and foundations attributable to the wall weight)

3) Charge for floor space occupied (the loss in rentable floor area and rental income due to wall thickness)

4) Cost of erection time (ie the effect of erection speed on financing costs)

[1] Although the costs of Table B neglect certain direct costs, this omission is offset by the fact that most of them would have to be reduced anyway, by from 5 to 10%, to represent national average costs.

[2] "Ultimate Cost of Building Walls," Structural Clay Products Institute, 1958

Table B—Representative Direct Costs of Fenestrated Walls
For Commercial and Institutional Buildings As determined by Turner Construction Company—1961

(Costs do NOT include airconditioning enclosures, interior furring, plastering or other finishes, window washing equipment, sun control devices, or any allowance for indirect costs)

Building Type	*No. of Stories*	*Wall Construction*		*Windows*	*% Visual Glass*	*Cost per s.f.*
		Masonry	*Metal*			
Office & Warehouse	2		Porc. enamel panels & glass in steel frame	Ind'l. steel sash	37	$ 3.80
Hospital*	5	Brick cavity		Alum. d.h.	n.a.	5.00
Office	12		Mfrs. standard metal curtain wall	Alum. vert. pivoted	n.a.	5.27
Office*	32	Brick: 4″ glazed 4″ sand-lime		Alum. d.h.	25	5.51
Research Laboratory	3–4	Brick: 4″ Roman 8″ common		Alum. d.h.	n.a.	5.92
Office*	27	Brick & block piers Glass panels, alum.		Alum. vert. pivoted	37	6.43
Office*	25	4″ Limestone 8″ Common brick		Steel d.h.	31	6.58
Research Laboratory	2		Porc. enamel panels, glass, aluminum frmg.	Aluminum fixed	n.a.	6.85
Office*	42		Stainless steel panels, 4″ block backup	S.S. vert. pivoted	27	7.69
Office	6		Mfrs. standard metal curtain wall	Aluminum fixed	31	7.74
Office*	25	Limestone, Brick backup		Alum. d.h.	31	7.87
Office	7	Marble, 12″ block backup		Alum. vert. pivoted	26	7.88
Office*	38		Aluminum framing, glass panels	Aluminum fixed	48	9.40
Office*	60		Aluminum framing and panels	Aluminum fixed	54	10.37
Office	3		Aluminum and S.S. glass panels	Alum. S.S. fixed	52	12.75
Office	41	Limestone and brick Stainl's steel panels		S.S. s.h. & fixed	33	13.95
Office	19		Stainless steel and glass	S.S. fixed insul. glass	70	14.27

* denotes New York City location; other buildings listed are located in Pennsylvania, Delaware, New York State, Tennessee, New England and Chicago. n.a.—not available

Future Charges:

5) Charge for heat loss

6) Charge for heat gain

7) Maintenance costs (cleaning, pointing, caulking, painting, etc)

8) Insurance cost

9) Real estate taxes

Future Credits:

10) Natural illumination value (as determined by windows)

11) Depreciation

12) Salvage value

It will be noted that this listing does not include two of the items of indirect initial cost referred to previously—the effect of the wall design upon the initial costs of both the heating and cooling equipment and the lighting system. When comparing walls with different insulation values or different amounts and types of fenestration, these additional factors should certainly be considered. But if we are concerned only with comparing costs of walls having *equal* thermal insulating and illuminating values, these factors, like some of the others, will have no significance because they cancel out. For this discussion the twelve factors listed above will serve adequately.

Any type of wall may be examined as to its approximate ulitmate cost by assigning reasonable values to all of these factors and summing them up. Since we are dealing with both present and future costs in doing this, they must be reduced to common terms before they can be totaled. This may be done

by converting all of the anticipated future costs to their *present values,* in much the same way that prepaid cost of annuities are determined. Precise determination of some of these future costs is of course impossible, but they can be closely approximated by such methods as those demonstrated in the SCPI report. Obviously the total cost is influenced greatly by the assumed life-span of the building, as well as by tax and insurance rates and other local factors. Identical walls, even with the same initial costs and predicted useful life, may have quite different ultimate costs in different parts of the country because of differences in local climate, taxes, maintenance costs, etc. Because of such variations it is impossible to assign a specific ultimate cost to *any* type of wall.

Theoretical ultimate costs are primarily useful in comparing the merits of alternative wall designs. Usually when two or more designs are under consideration they will be intended for the same building, and so will be subject to the same local conditions affecting long-term costs, such as climate, exposure, fuel and power costs, tax and interest rates and other factors. Wherever the alternative designs differ in respect to any of the twelve cost factors mentioned, or if they differ in anticipated service life, proper values must be assigned to these differences to arrive at a valid comparison of ultimate costs. It may be found, for example, that a significant difference in thermal insulating values results in a differential in heating or cooling costs which is much greater than the difference in initial wall costs.

The general approach to such comparisons may be demonstrated by determining approximate comparative values for the various cost factors as they apply to masonry and metal walls. To be valid, however, this comparison should apply to *only the opaque or solid areas* of the wall. Either type of wall usually contains windows, and usually the metal wall is characterized by a higher proportion of glass, but to make a true comparison this variable must be eliminated by assuming that *both walls have the same amount of window area.*

We have seen that the initial costs of masonry and metal walls vary widely, but for the same standard of quality, probably differ little. Without becoming involved in specifics it may be instructive to see how their ultimate costs may generally be expected to compare. The comparison will be simplified by first establishing some reasonable basic assumptions. We will assume that both types of wall

a) have the *same amount and type of glazing*

b) have the same insulating value in their opaque areas

c) are being considered for the same building

d) have the same fifty-year life expectancy

It is reasonable to assume also, for purposes of illustration, that the direct initial construction costs of the two walls are the same. It is unlikely that they will be exactly equal, since either may have some initial cost advantage over the other, but it will be seen later that the over-all comparison may easily be adjusted to compensate for any such difference.

With these ground rules in mind, let us examine briefly each of the listed cost factors in turn, and where differences are indicated, assign a reasonable *differential* present worth value per square foot of wall. The summation, then, will provide a general comparison of ultimate costs.

1) *Construction cost:* assumed to be the same for both walls.

2) *Support-of-the-wall charge:* This cost will undoubtedly be higher for the heavier masonry wall, and the differential will vary considerably, depending on actual weight differences, the height of the building, type of structural framing, foundation conditions and other factors. On a one- or two-story building it may be quite small—perhaps only 10¢ per square foot of wall—but on one high-rise building a unit cost differential of $1.01 was credited to the metal wall by contractors bidding on alternative wall constructions. This factor, therefore, usually represents a charge of from 10¢ to 85¢ per square foot of wall for masonry constructions.

3) *Charge for floor space occupied:* This should be considered only in rental buildings which occupy the maximum permissible ground area, as in urban commercial districts. In such buildings every inch of floor space represents a substantial income over the life-span of the building, and unnecessary wall thickness results in an economic loss. A difference of 4″ in wall thickness, for example, at average rental rates and for typical commercial story heights is equivalent, over a period of fifty years, to an additional indirect wall cost having a present value of about $2 per square foot of wall. On the other hand, in suburban areas where maximum utilization of land is unnecessary, no charge at all should apply.

Since masonry walls are usually the thicker, this cost factor, if it does apply, will increase the true cost. Its amount, though, will vary widely.

4) *Cost of erection time:* If earlier occupancy of the building results from faster wall erection this does not extend the useful life of the building, but it does provide a quicker return on the investment, thus reducing financing costs. It is generally recognized that building enclosure can be accomplished in less time with metal walls of standardized design details than with masonry walls, but again the monetary value of this advantage is variable. Calculations indicate, however, that a reasonable present worth evaluation is from 10¢ to 15¢ per square foot of wall, chargeable as an added cost of the masonry wall.

5) *Charge for heat loss:* As both walls are assumed to have the same thermal insulation value, there will be no differential in this charge.

6) *Charge for heat-gain:* Heat-gain through walls, as reflected in airconditioning costs, depends largely on the type and amount of glazing used, and since these are assumed to be the same in both walls, differences in heat-gain will be small. Metal walls have less heat capacity than masonry walls in their opaque areas, and so transmit heat more rapidly than masonry walls, but the over-all difference in heat-gain will of course depend on the ratio of opaque and glazed wall areas. If neither wall contains any windows and the building is to be fully airconditioned,

the present value of the extra cost chargeable to the metal wall might be as much as 20¢ per square foot of wall, but if there are relatively large window areas in both walls it will probably not exceed 5¢.

7) *Maintenance costs:* In comparing maintenance costs of the two walls it's reasonable to assume that the same amount of interior painting will be required for both, and since both have the same fenestration, both will incur the same costs for window cleaning. As for exterior surface maintenance costs, we may assume that the metal wall may require cleaning and caulking every six years, at a present cost of 10¢ per square foot, and that the masonry wall may have to be cleaned and tuckpointed only once during its fifty-year life, at a present cost of 65¢ per square foot. On this basis, an extra cost of about 5¢ per square foot, present worth value, should be charged to the metal wall.

8) *Insurance costs:* Because of its greater fire resistance, the masonry wall will, in most cases, have the advantage of lower fire insurance rates. It has been computed [1] that this cost advantage, for a typical building of fifty-year life expectancy, has a present value of about 12¢ per square foot of wall. This amount is therefore a differential charge against the metal wall.

9) *Real estate taxes:* This charge will be proportionate to the initial wall cost, which includes the indirect "support-of-the-wall charge." Because of that added charge, the present value of future expenditures for taxes on the masonry wall will be from 1¢ to 17¢ higher, per square foot of wall, than that applying to the metal wall.

10) *Natural illumination value:* If the fenestration is the same in both walls, as assumed, there will be no difference chargeable to this factor.

11) *Depreciation:* Just as with real estate taxes, the annual depreciation, on a straight-line basis, will be proportionate to initial costs. On the average, the present value of the initial cost recovered by depreciation tax credit is computed to be about 18% of the total initial cost,[2] and because of its additional "support-of-the-wall charge," this credit value for the masonry wall will be from 1¢ to 15¢ greater, per square foot of wall, than that for the metal wall.

12) *Salvage value:* The salvage of the metal wall is generally considered to be a little higher than that of the masonry wall. According to estimates made by the Structural Clay Products Institute, this differential present value is an extra cost of 4¢ per square foot for the masonry wall.

The summation of these estimated differentials is shown in Table C. It must be remembered that the values shown are *not* those assigned to the various factors, but only the *differences* in values, as indicated in the foregoing discussion. No values at all are shown for those factors which, by assumption, affect the costs of both walls equally. Thus the summation is not a total cost, but the probable *difference* in ultimate costs.

[1] "Ultimate Cost of Building Walls," Structural Clay Products Institute, 1958

[2] *Ibid*

Table C—Summary of Differentials in Values of Cost Factors
Contributing to the Ultimate Costs of Masonry and Metal Walls having equal initial direct costs, insulation values and fenestration

	Excess Cost per Sq Ft Chargeable to:	
Factor	*Masonry Wall*	*Metal Wall*
1) Construction cost	——	——
2) Support-of-the-wall charge	$0.10 to $0.85	——
3) Charge for floor space	(*see note*)	——
4) Cost of erection time	.10 to .15	——
5) Charge for heat loss	——	——
6) Charge for heat gain	——	$0.05 to $0.20
7) Maintenance costs	——	.05
8) Insurance cost	——	.12
9) Real estate taxes	.01 to .17	——
10) Natural illumination value credit	——	——
11) Depreciation credit	less (.01 to .15)	——
12) Salvage value credit	——	less (.04)
Totals	$0.06 to $1.16	$0.18 to $0.33
Margin of greater cost (excluding items 3):	up to $0.98	up to $0.27

Note: If applicable, may be as much as $2.00 or more

It is seen that the increase of ultimate cost over direct initial cost is generally greater for the masonry wall than for the metal wall; if construction costs are equal, the masonry wall will likely have the greater over-all cost. Conversely, the construction cost of the metal wall, neglecting any floor space charge, may be from 25¢ less to $1 more than that of the masonry wall and still have essentially the same ultimate cost. If maximum floor area *is* a consideration, the direct initial cost of the metal wall could be as much as $3 per square foot higher than that of the masonry wall without resulting in any substantial difference in the comparative over-all costs.

It is quite apparent that whether we are considering the initial or the ultimate costs of walls, meaningful information requires careful attention to a number of factors. Except for the direct construction costs, these factors necessarily involve many variables and probably some assumptions, and the determination of real cost can at best scarcely be considered an exact science.

The chief purpose and use of building costs, whether they represent walls or other parts, is for reasons of comparing one alternative with another, or comparing costs of the same item in different localities. The comparisons can have only limited significance, though, and may be misleading, unless the costs being compared represent identical scope and conditions. The confusion regarding wall costs mentioned at the outset is due principally, it seems, to the lack of generally accepted definitions of the precise nature of these costs and methods of deriving them. It is not unreasonable to expect that such standards may be developed, but until we have them there is likely be a lot more of unintentional "comparing of apples and oranges." ◄

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A. Myron Cowell has been a mason contractor for 35 years and is well known for expert work throughout the Washington area. He is president of the Masonry Institute, Inc. and of Associated Builders and Contractors. He is an active member of the Washington Building Congress and the Home Builders Association.

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Anthony Izzo

33 years a mason contractor, Anthony Izzo is past president of the Masonry Contractors Association and of the Masonry Institute, Inc., and a member of the Washington Building Congress. Recent examples of his work are the Washington Hospital Center and the high-rise apartment building, the Towers.

Greenbriar apartment building, Massachusetts Ave., Washington, D.C.

Committee Reports

Schools and Educational Facilities

Our October meeting with college presidents and other college officials (to be reported more fully in an early issue of the *Journal*) was devoted to exploring means of mutual assistance and the exchange of information relative to the design of college buildings between college administrators and architects. It is our hope to develop in the future as good a liaison with the people responsible for college buildings as that which we now have those responsible for elementary and secondary schools.

Our annual meeting will be held at Atlantic City at the time of the AASA convention. The meeting will be chaired by Wallace Steele and will be on school environment with special emphasis on color and on mechanical systems affecting the environment.

We have had two good meetings to date this year: one in Atlantic City on the expanding services of the architect chaired by Louis M. Wolff and one in San Francisco on junior colleges chaired by Mario Celli with able assistance by Don Hardison. This latter meeting, which was well attended, would not have been possible without the financial and planning assistance given us by Jonathan King and the Educational Facilities Laboratories.

The valuable information brought out at this meeting will be published in a *Journal* report similar to the one on our meeting on college campuses held in New York last year.

The Committee has taken care of the usual amount of firefighting and tending store which, of course, is essential to a Committee of this sort.

It is the Committee's present goal (as seen by the Chairman) to assist the profession in solving educational building problems. The Chairman welcomes being told of problems that may have come to the attention of any members of the Institute so that the Committee can schedule meetings to discuss these problems. The Chairman will see that the information derived at such meetings reaches the hands and, if possible, the minds of the members of the Institute as promptly as possible.

ALONZO J. HARRIMAN FAIA, *Chairman*

AIA-Producers' Council Liaison

One problem that continually plagues the profession is that of the responsibility of each of the groups who collaborate to design and build a structure: the architect, the contractor and the building supply manufacturer. The Committee presently is engaged in developing a statement of responsibility with respect to material and system failure for each of these basic groups.

Members also are assisting in developing aid for professional education for the profession.

D. KENNETH SARGENT FAIA, *Chairman*

Specifications

Meeting in April 1963 as an Institute committee as well as with its counterpart committee of the Construction Specifications Institute, the Specifications Committee adopted the sixteen-division format of the CSI as a basis for study and preparation of:

1 An indexing system for specifications

2 A filing system for manufacturers' catalogs

3 An indexing system for the specification work sheets

4 An indexing system for the Building Products Register

Following Board approval at the Miami convention, the Committee met and proposed a canvas of the membership for comments and suggestions on a proposed filing system and a specifications checklist, now ready for distribution.

In September the Committee again met jointly with the CSI, which concurred in the filing system and checklist for distribution to its membership for comment.

Finally a meeting was held of the Industry Conference on Uniform Indexing Systems, which adopted the sixteen-division format as the basis for study and preparation of an industrywide indexing system. The Conference also adopted the same canvas of memberships for reaction on the preliminary proposals.

It is expected that the proposals will be in the mail by November 15, with comments to be received by January 10 so that compilation and revision can be accomplished for further action in the early spring of 1964.

C. L. COLEMAN AIA, *Chairman*

Calendar

November 11 to 14: American Concrete Institute Fall Meeting, Royal York Hotel, Toronto

November 13 to 27: International Building Exhibition, London, England

November 19 to 21: BRI Fall Conferences, Mayflower Hotel, Washington, DC

AIA Regional and State Conventions

November 7 to 10: Florida Region and Florida Association of Architects, Grand Bahama Hotel, British West Indies

November 8 to 9: Illinois Region, Chicago

Future AIA National Conventions

1964: June 14 to 18, Chase-Plaza Hotel, St Louis

1965: May 2 to 8: Washington, DC

1966: June 28 to July 1: Denver

1967: New York City

1968: Portland, Ore (tentative)

1969: Chicago (tentative)

1970: Detroit (tentative)

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