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Journal

October 1963

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COVER: Sketch by Herbert Railton from "Pen Drawings of Florence" (p 34)

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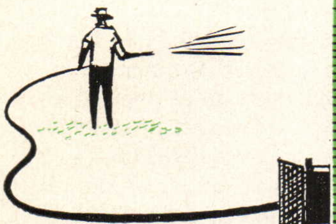

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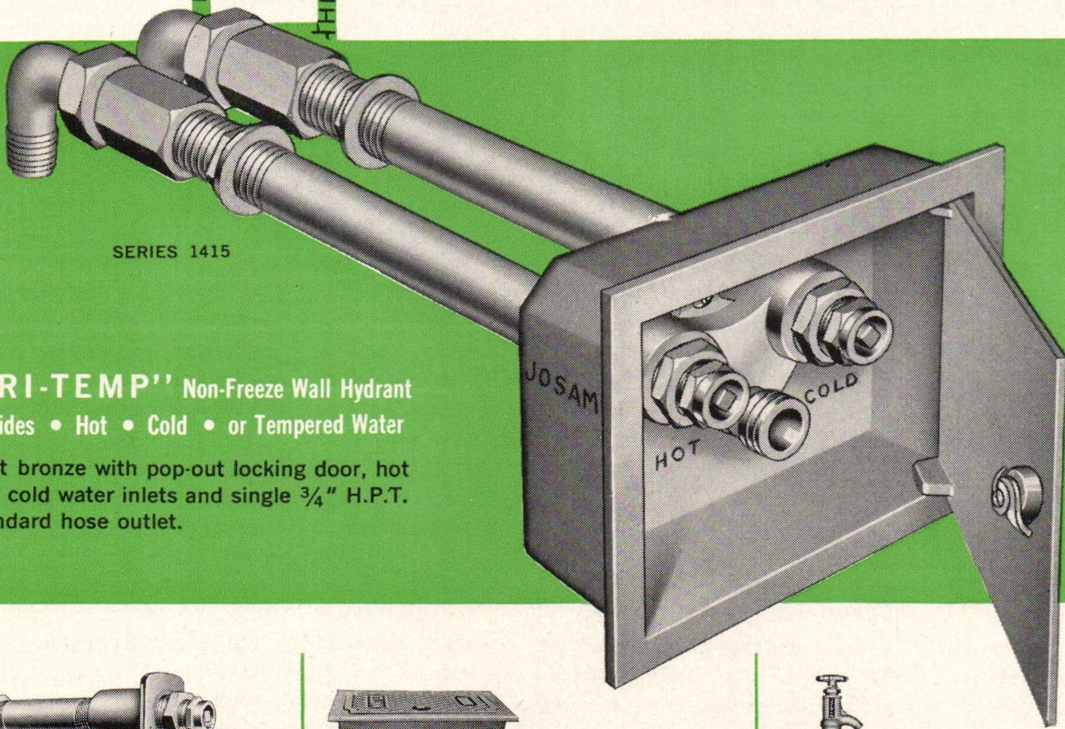

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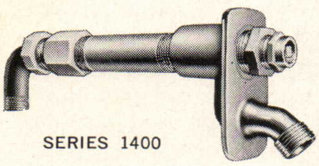

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Editor's Page

Do We Have a Social Conscience?

A few days ago I received a copy of a new book by John Dos Passos called "Brazil on the Move." I rather wondered why the publishers (Doubleday) had sent it to the *AIA Journal* for review, but I took it along to read on the bus on the way home. Looking over the table of contents, I saw that chapter three was entitled "A Nation in Search of a Capital," with all sorts of sub-heads that might lure an architect—"The Boomtown Feeling," "A Sculptor with Building Materials," "City Planner" and "The Case Against." The title of chapter six is "Brazilia Revisited," with sub-heads such as " 'The Bestlaid Plans'. . ." and " 'And He saw that it was good.' "

Brasilia is still news, so I started reading, but being a systematic sort of guy, I started at the beginning. After about twenty pages I found myself absorbed in the problems of Dr Penido, Public Health Officer of the State of Espirito Santo, in Vitória, its capital, and a port near the mouth of the Rio Doce. Dr Penido was saying "To produce an island of public health in each place we work, first we have to build privies for the people. We start from zero in this country. Then we give them pure water."

On a trip up the Rio Doce valley with Dr Penida, Dos Passos saw his first *favela,* a word which in Brazilian Portugese means slum. But it is not a slum as we know it. It is a very special kind of slum—as I was to find out a couple of days later. However, it is "a symbol of the population explosion which has resulted from the success of just the sort of public health measures Dr Penida and his associates were showing off with such pride." With the growth of industry and the collapse of the already meager rural economy, people came crowding by the thousands out of the back country into the cities. Accustomed to dirt floors and the flimsiest of huts, they expected little more in the city, but they could not find even that. So they squatted on government lands and put up shacks with whatever they could find.

But in a day or two I got a lot more information on *favelas* and the people that live in them. The August issue of the British magazine *Architectural Design* came to my desk. On the cover is a striking air view of what looked at first like the ruins of a city which had been smothered with volcanic ash and uncovered, like Pompeii. It turned out to be a *favela,* except that it is in Peru, where it is called a *barriada.* The greater part of the magazine is devoted to a group of articles on the *barriadas* of Peru. Get a copy and read it.

Four young British volunteers have been working for a year in the shanty towns of Lima, assisting the National Housing Institute in a home electrification program. John Turner, a British architect, has been working there for six years, employed by various government agencies. He has prepared this issue, written much of the material and supplied the photographs. It is an apalling yet inspiring story. In Lima alone, 350,000 people live in these squatter settlements. As might be expected, the rate of population growth is the highest in these areas, so that in 1960 the *barriada* population of Peru was 958,000—and they exist in every South American country—known as *ranchos* in Venezuela and *callampas* in Chile.

What are they like, these squalid, sprawling shack-towns? Well, to tell the truth, in many ways they're not so bad as they look or sound. Sociologically, they are sounder than many more pretentious types of housing—although, of course, the majority of them lack sanitation and electricity. They are formed initially by a carefully organized group of forty or fifty families who suddenly move in one night on state-owned land and build hasty shelters of straw matting in order to establish occupancy. They have previously secretly laid out lots and streets, and each family has made its selection—lots of perhaps 2500 square feet.

The next step is to build a wall around each piece of property, and then, using the wall as one or two sides, the house gets started, two rooms at a time. The reason the air view looked like a roofless ruin was because the flat roof is the last thing built. The exterior walls are of brick or cement block, plastered; interior partitions usually of matting on bamboo poles, plastered. The plans are fairly well standardized. By our standards the circulation is poor, ventilation is negligible, sanitation is entirely lacking. Water is bought in oil drums.

Few houses are built by even half-skilled labor. Most are built by the owner, with the aid of his friends and neighbors—whom he helps in turn. A house often takes years, since its construction is limited to the few hours its owner has free and by the small amount of money he can put into it at any one time. Given financial aid, a house could be built in six months.

The government no longer makes any attempt to oust these squatters. After the initial order from the police to get out, they are usually left alone. Nothing can be done to improve existing houses to meet building and sanitary codes. Since there is no true property ownership, no taxes are paid, so there is no police or fire protection. Somehow, not made clear, the children do go to school, often in schools built by the community. Some cities have by this time "legalized" the ownership of the properties, for everywhere it is realized that there are such vast numbers of families involved that absolutely nothing can be done about it. And some cities are beginning to install water and sewer mains.

Why don't the cities build high-rise housing for these people? Caracas tried it. Eighty-five superblocks and sixty-eight four-story blocks were built between 1954 and 1958, on an area of 750 acres and at a cost per unit of $10,000—fantastic, of course, for the economic level they were intended for. Monthly maintenance costs ran to $53.44. People moved in and squatted; less than five per cent of the occupants were "legal." Building maintenance was almost completely neglected. Squatter shacks

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Letters

Our Cover Gal: No Playboy Type

EDITOR, *Journal of the AIA:*

The cover illustration for the August *Journal* is a statue by Milo H. Thompson, who has won the Rome Prize for his work. Please ask Mr Thompson the following questions:

· Did his *model* really look like that?

· Would he want his *wife* to look like that?

· Would he want his *daughter* to look like that?

· And if either this model or wife or daughter had such a grotesque figure, would he feel impelled to reveal the fact to the world?

Discreetly and humbly I ask Mr Thompson: Why the hell did you create that monstrosity? What justification can you offer?

Incidentally, Mr Watterson, why did you choose that statue for your cover?

ALOYSIUS SCHUSZLER AIA
Cleveland Heights, Ohio

Mr Schuszler:

Your letter both puzzles and amuses me. As far as I'm concerned, Mr Thompson's little bronze figure is completely charming. I also consider it purely representational! I would thus assume that his model really did look like that. As to whether he would want his wife and daughter to look like that, I cannot speak. Some like 'em slim and some like 'em plump.

Perfectly frankly, friend Schuszler, I don't consider this figure either "grotesque" or a "monstrosity." I consider it, as I said above, a lovely and completely representational piece of artwork. And that *is why we chose it for our cover illustration.*

EDITOR

EDITOR, *Journal of the AIA:*

Anyone that can puzzle and amuse at the same time and impel you to reply via airmail deserves plaudits. Please stand by while I take mine.

It so happens I like 'em slim: Mr Thompson's study of a misshapen female repels me. If THAT'S how his model really looks, I feel sorry for her—and those close to her. I find this piece as charming as a toad.

But to each his own. You like it, you chose it for the *Journal* cover illustration. I have no wish to quarrel with you; I was merely curious. Now that I know how you feel about it, I shall not pester you any more.

I'll take grace and beauty every time over what *some* people find *charming.*

ALOYSIUS SCHUSZLER AIA

EDITOR, *Journal of the AIA:*

So the *Journal* has gone "arty"—re the cover gal for August. A less attractive form of womanhood I hope I'll never live to see.

CHARLES C. PLATT AIA
New York, NY

EDITOR, *Journal of the AIA:*

It seems to me that the Institute is missing the great opportunity to inspire the youngsters who should be the leaders in the profession fifteen to twenty years hence. The *Journal* publishes many articles each month that seem to indicate an awareness of what I am trying to say; but the product of the self-same authors, in many cases, seems to belie their written word. It suggests the thought that perhaps the articles had been "ghosted" on Madison Avenue, with a similar lack of truthful relationship as often exists between the advertiser and his product.

In front of me is the August issue of the *Journal,* which has on its cover the reproduction of a sculptured female abnormality, produced by one of the winners of the Rome Prize. I believe our profession deserves better than that from the official publication of The American Institute of Architects. Beside this lies the *Technical Bulletin* of the Producers' Council for September 1963. On its cover is a reproduction of a photograph of the interior of the recently completed South Transept of the National Cathedral.

Architecture must supply the quality of beauty in its structures; otherwise it is not architecture. I am not suggesting the revival of past styles which have no meaning for much in the present age. But I do advocate those qualities so evident in those examples of the past that remain with us: the qualities of spirituality and humility that make them deathless.

More and more the *Journal* assumes the complexion of an organ of "big business" and how to handle the financial aspects of construction. This is important, of course, just as adequate fees are necessary, and ethics likewise. But the Institute should busy itself with instilling the love of a whole profession in the minds of those who contemplate entering it and insisting that this is the most important component of all.

RICHARD W. ALGER AIA
Arlington, Va

ED NOTE: *See our September cover, Mr Alger.*

On the Other Hand: Kudos

EDITOR, *Journal of the AIA:*

The *Journal,* in my opinion, is by far the best professional magazine available in the USA—adult education in its truest and best sense.

JAN REINER
St Petersburg, Fla

URBANISMS

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

Urban Patina

Dowager neighborhoods like Washington's Dupont Circle area or Chicago's Near North Side, are often the refuge of the young and the young at heart. These once fashionable areas, where the city's great and near-great early erected their mansions and townhouses, are reminders of a now rare way of life and attract persons of every age, ethnic and economic group.

The houses, though mostly divided into apartments, retain their original charm and mystery—the marbled halls and paneled walls, the high, ornate ceilings, the wrought balustrades, the glowering garretts and cornices—and combined with a few more recent apartment houses offer a housing choice, both financial and esthetic, for the urban dweller. These neighborhoods are today's melting pots; youngmarrieds, business people and professionals, the retired, the city's bohemians and beatniks all are drawn here; economic and social segregation is minimized.

A wide variety of uses, scrambled in a delightful urban mixture, typifies the Dupont Circle neighborhoods. Convenient stores abound; specialty shops crowd the dwellings along the streets radiating from the Circle, providing interesting and unique nooks to satiate every shopping want and whim. As an urban focus there is always some traffic on the Circle, even in the early morning hours. Open-late restaurants and all-night launderettes are after-hours community centers. This mixture of people, uses and traffic and the scale of the park keep neighborhood residents in touch with one another. It is as inviting and safe at midnight as at midday.

The park, like all successful urban rooms, is both a crossroads and stopping place. Neighborhood elders sit along the outer ring of benches, their attention directed to the center where the young gather at the fountain for talk and song. Others, intent on reading, checkers or chess, find spots in the grassed areas between. The design of the park almost audibly offers the choice: the benches facing

Cont'd on p 12

the center draw the spectator; the center circle attracts the performer. Followers of the urban scene find real satisfaction in just such old, familiar and comfortable spaces as these where lively and leisurely pursuits mix and individuality flowers in all its colorful varieties.

Every American city has its Dupont Circles, those areas that have a durable quality which allows them to age gracefully and harbor new people of a new way of life. They have, like silver and leather, increased in appeal with use, and need not be kept unmarred, neat, clean and sterile to entice the city dweller.

When a home evidences decorating pains or the care of a seven-day maid its coldness is often obvious. In their homes people strive for spontaneity and warmth, but these qualities often come most naturally with age and love of place; they are not built of philodendron and plate glass. In like context, why in our neighborhoods should we replace all our "lived-in" looking buildings with new, awesome constructions, complete with potted plants and fenced-in grassy plots? Their meticulous impression can be spoiled by a single gum wrapper or a bike, which one building prudently took precautions against with *Don't Lean Bicycles Against the Wall.* These attempts at perfection are usually uninviting and sometimes unlivable since they disregard all the bike-riding, gum-chewing, cigarette-smoking people of the world —in a word, us.

Why then must we cry for new buildings when we see these neighborhoods adapting to new activities and people? Will our new buildings be labeled "rundown" or "seedy" at the end of their economic life when they cease to function precisely as their builders envisioned? Condemned by these labels, many beautiful old neighborhoods are falling prey to the demolition crew.

To those who say the Dupont Circles of America are becoming seedy, that reconstruction is in order, let them look again. If they cannot accept the unordered and slightly soiled, the spontaneous and emotional side of man, they cannot look at themselves. They are denying one-half of their nature— that half from which art and genius spring. ◄

Miss Nana May, urban dweller, people-watcher and Secretary to the AIA Urban Programs, wrote this month's column. Enthusiasts of Chicago's Newberry Park, New Orleans' Jackson Square—as well as New York's Hudson Street—will find comfort in her remarks.

A·I·A
Journal

A One-man Panel on Architecture

EDWARD LARRABEE BARNES AIA

Once again we present a talk delivered to laymen by an architect. This time it is an address given by Mr Barnes at Sarah Lawrence College

ARCHITECTURE COVERS an incredibly broad field ranging from the design of cities to the design of chairs. No other art, and perhaps no other profession, spreads itself so thin. We architects have the job of joining such irreconcilable opposites as pure structural form and cost budgets, and we must search for architectural unity in a changing chaotic world.

I would like to tell you about this challenging scope of architecture, but I find that I am quite inadequate to the task. Therefore I have conjured up a panel of experts to help me. They are all architects, all idealists, and all convinced of their own point of view. Whether each of these people is seeing the true forest or only the immediate trees is a matter for speculation.

So now, without further ado, let me introduce them and then let each speak for himself. I have with me tonight Abe Douglas, a man of social conscience; Mrs Lebensraum, an interior designer; Dr Concrete, an engineer; Mr Taylor, a functionalist; Mr Green, who is interested in our environment; and Mr Eye, an artist.

First, Mr Abe Douglas:

Mr Chairman, I am delighted to be here, recognized as a member of our creative profession. Social planners are generally considered to be pretty unesthetic types—people who don't appreciate the *art* of building,—habitual compromisers. Nothing could be further from the case. However, we *are* wholeheartedly against ivory towers and all the fads and clichés that clutter up the architectural magazines. It is hard for me to appreciate the significance of an expensive gem house on a platform in Westport when I know that every ounce of talent and courage we have is needed to design a decent housing project and get it built.

You see I am an old New Dealer. I was an undergraduate during the early days of the New Deal. At architectural school I gave my attention to European housing in Sweden and Holland and Germany, for I was concerned about housing for the bottom third of the nation here at home. At this time modern architecture in its early revolutionary form was breaking out around the world. It seemed to me then that we lucky ones, who were studying to be architects, had found a profession that unified all our ideals, and that the entire spectrum of our convictions about art, technological advance, social reform and politics could be unified in practice. It is an aim which we must not abandon. For achitecture unlike painting or music or writing must be *constructive.*

We cannot satirize our culture in our buildings, and we cannot withdraw and concentrate on precious preoccupations when there is so much planning to be done. Let us look at Manhattan today.

Are we building the kind of living environment that we want? What kind of housing is replacing the tenements? I am sure you will agree that the forbidding red brick cliffs with endless double-hung windows are an absolute abomination. Many prisons have pleasanter facades. When we clean out a slum we "cauterize" it. I recall Lewis Mumford speaking at the Architectural League after the war. He had just come back from Warsaw and East Berlin where he had seen new housing behind the iron curtain. Driving along the East River Drive he saw again our own institutional housing. "This is the expression of the police state," he said, "not what I saw abroad."

This dehumanization of the city is underlined by our traffic policy. Since Moses we have had one aim: to bring as many cars in and out of the city as we possibly can. While mass transit systems, the buses, subways, trains and ferries starve, private transportation is given every favor. We have sacrificed our entire waterfront to multilane highways. We have clogged our streets with the noises and smells of cars moving like angry snails back and forth across town, and now we are about to crisscross the center of town with more expressways, truncating neighborhoods, blighting the adjacent blocks on either side right across the island. (Perhaps the Kennedy bill to assist mass transit systems that passed the Senate a short time ago will reverse the trend. Let us hope so.)

It is not a pretty picture—a fragmented society, transient and rootless, in the shadow of expressways, high-rent office buildings, entertainment centers and hotels. I know of no precedent in the past, no Hanseatic town or Mediterranean trading center, where the expression of the city is so directed to finance: the cost of land and the power of money.

The question, it seems to me, is whether there is another way to orient our growth towards an integrated society where birth and love and education and work and play are all related. You know what I mean—the look of a town where the steeple and the square and the houses and shops and cemetery represent the cycle of life. I believe that this relationship between a humanistic way of life and our physical surroundings is possible. I believe that in New York we can rebuild pleasant neighborhoods in modern terms and, furthermore, that we can even direct the great metropolitan sprawl so that human values are revived.

I will conclude by mentioning three important aspects of this very complex problem.

Low rents. It is essential that we provide better architecture with more amenities without raising rents. In order to do this we must raise the public subsidy. You must realize that the reason our low-cost housing looks so bleak is largely because of the drastic cost limitations. If we care about better housing standards in this city, we must pay for them. I remember an old comparison. One broadside from the main battery of the battleship Idaho would house a family of four for thirty years. Think today what living space could be provided for the cost of one rocket launching. Can't we spend some space money for space on earth?

The neighborhood. This, not the individual housing block, should be the architectural unit. The architect must become involved in the whole neighborhood plan—the shops, schools, open space and complete community life. It is the singleness of use that gives our apartments the look of barracks. I believe that our architecture, as well as the life of the inhabitants, will be enriched when we plan for the many uses of daily life.

Now, with legislation for urban renewal we have a tremendous opportunity to build our neighborhoods as architectural entities. So far in New York we have failed to produce a single example of a complete neighborhood design. Well-designed new communities exist in other parts of the world. It is time we built them here.

The city. Grand schemes for cities like Gruen's Fort Worth plan where the automobile is buried and out of sight, or Jellico's dream city where the cars run on continuous roof tops and the ground is a park, or Corbusier's linear city where development is stretched out along the transportation line with all sections close to open country are stimulating and possibly prophetic. The architect can have a concept for a whole city as simple and cohesive as the concept for a neighborhood or a single building. But since our problem is to redirect the growth of an existing city, New York, our job is much more complicated. Manhattan is not just thousands upon thousands of apartments, or hundreds and hundreds of neighborhoods. It is the center of a great metropolitan galaxy reaching as far as Boston and Philadelphia. This galaxy, like the neighborhood constellation, has a form that must be comprehended and a growth that must be controlled and directed. Parts are growing by accretion, and parts are dying of decay. The architect who works to direct the composition of such a city must know that he is dealing with changing, shifting patterns, not with finalities. He must be satisfied with trends, not hope for complete solutions. But he is working where he is most needed today. So my friends, when I carp at the Westport pure platform house, I am not attacking pure design. I am simply following Burnham's advice to "make no little plans."

Mrs Lebensraum, our lady panelist:

Thank you, Mr Chairman. I suppose you included me in this discussion because it is being held at Sarah Lawrence and you thought the students would be interested in my special field—"living space." Certainly, whether women like it or not, the inside of the house is their territory and they are responsible for its character. So it behooves us to forget for the moment all questions of "fashion" and "taste" and to try to think freshly about the architecture of rooms.

Next time you drop a hairpin get down on your hands and knees and look about you at the bottom eighteen inches of the room. It is a strange world of assorted legs and twisted light cords that we accept because we are used to it. A dining table with eight chairs around it has a total of thirty-six separate legs; if the furniture has stringers or braces, the complication is astonishing. The sideboard, which could be hung from the wall, has six more legs. The marble coffee table has lovely chrome supports, but since it sits on a soft rug there are nasty rubber cups to spread the load. The bottom of the sofa is four inches from the floor—too close for cleaning—and the wooden backs of chairs are gouging the wall. This is the world of cats and dogs and dust balls where the architect gives up and the decorator takes over.

My thesis, you may gather, is that our living rooms are too cluttered. In this point of view, I have many architects as allies. You may remember the famous statement by Mies van der Rohe, "less is more," a statement which precipitated a violent attack in *House Beautiful* magazine. Years ago, someone asked Frank Lloyd Wright about chair design; what were his ideas? Of course Wright had designed many chairs but on this occasion he gave a delightful answer. "The trouble," he said, "is with people—they should either lie down and rest, or stand up on their feet and work. The in-between posture is essentially ugly."

Now, why do architects make these perverse statements? Why do we always vote for simplicity and elimination of detail? What is it that we see in a space when we have taken everything out of it? The answer is that what we see is the space itself. Space is the single most important element in architecture—not walls, or columns, or ceilings or details. We think in terms of invisible volumes, sometimes contained, sometimes loosely defined, and the objects in the space are of great importance and concern to us. The placement of a flagpole in a public square and the height of chair backs in a room are one and the same problem. Whenever an object is placed in space, the space is changed for better or for worse.

I should like to see more unity in our interiors. I am tired of the oppressive personality of batlike wings, wicker hoods and curly bentwood arms and legs, and the sacrifice of space to a parade of possessions. Let me describe two interiors.

The first is a well-furnished room of today. The walls, ceiling and floor are all different planes and the furniture is placed piece by piece inside. There is a rich juxtaposition of many materials and many colors. The furniture is a sophisticated collection of Japanese, Italian or Swedish pieces with a few French or English antiques added for depth. The objects and works of art are chosen with discrimination and placed on walls or table with care. A selective eye and careful articulation can organize this hodgepodge and make a beautiful space. But it is a changing restless flexible interior—a twentieth century American room—as slavishly chained to status symbols in the form of possessions as a Victorian drawing room.

The second is the room as I should like it to be. Here the planes have vanished and the walls and ceiling flow together, the floor slopes up to hold cushions or mattresses, the lighting is magically built in, and the number of separate impressions is reduced until one might say there is nothing but the activity—such as sleeping or sitting—and everything else is surrounding space. The architect Kiesler pioneered in this direction with his womblike Endless House.

Now, I realize that it is impossible to make every living room into a womb with a view, but I think we can take steps in this direction. We can eliminate legs. Tables can be cantilevered from the floor, and storage units can be buried in the wall. Then our living rooms will cease to be a jangle of separate impressions and become quiet places of repose. The transition from architecture to the activity within should be graceful, gradual and simple. Above all, we should strive for unity.

We should study harem interiors with their many layers of Persian rugs and pillows, the modular system of Japanese living rooms where the *tatami* floor mats and *shoji* screen partitions are designed to a national module, so that they will fit in any room. We should look more carefully at the neglected Rococco. You may know Potsdam or the little Nymphenburg shooting lodge outside Munich. Walls run into ceilings, mouldings break loose into sculptural garlands, the furniture is an extension of the ornament, murals and wall decorations intertwine. Everything is unified in one glorious exuberant foaming expression. One cannot distinguish the slightest difference between the point of view of the architect, painter, furniture designer, craftsman and patron.

A coda about possessions. A Bible, yes; books, yes; a musical instrument, yes. A portrait or painting, yes. But a chair, a floor lamp or a dressing table, no. Let physical and biological functions become part of the architecture and let your only possession be spiritual ones.

Dr Concrete. I should tell you that the Doctor is not a cement specialist. He likes steel and other materials as well. He is called Concrete because he is a man of facts.

Dr Concrete

Mr Chairman, despite my love of facts, I am probably the only one here tonight who will not be dogmatic in his views. Certainly Mr Douglas and Mrs Lebensraum are burning with enthusiasm for their own points of view. Abe talked about low-cost housing; Mrs L. talked about egg-shaped space-wombs. Well, I am an engineer, and I am happy to serve them both. I am a scientist. I work from the specific, and my job is to serve architecture, not to dominate it. There is a word—I'm afraid it's not a very lofty one—which is sometimes used to describe the relationship of structure to architecture. The word is "appropriate." I have a better one: "unified." There must be complete unity of purpose between the structural and architectural ideas. And the architecture must take the lead.

So, if I am doing low-cost housing, my ideas are geared to economy—the total economy of repetitive parts and mass production, as well as the economy of using the least possible material. Economy is at the root of all good structural design. Mind you, this does not mean cheap or shoddy. Economy means "the most for the least"—the longest span by the simplest method. So I do not feel put upon when I am asked to work economically. It is in my blood.

On the other hand, an egg-shaped room—there is an exciting problem. For while our present construction methods make such shapes expensive, one sees immediately that one is dealing with a basic form—a form seen in nature in shell structures and cone forms and wasps' nests. This should be a form which is simple to calculate and construct. I must think originally, since western building techniques are not applicable. I must find a way to unify a structural concept with a space concept. Do I spray plastic over a wire net? Do I pour concrete on a sand pile and then hollow out the inside? The engineering mind must see structural potential in new architectural shapes.

Only a few years ago a number of engineering experiments dominated architecture. There was a fashion for thin concrete roofs sometimes spherical, sometimes waffled, sometimes saddle-shaped. A form called the hyperbolic paraboloid became fashionable. At MIT a dome was built supported on three points and then entirely filled with conventional architectural elements so that one never sensed the inside space. In fact, by the time the building was finished the roof could have been supported on the interior partitions. This was a particularly good example of the lack of a unified concept. There was the influence of Buckminster Fuller, that wonderful creative engineer who invented the geodesic dome, really a sphere. How many architects have tried to ram square functions into his spheres? And what architect ever solved the problem of how to make the sphere meet the ground? The ball is crudely truncated with no adjustment for the critical esthetic problem of support. No, Mr Fuller's sphere is a pure mathematical concept. There is no way to set it on the ground without making some radical alterations. Perhaps the sphere should simply be thrown in orbit to roam in space as a free form.

Of course, structural experiments are proper and laudable in their place. There is no question that such "playing around" is not playing around at all but tremendously valuable to the architect. A whole new vocabulary of forms is at his fingertips. But until the chosen form is truly appropriate, we cannot recognize the result as finished architecture.

What I am saying is simply this: The engineering concept must be an integral part of the architectural concept. The notion of the right space and the right structure must be simultaneous. To let structure dictate the space or dominate the form is a kind of imbalance that should not be encouraged. Some current architecture is guilty of exactly this kind of excess. We call it "structural exhibitionism."

In this connection, it is important to mention Gothic architecture because to many, the Gothic cathedral is *the* example of structure dictating to architecture of just such structural exhibitionism. Now if we are talking about the great period in France—the early thirteenth century, the time of Chartres—I cannot agree. For here mass and space and filtered light are all in balance. The structure is only a part of the whole. On the other hand, in the late Gothic period, the structure became extreme and the earlier unity was lost. Perhaps there is poetic justice in the collapse of the great nave at Beauvais in 1573. No, great examples of architectural structure show restraint as much as daring, and above all unity—unity of purpose.

Mr Taylor

Mr Chairman, I welcome this chance to defend and explain functionalism. Since the war this "ism" has been the principal target of numerous architectural critics, the most vehement of whom were trained in functional architecture by Walter Gropius at Harvard. To put it mildly, there has been a reaction.

At one level "functional" architecture is criticized for being too much concerned with efficiency and practicality: stacking the plumbing, producing plans with the least possible hall space, providing closet walls, slavishly orienting buildings to admit or exclude sun, always choosing the lightest, most economic structure for any given span.

At a somewhat higher level, "functional" architecture is criticised as being fundamentally a wrong approach. Form, the critics say, does not follow function. Form in architecture may be borrowed from the past or the work of other architects, it may take a completely imaginative flight, it may be a decorative expression of delight, it may take any direction the architect chooses, but—the form should always take the lead, and function fit in as best it can.

Now, of course, the answer to the first criticism is simply that never did Gropius or anyone else in the Bauhaus intend that pure efficiency and practicality should be the genesis of architecture. It must be admitted that many of us who studied at Harvard took a truly scholastic delight in seeing how many toilets we could balance on one plumbing stack. Those were the days, as Abe Douglas suggested, when low-cost housing was one of our most cherished goals. However, if we really thought that this kind of efficient minimum planning was architecture (and some of us did), we got over it when we left school. I think that all that should be said about this approach to architecture is that it is a distortion of real functional theory (although it is a valuable planning exercise).

With the second point—that architectural form should not derive from function, that Sullivan, Corbusier and Gropius were wrong—I emphatically disagree. The interrelation between form and function is the distinctive feature of architecture. I say to architects who don't like the functions they have to plan for, "Get out of architecture and over to sculpture where you belong."

No, the essence of architecture and the most wonderful thing about it is its direct relation to life. A building has a life of its own, its activities will determine, as Lou Kahn says, what the design "wants to be." Thus, in every good building there must be a strong design idea directly related to the life within. A country house is broken up into parts like a village. A girls' dormitory is concealed behind a walled garden. An airport is designed as a city gateway. In each of these descriptions I describe the activity and the building in the same breath. So it must be, for there are too many buildings today masquerading behind grilles or cowering behind flamboyant porticoes where the architect was obviously thinking of the facade and not the life within. "Facadism" whether in a Western frontier town or a New York museum, is an evasion of architecture. "Functionalism" in its broadest sense means a complete expression of the activity in a building. The functional architect lets the building grow from inner forces. Not only will a hotel appear cellular and a supreme court building axial around a central room but the two buildings will be symbolic representations of their purpose. The hotel becomes part of the texture of the city. The Supreme Court building expresses the absolutism of law and authority. So in the best sense, symbolic architecture is an outgrowth of functional architecture. In the end the full meaning of the life in the building pervades the design.

Mr Green

Mr Chairman, I will be brief. To suggest that a building is only a product of the program is in my opinion a half-truth. A building is also shaped by its environment.

When the architect walks over land for the first time before starting a house design, he must be receptive to a thousand impressions. Let us suppose it is a hillside with a north view. He thinks of cold north light and the need for sunny back light. Perhaps the hill warps to the right away from the view. How shall the house respond; how shall it step down? Is the hill bleak in winter? Where would one really like to sit on the hill? And all the secondary views, long and short, do they attract? How does one approach the site? Will the house spoil the hill? Should it stand alone like a Maine lighthouse, or should it be battered into the hill like a sheepfold? The architect comes away dizzy, but already the house is taking shape. As he looks and observes what is really happening on the site, things to do and things not to do are running through his mind. Like a sunflower, the house is orienting itself. The architect is only the medium. House and site are becoming one.

Similar forces are present on every site, whether flat or wooded or in the city. The environment shapes the building. Indeed the spaces between buildings, the negative volumes, often mean more than the buildings themselves. Think of the dog-leg vista from St Mark's Square to the canal, or the subtle angles between Parthenon, Erechtheum and Propylaea, or even the narrow streets of an Italian hill town. Each building added over a period of years is sensitive to its neighbors and the spaces between.

In America, particularly in the work of Wright, we have many examples of architecture that is an outgrowth of the landscape. However, for an equivalent sensitivity in city building, we must look to Europe for examples. At Idlewild one sees a ring of separate buildings; the space between them which could have been so wonderful is neglected. At the New York World's Fair one will see a meaningless pattern of separate competing buildings on separate lots. There is no great space designed as such, no streets or avenues composed as rooms.

It is time we thought of streets and squares and city spaces. We must be as sensitive to the existing buildings, old and new, when we build in the city as we are to the slope of a hill when we build in the country. Because it is the environment, more than we realize, that shapes our architecture and our lives.

And now, last of all, Mr Eye—sometimes spelled "Eye," sometimes spelled "Ego." He has nicknames like Angry Eye and Hungry Eye, and of all tonight's speakers he is the most sure of himself.

Mr Eye

Mr Chairman, all this talk about social reform, and space and structural unity and tailor-made architecture seems to me to miss the real point—that architecture is primarily a form of self-expression. It is an *art,* and the architect must find release for himself in his art in the same way as the composer, the poet or the painter. How can it be otherwise? One look at a Frank Lloyd Wright building tells us. The Guggenheim Museum is not a functional building, a background for exhibitions. It is a great burst of energy from one man—as a wag said, "The greatest piece of sculpture in the Guggenheim collection." Or Le Corbusier—his chapel at Ronchamps and his monastery called La Tourette are his religious statements. In his buildings we see Corbusier as clearly as we see Bach in the St Matthew Passion. Or Phidias—the Parthenon does not move us as a temple. Most of us know little of Greek worship in the fifth century BC or the rites that took place within the structure. What is moving is the sense of proportion—the exact placement of the block in space—decisions and refinements made by a sculptor twenty-five centuries ago that are intimate and immediate today.

"What counts," as Kandinsky has said, "is not the what but the how."

Back in 1925, in "Towards a New Architecture," Le Corbusier took time out from extolling the beauties of the house as a machine to live in to write: "You employ stone, wood and concrete, and with these materials you build houses and palaces. That is construction. Ingenuity is at work. But suddenly you touch my heart, you do me good, I am happy and I say, 'This is beautiful,' 'That is Architecture,' 'Art enters in.' "

What Corbusier expressed is the essence of architecture. Abe Douglas is right: Our work must be a part of constructive historical trends. Mrs Lebensraum is right: We must try to unify our way of living, our possessions and our utensils with the envelope we live in. Dr Concrete is right: Structural and architectural concepts must be one. Mr Taylor is right: The purpose and meaning of every problem should be expressed in the solution. Mr Green is right: We must respond to our environment. But after everything else is said, there is one truth, which is more important than all the others, and that is that architecture is an "art." And it is my thesis that art is an expression which comes from inside the designer. As he explores a problem, he discovers his own relation to it. He becomes involved. His senses react. He finds something in himself he didn't know existed.

Distortions of form and subtle exaggerations in the statue of David are the signature of Michelangelo. The somber materials and quiet proportions of the Seagram Building are the voice of Mies van der Rohe. It is possible to design and build pure fantasies like the dripping sand castles of a child on the beach. There is the dreamlike work of Gaudi in Barcelona at the end of the last century, who built free-form stone facades carved and chiseled in an entirely personal idiom that somehow predicted the plasticity of concrete construction which is just appearing today. Some of his masonry facades literally appear molded or poured. There is the strange monument built by a man named Simon Rodia in Watts, Calif. This last consists of nine cagelike pinnacles of concrete and stucco covered with a mosaic of broken glass, tile and bottle caps. The designer, an Italian tile-setter, is expressing his gratitude to the US with "something big." There is no other purpose. It is even possible to react against the times as did the short-lived New Brutalist movement in England. This group led by a couple named Smithson turned against the slickness of the glass and steel facade and the careful articulation of Miesian architecture and advocated rough details and a more haphazard use of materials. It was in effect a justification for an unmeticulous architecture.

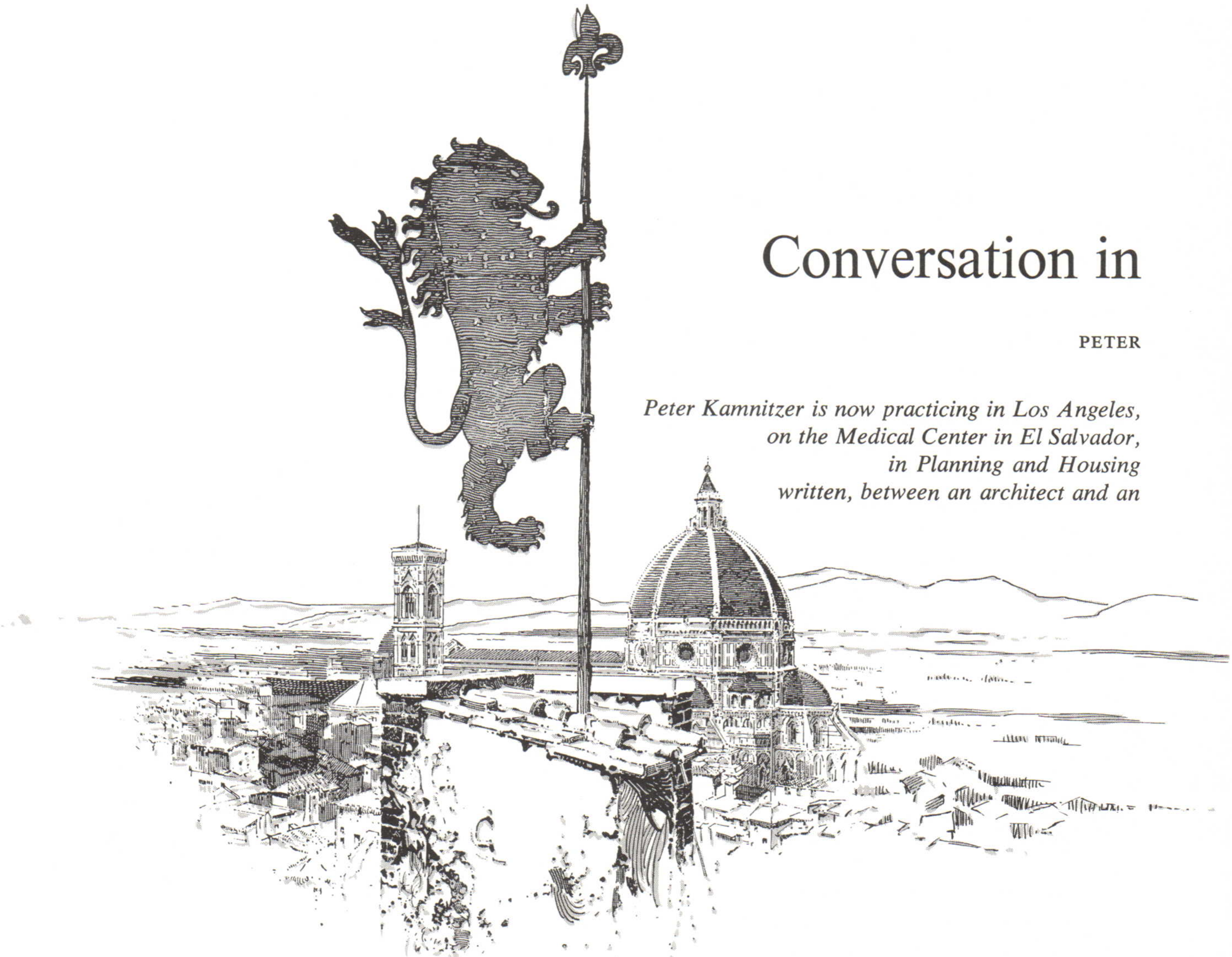
I am citing these examples to show that the architect, no less than other artists, is able to make personal statements that are not only separate from function and construction, but sometimes almost in defiance of them. It seems to me that this expression is essential and that the designer must have this sense of release. Always to be at the mercy of armies of facts and never to find yourself in your work may be compared to other Freudian frustrations. I am afraid the unfortunate truth is that for many architects, the everyday routine of architecture snuffs out all change of self-expression. They are dominated by the problem. And so, they build up a rationale called "functionalism" to justify the fact that the building has designed itself, that the program, not the architect, has dictated the form.

Now I say that the architect must not resign himself to the role of a tailor. And we must remind our students that architecture begins after they have assimilated the facts and does not end until they have made a complete creative statement of their own.

It may sound to you as though I am arguing for self-indulgence, for personal expression with no regard for the discipline of the program. Nothing could be further from my meaning. Freedom and responsibility are linked together in architecture exactly as they are in daily life. The real point about the relationship between the ego of the designer and the architectural problem is that these two identities must be fused together in the solution. The artist and his production must become one.

Now the question is how to achieve this fusion in the design of buildings, a process that often goes on for years and years with continual interruptions and distractions. As a rule, two or three years elapse between the day the architect starts to work and the day the building is finished. In that time, the architect will start and finish other jobs, coordinate the work of consultants and engineers, supervise contractors, pay bills, keep clients at bay and occasionally relax.

Can he maintain the high pitch he needs to make good decisions and refinements along the way? I am sure that he can if he is able and willing to follow his instincts. Let me assure you that there is no way to "think through" an architectural problem. If, in a single design, the architect is attempting to relate his work to good social principles, to make it express the purpose of the building, to create an inside space that fits the life within and outside spaces that enhance their surroundings and, furthermore, to choose the appropriate structure and materials, he needs insight and instinct to achieve unity. He must become completely involved. So I say that architecture is art and that art is an expression of the ego. Architects should accept this precept and sink or swim. ◄



Conversation in

PETER

Peter Kamnitzer is now practicing in Los Angeles, on the Medical Center in El Salvador, in Planning and Housing written, between an architect and an

PARDON ME, SIR, but I could not help observing your obvious interest in the S Maria del Fiore. I have watched you for the last hour looking at this cathedral in fascination. I assume your interest is not purely that of a layman.

> No. Not exactly. Although I don't quite know where the line between layman and expert should be drawn.

This does sound like the language of an expert. I am now doubly curious to know what your field of interest is. . . . Would you allow me to share your table for a while?

> I should be delighted. Please, make yourself comfortable. I hope you will join me in another glass of wine. I can recommend the Chianti which I have been sipping here for quite a while, as you have undoubtedly noticed.

Thank you very much. It will be a pleasure.

> Waiter. Two more glasses, please. . . . Yes, I am interested in the cathedral, but at the moment particularly in the dome by Brunelleschi. This man continues to fascinate me; in fact, I am now more or less at the end of a pilgrimage to his shrines.

Don't tell me you are an architect too? . . .

> No, I am not. I am an art historian, but I am delighted to have run into an architect. I better warn you that I may bombard you with a great many questions because in my studies I have often felt the lack of an architectural education and I wished I had your background. . . . But I suppose you are not particularly interested in my present hero.

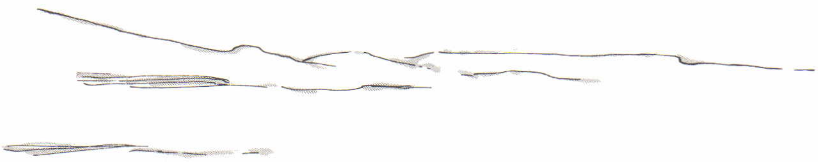
Brunelleschi? Quite in the contrary. I have been studying his works for some years now. I have been attracted by them and I have been troubled by them. Yes, I would say I am interested in your present hero.

> You mentioned that you have been troubled by him. That sounds interesting.

Florence

KAMNITZER

but he has worked at everything from bricklaying and stage design to serving as Project Director for the IBEC Housing Corporation. He has a Master's degree from Columbia and a Master of Architecture from Harvard. The delightful discussion which he has art historian, represents the dichotomy within most of us—the struggle between reason and emotion



Frankly, not just by him, but by this entire celebrated movement called the Renaissance. . . .

Well . . . . ?

I am afraid you would not want to hear all that.

I told you I would.

You see, traveling around and observing Renaissance art, I remember the claim that this era was a rebirth of classic art. . . .
If it had been that, it might possibly have been a good thing.

You don't consider this a "legitimate" rebirth?

No, not "legitimate." Not of the best in classic art, not of the noble qualities I admired in Greece but mostly of the decadent Greek schools as represented in Roman copies. Sure, many of these show a great deal of sensuous charm and show much technical refinement, but they don't compare to the best in Greek art. From the Roman copies of fauns, Apollos and Venuses that had been preserved in Italy at the time, it was impossible to gain high inspiration or true guidance. You see, what disturbs me is the "phoniness" of it all. To the ancient Greek and Roman the pagan ideas had been real and their inspiration was genuine; but to the Italian of the fifteenth century, these ideas could not have the same meaning nor supply a true incentive. After the intervening centuries of Christian thought and experience, it was impossible for men to approach ancient themes in the spirit of the ancients. The neo-pagan art of the Renaissance is not wholly spontaneous or sincere. It contains elements that are foreign to the pagan spirit and not compatible with it. The art of the Renaissance is in fact a combination of widely conflicting ideas and confused aims.

Quite an indictment, I must say. But while you paint such a dark picture of the Renaissance, do you not realize how much you personally owe to the achievements of this period?

What do you have in mind?

I am referring to the emergence of the artist as an individual. In previous times, it seems that all works of architecture had been collective achievements, the builders of the parts being separate members of a congregate body; and while they put their original ideas and fantasies into their own portion of the work, the individual artists were lost in the congregate merits of the entire building. We hear vaguely that Arnolfo began the Duomo, that Giotto, Andrea Pisani, Talenti, etc, went on with it, but who knows the exact contribution of each of these sculptors and designers? It is only from the late discoveries in the books of the "Opera" that we find that the fine Mandola door was not Jacopo Della Quercia's but Nani di Banco's. But, to return to your special field of interest, did you notice that on all the early Roman and Tuscan buildings where there is any description at all, it usually records the patron or the ruling operaio, but very seldom the architect. It took Brunelleschi's courageous strike for freedom that artists dared to stand alone and the builders of the Renaissance shine out as separate men whose distinctive minds are impressed on their buildings. Michelozzi, Alberti, Cronaca, San Gallo, Michelangelo are all individual artists whose work represents their own independent conception.

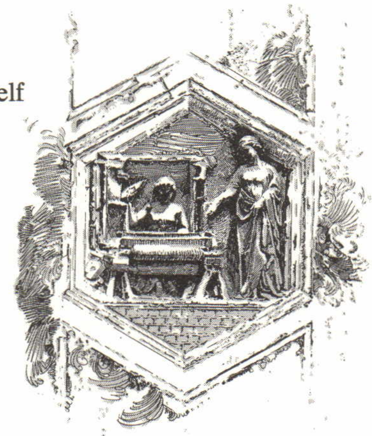
Being an architect yourself, would you not fight for your right of personal individual expression rather than being anonymous, following the traditions of your guild and being considered more of a technician than an artist in your own right?

I often wonder. Certainly, on the surface, I would want my "freedom" and "individuality." But considering where it led us today, I often wonder how much freedom and individuality we really have in this era of maximum economic pressures, teamwork and specialization. Are we not dreaming rather than facing reality? And are we not forgetting that the medieval communal life stimulated the faculties of the individual in many ways? The individuality of the Middle Ages was obedient to the demands of corporate and cooperative life, while that of the Renaissance was independent and capricious. It was the strong communal spirit giving unity of purpose to the varied faculties of individuals that made possible the production of the noble arts of the Middle Ages. The development of the individual in the Renaissance differed from that of the Middle Ages mainly in favoring individual caprice and search for personal fame at the expense of harmonious collective effort.

You seem to be critical of the desire for personal fame. But let me remind you that Brunelleschi was driven by this force. In my opinion it was mainly this force which gave him strength enough to withstand the constant pressures of the hostile mason guild

and to fight them successfully. The search for fame, in addition to his strong belief in himself, gave him this supreme strength—and God bless him for it. I will admit that freedom is hard to accept. The collective background and the framework of tradition of the Middle Ages supplied a great deal of moral support. But it is the price of freedom to search for your own way, your own individual expression, without this support. I, for my part, would still chose individual freedom. Speaking of the contribution of the independent individual artist, let me remind you of the dome in front of your eyes. The whole scheme of this dome was a most daring innovation by *one* single man, completely new, nothing to compare it with in size or beauty. A span of nearly 140 feet, the dome itself 120 feet high. This was not one of the former architectural innovations which were the comparatively slow outcome of corporate endeavor, when progressive changes were so gradual that no wide or sudden departures from known methods of construction were made at any one time, or by any one person. Only an individual would dare to propose to raise this vast dome without the use of the ponderous and costly centering device, and only an individual would arrive at this elegant and proud form. The beauty and achievement of this dome in front of you has not been matched by any of the later elevated domes.

I really hate to have to disappoint you. You mentioned the supreme beauty of the dome and the superior method of construction. I share your feelings about the artistic merits of the dome. Yet, to my greatest regret, I have to mention that the shape was not designed by Brunelleschi. I know you will find it hard to believe because, obviously, you are another victim of Vasari's public relations efforts on behalf of your hero. But the design of the dome started with Arnolfo di Cambio himself who, undoubtedly, had prepared a complete design for the cathedral, which included the dome. A fresco in the Spanish Chapel of Santa Maria Novella shows the entire complex with the dome practically identical to the way you see it today. Moreover, it is known that a committee of the eight maestri was thereafter in charge of the constant "design development" of the dome, and when Brunelleschi started to work on the dome he was bound, as were the others before him, not to depart from the given design. As for the uniqueness of construction, let us not forget that Brunelleschi had a perfect example in the dome of the Baptistry, right here in Florence. The attic wall and pyramidal roof of the Baptistry are transformed into the external shell of the cathedral dome; the angle buttresses of the older monument become the great angle ribs of Brunelleschi's vault; the intermediate abutments of the Baptistry are changed into the intermediate ribs of the great dome; and the inclined barrel vaults of the Baptistry scheme are represented in the cathedral dome in the arches spring between the great angle ribs.



Congratulations! So you really could prove that Brunelleschi did not work in a vacuum after all. And—what baseness—he even carefully studied available examples of dome construction. But have you considered the size of span of the two domes you are comparing, 75 feet for the Baptistry, 140 feet for the cathedral? Twice the span, nearly four times the area covered. The Baptistry dome hidden from the outside behind a pyramidical roof; the Duomo soaring proudly, most visibly, above the high drum, hundreds of feet above the ground. No, I can't help feeling that you don't do justice to Brunelleschi's immense contribution. Have you ever considered against what odds this stubborn individual had to create this magnificent achievement? The doubts, the intrigues, the humiliations—the operaio throwing him into jail for not paying his dues to a guild to which he did not belong; his having to share the assignment, which was rightfully his, with—of all people—Ghiberti! The humiliation of being handed the assignment first only up to a certain height of the dome, with the work to be critically reviewed by the operaio at that stage. And, shortly before his death, to be forced to compete for the design of the lantern, which should have been his as a matter of course in view of his unique achievement. I am afraid that you see this man too much in a vacuum and not as a human being, struggling and working within tremendous external limitations.

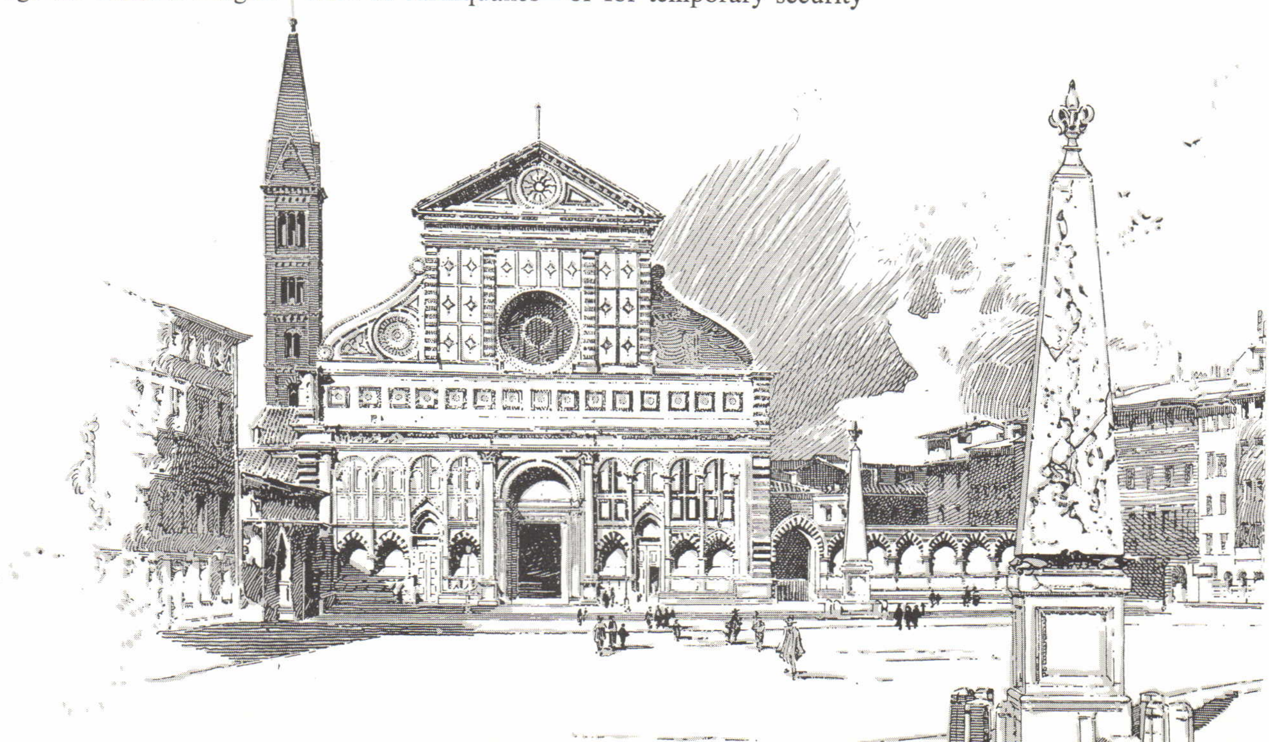
I am honestly touched by your empathy. I do feel, however, that also he was no saint and that some of his own character traits did not exactly help in his relationship with his fellow men. It is known that he was of a suspicious nature, that he would not confide even in his best and closest friends, like Donatello, for example. He shared room and board with him; they set out together for Rome for common studies; but he would not let him in on his plans with regard to a revival of classic forms in general or the dome construction in particular. In fact, he sent Donatello back to Florence before he dared climb atop the Pantheon roof for his investigation of the ancient method of construction. He was scared that people might rob him of his authorship. He chose for his friends those who would worship him like Masaccio and Donatello. If his great belief in his own power was recognized by others, he would be amiable; where it was ignored or disbelieved, he reacted with hostility. I mention this only because of the picture you painted of Brunelleschi as the innocent victim of persecution. I am sure that the members of the guild were not spared the impact of his total personality.

Do you really believe that amiability and friendliness would have smoothed the path of a man whose contribution to mankind could only be made by fighting the existing order? Do you really believe that the American, French or Russian revolutions were made by lovable family men? Do you believe that Michelangelo, Leonardo da Vinci, Beethoven, the great innovators, the giants, the geniuses were humble, modest, kind, helpful, patient, considerate or most of the other Christian virtues you might name? I don't believe so, and I feel that Brunelleschi has earned the right to be named in company with these great men.

I am sorry that I cannot see Brunelleschi quite in the category of the men you mentioned. Judging his achievements as an architect, I have to apply criteria applicable to the really great ones. And one of the chief criteria is, in my opinion, the structural soundness of any building, good or bad, beautiful or ugly. Surface decoration, however attractive, cannot substitute for the shaping of a building entity created from inside out, the beauty being an expression of its truth.
The dome, with all its artistic and mechanical merits constitutes a departure from sound methods of dome construction and is structurally false: a bulging thin shell of masonry cannot be made secure without abutment; much less can such a shell sustain the weight of a heavy stone structure like the lantern of this monument without resort to the extraneous means of binding chains. A builder having proper regard for true principles of construction in stone masonry would not undertake such a work. For although it may be possible to give the dome a shape that will be self-sustaining as to thrusts, it is not possible to make it entirely so, and, therefore, if deprived of abutment, it must be bound with chains. A structure of masonry which depends for stability on binding chains is one of inherent weakness and thus of false character.

But did you not have metal clamps in masonry in the walls of the Parthenon? Or wooden ties in parts of Gothic buildings? Or tie rods in the proto-Renaissance and tension wires in twentieth century construction?

It is a question of integrity of the structure. In Greek or Gothic works the masonry forms are favorable to stability, independent of the clamps and ties. They don't depend on them for a total structural concept. They were only inserted either for security against unusual dangers—such as earthquakes—or for temporary security

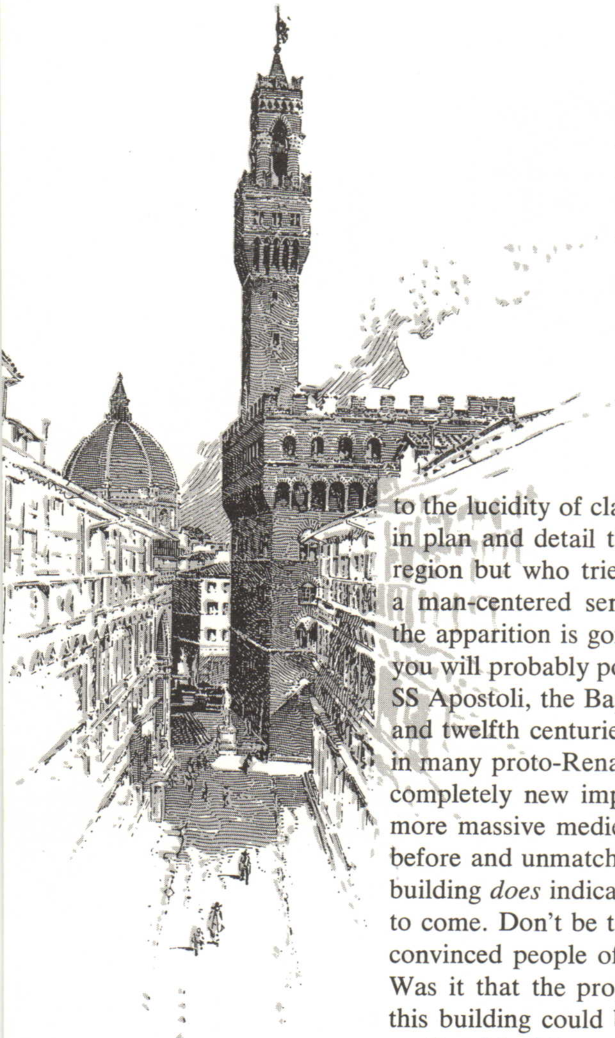


against rupture while the work was in progress *before* the interaction of the parts of the system was fully established. As for tension wires in contemporary work, you have to realize that good modern designers will utilize the tensile qualities of steel in a creative way and express these qualities in their design, instead of using them for salvaging an otherwise unsound structure. But a dome without abutment violates the constant conditions of stability.

I must confess I am amused by you architects; you are trying to prove that the dome is basically structurally unsound, that it is barely held together by a wooden chain. Yet there it stands, in all its grandeur, for all to see, for more than 500 years. Are you not too much of a purist in insisting on structural integrity in all its details—and, mind you, this at a time when structural design did not yet have the benefit of the science of structural calculations but was based on a tradition of trial-and-error?

It is not a matter of details, it is a matter of the total concept. The dome of the Pantheon, built at a much earlier time, and equally without the benefit of exact structural calculations, was set *within* its drum, providing for a sound continuous abutment. While from outside it is not as imposing, from inside the dome is far superior in beauty, and, in my opinion, the most impressive dome of its kind in the world. Structural integrity is so fundamental a prerequisite of good architecture that in so far as Brunelleschi was obliged to ignore sound principles of construction in order to attain an end not compatible with such principles, the result cannot be properly considered an entirely noble and exemplary work of art, however much beauty and impressiveness it may have.

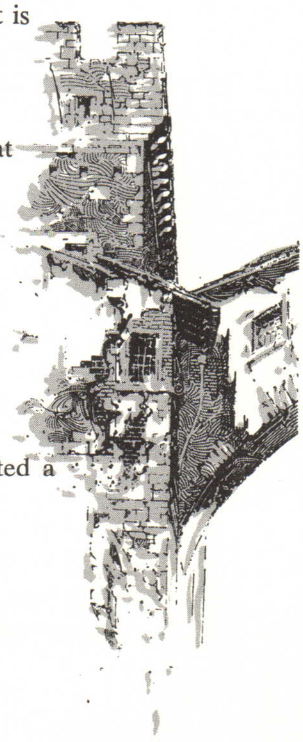
I think your impassioned speech for structural integrity has earned you another glass of Chianti. And while you sip it slowly, enjoying the mellow Italian sunshine and the beautiful view, I wish you would permit yourself for once to follow your eye and your heart rather than your brain. And maybe you will be able to evoke the mental image of the facade of the Ospedale and soak in its infinite grace, its melodious harmony, its delicateness, its affirmation of the good things in life, the love and tenderness which it spells, its sunny quality, the warm welcome it holds out, the perfection of beauty. Just soak it in, just experience the sensuousness of it all and let the impact of the building take over rather than you dominating it.
And maybe then will you understand that this work of art had to be the creation of an Italian, of a son of this city, of a Tuscan who grew up among the loveliest, most gentle hills, the clearest air, the softest light. A Tuscan whose people had always been much closer to the sensuousness of classic art than to the spiritualism of the Gothic era. A Tuscan full of affirmation of life and self-assurance who was attracted



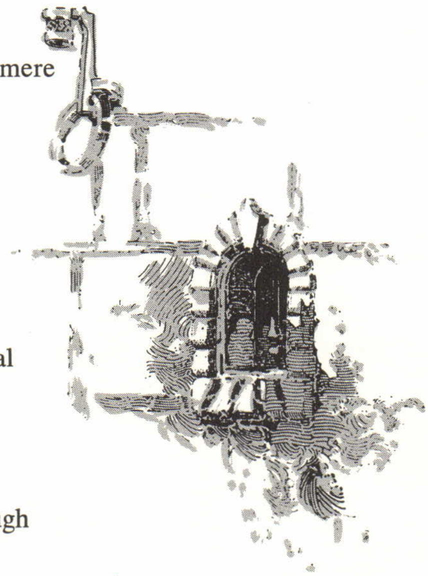
The illustrations, and our cover, are reproduced from sketches by that English master of pen-and-ink, Herbert Railton. ("Pen Drawings of Florence"—J. H. Jansen, Publisher, Cleveland)

to the lucidity of classical art without trying to recreate it; who was free enough to accept in plan and detail the medieval and "proto-Renaissance" examples of his region but who tried to imbue his buildings with the abstract quality of classical time: a man-centered sensuality rather than a heaven-oriented transcendentalism. When the apparition is gone and the music silent, your brain will take over again and you will probably point out that the source for this facade can be found in S Miniato, SS Apostoli, the Baptistry, in short the architecture of Florence in the eleventh and twelfth centuries; that most of the motives, even the classical ones, can be found in many proto-Renaissance buildings. Yet, this does not tell us much about the completely new impact which this building made within the darker more massive medieval stone buildings around it. Uniquely different from anything before and unmatched and unsurpassed for at least a quarter of a century, this building *does* indicate a rebirth of classical style, of profound influence for generations to come. Don't be too disturbed if you cannot quite define what it is that convinced people of the time, as well as us today, that something *new* was born. Was it that the proportions were new and different, or was it the fact that this building could be comprehended in its entirety in contrast to the medieval buildings which led the eye from detail to detail. Or was it because one could sense the *man* who created this work of art, that one could sense his direction, his will, his domination? Here was classical style without borrowing many classic forms. Here was clarity, here was harmony, with *man* in command. You were very patient. And I talked a great deal. It is your turn now, and I promise to be equally attentive.

You succeeded in making me silent. And it will take some courage to follow your beautiful speech. For what is there to say after this ringing appeal to emotion? Very little, except that I know that tomorrow my alter ego will tell me that emotion alone is not enough to give guidance and direction for our work and for that of those who will follow us. It may very well be that we had too little emotion in our work lately, I will grant you that. But our judgment cannot and should not entirely be limited to our emotions. For we are not dealing with sculpture or painting, abstract works of art. We are dealing with this hybrid art called architecture which is eternally doomed to float between idea and reality, between the abstract and the concrete, between art and technique, between beauty and utility. No, emotion cannot be all; and I am afraid I may have to repeat myself in insisting on a deeper truth than surface "beauty." You evoke so magically the image of the Italian Tuscan environment which created a Brunelleschi. Yet carrying this thought one step further, I cannot help feeling that this very same Italian genius for art has basically been a genius for painting; and it seems to me to be the painter's habit of mind which constantly manifests itself in the Italian architecture of all times. Coming back to the Renaissance, this is especially noticeable in their use of the orders, which is



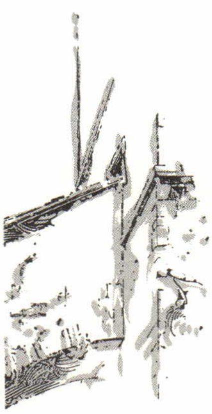
rarely based on any structural need but is governed mainly by the fancy of the designer in seeking to produce a pleasant surface composition. Columns and pilasters, answering to nothing in the real structural scheme of a building, are disposed with no thought except for agreeable lines and rhythmical spacing. Thus they soon, and inevitably so, come to be used in many new and capricious ways. Set in pairs, stretched through several stories, embraced by pediments and varied in countless fanciful ways. In this way the architecture of the Renaissance, even more than that of Imperial Rome, became a mere surface architecture differing fundamentally from all the great architectural systems of ancient times and the middle ages.



The charming little Pazzi chapel might serve as an example to prove my point. Delightful, delicate, irresistible. Brunelleschi decided to show here how his studies in classic architecture might revolutionize the building style and he reviewed here the use of the orders. But he employs them in ways which for incongruity surpass anything that Imperial Roman taste had devised. The Corinthian order of the portico is made to carry the barrel vault, a dome and an attic wall which encloses the vaulting. The classical order was never intended for the structural use employed here and cannot properly perform it. Such an order is meant to support a crushing weight, a vertical load; but it has no power of resisting the thrusts of vaulting. I daresay that it is only the weight of the attic in addition to some extraneous means that holds the structures together. While inside, the entablature passes through the arch impost, making for a completely irrational combination.

You might find quite a few examples of this in early Roman churches: in the great hall of the Baths of Caracalla the entablature block rests on the capital; complete entablatures run through the imposts in the arch of the apse of St Paul's Outside the Wall at Rome. . . .

But that was at a time when the architects were struggling with the traditional use of the entablature and the new introduction of the arch sprung from the columns. But after the admirable logic of the medieval arched system of construction, it seems strange that a designer should go back to this irrational system. No, I feel that in such a building, essentially Byzantine in nature, a classic order is out of place, is not organically evolved, and remains a superimposed decoration. The inconsistency of the structure of the central "dome," which is actually a Gothic circular vault whose thrusts should have been met by isolated abutments rather than by the enclosing drum, does not help to clarify the total concept of the building. . . . Yet, who would deny the beautiful clarity of what the eye beholds?



I am delighted that you admit the beauty in spite of your criticism. The admission seems to hurt you, and I appreciate your struggle. I am sure you would give the same critical comment to the old Sacristy at San Lorenzo, which is essentially very similar in design. Yet, I am also fairly sure that you would not deny the admirable treatment of this space, dissolving it, as it were, into individual parts, masterfully handled. How new and consistent his treatment is can be judged by the sudden dissonance created by Donatello's door treatment which appears like a copy of Roman architecture compared to Brunelleschi's abstraction of the classical spirit. In fact, any later Renaissance work would be in disharmony with Brunelleschi's work. His buildings had a quality all their own, and I often wish that the later builders had followed Brunelleschi's lead rather than Alberti's and Bramante's. Maybe more music would have remained in "Renaissance" architecture, and more genuine self-expression. . . . It is getting late, my friend. I truly enjoyed our conversation, and I am grateful for what I have learned from you. What puzzles me about you is that you seem to be so severely critical and harsh about Brunelleschi. Tell me, now that we former strangers have each shown our hand a little bit, what do you really have against this wonderful, independent, proud man?

I am afraid you don't seem to understand. . . . I love him deeply. . . . He is part of myself. . . . ◄


YATES HOUSE

COURTESY SCHENECTADY COUNTY HISTORICAL SOCIETY

THE STOCKADE STORY

GILES Y. VAN DER BOGERT AIA

In these days of turning to Washington for aid in every type of community project, it is heartening indeed to hear of a truly private and spontaneous effort which has resulted in the rehabilitation of one of the country's most ancient settled areas, where, surprisingly enough, a large number of old buildings are still standing.

OVER THE PAST FIFTEEN to twenty years an exciting urban renewal and historic preservation has been taking place in what is known as the "Stockade Area" of the city of Schenectady, New York. What started as a rather spontaneous, unorganized reclamation of historic buildings in the old downtown section of Schenectady has now become an organized and enthusiastic program of the residents of this four-block area, with the result that perhaps one of the most interesting groups of historic buildings in the country is being saved from further deterioration or possible total destruction.

Three hundred years ago Arent Van Curler, the founder of Schenectady, saw the *Groote Vlachte,* the Great Flats, that lay in the Valley of the Mohawk River, west of Fort Orange (Albany). It was land which he described as "the most beautiful the eye of man ever beheld." At the convergence of the Mohawk and the Binne Kill, on the high land above the threat of floods, was an ideal spot for settlement. When in Manhattan, he discussed this with Peter Stuyvesant, Director General of New Netherlands. Either Stuyvesant was not very interested or the cares of his office were too pressing, for he took no action in the matter. Finally, on June 18, 1661, Van Curler wrote an urgent petition to the Director General. The Indians were willing to sell, and he and his followers were anxious to take possession of the land. Perhaps it was the postscript to this letter that caught the Governor's eye:

"PS. If your Honor falls short of three or four muds of oats as feed for your Honor's horses, please command me to supply your Honor with the same. *Your Honor's Servant*
A. V. Curler."

Apparently Van Curler was wise to the Governor's proclivity toward graft. In any event permission was granted. The lands were formally deeded to Van Curler by the Chiefs of the Bear, Wolf and Turtle tribes of the Mohawk Indians on July 27 of that year, and the founding of Schenectady had begun.

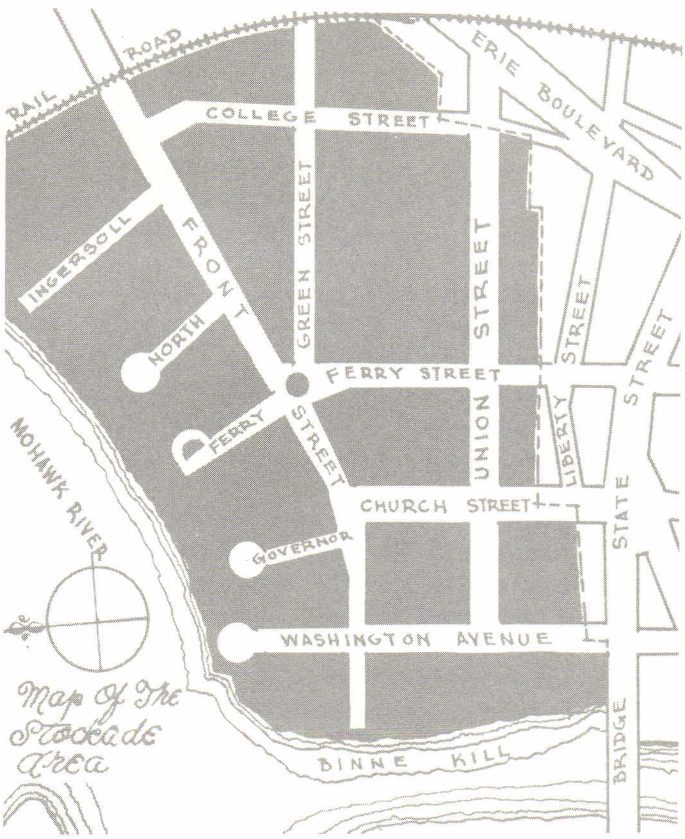
The location of the new town, the farthest western settlement of the Dutch, perforce rendered it a dangerous one. The western horizon of civilization dropped down at its border line and beyond this no white man had yet settled. Although the Mohawks were friendly, attack from unfriendly tribes from the north, the friends of the French, was no remote possibility. Therefore, a stockade, with a blockhouse at one corner, was built around the settlement. It is from this that the present section of the city derives its name. It is ironic that, after the inhabitants had expended all this labor in self-protection, the stockade proved as useless as the Maginot Line.

Soon after the settlement of Schenectady, Peter Stuyvesant capitulated to the British. New Netherlands became the Royal Colony of New York, and the little Dorp town became embroiled with the ambitions of Louis XIV, the power of a Queen's bedchamber, the schemes of Canadian

Abraham Yates House, c1700

Frenchmen, and the pros and cons of Leisler's policies—all to come to a hideous climax at eleven o'clock on Saturday night, February 8, 1690.

Despite the warnings of Sanders Glen and others and the continual talk of attack at Douw Aucke's Tavern, no one could conceive of an attack from Canada in the dead of winter. They were so confident that, almost in mockery, the North Gate was left open, guarded by two snowmen. The small contingent of Connecticut men who garrisoned the blockhouse, the Dutch and the few Scotch and English residents of the place went to bed. The French and Indians came silently through the new-fallen snow and stationed themselves at each doorway. Then at the signal, a blood-curdling warwhoop of the Indians, the holocaust began. The great majority of the inhabitants were brutally massacred. A few were taken off to Canada as prisoners and some twenty-five escaped. The French, in order to keep the Indians amused and to prevent a drunken orgy, ordered the town to be set to the torch.



Despite almost total destruction, it was decided not to abandon the outpost. By May 10, 1690, a new fort had been completed at the foot of present State Street. Another blockhouse was constructed about 100 feet north of St George's Church and a guardhouse at the corner of Church and Ferry Streets (see map). The settlement slowly recovered. Within twenty to thirty years the town had grown to some 400 dwellings and was a prosperous trading center. Although none of the buildings of the founding days remain, there still exists several houses constructed in the early eighteenth century during the time of reconstruction. In addition to these there are a score or more which also antedate the Revolution. In all there remain in the Stockade Area over forty-five buildings which are either marked by New York State plaques or upon which the Schenectady County Historical Society has placed date markers. The terminal date of this program of the Historical Society, which will be discussed later in this article, is 1825.

It is miraculous that so many dwellings of our early history remain in this cluster. For 150 years the Binne Kill was lined with wharves, warehouses and boat-building shops serving the traffic that moved up and down the Mohawk. Then, in 1819, a disastrous fire struck the city, wiping out most of these establishments, along with a large number of nearby houses. In all 200 structures were destroyed. Perhaps this disaster was truly a blessing. When the business buildings were rebuilt, it was in a new part of the city to the south and east of the Stockade Area. This left the old part almost entirely residential. Had this not been the case and had business redeveloped in the Stockade Area, it is more than probable that these treasures of the past would have been razed in the name of progress to make way for plate glass fronts.

Since most of the early settlers were Dutch, they built in the homeland fashion. So did the next generation—close to the street and on deep narrow lots. Among the buildings in the area there are some splendid examples of Dutch architecture, such as the Abraham Yates House, ca 1700. Although the windows and door of the Holland brick front have been enlarged and modified, the high-pitched gable facing the street with its decorative beam anchors, the butterfly brickwork along the rake of the gable, the brick finial at the peak, the clapboard sidewalls and the flat-roofed dormers are all so Dutch that a burgher out of Rembrandt's "Night Watch" or one of Breughel's dancing peasants would feel at home here.

Another is the Adam Vrooman House. Adam was one of the original proprietors who, though he saw his wife dead at his feet and his infant child's brains bashed out against the wall on that horrible February night in 1690, fought his way to freedom to come back to rebuild during the reconstruction. This house dates ca 1720. Although it is built entirely of wood with brick-filled walls, it, like the Yates house, has its high-pitched gable facing the street. Despite minor alterations to the exterior, it is pure Dutch in character. There are three others, built in the middle of the eighteenth century—the Van Slyck,

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Johannes Teller House, c1740

the Isaac Vrooman and the Fonda Houses—which are built in this same Dutch style. Then there is the Johannes Teller House, ca 1740, which, with its Holland brick walls in Flemish bond and its gambrel roof, could have been lifted from the Lowlands of the Netherlands and planted in Schenectady. It is as Dutch as Edam cheese.

Probably the oldest and in many respects one of the most interesting is the Hendrick Brouwer House, ca 1700. Tradition has it that, because Brouwer, the fur trader, was so fair, the Indians spared an earlier house of his during the massacre. It may be possible that some parts of the earlier structure have been incorporated in the present building, which is a combination of three buildings, two along the street and one in the rear. The latter has the typical steep-pitched roof of the Dutch, while the former have their gables parallel to the street. The walls of this frame structure are filled with sun-baked brick. The interior has undergone far less change than most of the other residences in the area. Its beamed ceilings, large fireplaces, wide pine floors and several secret rooms make it a treasure of our historic past.

These Dutch-Gothic houses are not architect's houses; rather they are monuments to guilds and morality plays, feudal Europe extended to the banks of the Mohawk and the Binne Kill. There are many more, too, which are not architect's buildings but which are an expression of Peter Stuyvesant's surrender to the Duke of York. Though simple in style, these are English houses, England and New England blooming in the valley. The roof gables have been turned parallel to the street. The dormers have pitched roofs, and there is an occasional balustrade at the juncture of the roof and the street wall.

Then the Builder's Handbook takes sway. The Tobias Ten Eyck House, 1760, and St George's Church, 1761, both designed by Samuel Fuller, who first came here from New England to repair the Fort and later returned to become the master builder of the Mohawk, have written all over them Fuller's debt to the Handbook. The First Presbyterian Church, 1809, with its superb Palladian window over the pedimented Ionic entrance, whoever may have designed it, is a further expression of the growing interest in the architecture of the old world which culminates in the

Mohawk Club. Built originally for Schenectady's first bank in 1816, this building is so orderly that it bespeaks the England of Inigo Jones and Christopher Wren. Here and there there is a Victorian mansard or a stately brownstone. And there is one excellent example of Carpenter Gothic practically taken *in toto* from Sloan's "Model Architect." This, in brief, is the architectural heritage that remains within the four blocks of the Stockade Area.

It is quite probable that much of the area, especially Union Street, Church Street, lower Front Street and Washington Avenue, would have remained reasonably preserved, since many of Schenectady's oldest families lived in this section, but there was no assurance. Some fine old build-

What reversed the trend? Back in 1932 a college professor and an attorney jointly bought the Adam Vrooman House which lay in this "gray zone." At this time it took real daring and courage. They were chided by their friends. Little did their friends realize that in not too many years, they would be eating their words and clamoring for a house or an apartment in the "slums."

This one event is undoubtedly the most important in the history of the reclamation of the Stockade Area. The attorney, who is also a very astute business man, realized the potential of the area. He knew that no bank would help in financing because of its experience during the collapse in 1929. But he also knew that, if he could find the money, he could buy a number of the build-

JAMES BOORN

Old Mohawk House, 1816

ings had already given way to progress and to the four-wheeled monsters of Detroit. Even in this well-established area the trend could continue. However, what was more threatening was the "gray area" developing to the east on Ferry, Green and Front Streets. In fact, on Front the area was "gray" enough in the early forties to be seriously considered for a low-rent housing project. Fortunately this never occurred.

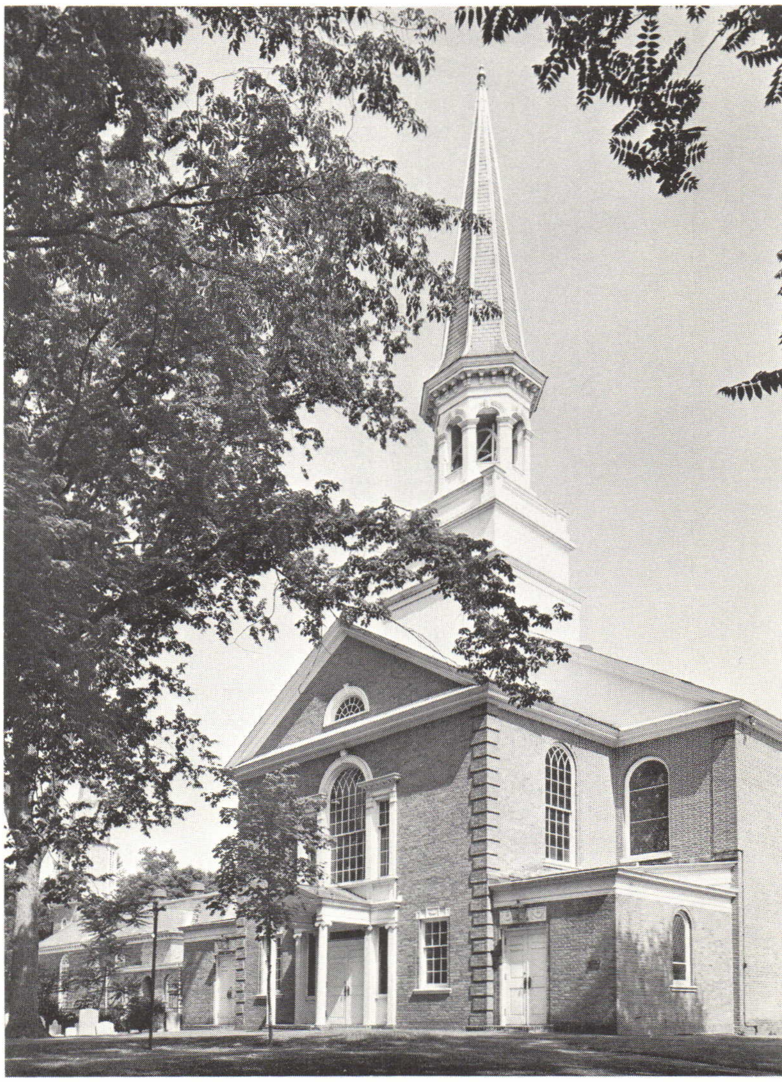
ings for the cost of the HOLC mortgages. The banks would be only too glad to unload these poor risks. He found private money, bought several buildings which he converted into apartments, and the trend started to reverse.

Schenectady's population is quite transient. Its major industry, the General Electric Company, brings many young engineers to the city for training, a large number of whom are later transferred to other plants. The demand for good apartments in a nice area is therefore constant. This situation became aggravated during World War II when housing became critical. With the advent of the NHA program, people saw the advantages of buying and converting more of the houses in the Stockade Area into apartments. In this way much of Ferry, Front (above the Indian Statue) and Green Streets was reclaimed. Some of these have now been reconverted into splendid private homes. Others remain well-kept apartment houses. During this critical shortage, other citizens who were more permanently situated in their employment in the city and yet who needed housing, learned that for $5,000 or less they could pay off an HOLC mortgage and become the owner of an historic building. Finding the money to rehabilitate these almost substandard dwellings was no longer a problem. The banks now knew that the area was becoming stable and were more than willing to take new mortgages and to make loans for alterations, repairs and restoration. Without this financial support no reclamation or rehabilitation would have been possible.

Meanwhile, in the corner store, the old Public Market, ca 1795, a new sort of organization was forming. The market was vacant for the first time in years. The owners lent the corner store to a group of men who had been getting together once a week to relax over their canvases. It was an interesting cross-section of men living in and having a stake in the area. There were the attorney, the general contractor and the seller of old and rare books, whose shop lay just outside the four blocks. There was the GE artist, and there was the architect who had recently bought up an HOLC mortgage and had gutted and remodeled an old house.

As we criticized each others' works of art and sipped our highballs, we also discussed the area. In complete ego we decided to form a group called the "Villagers," which would sponsor an outdoor art show, open to all, amateurs and professionals alike. In this way we could exhibit our own endeavors. The first year was a great success, and the show has now become a major cultural event in Schenectady. The Schenectady County Historical Society suggested a "walk-about." Some of the old homes were opened to the public for a day to let people see the interiors. This was welcomed with enthusiasm by the owners. Now annually, people of Schenectady and visitors to the city have an opportunity to become more familiar with these fascinating old buildings. However, there was still something lacking—my wife and I could not help but feel the need for a more formal organization. Finally, in 1957, six people sat down in the Abraham Yates House, and the Stockade Association was formed.

JAMES BOORN



First Presbyterian Church, 1809, and St George's Church, 1761, beyond

The Association was composed of property-owners in the area and dedicated itself to preservation, protection and beautification. This was a big commitment. Getting organized, of course, required time. In the interim the Schenectady County Historical Society came to the fore and instituted a program of placing date-markers on buildings whose construction could be authenticated as prior to 1825. This was a great stimulus. Already over forty-five buildings bear these markers. However, the true significance of the program lies in the fact that since its institution in 1957, only one building of early date has been lost to the bulldozer. Although the program will be continuing and perhaps updated, it served as a true stop-gap in preservation prior to the recent enactment of an Historic Zoning Ordinance.

In 1961 architect James D. J. Schmitt was elected president of the Association, a post he held for two terms. Under his imaginative and dynamic leadership big things were accomplished. One program of importance has been tree-plant-

JAMES BOORN

Adam Vrooman House, c1720

ing along the sidewalks. Due to the Dutch elm blight and street-widenings, many of the beautiful trees, which once provided shade on the streets and sidewalks, have been lost. A committee studied the problem with a local nurseryman, with the result that two years ago property owners purchased and planted over $1,000 worth of trees to replace the lost ones. The Stockade Association helped in this program by subsidizing the cost of cutting the concrete sidewalk slabs with funds raised through the membership dues.

In the summer of 1961, in celebration of Schenectady's tercentenary, owners of the dated houses were asked to purchase and fly the historic flag that flew over Schenectady at the time of the construction of their home. Now, especially on national holidays, these historic flags proudly fly from their architectural counterparts. Two long-range programs are on the agenda, the elimination of overhead power and telephone lines and the cleaning up of the Mohawk River frontage.

However, the development of most consequence has been the adoption of an Historic Zoning Ordinance. For a full year a committee of Association members studied the problem. Working with the Corporation Counsel, this committee drafted an ordinance which was enacted into law by the City Council on May 14, 1962, to become the first Historic Zoning Ordinance to be adopted in New York State.

There are flaws in the ordinance which time will erase. For example, complete protection is afforded only to buildings erected prior to 1825, and contemporary architecture is, in effect, prohibited, the result being that this amazing continuum of American architecture could be destroyed. But it is a big step forward in a long, hard task of reclamation and renewal. It has been exciting to see the "gray zone" slowly recede without Federal, state or municipal aid. Nor has it been a rich man's hobby. It has been possible only through the work of many, including the Friends of the Stockade, an organization of former residents who now live in five different states and who are willing to finance various projects. They know, as we who live in the Stockade Area know, that here in the heart of Schenectady lies a true gem of our American heritage. ◀

This Series is a Project Financed by Your Supplementary Dues

Comprehensive Architectural Practice
The Architect and His Client

DUDLEY HUNT JR, AIA

Comprehensive architectural practice helps make it possible for the architect to understand his newer types of clients better, to work with them more harmoniously to satisfy their expanding and changing needs effectively

The general characteristics of many of the important clients of today are: 1) They are organizations rather than individuals; 2) They are controllers of buildings rather than owners; 3) They are providers of space for others rather than occupiers of space; 4) They tend to be big and complex; 5) They are primarily concerned with buildings that are good business. The role of the architects, when working with these clients, is to serve their needs so effectively that good design becomes good business.

Architects have a new client, or rather they have several. Of course, the old familiar client—the individual owner who builds for his own use—is still around, but with every succeeding year, he is responsible for a smaller portion of the total amount of building construction. The new clients of the architect are organizations instead of individuals; they build, not for their own use, but the use of others; and they build more and more each year.

Perhaps the most familiar of the new clients are the corporation, the government agency and the institution, but there are also the entrepreneur—speculator or investor—and the industrial producer of complete buildings or their components. The entrepreneur and the industrial producer, having come on the scene later than the others, are therefore less familiar. This does not make them any less important. Architects are finding that an increasing number of projects are initiated by entrepreneurs, and if architects are to serve such clients, it becomes necessary for them to learn the business, so to speak. Industrial production of buildings and components will surely increase in the future. If the architect is to influence the future of this field, he must learn its fundamental principles and gain an understanding of this new type of client.

Needs of the new clients

In common with all others, the new types of clients need a high level of performance in the basic design-working drawing-specifications-construction sequence of architectural services. And they want their buildings to do the jobs for which they are intended, efficiently and profitably. Often they want the buildings fast and, almost always, within strict budgets. In addition, most of these clients want—and need—some of the phases of comprehensive architectural services. Such needs vary between clients and between projects but, in general, each of the new clients needs assistance with some combination of financial, site, operational, promotional and similar problems. And they are going to get such help somewhere, if not from architects and their staffs or consultants, then from non-architectural sources.

Smaller offices can serve the new clients

In order to avoid any misunderstanding, it should be pointed out that the type of comprehensive services needed by the new clients are not the exclusive province of large, diversified architectural firms. Many of the new clients can get along very well indeed with the services of smaller offices, if they are geared to their client's needs. Perhaps the best example of this is the home-builder market. Much of this work, when it is handled by architects at all, is performed by smaller offices. It goes without saying that the overriding task of these architects is to sell builders on the merits of good design. It is no less important for these architects to understand the business problems of builders and to assist them in every way possible to solve their problems. In fact, this might very well be the one most important avenue toward better design in houses.

Needs of the homebuilder

In the August 1963 issue of *House & Home,* the need of the homebuilder for comprehensive services is illustrated very well. While discussing the growth of "design" companies that do everything for homebuilders except construct and sell the houses, Walt Wagner points out that these companies ". . . provide not just design but land planning, feasibility studies and market analysis, design of model homes and sales offices, landscape design and coordination, color-coordination and display boards, interior decoration, financing advice, and merchandising and promotion counsel. . . ."

What is being described here sounds suspiciously like comprehensive architectural services for builders, but in this case, the services are being delivered by others, not by architects. That the need exists is demonstrated, in the same article, by the fact that one of these "design" firms has been in existence for over eighteen years and has designed over half a million houses. Another, started five years ago, has already had $380 million worth of houses built from its designs.

The other new clients also need some degree of comprehensive architectural services. This will be dealt with in detail, in other articles, by authors who have had a great deal of experience with these clients. Only an attempt to establish the general context for the details—a broad look at the whole spectrum of these clients—is in order here.

Client Characteristic No 1: Organization, Not Individual

What are these clients like? In the first place, they tend to be multiple, rather than singular, organizations rather than individuals. The architect who works with them must deal with a client group rather than an individual client. This may be a relatively homogeneous board of directors of a corporation or a corporate building department. At other times, the group may not actually be unified at all, in any real sense, but rather a loose confederation of individuals or corporations, each with its own interests to serve. In one recent project in the million-dollar class, the major interests involved were two independent developers, two real estate agencies and two investors—and a law firm apiece. Finding himself with what amounted to six clients, four of them corporations, represented by six law firms, it should come as no surprise that the architect immediately brought in an associate architect and their own attorneys, in an attempt to improve the odds. In larger projects, particularly those for sale and leaseback, the situation is often even more complex.

Client Characteristic No 2: Not Owner, but Controller

In most cases, the new clients are not owners, in the usual sense of the word, but controllers of buildings; and this in many cases, for only short periods of time. The simple fact is that many of the projects put together by entrepreneurs, whether for themselves or for others, are sold as soon as the tax laws make their sale feasible. Some are held as investments, but the tendency even here is for such buildings to change hands often. Even corporate, institutional and government clients are controllers, not owners, of buildings since—in theory at least—they build in the name of their stockholders, their members or the public. And there is also a growing tendency for all of these clients to make use of the sale-leaseback. It should also be pointed out that all of these new clients build, not with their own, but with other people's money.

Client Characteristic No 3: Providers, Not Occupiers

Many of the new clients are not occupants of the buildings with which they become involved; rather they are arrangers, or providers, of space to be occupied by others. It is scarcely necessary to point out that the attitudes of such clients will vary considerably from the attitudes of the older type of client who builds his own building for his own use. Of course, there is also a difference in attitude between the client who expects to hold his property as a relatively long-term investment and the one who expects to sell it as soon as he can do so profitably.

Client Characteristic No 4: Large Size and Complexity

The new clients are apt to be characterized by such traits as bigness and complexity. And the tendency is for them to get bigger and more complex. Growth and diversification—almost synonymous with bigness and complexity—are probably the most prevalent characteristics of corporations today. This seems also to be true of the entrepreneurs, the producers (most are corporations) and the institutions (labor unions are perhaps the best example). Surely all will agree that government, on every level, is also in a period of rapid growth in size and complexity.

None of this should be taken to mean that the new clients are only concerned with buildings of great size. As has been pointed out, the homebuilder is one of the most important of these clients, especially to the smaller architectural office, exactly because he constructs a sizable number of small buildings. Furthermore, the producer of relatively large numbers of relatively small buildings, or of even smaller components, can be expected to become an increasingly important architectural client.

Client Characteristic No 5: Concern with Business

Finally, it seems fitting to round out this general discussion of the new clients by referring to their almost universal primary concern when they engage the services of the architect—that is their concern with the business of architecture or, more properly, with the business of construction. Almost without exception, the new clients are engaged in business. Understandably, business being what these clients know best, it is also what they think is important above all other considerations. Accordingly, the new clients expect their architects, not only to "speak the language" of business, but to have a proper, that is to say "healthy," attitude toward the necessities of business. This is not to say that these clients are averse to good design, if it is also good business. It is up to the architect to prove that good design can be good business.

Necessary to prove that good design is good business

This Series is a Project Financed by Your Supplementary Dues

Office Organization for Successful Comprehensive Architectural Practice

RICHARD A. ENION *

For comprehensive services to lead to better buildings and environment, architects must so organize their offices that efficient business practices contribute to—rather than conflict with—the achievement of excellence

**The Author, who is president of Enion Associates, Inc. Management Consultants, of Philadelphia, designed and supervised the reorganization study of the Institute staff in 1960 and is now permanent consultant to the AIA on organizational and personnel matters*

The practice of architecture in the complex society of today is in the throes of what appears to be a significant evolutionary change. Mass production, mass consumption, government directives, redevelopment, decentralization and urbanization affect not only the basic design concepts of the architect but his performance as an economic unit of society as well. The spirit of individual architects which created and built most architectural practices several decades ago is now slowly being replaced with the collective spirit of organizations of individual architects. Today, the *practice* of architecture is irrevocably complicated by the *business* of architecture. In addition to his essential design functions, the architect must now devote time to cost accounting, cash flow projections, image building and solicitation of new business.

Such trends and forces give many an architect pause for contemplation: What is his purpose? What is the philosophy of his practice? Which direction does he wish his office to take in terms of client assignments? In order to define his goals, the architect must find satisfactory answers to such questions.

Balancing design and business

It has been said that the role of the architect today is to design a hospitable environment for our scientific age. In such a role, the architect finds himself involved in conflict between his aspirations as an artist and his needs as an astute businessman. He must somehow strike a balance which will enable him to function as an artist, yet arrive at designs that will be compatible with his clients' needs within today's socio-economic environment. He must then maintain this delicate balance, yet handle himself in a businesslike manner.

Even the great cathedral builders of the Middle Ages could not escape the vexing problems of the market place, although this may often have interfered with their pursuit of design concepts. Master builders from William of Sens to Christopher Wren found it necessary to offer a version of comprehensive services. No doubt they often wished they could be free to create instead of becoming enmeshed in the details of hiring (or conscripting) masons, carpenters, ironmongers and tracers. They, too, wasted valuable time placating clients. However, time was less expensive in their time than in ours.

Time can be worst enemy

Time seems to be the worst enemy of the architect who hopes to realize reasonable profits on his commissions. Time lost in design alteration, time devoted to client consultation, time spent over the drawing board, time revising specifications, time supplying the incidental and supplementary services of a comprehensive practice. Time means man-hours—and additional technical man-hours expended beyond the time budgeted in estimates mean dollars deducted until, in the end, the predetermined profit on a project may be wiped out.

How many hours can an architect afford to spend in redesign, revision of working drawings or correction of specifications? How can a firm achieve excellence in design without too many revisions and without merciless reappraisal of design, drawings and specifications?

Establishment of design freeze point necessary

Architects constantly deplore the lack of a satisfactory design freeze point and feel that this is an insurmountable ob-

Management Case A: Budgeting Man-Hours

Firm A had evolved an empirical formula (based on experience) for breaking down a project fee, by dollars, for each step in the architectural process. Quite correctly, the partners first allocated a certain percentage of fee for anticipated profit. Dollars spent for manpower were posted (although not too regularly) against budgeted dollars. Over-rides mounted, budgets were exceeded and everyone talked dollars. After evaluating the situation, it was decided to take the dollar analysis one step further and convert dollars into technical man-hours. Then, through adherence to a better report schedule utilizing a specially created form, technical man-hours expended could be compared regularly with budgeted man-hours, resulting in closer control of production and a return to predetermined profits.

Origin of design freeze point problems

stacle to efficiency. Yet, when an informed observer follows a job through the shop, it often becomes apparent that failure to freeze design may be only a symptom of problems that are more basic.

Uncertainty about when to set a design freeze point may arise from several basic problems. Perhaps the creative team itself generates its own problem. Is the design freeze point actually an essential part of the architect's capacity to design? The desire to perfect design is a legitimate—and, in general, laudable—goal. Then why do many architects feel guilty about a series of revisions on the design board?

Is the problem one of lack of communications between the design room and the rest of the staff?

Is the inability to freeze a design characterized by constant revision of details in the design, while the initial concept remains static?

Or, is it possible that fluidity of design is the easiest thing for everyone to blame as a time and money waster, thus making it possible to gloss over the real and basic problems in the organization?

Other problems are basis of design freeze troubles

A firm suffering from chronic design freeze trauma should ask itself if its administrative organization and personnel are functioning properly. The principals should ask themselves:

1 Does our firm have a good grasp of job cost analyses? Is someone responsible for keeping man-hours within estimated limits? Technical man-hours, when properly planned and reported, can become one of the most effective budgetary tools available to the architect who expects to realize predetermined profits.

2 Have time estimates been followed closely in all phases of the project? Too much time expended in one phase can almost never be recovered in succeeding phases without adverse results.

3 What financial controls has the firm adopted? Is there responsible management of the office budget, as well as the budget of the job? Has the firm a reliable system of budgetary controls?

For each firm, for each architect, there exists a point of reconciliation of perfection in design and efficiency in execution;

Management Case B: Design Freeze

Firm B was growing rapidly and decided to departmentalize by technical skills in order to better handle the expanding volume of work. The contract documents department continually complained that they were receiving incomplete preliminary drawings. They added that the design department never stopped reworking design detail. Analysis of this situation revealed that there was little, if any, continuity of control over a project as it progressed between departments. The best solution appeared to be the introduction of the project manager concept, superimposed on the departmental concept. This, of course, meant added overhead, but when a predetermined volume of work was reached, this change in organization paid off handsomely in effecting design freeze and a return to healthy profits.

some achieve it automatically by an almost intuitive sense of balance; some will never achieve it; most find that they must struggle constantly with the shifting weights of the design board and the balance sheet. There is no single pat formula for efficiency in business organization any more than there is only one solution to a design problem. Each solution—whether of a design or a business organizational problem—depends upon the careful integration of the elements of the problem in terms of its affective environment.

Achieving efficiency and design excellence

It is possible, however, for architects to improve the efficiency of their organizations without sacrificing their goals of excellence. If a firm finds its percentage of profit slipping downward, if an office seems constantly at odds, then the principals of that firm might do well to check over the following areas of their own practice:

1 Is the atmosphere—or environment—of the office itself conducive to efficient work?

2 How clear are the communications between principals and associates, between associates and draftsmen? It has been truly stated that more men fail from a lack of understanding than from lack of ability.

3 What are the personnel policies and procedures of the firm? How are salary increases, bonuses and promotions decided upon? Do these incentives actually motivate personnel to optimum performances?

4 Do the principals spend the time necessary to develop and train assistants and to delegate authority? Do key associates feel that they have career growth opportunities, or is turnover a constant harassment?

5 Does only one principal meet clients? Have steps been taken to develop an associate who can support this vital activity?

Factors that affect the balance sheet

These are considerations which directly affect the firm's balance sheet. Every architectural practice has peaks and valleys of work. When the pressure is great, an atmosphere of ease speeds up the working efficiency and mutual cooperation of all members

Management Case C: Communications

An analysis of communications problems in Firm C revealed that some key members of the architectural team did not appear to be fully informed of what was happening in areas other than their specialties. Also each man needed to know his position in the total architectural process and what his degree of participation should be in areas other than his specialty. A vector diagram of the logical steps of the architectural process was drawn, showing the degree of participation of each key man in each step. A number of important facts were revealed by the diagram; for example, it became apparent that the firm's specialist in field supervision should not limit his activities to the construction phase but should participate to a certain degree in activities such as those occurring during the contract-drawing phase.

of the firm; when there is discontent, the opposite will undoubtedly be the case. Probably more dollars are lost through personal conflicts within the firm then through the reworking of drawings necessitated by changes in design concepts. Yet, neither type of loss need occur. The working atmosphere of an office reflects the over-all timing and leadership of the senior members of the firm and the clarity and relevancy of reporting relationships in the structure of the organization. Members of a firm who feel that their practice should be more profitable might look carefully at the organizational structure of their office and ask themselves:

Profits tied to organization

Is this the best organization plan for us? Do we have the right man in charge of design? Should the design function be directed by an administrator or a truly creative and inspirational type? Should we have a "new business" man?

To this list could be added a host of other self-searching questions. It is often difficult for members of a firm to appraise their own organization structure—and the people in it—objectively and accurately. Yet failure to do so can be extremely costly.

Many architectural firms have developed excellent plans for the logical steps which must take place in the architectural process, from programming through preliminary design, working drawings, specifications, engineering and construction, as well as the kindred areas involved in comprehensive practice. Yet many of these same firms have failed to evolve organizational structures, complete with defined areas of responsibility, authority, and accountability, to implement their architectural processes. And the failure to formulate carefully an organization that has logical and workable reporting relationships can smother the profit potentials of an architectural firm.

No one organization structure proper for all offices

There is no single optimum approach for properly organizing an architectural office. Each organization must be tailor-made to meet the needs of each practice. The departmentalized approach of one office may not meet the needs of another office. One office will utilize the "team" approach, while another uses project architects. Still another office makes better headway with

Management Case D: Compensation Plans

Firm D found itself paying recent architectural graduates as much as architectural graduates who had been with them one or two years. An analysis of the situation revealed that a wage and salary administration plan should be established which would set forth competitive compensation ranges for each position in the firm, complete with minimum and maximum salary points. In this way, "guesswork" was removed from the compensation process. The more formalized wage and salary plan made allowances for discrepancies between jobs, and among jobs based on seniority, by utilizing step-by-step increments of increase. Finally, the plan was tied into a performance review program so that each man could be compensated on the bases of the value of his position to the firm, assessment of his performance and his length of service.

project managers. Semantics also enters the picture here; for different offices—even those practicing in the same city—often interpret terms like "project architect" and "project manager" differently.

Importance of personal relationships within offices

Firms which have excellent personal relationships, within their organizations, may still lose money because of inadequate coordination of projects from inception to completion. Job functions may overlap too much or there may be too little supervisory push at critical points. It is in this area that a great many firms appear to have trouble.

In actual practice, it is always difficult for the principals of any firm to assess their own managerial performance effectively. An architect who will subject his design to merciless reappraisal may not always be as willing to evaluate his organization structure, personnel problems and budgeting functions in the same manner. Nevertheless, the architect must develop a working organization which is efficient and profitable so that he can be free to achieve excellence in design.

Often, the alternative to this is living with an ineffective, inefficient organization, one that lacks personnel alignment and whose troubles are compounded by hidden losses that stem from improper budget controls. Worries about inefficiency do not increase the effectiveness of design.

Purpose of organization is creation of architectural strength

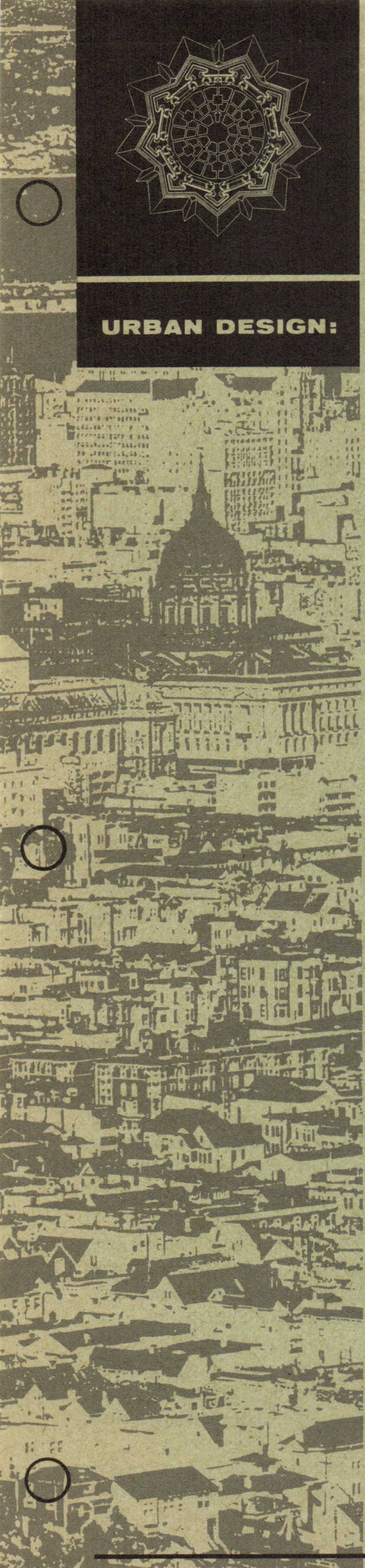
If any of the foregoing seems to make the practice of architecture sound too businesslike, it will be well to remember that the strength of an architectural firm is not derived from overconformity or from rigid adherence to set policies and procedures. Rather the strength of a firm comes from the creation of a vehicle of organization that will allow each man to perform, at his highest level, in his fullest capacity, within a total atmosphere that contributes to individual motivation. Accordingly, controls and procedures should be introduced into an architectural firm only to the extent that they can be expected to nurture an atmosphere of freedom and creativity, make it possible to capitalize upon it and thus provide an effective and profitable enterprise.

Management Case E: Job Performance

The partners in Firm E had a very successful practice and, furthermore, felt that they knew exactly how well each employee had performed for any given year. The truth is that the partners did know but, unfortunately, few of the employees knew how well they were making out. After a thorough review of the situation, it was decided to introduce a job performance appraisal plan. This plan not only sharpened the objectivity of the partners' review of each employee's over-all performance but also created a vehicle of communications by means of which each employee could learn just how well he was making out. Through the medium of confidential interviews conducted periodically, each employee is given counsel on what his strengths are, areas that need development and what he can do to improve his situation.

An indication of the sort of organizational problems frequently encountered by architects—and how they may be solved—can be gathered from the following examples selected from studies made for architectural offices by the author's firm.

1 Organization Structure:	Modifications in firm's organizational structure complete with separate functional organization charts and manning organization charts for adopting quasi-departmental structure.
2 An Executive Committee:	Creation of executive committee which reapportioned certain responsibilities among partners.
3 Incentive Bonus System:	Adoption of incentive bonus system for selected employees.
4 Planned Annual Budgets:	Incorporation of method of annual planned budgeting for specified expense items by departments on quarterly basis.
5 Project Plans, Control:	Methods of planning and controlling progress of projects by determining variations between actual hours expended and hours budgeted at critical stages, with report forms.
6 Distribution of Profit:	Method of recalculation of profit distribution to associates.
7 Partners' Compensation:	Recommendations concerning partner compensation and techniques for tax-sheltered income.
8 Standards for Drafting:	Establishment of drafting room standards.
9 Program for the Future:	Introduction of specific programs for forward planning.
10 Specialized Functions:	Creation of new departments encompassing specialized functions of service necessary if firm is to continue its rate of growth.
11 Functional Delegation:	Recommendations concerning firm's personnel who should be able to assume more responsibilities, now and in long-range future.
12 Position Descriptions:	Creation of position descriptions to define responsibilities.
13 Salary Review Methods:	Creation of salary review procedures for both hourly and salaried personnel.
14 Performance Appraisal:	Establishment of job performance appraisal program.
15 Fringe Benefit System:	Establishment of system of broadened fringe benefits.
16 Drawing Account Plans:	Establishment of partner drawing accounts (or changes in present drawing account procedures).
17 Public Relations Plan:	Establishment of planned public relations program.
18 Diagrams of Work Flow:	Introduction of work-flow diagram which specifies responsibility by job classification at each stage in progress of projects, with indications of amount of time needed at each stage.
19 Predetermined Profits:	Establishment of a method, complete with control forms, for budgeting, planning and programming projects in order to arrive at predetermined percentages of profit.
20 Design Freeze Methods:	Procedures for establishing methods of freezing design. (Vary according to particular needs of each firm.)
21 Improvement of Morale:	Recommendations for improvement of morale in order to curtail turnover at essential middle-management level.
22 Better Communications:	Recommendations for improving communications.
23 New Business Program:	Planning and implementation of continuing new business program.



URBAN DESIGN: THE ARCHITECTURE OF TOWNS AND CITIES

SIXTH IN A SERIES OF ARTICLES

Land-Form, City Life and Urban Design

This article is about landscape painting—in reverse. It is about landscape—and cityscape—creation.

John Marin, the American painter, once remarked about one of his seascape paintings: "It is for the artist to paint a paint-wave a-splashing on a paint-shore." Marin painted natural landscape and the urban scene in somewhat abstract form, perhaps in "extract" form, since he chose the elements of nature which he could simulate in painter's terms on canvas. Marin was moved by the American landscape, and cityscape, too.

The American landscape has moved many artists to paint its beauties—more, alas, in past years than it does now. George Innes, for example, painted the landscape of northern New Jersey. It is difficult to find there today the sights that Innes saw yesterday.

Where our American landscape used to move artists, it now more often moves cars. One of the purposes of urban design is to allow it to move both and, in addition, to support all of our vast new constructions in a fashion better commendable to our senses.

Where Marin and Innes extracted, as artists, we must insert, as urban designers. In this, the sixth article of our series we now concern ourselves with the total appearance and form of cities and towns.

Lester Collins ASLA, a distinguished landscape architect, was our advisor for this paper. We are indebted also to the suggestions of John O. Simonds ASLA, his colleague. Joseph Watterson FAIA, edited the paper. These papers are written and illustrated by the head of the AIA's Urban Design Project, Paul D. Spreiregen.

Urban Design and the City

Nature

Sticks and stones, nails and glass, if well-assembled, make a house. If they are assembled with the spirit of an artist, those same materials become architecture.

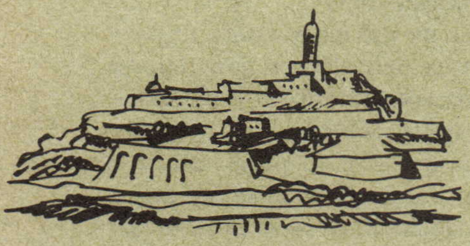
Similarly, a city is an assemblage of buildings and streets, systems of communications and utilities, places of work, of habitation, of leisure, of meeting. The process of arranging these elements together, both functionally and beautifully, is the essence of urban design.

Because urban design is a matter of arranging material objects, it is largely a plastic art, concerned with how things appear and yet how they actually operate. A city is constantly changing—like landscape. The landscape can be left to nature to administer. The city must be administered by us. These conditions of form and the attention that must be rendered are quite familiar to architects. Architecture is, after all, largely a matter of adjusting forms to suit human uses according to available means for building. It is also a matter of readjusting buildings for new uses. Thus urban design is largely a responsibility of architects; they are well tuned for seeing things this way and they can create forms suitable for people's needs.

Ancient Greek Acropolis

As long as we have dwelt on the earth we have found ways of making our habitations—tents or towns—harmonious objects in the landscape. The appearance of primitive towns, ancient or modern, usually is part of a balanced picture of man's constructions in nature, harmonious in its own parts, functional for its own purposes, well-arranged for its inhabitants.

When we see a picturesque town we often feel as though a happy sequence of accidental forces were at work to make it so. Accidents there may have been, and happy ones at that, but there is too much evidence to the contrary to conclude that it was all by chance; evidence that our ancestors thought carefully, very carefully indeed, about the way their cities looked and functioned. Perhaps, too, our rationale of the happy accident and the picturesque serve us as excuses for our own shortcomings. For, in most of our cities, we have not been able to approach the old village for simple, good planning sense and visual harmony. True, the village is smaller and less complex. But so were the means to overcome its problems. True too, there was a general consciousness of the arrangement of the village. No experts or consultants were needed; no illustrated brochures were produced. The beauty and function of the old villages and towns we admire were the products of a general awareness and active concern.



Medieval Hill Town

Surely this concern is not new. What is new is the compartmentalization of all the many specialists concerned with the city. What is very old is the comprehensive view that refined city or town dwellers achieved, embracing all of this. Perhaps the great contribution of today's urban design concern will be to set the proper goal for all these efforts. For really, what if we do have the best sewers, the best telephones, the best roads, the best houses—what have we made if we have not also made beautiful cities?

Modern City

The sketches on these two pages by Charles A. Blessing FAIA embrace the total form of the city

Beauty in cities is not an afterthought. It is a necessity. Man cannot live long without beauty without becoming somewhat distorted. Order and beauty in our surroundings are as much a prerequisite to human health as fresh air. Perhaps future generations of Americans will look back on "the past" with amazement—and let us hope, sympathy. Perhaps they will be surprised at the way we polluted our air and streams. Perhaps they will react to that practice as we react to the practice in past centuries of throwing garbage into the street. Is throwing filth into the air any less offensive?

Because this outlook toward cities is from the standpoint of "art," it stands on shaky ground. The concern for urban design, therefore, must be both practically and realistically broached. As J. B. Jackson observed in *Landscape*, ". . . a city exists only by grace of the life which pulsates in its streets and squares, . . . art can only adorn something which the spirit has created." We certainly have the spirit, but where is our art? It lies in our imaginations and will come forth with long, hard thought. Our spirit we can understand by understanding the nature of our cities.

Basically, a city is a place of exchange—first a place for exchanging simple goods, then services, then ideas. Ultimately, it is a place for exchanging everything, and it generates the further creation of the ideas and products which underwrite the advancement of civilization. Where, then, do cities spring up and develop? At places convenient for exchange, naturally enough—at the crossing of routes: land routes, the meeting of land routes with water routes, the entrance to a fertile valley, or the center of an abundant plain.

Our own cities and towns are relatively new and their own reasons-for-being are not unlike those of the cities of the past. The rapid changes they undergo, including decay, are but aspects of their continuing evolution. Understanding this evolution, from the time of the pioneer settler, to the family farm era, to the present period of vast consolidation of social efforts and national production, is prerequisite to realistic and effective urban design today. We must always search for and acknowledge the ideas and opinions of all men who have turned their energies to the creation of better cities and towns—better living for all of us.* But let us add our own thoughts of a beautiful country and beautiful cities. Let us add them in a way that may point out a fine goal for all these efforts. Let us show what these better cities and towns, harbors of better life, can be.

The late teacher, Henry Vincent Hubbard, defined beauty as the "perceived harmonious relationship of all the elements of a thing observed." This definition applies to the relation of a city to nature, for that is perceived. It also applies to the relationship of a city's parts, and to daily living in all its details, since the life of a city's inhabitants is greatly determined by the physique of the city.

A city built in harmony with the character of its topography and in support of the best manner of civilized life creates systems of harmonies. Such cities borrow dynamic power from their sites and their people and, in return, transmit dynamic and life-giving power to them.

In this article we will explore the nature of this harmony in some of the great and beautiful cities of the world. And we will go further and project images of what some of our own cities and towns can become. We will look now at cities in their entirety, to focus on details in subsequent articles.

* "Man's Role in Changing the Face of the Earth," W. L. Thomas Jr. Editor, University of Chicago Press, 1956, and "The Future Metropolis," edited by Lloyd Rodwin, George Braziller, 1961, NY

Hong Kong

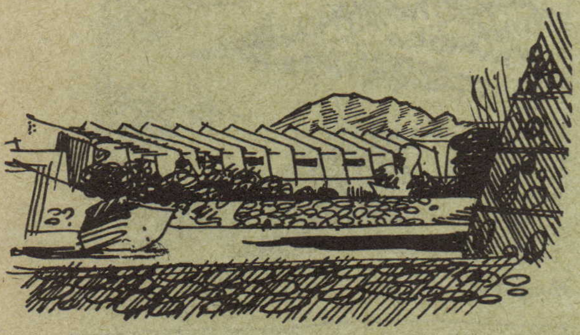
San Francisco

Constantine, Algeria

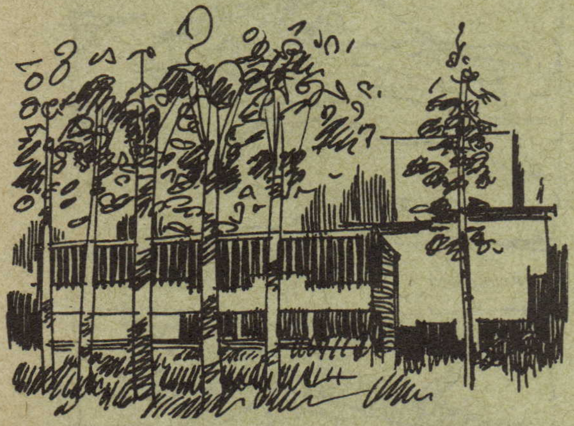
Auckland, New Zealand

Berne, Switzerland

We must envision all cities and towns this comprehensively



Taliesen West



Säynatsälo Town Hall

La Tourette

Roof of La Tourette

The Nature of Beautiful Cities

Architects need little persuasion that beauty in architecture rests largely on the harmony between buildings and nature. Throughout the history of architecture this relationship has been one of its major goals.

In Taliesen West, Frank Lloyd Wright used an acute angle of about thirty degrees throughout the major and minor junctures and forms of his design. This angle, he explained, was the basic angle of the hill and rock formations on the site. It was a dominant and pervasive fact of nature which he recalled and extended into his architecture, a key to the harmony between his buildings and their settings.

Alvar Aalto developed a different theme for suiting his buildings to the unique Finnish landscape. That landscape is undulating, accented by rock outcroppings, and almost entirely covered by stands of straight, pole-like trees. Aalto's facades proceed from the ground as stepped foundations, rising or falling according to the shape of the terrain. The majority of his facades are long horizontal blocks which undulate in sensitive adjustment to both the building's interior function and the external land form. This horizontal emphasis is seen against the vertical subdivision afforded by the trees. In plan, we often see a free-form whose shape mirrors that of a typical Finnish lake. Thus, Aalto extended the forms of nature into his buildings.

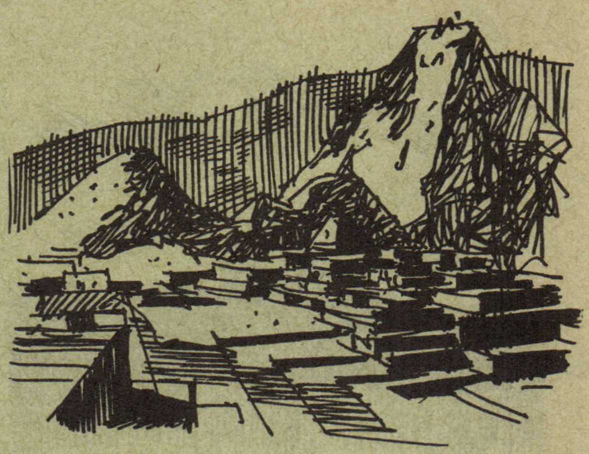
More recently, Le Corbusier has shown how deference to nature can bring about harmony. In designing La Tourette, the Dominican monastery in central France, Le Corbusier found himself confronted with a magnificent site; one which would ask something very great of architecture, including where, exactly, the monastery should be placed. La Tourette was sited facing westward just below the crest of a long ridge. Le Corbusier took careful note of the natural conditions of this spot; he noticed that the trees on the ridge top were quite mature and full, and that their tops were uniquely level, forming a great horizontal plane; he noticed the view to the west over the surrounding farmlands; and he noticed, too, that the sun's rays in the early morning lit the grassy slope with a beautiful side-light.

Of course, the design reflected the inner function of the building, but added to that determining factor was the recognition of the facts of nature. La Tourette's roof is flat, like the tree tops, but is, respectfully, about thirty feet below them. La Tourette stands on pilotis, the grass flowing uninterruptedly beneath the building. The early morning sunlight now lights the pilotis as well as the grass. And on the roof-top there is a promenade for contemplation while viewing the countryside below.

The buildings of these great architects, all AIA Gold Medalists, are beautiful largely because of their harmonious relation with nature. That basic harmony is the essential foundation of beauty, not only in architecture, but also in cities.

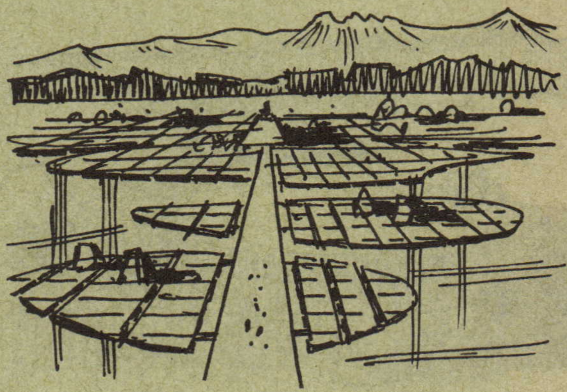
Let us now consider the form and appearance of cities in this same way.

Macchu Picchu, the pre-Columbian city of the Incas, is set in a wild mountainous area of Peru. There the mountain tops soar as high as two thousand feet above the stream beds. With incredibly skillful stonework the Incas terraced hillsides, covering them with a series of walls and buildings. The form of Macchu Picchu developed as a series of regular geometric shapes, contrasting with the irregularity of nature. The architecture of Macchu Picchu consisted of large rectangular courts, large and long rectilinear building masses, and assertive pyramidal structures. The landscape was a series of uniquely shaped hills forming valleys and ravines. Thus, the forms of the city repeated this theme, but in highly sophisticated geometric shapes. The regular buildings were counterparts to the irregular hills. The regular court spaces were counterparts to the irregular valleys. And the regular pyramids were counterparts to the unique character of the hills.



Macchu Picchu

The Mexican city of the Aztecs must, too, have been a splendid sight of city-form as a response and complement to nature. It was a group of islands floating in a lake, which gradually became connected to the lake bottom. Eventually the islands were stable enough to support heavy structures—pyramidal stone altars and buildings. At the height of its beauty it was a series of island pavilions mirrored in the lake, the background being a rim of mountain ranges. Here was another composition of city-form as a response to land and lake form. We find the practice of compositional response in universal application, as in the American Pueblo Indian village.



Mexico City of the Aztecs

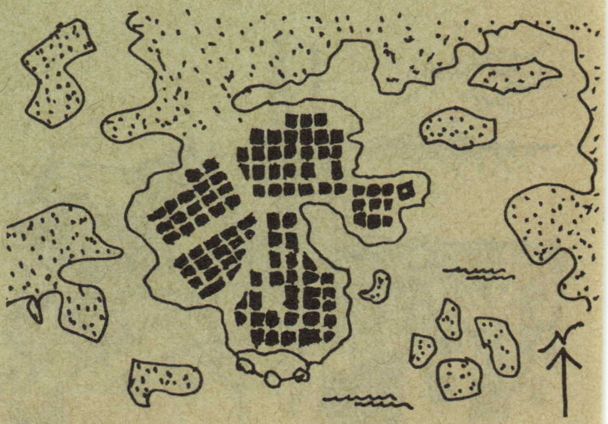
Pueblo Indians built their villages in a variety of landscape situations which had one main characteristic—great expanse. Their particular sites varied from flat plain to mesa-top. The form and appearance of the villages was quite simple. Seen from afar the Pueblo villages were an array of cubic blocks on the horizon. Within the villages were narrow streets and at least one open ceremonial plaza. Their holy places were underground rooms called *kivas*, symbolizing the Indians' belief that they came from the ground. The ladder by which the kiva was entered had arms which projected far above ground level—and the level of the roof tops—sweeping up into the sky as a graceful curve, perhaps symbolizing the flight of a bird. Thus, the Indian village presented itself in the landscape, its cubic houses in geometric contrast to the rocks and open plains, and its sweeping ladders accenting the village against the horizon.

Taos Pueblo with kiva poles

A use of more advanced geometry is found in more sophisticated societies. Helsinki, Finland, is a good example. A most striking contrast exists between its topography and the old city of Helsinki, laid out in the crisp classic style of the early eighteenth century. The geometry of that old plan could not contrast more sharply with the flowing forms of shoreline, lake and land-form, and yet, could not be more suited to it.

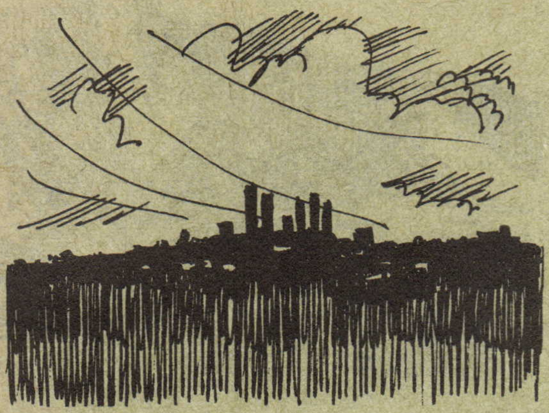
Imagine approaching Helsinki from the sea, passing through the archipelago of islands strewn about as if by a careless child, and then arriving in Helsinki harbor, there to be confronted by the crisp classical facades, the extensions in three dimensions of the plan!

As artistic compositions these ventures have taken a variety of directions and there are no rules for success. There are only challenging situations which insist on superb form solutions.



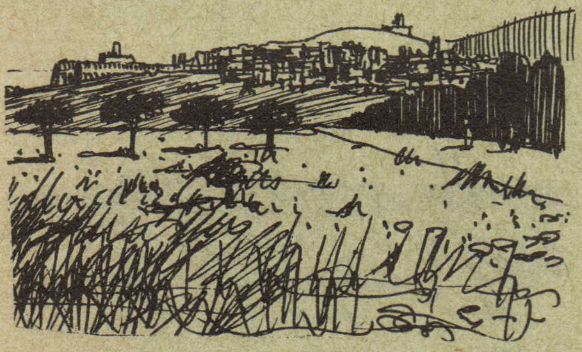
Classical Helsinki

San Giminiano, Italy, is an example of a city whose appearance would seem to defy nature. Yet, in its defiance, it serves, by

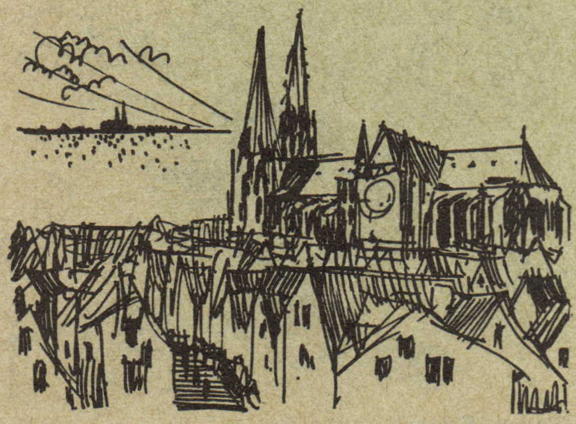


San Giminiano

Rio de Janeiro



Assisi



Chartres, far and near

accentuation, to extend nature itself. San Giminiano is on a round hill amidst gently rolling countryside. The sight is striking, unlike that of any other city except, perhaps, Manhattan, approached from the sea. There were once nearly sixty slender stone towers, the treasuries and strongholds of San Giminiano's wealthy citizens; ostentatious displays. Now it has less than thirty, but those few are enough to remind us of the city's former grandeur. The towers rise from the cube-like array of two- and three-story houses, extending their geometry skyward. Here, natural form is emphasized by complementary urban forms.

In almost direct opposition to this course of design is the modern city of Rio de Janeiro, Brazil. There, the immense mountains are more dominant than any architectural feature man might provide. One hill, Sugarloaf Mountain, is accented with an enormous crucifix, the Christ of the Andes, but for the most part Rio is a natural site which cannot easily be overwhelmed by even the most dominant structures we might devise. The city of Rio sits in the lap of nature. Its lesson is to let nature do the work, not to try to overwhelm or diminish its forms. In Rio that, of course, would be difficult; but in most other sites it would not.

One can ponder so many of the cities in the world and find so many different arrangements of city-form in natural form. Where they achieve a harmonious poise which our deeper instincts respond to, where they arouse the sense of reason and poetry in us, there we find beauty.

Such is the case of Assisi, the hill-town of St Francis, which sits on a long ridge-like hill amidst farmland and terraced hillside. Assisi has a form found in few cities in the world. Most of the town is on the southern side of the hill, obviously for the sunlight's warmth. But the cathedral of Assisi and its related monastery group is built on an arched masonry terrace extending from one end of the hill. Here, the architecture subtly dominates and, at the same time, avoids a heavy-handed suppression of the essence of the landscape. For the church group is an extension of the key aspect of the hill, its length.

Assisi has another asset which is often overlooked when considering the aspect of cities. While the view of it from the surrounding land is superb, the view of landscape *from it* is equally striking. From unexpected niches and openings set in some of its most dense quarters, one often has a beautifully framed view of the green tapestry of terraced countryside around it.

Architects, working in even the most fortuitous periods, can seldom hope to design whole cities. More often they contribute a key accent to its form, one which may be as telling as the alchemist's touchstone. Two old French towns demonstrate this—Chartres and St Flour.

The first view of the town of Chartres has a magic that challenges explanation. Is it the beauty of the flat farmland which surrounds Chartres? Is it the sense of expectancy that is the prelude to actually seeing one of the greatest works of Western art? Is it the sight of the two towers? Perhaps the Gothic towers are a partial clue. They do more than mark the facade of the church. They also mark a key spot in the town and accent the landscape in precisely the right way. They are delicate and lithe, spears pointing to heaven, their differences in treatment and height emphasizing their heaven-bent ambition. For the plains around Chartres, for the mound-like town itself, these towers are perfectly right.

St Flour is in a different landscape. A fortified town on a hill, it was a sentinel among harsh valleys and hills which were difficult to traverse except through the valley St Flour guarded. Its foreboding aspect is emphasized by the color of the native stone used in its buildings and its cathedral. That stone is a dull, leaden gray.

The towers of St Flour—earthbound and guardian—are as suitable to their valley setting as the towers of Chartres—graceful, delicate and lofty—are for its plain landscape.

We can also find clues to the role of urban form by considering details in conjunction with each other; for example, accent and entrance approach.

Istanbul, approached by sea, is seen as a mound-like hive of buildings on a peninsula. Minarets and mosques accent its skyline. There are no grand landing places for ships. Ships coming to Istanbul pass around the city and enter the protective Golden Horn. For the climax to arrival in Istanbul in the past was not at its entrances, but rather in the palaces of its rulers and at its religious and cultural focal points—the mosques. The mosques can be spotted from afar by their pencil-like minarets which block out the space of the mosque. Indeed a space it is which the mosques occupy, a space arousing a profound impact on the visitor who has had to traverse long, crowded streets to arrive at the great mosque.

In contrast to Istanbul, Venice presents a grand entrance to the visitor arriving by sea. Venice is reached by water through the Adriatic, and is entered through a channel cut in a long sandbar which encloses the Venetian Lagoon. It is clearly seen from afar—the entrance being marked out aerially by the Campanile of the Piazza San Marco. Flanked by a pair of columns, the entrance Piazzetta affords a fine view of the Ducal Palace to the right, the Church of St Mark beyond, to the left the tower and library—all this says welcome to the visitor and draws him into the Piazza which is the heart of the city. At this portal spot in Venice begins the main corridor of the city, the Grand Canal, which winds its way as a giant "S" through the whole island group.

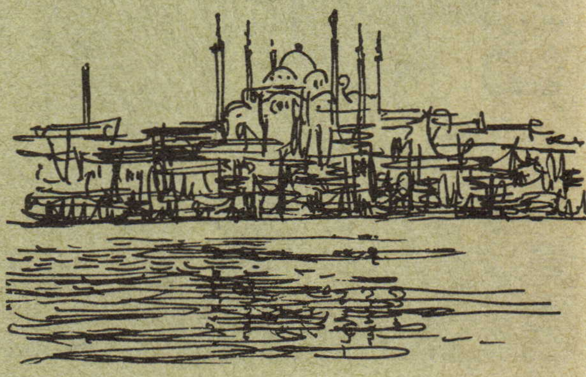
Every decision on urban form and appearance must derive from the artist's awareness of the conditions of the place. Often the decision for action can take a very simple form. Such was the case in Renaissance Rome under the Popes.

Rome is characterized by many orange-colored buildings which act as foreground and surroundings to the monumental churches and palaces. The orange color is not an accident; it was once a legal requirement imposed on all new buildings. A Renaissance Pope ordained that all new secular buildings must be colored orange. His purpose was to insure that church buildings and monuments would always be dominant visually. His choice of color merits considerable artistic acknowledgement.

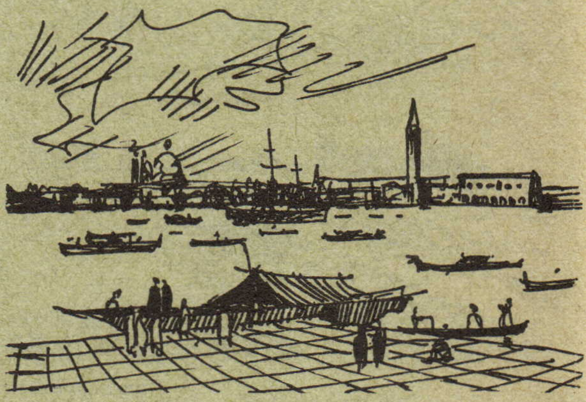
Orange is an "advancing" color, that is, it seems to come forward. It also makes buildings seem more solid, as compared to blue, which is transparent. An orange building, seen against the prevailing blue Roman sky, looks solid and static. As the foreground for a richly sculptured white church or palace facade, the orange buildings make the facade seem more distant and yet directs our eyes to its sculptural delicacy. The orange buildings are very appropriate foreground to the monumental architecture in Rome. This theme gives much beauty to Rome and was accomplished through the choice of a single color.

The use of colors is a significant aspect of beauty in cities.

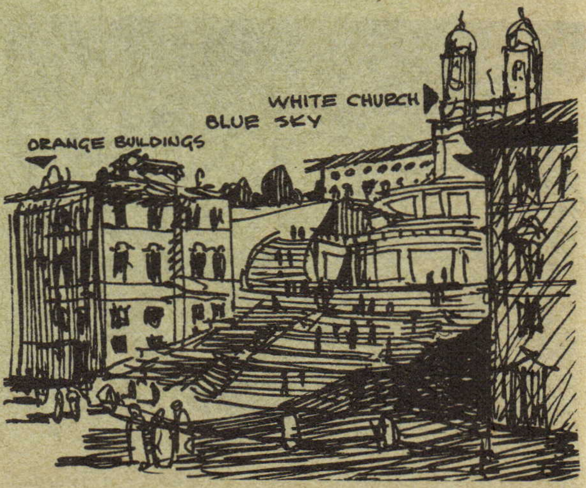
St Flour



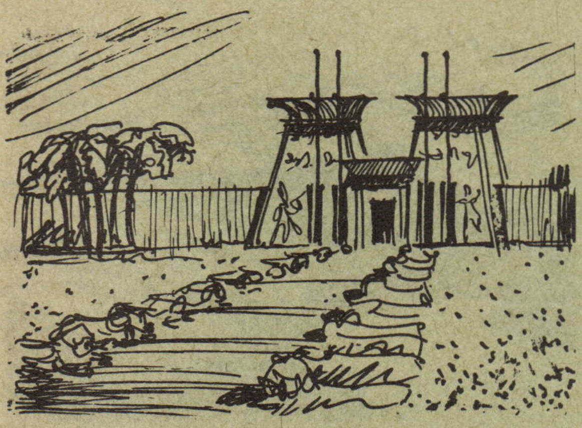
Istanbul

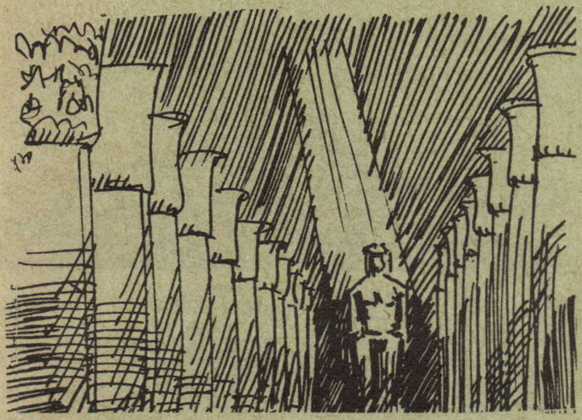


Venice

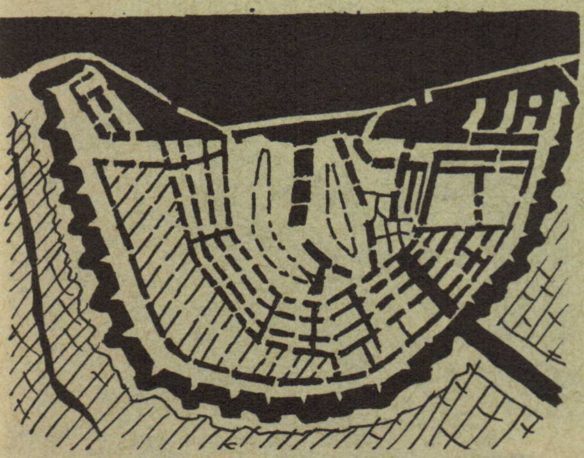


Rome


Egyptian pylons


Egyptian temple interior


Dutch landscape


Plan of Amsterdam

How correct is the vermilion bus of London seen against the somber grey facades. How correct the sky-blue streetcars in Zurich, and the yellow and orange stucco facades of Scandinavian buildings!

Another visual factor is the particular quality of natural light. Some architects gave this great thought. The architects of ancient Egypt were confronted with the problem of how to make a monumental group of buildings assertive under conditions of blazing sunlight. They created great avenues lined by sphinxes. The avenues led to huge pylons which marked the entrances to the temple groups. The avenues of sphinxes proclaimed order in the desert; the pylons were gigantic placards which announced the sacred precinct. These pylons, seen in brilliant sunlight, were of the same light intensity as the sky and desert, for the bleaching sunlight muted differences in color and texture. To combat this, the Egyptian architects incised the pylons with large, brightly-colored figures. Further, they outlined the corners of the pylons with a three-quarter-round moulding and the top with a deep concave projection, thus creating a permanent shadow-line which would always mark out the pylon forms against the sky.

Thus announced, the architecture of the temple group proceeded to employ sunlight in decreasing amounts. Entering the temple along its axis a procession first came into a large court, then passed between more pylons to a more fully enclosed court. As it advanced, the sunlight was progressively excluded until in the hypostyle hall it barely lit the forest of columns, making the number of columns seem infinite. Finally, at the central altar, a sacred place, a single beam of sunlight struck the golden statue in the inky darkness.

Of the examples mentioned the small cities are seen as entities in nature, whereas the large ones create new landscape, or cityscapes. Where, in some cases, the features of nature which one might seek as clues to form are wanting, the cityscape must substitute for landscape. The city-form is not unresponsive to nature; rather it employs the less demanding land-form more as a point of departure than as a condition to be extended, amplified or contrasted, and it goes further to create its own conditions. Amsterdam is an outstanding example of this phenomenon.

The Dutch landscape is absolutely flat. Very prominent in the landscape are clumps of trees which are usually found around farm houses. Water cannot be seen from afar, but only when one is standing on the edge of a canal or channel. Often, rows of trees mark out the line of a canal. One is constantly aware of the sky, since it is full of changing clouds and usually very dramatic. In contrast to this spacious landscape the Dutch towns are highly concentrated, generally because farmland was always precious. The streets are small and open on to a central market square. Orientation is aided by views of church spires and other landmarks.

But Amsterdam, long one of the largest cities, was too extensive to depend entirely on the basic orienting device of landmarks. Its beginning as a small medieval cluster on the Amstel River became the nucleus of a concentric growth which has continued to this century. But what form could Amsterdam take? What could cityscape substitute for landscape? In Amsterdam the answer evolved in time as the city grew, particularly in the seventeenth century, Holland's golden years. At that time four concentric canals were constructed around the original medieval complex. Canals, houses and bridges were designed and built simultaneously

—as whole design entities. This theme has prevailed. The result is a city of nearly a million people, quite compact, very low and never waning in visual interest despite the very simple theme of form. One of the delights of the city is that the sense of orientation is never lost. The center is always indicated by the direction of curvature of the concentric streets and canals, which one sees re-occurring as one traverses the radial streets.

The cities mentioned thus far share two qualities which underlie their beauty: their forms are artistic responses to the conditions of nature and the culture of their societies; and, they possess a high degree of urbanity—that quality of civility and good manners in architecture which allows buildings to stand close to each other, creating compositions which are greater as wholes than any part alone.

Richelieu, built as an adjunct to Cardinal Richelieu's castle south of the Loire Valley of France is a prime example of the quality of urbanity in city-form. The town is a tiny, walled rectangle measuring about five hundred by seven hundred yards. Its population was and still is a mere two thousand. Yet it has all the elements of city-form which constitute the physical aspect of urbanity. It has clearly-marked portals in the walls, making a distinction between town and country, a main street of handsome proportion, two main squares and several minor ones, an impressive church, and small town house gardens behind the rowhouses which form the walls of its streets. It could not be more different from the sprawling suburban clusters we build today.

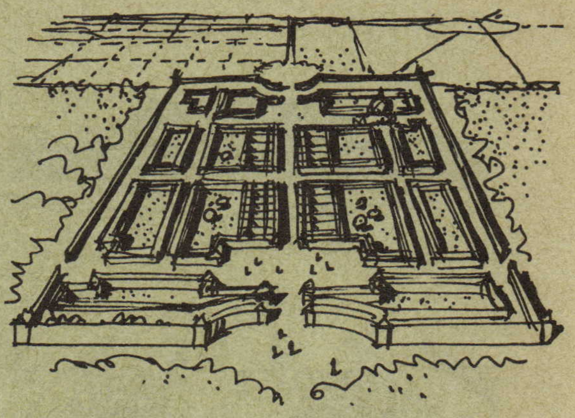
An interesting counterpart to Richelieu is the core of the ancient Indian city of Fatehpur Sikri whose population once numbered fifty thousand. Around the core of the city, a court called Mahal-i-Khas, centered the residence of the ruler. It was also his administration center where he sought the council of his ministers and held audiences with his subjects. It was a city within a city.

Like Richelieu, the layout of Fatehpur Sikri is highly geometric, both cities being rectilinear, but there the similarity ends. In Richelieu the observer sees things along axial layouts; in Fatehpur Sikri his powers of observation are assumed to be more advanced. There, the entire complex can be viewed obliquely as well as along its axes. In Richelieu one experiences a series of head-on or profile views; in Fatehpur Sikri one experiences profile views plus the more subtle, and sometimes more telling, three-quarter or oblique views.*

We may see a similarity to Frank Lloyd Wright's Taliesen as we walk through Fatehpur Sikri. So, perhaps, would contemporary interpretation have it. Aside from the validity or error of such conjecture, we have at least established the richness of possibility that can extend from one aspect of urban form—the use of geometry.

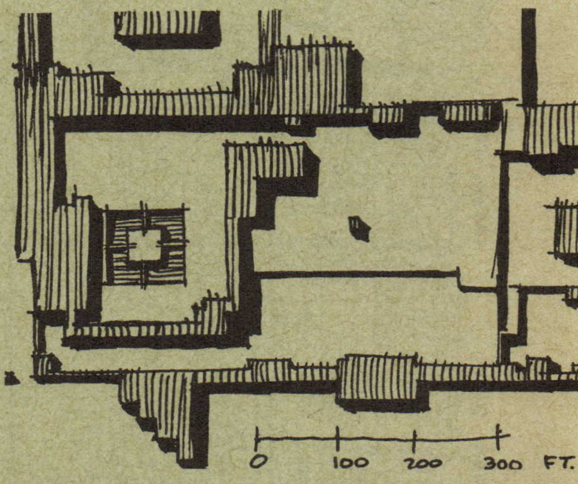
If there is one city that incorporates more of the qualities we have been mentioning to a greater degree than any other in the world, that city is Peking. Its form, its arrangement, its details and its life, create a superb example of a beautiful environment in which urban life can be conducted most graciously. Peking has had several forms, all more or less rectangular, and all occupying the same site—on a plain between the sea and the Mongolian hinterlands to the north. Peking's form is full of symbolism, but a practical symbolism, reflecting the beliefs which were derived from the experience and understanding of its people. It was walled

* "Fatehpur Sikri," Jacqueline Tyrwhitt, *Architectural Review* Feb 1958

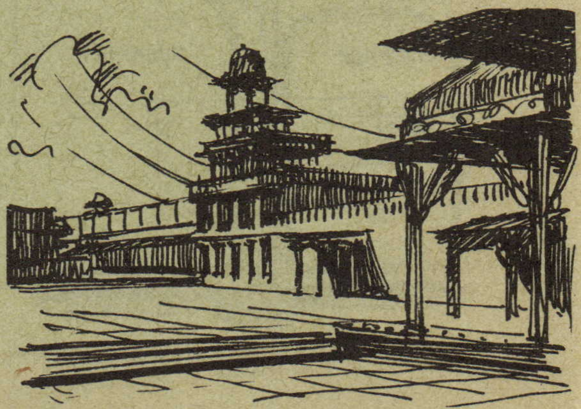


Air View of Richelieu

Richelieu



Plan of Fatehpur Sikri



Fatehpur Sikri

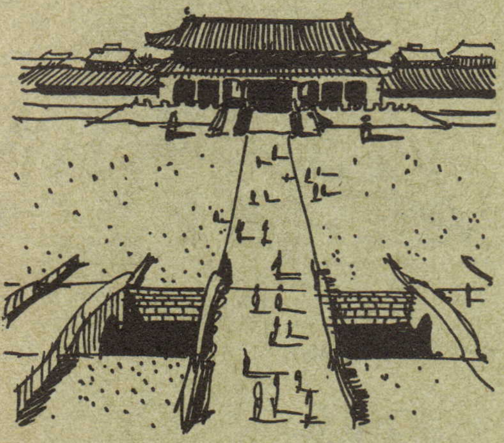
to keep out invaders, just as the whole of China was walled. Its houses were oriented around courts which faced South, a symbolic and practical measure, since both cold winter winds and barbaric invaders came from the north. Indeed, the whole city is laid out as a giant house, the emperor being at the center, facing south on his household—the entire population of the city.*

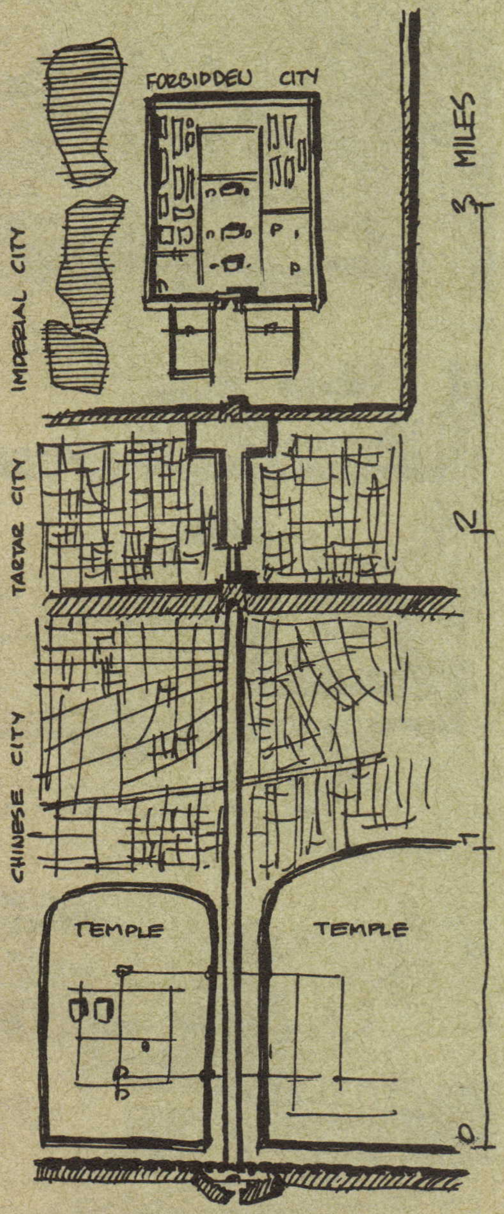
The landscape around Peking is flat, except for hills on the distant horizon. There was little in the way of natural form to extend, as in Amsterdam, and thus, lacking strong hints from nature, the Chinese had to invent their own urban forms. Kublai Khan, in the thirteenth century, called together his wisest men—philosophers, scholars, artists—and told of his ambitions to build the world's finest city—a veritable throne of heaven on earth. He urged his assemblage to advance far beyond what was then their sum of knowledge, and inspired them with one ringing thought: "To build a beautiful city," he said, "we must start with a beautiful concept." That concept was not simply a concept of form; it was a concept of living, for which form was but the physical extension.

The detailed results of Khan's thinkers are vast. Shopping, they decided, should take place in wooded groves—the hustle of shopping would be relieved by the calm of the grove. The infinite variety of activities and the complex constructions which housed them were cleverly ordered by broad major avenues dividing the town into regular rectangles; the disadvantages of close quarters and narrow streets being thus relieved by the orderly grand avenues. The rigidity of the rectilinear plan is complemented by the natural flow of stream and park which enters the city from the north and winds its way through to the center.

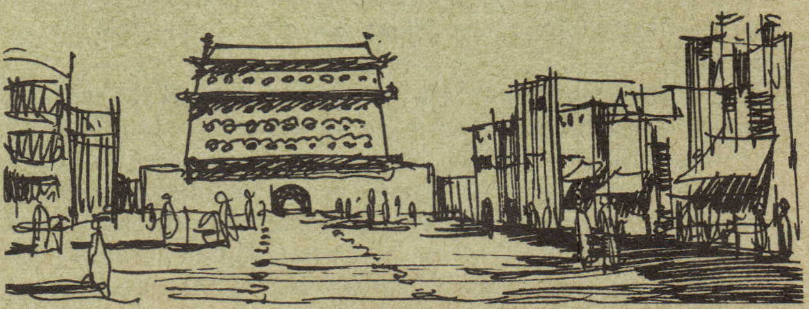
Perhaps the greatest value of observations such as these lies in gaining an attitude of optimism and deference toward the creation of beautiful cities. Our optimism can rest in the knowledge that beautiful cities have been created in all types of topographical situations and cultural conditions, including times of uncertainty and unrest, times like our own. Our deference must come from the attitude that a city is a guest in nature, and as such, must practice its best manners. The life and form of a city must defer to the customs of the place established by local climate, topography, light and the past and present populace. Only then can we absorb graciously the abrupt changes and conditions which evolving life and developing technology present. And only then can we proceed to establish the harmonies and refinements which constitute beauty in cities.

* "Chinese Art," Vol 2, William Willetts, Pelican Books 1958


Palace in the Forbidden City of Peking



Main Axis of Peking


A main street in Peking

Possibilities for Reshaping American Cities

Consideration of the beauty of the cities of the past is a spur to the consideration of the future of our own cities. If we are to fulfill the promise of our cities we will have to match and surpass the accomplishments of our colleagues of other times and places. We can begin by adopting the philosophy that "to create a beautiful city we must start with a beautiful concept" and the conviction that *every city can become its best self.*

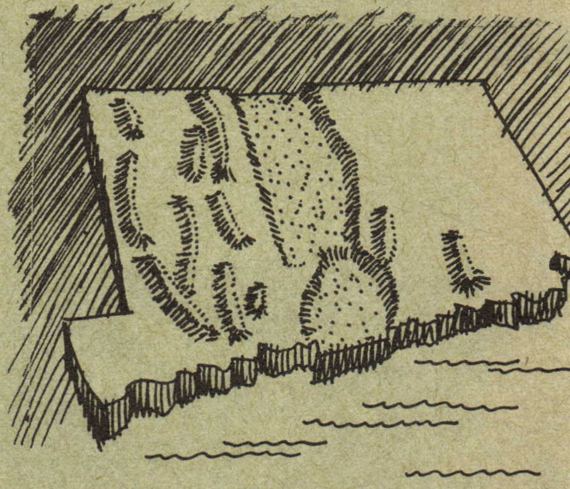
This very large-scale work should begin with an equally extensive evaluation of the possibilities of the site. We should start making surveys of sites from the point of view of their design capacity—their potential to support additions and the character of those additions. We should examine sites which have been built upon almost as if they had not been touched, and ask what would be better there, considering the site and its most artful development potential.

This approach was vividly stated by Ian Nairn, the English architect-planner, in a recent article.* Nairn pointed out the fallacy of using statistical analysis in making planning decisions which are matters of artistic judgment—matters of seeing the whole picture through a design survey with both the mind and the heart at work.

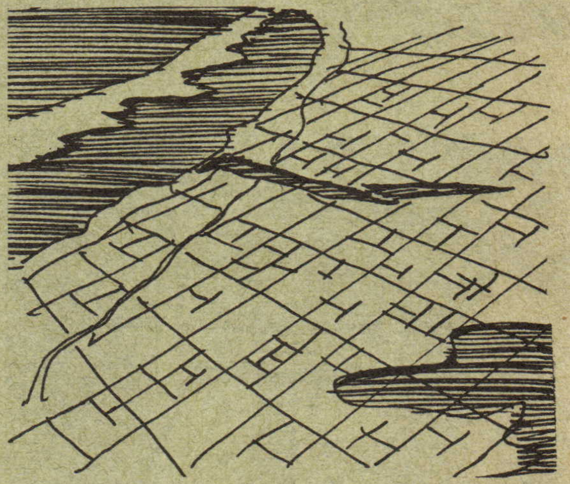
Design surveys can be made on any scale. Their physical boundaries can be delineated as areas which function interdependently, such as metropolitan or state regions. Henry Wright's and Clarence Stein's plan for the State of New York in 1926 is a landmark in this field. More recently a survey of the State of Connecticut was completed by the Connecticut Redevelopment Commission, and was published as a report entitled "The Appearance of Connecticut." It assessed the appearance of the entire state and discussed the character and function of its parts, entities which were largely determined by distinguishing physical and visual characteristics.

Such surveys should be preludes and accompaniments to all planning actions. This would in no way replace any of the other analytical surveys necessary in planning programs. It is, however, a vital link to understanding what an area's physical and visual resources are, along with the other more conventional development surveys. Each state in our country should embark on such a survey program.

On a smaller scale regional entities encompassing several interdependent cities and towns could be taken as the "field" area. Such an instance is the Cape Canaveral-Orlando-Daytona Beach area of Florida. A recent conference of planners of all outlooks met to discuss the course to be taken for that area. Among their conclusions was that of Carl Feiss FAIA, who recommended that a design survey for the area be initiated in order to suggest development sites and possibilities as well as to give direction to the planning.



Topographical features of Connecticut

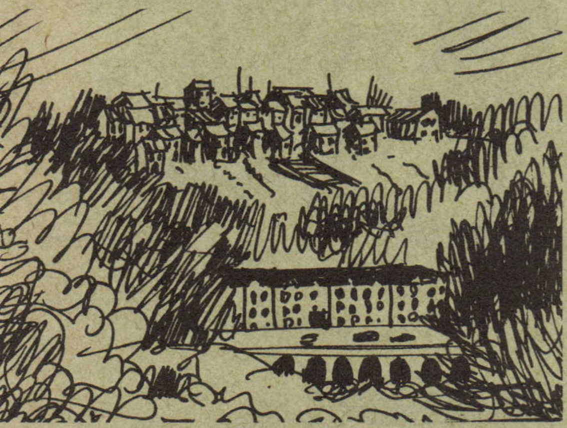


The east coast of Florida

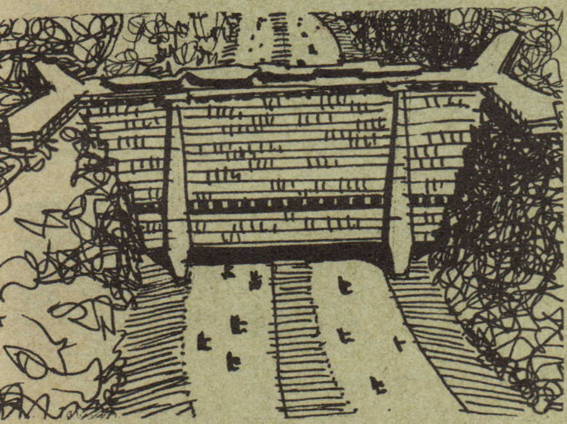
The design capacity of a landscape fulfilled

* "What New Towns?" Ian Nairn, *Architectural Review,* June 1963

View of Pittsburgh



Hillside development in Pittsburgh



Proposed building over a valley expressway for Pittsburgh

Proposed point buildings for Pittsburgh

(Sketches adapted from drawings by Richard Farley and Joe Johnson in "Pittsburgh Perceived")

There are countless such situations in this country—groups of related cities or towns which are destined to grow. They need a large plan of physical development to set a beautiful direction and goal for their efforts. For most practicing architects a more likely scale would be design capacity studies of their own cities or towns, stated in general terms, pointing out how the more obvious errors of the past could be corrected, and giving new images of better communities.

We would begin our proposals of urban form by considering our city's basic relationship to nature. We would then go on to examine its form as a satisfaction or an encumbrance to its function. We would then examine its forms and their relationships as satisfactions or insults to our human senses. We must always question the quality of the city's forms as a response or a repudiation of all these conditions. And we must discern in the disarray the elements which are the true bases of its forms. The recent study of Pittsburgh by Patrick Horsbrugh of the University of Nebraska, is a landmark in this approach.*

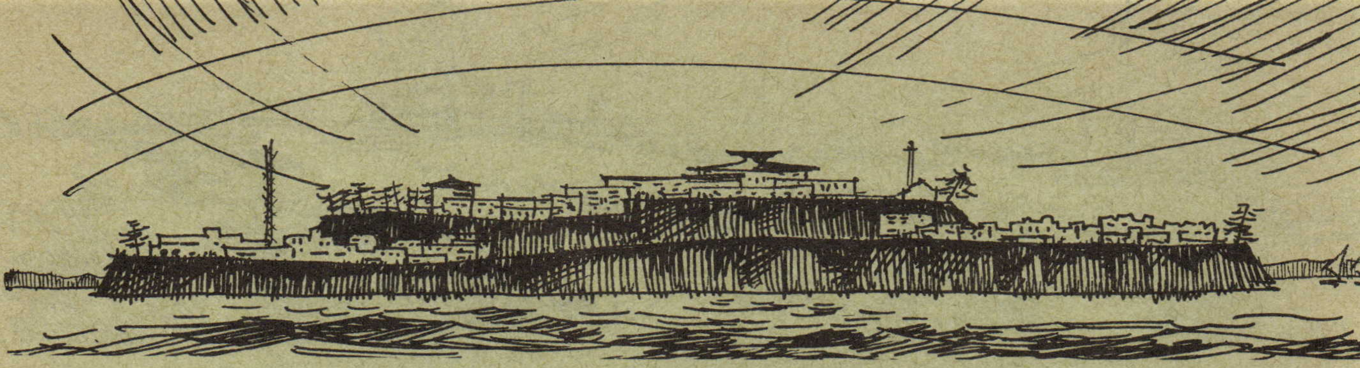
Few cities have as disparaging a reputation for ugliness as does Pittsburgh, the "Cinderella of American Cities," as Professor Horsbrugh described it. Curiously, it may be our ugliest cities which turn out to be the most amenable to civic redevelopment—and beautifying. Professor Horsbrugh's study suggests how this can be done for Pittsburgh, basing the new forms on the prevailing conditions of the site, specifically its topography and its way of life. He designated various areas for housing or roadways, or factories, or simply for being preserved in their natural state.

The great error which Horsbrugh pointed out was the lack of recognition of the outstanding natural beauty of the site as the design basis of its urban forms. He pointed out how both the character of the terrain, and the many cultures of Pittsburgh's citizens, its industries and its unique position, should be used as the real basis for re-forming the city. Horsbrugh's report is a sensitive appraisal of delicate topography which has been abused. It is done, not with a statistician's measure, but with a heart and mind poised for seeking a more harmonious relation between nature and human settlement on this site. And he implies that every city has its own personality which its form should express—the basis for developing the city as "its best self."

Of course, few cities have as striking topography as Pittsburgh—San Francisco, Troy, Atlanta, Seattle, and some parts of Los Angeles and Portland are among the few—and all of these need and deserve the kind of penetrating study which Pittsburgh obtained.

A more common natural asset to cities is the proximity of water. Many of our cities were developed on water for obvious practical reasons; for these same reasons we have neglected the potentials of the water edges in our haste to develop industries

* See *AIA Journal*, September 1963



A proposal for redeveloping Alcatraz Island, one of several by members of the Northern California Chapter AIA. Sketch adapted from a drawing by Jack Hermann

and commerce. This abused resource has begun to receive wide appreciation and in many cases, forward-looking redevelopment proposals. Boston harbor, for example, is a fertile field of urban design potential, considering for redevelopment not only the shoreline immediate to the city, but the entire bay with all its islands and water areas. Some of the islands could be residential, some, institutional. Others could have satellite communities connected to the central city by water transport or perhaps, in the not too distant future, hovercraft vehicles. Many islands should, of course, be left alone.

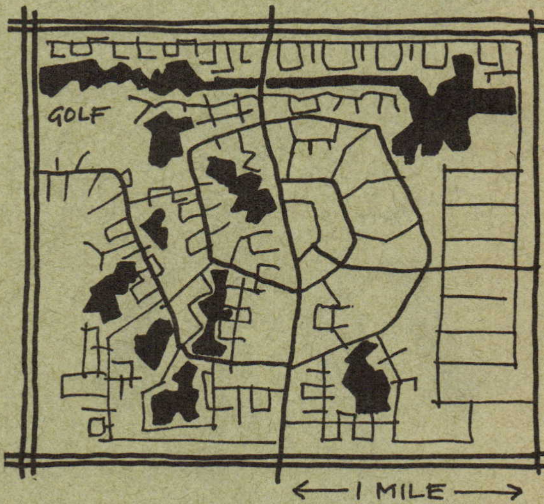
Recently, members of the Northern California Chapter of the AIA submitted imaginative proposals for redeveloping Alcatraz Island in San Francisco bay. Ellis Island in New York harbor has also received design attention for redevelopment.

Greater Baltimore harbor, the whole of the Norfolk, Virginia, area, much of New York and Long Island, the Tacoma-Seattle bay area, the Detroit-Windsor water area—all are dormant worlds waiting to be awakened by the magic of urban design vision. Modern engineering has made possible the creation of artificial or man-made landscape—landscape sculpture on a vast scale. The precedent for this work has been established, and forward-looking urban design could give direction to our continuing urbanization.

In the great land speculations in Florida in the 'twenties there were many imaginative designs for artificial islands for hotels and housing. Much of the coast of Florida was developed by infilling. In effect, what nature had begun developers tried to refine. Some of the plans recalled the character of Venice. Indeed an airplane flight along much of our coastal shoreline reveals a considerable amount of marina housing development.

There is an opportunity for creative shorescape in many of our water-edge cities which are flat and otherwise topographically featureless, except for the meeting of land and water. The monotony of these sites can be relieved by the creation of artificial hills, as has been started in Detroit. Water could even be brought into the city, through channels and reservoirs. Land could be consolidated into parcels, thereby increasing its development density. Livability could be insured by good design. The value and attractiveness of these sites would be increased by the pleasant presence of water. Waterways could be active as well as passive: some could have marinas, others could be used for rowboating, fishing, small craft sailing, and swimming. The engineering potential is in our hands. The real estate and speculative inducements could be strong, but the urban design vision must first be tapped.

The treatment of a hillside, whether a palisade or a slope, overlooking an urban view is a perplexing design problem. Should the hill be left intact as much as possible, and accented with contrasting architecture, or should it be terraced? Our engineering skill has made terracing more and more feasible and the shortage of good urban sites undoubtedly will increase the practice. Artistic



Design of an urban sector with waterways

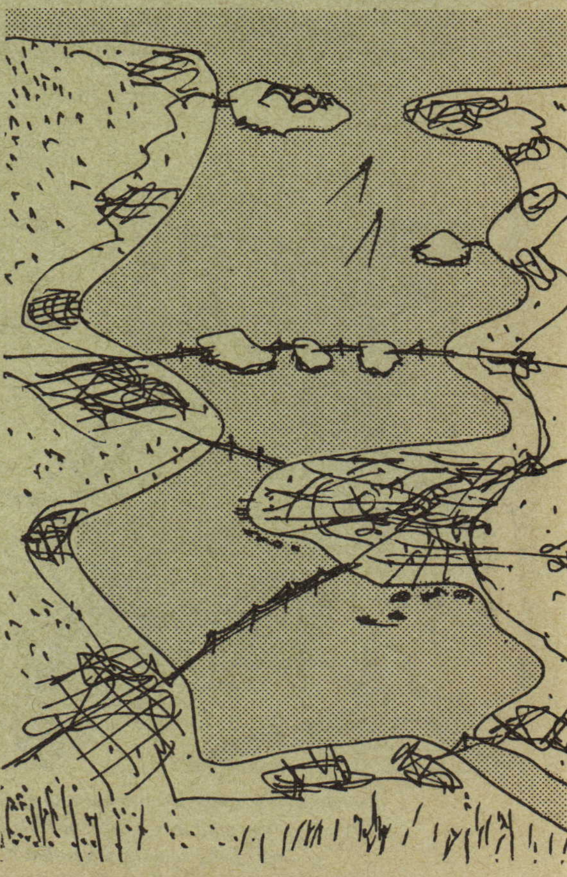
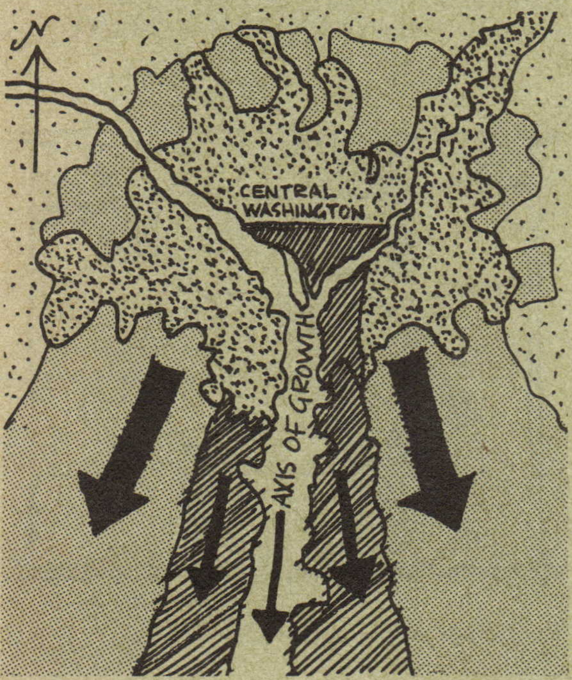
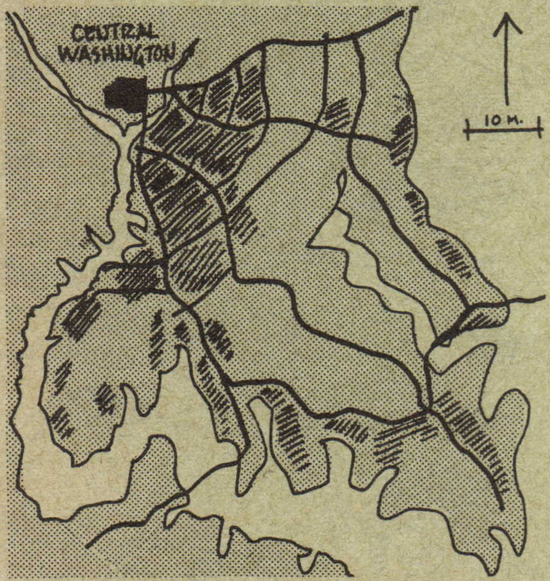


Image for a harbor metropolis

The design of a hillside



Southward growth of Washington—from "Dynopolis"



Development study from a class project of the students of Kevin Lynch of one of the sectors suggested by "The Year 2000 Plan" for Washington

judgment must be applied to these situations. Los Angeles is fast becoming a case-book of both good practice and serious failure from a design standpoint. Some of the hillsides have been employed as bases for homes whose design artfully recognizes the hill form. Some of these homes have been built on stilts or masts. The other extreme is the wholesale terracing of the hillside into suburban one-acre lots, an attempt to make a hillside into a flat area, which it hesitates to be.

Hillside treatment, palisade accentuation and artificial hills, waterways and islands—all these are but preludes in the developing palette of urban design. Urban design, insofar as it recognizes natural terrain characteristics, must respond to every situation, from the dramatic landscape to the nearly featureless flat plain. Of course, the day-to-day life and culture of a city can never be neglected, but the direction and forms of a city's growth are largely determined by the land. Two design proposals for a sector of Washington, DC, illustrate this.

From its original core, Washington grew out along routes of transportation which connected it to neighboring cities. Bridges were built across the Potomac to effect communication with the South. The route north to Baltimore was overland and presented no obstacles. The northwest sector of Washington was not developed until recent times when the pressure of real estate development and the need for communication with towns in that direction urged the spanning of Rock Creek park, a deep natural gully. This opened that entire area for building. Today another sector has begun to develop—the area of the city stretching southward along the Potomac.

The two design proposals which recognized the possibilities of the south sector were based on two very different design theories. Constantinos Doxiadis, during a visit to Washington, pointed out how the center of Washington could move gradually southward. That direction, he felt, would best serve his concept of "Dynopolis," a city whose center moves according to plan to perform an ever larger service which the preceding center is ill-equipped to provide.* This movement, according to the doctrines of Dynopolis, is a characteristic of modern cities.

In the case of the southern sector of Washington one major obstacle to growth is the Anacostia River. Doxiadis proposed a substitution in transport to overcome this difficulty—waterborne traffic.

The second design proposal was published in a study made by Kevin Lynch and a group of graduate students. This study applies to a real situation the findings of Professor Lynch's research on the form of a city. The design of the sector proceeded with the standard planning considerations, aided by the methodical

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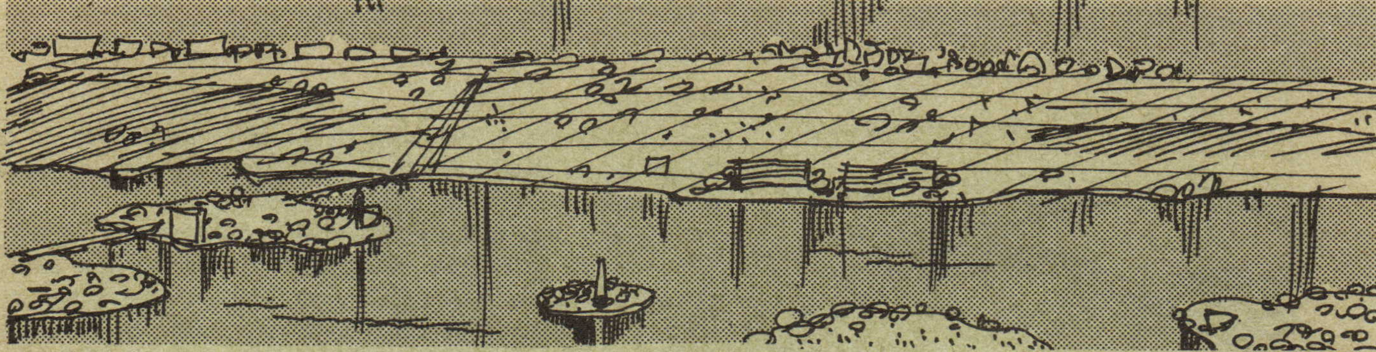
* "Dynopolis, the City of the Future," C. A. Doxiadis, Athens 1960 and "Profiles—the Ekistic World of Constantinos Doxiadis," *The New Yorker*, May 11, 1962



Air approach view of Miami

application of considerations of form which would lead to better decisions in land-use, roadway placement, vertical or horizontal development—in short, a full plan which also considered form as a major aspect of design.

The point of these proposals was that they were based on the realities of topography. An interesting study could be made of most cities along these lines—the recognition of dormant sectors for development, possibly applying a theory of growth.

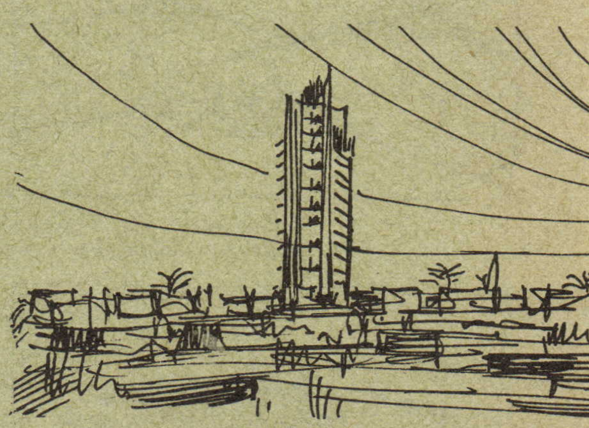
In some cases the topography in a sector might be entirely uninhabitable, like the marsh areas of San Francisco bay. Here is a piece of geography ripe for development and the ultimate in land and water sculpture. At this scale the appreciation of movement through landscape is essential. In some cases it has been recognized. The air approach to Miami, for example, is carefully plotted to give arriving vacationers a view of the ocean front development.

As long ago as 1930 Elbert Peets proposed that cities be designed to be seen from the air as well as from the ground. This consideration could involve the skyline of a city, something we might call vertical texture. Studies of a town or city could determine where on the skyline assertive verticals should be placed, perhaps as cluster groups. In prairie cities the grain silo has often been both an accent and a symbol on the skyline. The Price Tower in Oklahoma by Frank Lloyd Wright suggests an amplification of the role of the vertical in a small town. Some towns could be ringed with slender towers, marking them out on the flat plains as the minarets of ancient Istanbul did for its mosques. Pairs or clusters of towers can often serve an old city as a portal accent, marking a significant point of entry.

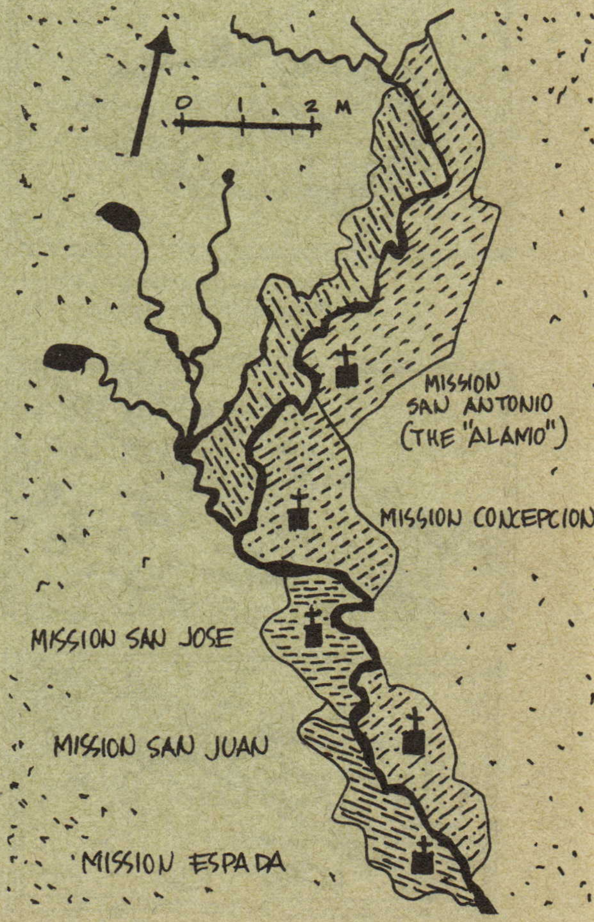
The possibilities are limitless, and can derive from every outlook. For example, one might recall a town's history by reviving an old element. Such is the case in a proposal a few years ago in San Antonio, Texas, to revive the old Mission Trail. The Mission Trail is now somewhat incoherent; it once connected the original Spanish missions. The route roughly follows the San Antonio River, which was used to irrigate the farm fields of the missions. Some parts of the fields are now used as parks. The mission trail would revive the stretch of agricultural land as a grand green-way, reaching nearly to the heart of the city. Its land uses would be both active and passive, but wholly varied.

We may find that some legal actions have significant urban design effect. The relaxation of laws which hamper leisure pursuits might give tremendous impetus to a more wholesome and adult use of the city. An example of this was the alteration of laws in Washington, DC, to allow sidewalk cafes and then to allow alcoholic drinks to be served in them.

We have concentrated in this article on the physical aspects of urban design, not to deny the social and cultural bases of it, but because these latter are implicit—as implicit as in architecture. We have dwelt on the aspects of form because that is the medium



Wright's Price Tower in Oklahoma



The "Mission Trail" which became San Antonio. The Alamo is at the present center of the city through which we, as architects, make our contributions. In conclusion, let us recall the advice of two great masters of our art, Alvar Aalto and Eliel Saarinen.

Aalto once told a group of students how he designed the TB Sanitarium in Paimio, Finland. He considered how each inhabitant would use it and feel in it, from director to patient to janitor. He imagined himself the director, arriving, parking his car, entering "his" hospital, feeling proud of his role at every moment. He then imagined himself in the role of every member of the hospital's staff, and checked his design to insure that everyone who used it, who worked in it could feel the importance of his own part in the hospital's operation. The janitor, for example, had to have his own small closet for his work clothes so that he knew he was appreciated.

Aalto also imagined himself a patient, arriving at the hospital depressed at having to leave his family, and faced with a long period of convalescence. He pictured himself in every moment of a patient's experience, traveling through the wooded landscape in which the hospital is set, arriving and seeing for the first time the large white building with its outstretched welcoming arms, entering and being cheered by the warm colors and the warm, textured woodwork. Aalto designed the patients' rooms thinking of the angle at which patients would be looking at them—horizontally, from a bed.

In this, Aalto went beyond function, utility, economy and proportion; he entered the area of real experience.

Eliel Saarinen related how he, when designing the Church of Christ in Columbus, Indiana, visited that town and proceeded to imagine the future church. He conceived the whole plan, the appearance of the church, the experience of its congregation living in the town and attending the church—all from the point of view of the people who would be using it. Before making a single drawing he checked and re-checked his design, altering it to satisfy all the conditions and requirements the church would have to meet and the spiritual effects it would create. Then he was ready to draw up his design.

This procedure of conceiving the physical environment in such real terms with beauty the ultimate goal must now be extended to the design and re-creation of all our towns and cities. And, in this work, we must never be reluctant to approach our task with a sense of poetry.

For further reading on these subjects, we suggest:

TOMORROW'S LANDSCAPE, Sylvia Crowe, London, Architectural Press, 1956

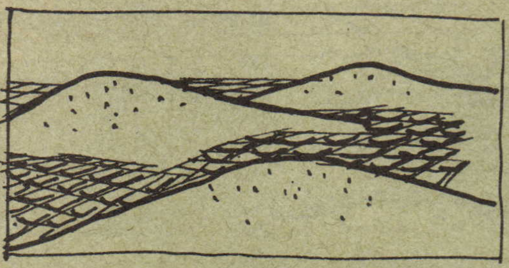
AN INTRODUCTION TO THE STUDY OF LANDSCAPE DESIGN, Hubbard & Kimball, New York, The Macmillan Company, 1917

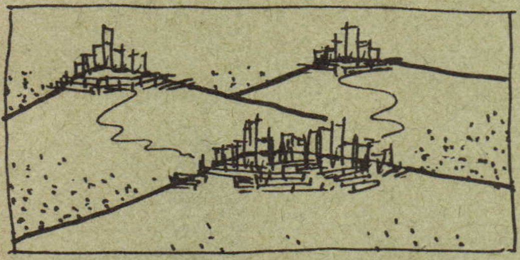
LANDSCAPE FOR LIVING, Garrett Eckbo, New York, F. W. Dodge Corporation, 1950

LANDSCAPE ARCHITECTURE, John O. Simonds, New York, F. W. Dodge Corporation, 1961

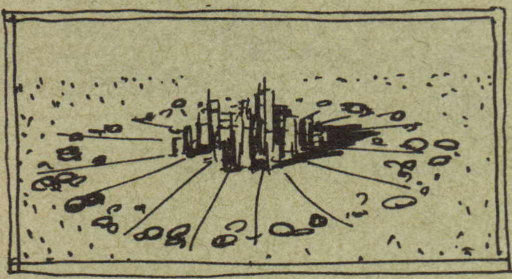
DESIGN IN TOWN AND VILLAGE, Thomas Sharp, London, HM Stationery Office, 1953

Landscape and *Landscape Architecture* magazines ◄

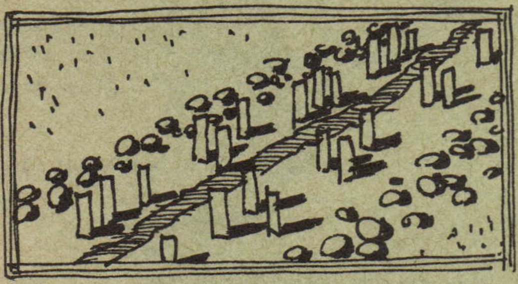


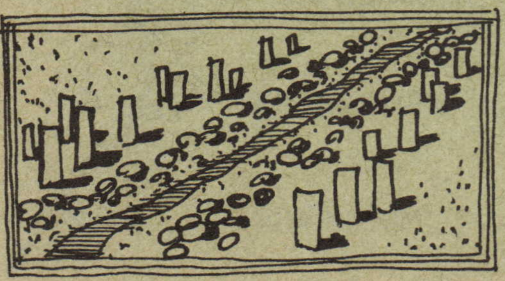


Hilltop free—valley developed
Valley free—hilltop developed



Dense center—intimate periphery
Dense periphery—intimate center





High rise close to spine
Low rise close to spine

◄ *Studies of alternative urban forms*

Fifty-Year Sale

ONE DAY when the plane circled over Manhattan the thought struck me that most of those buildings weren't there fifty years ago. I remembered a book on the wonders of America that awed me as a boy with pictures of the Woolworth Building and the Singer Tower.

Fifty years isn't a very long time when you have lived it. Who would have thought so much could be built in so short a span? Not a community planning committee on which I once served. For them a fifty-year projection was practically infinite and thereby a fairly comfortable perspective for "long-term goals." Projects calling for implementation within five years were disturbingly imminent, big and expensive in comparison with recent achievements.

That viewpoint was typical in a time when the preceding fifteen years included the depression and the building paralysis of World War II. Now we look back upon a building boom whose five-year increments give greater confidence in the nation's capacity to build. Even more reassuring, and probably sounder, is the fifty-year review which reduces some dramatic ups and downs to zigs and zags on a soaring graph.

The view from a plane over most American cities tells the same story. As you look at your city think what the view may be fifty years from now. The prognosticators of population and economic growth insist that in that time, we must build as much new as is already there—a prospect neither infinite nor disturbing because now we believe it can be done—and certainly most heartening to an architect. If we ponder *how* it will be done we see the responsibility that goes with the opportunity.

From the air or from the ground, the characteristics of the city you approach have been determined by the works of architects, engineers, planners and (lately) homebuilders. The skyline, the proud ranks of new buildings, the pulsing arteries of transportation, the bridges, parks and sprawling suburbs are of their creation. Only too evident are the decayed remnants of earlier building booms and the squandering of natural site resources along waterfronts. The rubble of a few cleared slums is a reminder of unsolved economic problems. This great mix of good and bad challenges the architect's conviction that we must do better.

Should not the next fifty years belong to the design professions—the "decision-makers" who know how to improve mankind's physical environment? What or who can prevent them from being the decision-makers?

The same forces that have been used as alibis for the lack of good planning and design will still be there: the weaknesses of a master plan; quirks in zoning; restrictive codes; money-minded clients; governmental red tape; the press for time; public apathy.

A speaker at last year's AIA Student Forum delivered a parable about the bad guys (power and greed) and the good guys (idealistic architects) in continual conflict over the design of cities throughout history. Power (the authorities) and greed (investors looking for a fast buck) really called the shots on land-use and design. The design professions were more in the role of accommodators than decision-makers. Occasionally the story had a happy ending when the power and money gents were won over to right ideas by a great architect-salesman.

City-building has reached a peak of complexity. We speak of the design team required to do the job. The AIA has already put into words new concepts of education that will train architects, urban designers and engineers as a fraternity of environmental specialists equal to the unprecedented task. The AIA has put into words new concepts of comprehensive services to enable the design team to serve the individual, corporate, entreprenurial or governmental client.

Meanwhile the design professions must learn two things: how to settle intramural squabbles over spheres of responsibility, and how to make the public design-conscious. We need as many great architect-salesmen as we can produce. The other design professions have the same challenge.

W.H.S.

State of Michigan
In the Circuit Court for the County
Civil Action No. 5136

Proceedings Had on the Opinion of the Court at on April 24, 1963

Eberle M. Smith FAIA, *of Detroit, sent us this court decision as of possible interest to the profession. We felt it amusing. So we pass it along in the Judge's own words. We might explain that two days before the date of receipt a restraining order by a taxpayer, prohibiting them from taking bids on the grounds that they did not give due proposed building, instead of electrical heat as planned. After a three-day trial, the Court found as follows:*

THE COURT: After two and a half days of hacking back and forth, we have reached the point where a decision has to be made.

The question here involved is whether or not the Board of Trustees for Schoolcraft College acted in good faith, or abused their discretion, in accepting the recommendation of the architect whom they had hired to install electrical heating rather than wet heating, so-called, in the college which they are about to commence building.

The question we have here to decide is not whether the cheapest system was adopted, or whether some other system wouldn't have been just as good, or whether they made a mistake. The question is whether they were guilty of an abuse of discretion, or a lack of good faith; or, in other words, of a lack of honesty in dealing with the public's money.

I have seen three of the members of this Board on the stand. They all impressed me as conscientious and serious-minded. There wasn't anything in this case that indicated that anybody on that Board had any axe to grind. None of them worked for the Detroit Edison Company. None of them that had any brothers or husbands working for the electrical interests, or anything of that nature.

Generally speaking, in a case like this, that is where the corruption, if any, comes from. Somebody has something to gain. There has been no indication from the testimony in this case that anybody involved in this matter had anything to gain from any decision they made.

This has come to the attention of the Court as a taxpayer's suit. I do not know whether that is a misnomer or not. I have not seen the taxpayer. I have not heard him testify. I do not know whether it is a fight between the electrical interests and the gas interests, or the mechanical heating interests, or whether it is a genuine taxpayer's suit. It doesn't make very much difference. But it is certainly something to think about.

The testimony indicates that these people did consider at length the heating problem. In the first place they hired an architect, and even the plaintiff does not question the ability of the architect they hired. Nobody has questioned his honesty. Nobody has questioned his ability. Nobody has questioned his experience. He has, apparently, plenty of all three. The Board did send a man down to Steubenville, Ohio, it was testified, to make an investigation regarding a heating system down there in a school; which shows that they at least didn't accept the word of the architect without any investigation at all. There has been testimony that the heating system was under consideration for some goodly period of time, because there were sample heaters installed in the office of the Board of Trustees during the summer and early fall of that year, and there were other indications that the matter was being given consideration.

As I have said before, the architect that they hired, as far as this case is concerned, must be presumed to be honest and competent, because nobody questioned the fact that he was.

These people are lay citizens. They are not architects. They are not engineers. They hired an architect for the simple reason that they do not know enough about architecture themselves in order to perform a job of this kind; and they are not presumed

# of Wayne

Detroit, Michigan

was both interesting and encouraging—as well as
of bids, the Board of Trustees was served with
consideration to the use of hydronic heat in the

to, nor do they have to, nor are they required to know anything about architecture. It does seem to me that having hired a competent architect, they are entitled to take his word as to most things. They hire him because they think he knows his business; and when he comes to them with a set of figures and he says "X" is cheaper than "Y," unless the thing is so absurd on the face of it that no sensible man would take his word, I think that they are entitled to accept his decision. It has been argued on the other side that maybe they should have indulged in some other form of investigation when they found out that electricity was to be used, because on the face of it electricity seems generally more expensive than wet heating systems. There isn't any doubt that the fuel costs are higher. But there is evidence in this case that it was considered both by the architect and by the Board that the initial cost of installation for the so-called hydronic system was considerably higher than that of an electrical system. The figures indicated that in a period of 25 years the costs would be approximately the same, the over-all cost; that is, the cost of installation, plus the cost of maintenance, plus the cost of fuel.

The next question that arises is, why would they take the electricity otherwise than because it was recommended by the architect? Did they have any other reason? Well, they do put forth two reasons. The architect says, "The reason I recommended electricity instead of a wet system in this particular case was that considering the fact that they were going to use airconditioning, and considering the fact that I thought they would obtain more space by installing an electrical system, an electrical system would be better. I recommended it—with a wet system they have to have transformers anyway."

Now, these things have all been attacked. The plaintiff says that with a hydronic system they could use smaller transformers, that they wouldn't have tunnels, and so forth. Nobody has been able to come up with any exact figures as to what the savings would have been. I cannot blame them for that, because I recognize that it is not very possible to get those figures, exact figures. It is true that the architect is a reputable architect, and he submitted a set of figures, and he stands by those figures. The plaintiff says, well it is only an estimate because electrical systems are not capable of being exactly appraised at this time, because electrically-heated schools are relatively rare in the United States. Well, the suspicion crossed my mind at one point in this case that perhaps the architect was trying to establish a reputation for himself as the first man to design an electrically-heated school in this area. That has been known to happen. I asked him. He admitted that he hadn't designed any other electrically-heated schools; but pointed out that there were three in the city of Detroit under construction, I believe, and two in the city of Utica, just outside of Detroit, that had been in operation for some time. Therefore, I couldn't say to myself, this man is trying to establish for himself a reputation as the first man to design and build an electrically-heated school in this territory for the sake of personal aggrandizement. So I added that as a point in his favor; because it contributed, in my opinion, to his over-all honesty. This architect says the installation will be substantially cheaper with electricity. I may not go along completely with what he says. The plaintiff has picked away at it, and there may be some costs that he could have cut down on; but I am convinced of his over-all honesty. I don't think he faked the figures. I think he believed them. I think he may have been able to cut corners here and there, but that he didn't think it advisable to do. It is not, in my opinion, my position to substitute my judgment for his, any more than I think it would have been proper for the School Board to substitute their judgment for his. He was the expert on that sort of thing, and I think they were entitled to take his opinion.

If there is a greater expense in the initial installation cost of a hydronic system, you cannot ignore the interest factor over a period of years. It has been suggested here that it was over-computed. I do not know whether that is true or not. But I do know that it is a factor here, and would have to be taken into consideration.

You cannot deny that it will cost more to operate an electrical system, but at the same time I don't think you can deny that it would cost more money to maintain the hydronic system over the years.

Also, something that looms rather large in my consideration is the fact that this School Board has apparently secured a rate from the Detroit Edison Company. The rate, I noticed in the letter that was presented by the plaintiff, and signed by Mr Briggs, says that, with electricity, costs approximating two cents per kilowatt-hour, and so forth and so on. The figures in this case show that the cost, I believe, is going to be from a cent to a cent and a half per kilowatt-hour. So even the Mechanical Contractors Association have had their thinking somewhat led astray by that. The School is getting a rate. It sounds like a good rate. At least it is under the rate that the plaintiff thinks is the bottom rate, I imagine, if they put two cents in their letter. So that may result in a saving.

The test in these cases is substantially that of good faith. The only question that I have to decide is whether or not this Board acted in good faith. I am not here to decide whether Mr Smith should lose his architect's license because he does not seem to know how to compute costs, or that he led his clients astray, or anything like that. As I said, I am convinced of his honesty. However, that is not the thing that I have to decide. I have to decide whether or not these people acted in good faith. As indicated in the case of Moran vs Detroit Board of Election Commissioners, 334 Michigan, 234, that was cited this morning in the argument, there are three things that have to be considered: Was there any malicious intent; was there any capricious action; or was there any corrupt conduct? There certainly hasn't been any evidence of any malicious intent. There certainly hasn't been any evidence of any corrupt conduct. And I do not believe there has been any evidence to substantiate any claim of capricious action; because I cannot say right now, and I do not think that anybody else can say right now in this courtroom, how much difference in cost there is going to be if electricity is substituted for a hydronic system. I can say this, that I do not think that the difference is going to be substantial enough to outweigh the advantages that the Board thinks they are going to obtain from accepting an electrical bid instead of a hydronic bid. There is certainly no gross abuse of discretion. I might put it this way. You may not agree with what they did, but I think they did it honestly; and, as I said before, I do not have any right in the world to substitute my judgment for theirs, whether I think it is correct or whether I do not think it is correct. If I think myself that a hydronic system would have been better in this case, that is immaterial. If they acted in good faith, if they hired a competent architect and they took his word, and there was good reason for them to accept his word, then I have to decide in their favor, whether I would have done the same thing under the same conditions or not. I do not say that it will not cost any more; but I do believe that everyone here acted in good faith, both the Board and the architect. Only time will tell if they acted wisely. Perhaps the voters will have to take care of this Board in the long run. I don't know. I cannot say whether the costs will get out of hand or whether they will not. It may be cheaper. It may be more expensive. I cannot tell for certain.

I am going to dismiss the bill of complaint, because I do not find any evidence of wrongdoing sufficient to warrant any other decision in this case. The bill of complaint will be dismissed; with no costs, this being a public question. ◄

Coming in the November Journal

Fifth Annual Book Supplement

Sixteen pages of authoritative reviews and notices of current books of interest and value to the profession

A Tale of Two Cities—College Hill and Downtown Providence 1970

DIETER HAMMERSCHLAG AIP

The Deputy Director of the Providence City Planning Commission recounts the story of these two now-famous URA studies

Cranbrook 1963—An Anthology of the AIA-ACSA Teacher Seminar

EDITED BY MARCUS WHIFFEN, of the School of Architecture, Arizona State University at Tempe

UIA Working Commission on School Buildings (Hamburg)

ERIC PAWLEY AIA

Continuing the Institute's active participation in international architectural affairs, our former Technical Editor reports on Reunion IX of this important Commission

Visual Benefits of Polarized Light

H. RICHARD BLACKWELL PH D

A method of improving visual comfort and efficiency by increasing the quality, rather than the quantity, of light

Library Page

Real Property

Essential to the architect is a knowledge of real property and its constant reflection of changing economic and social forces in an urban society. Such interrelationships have significant consequences for building patterns. The list of books given here is by no means comprehensive, but it is presented in the hope that it will be of some assistance either in increasing one's store of information on a vital subject or in answering questions posed to the architect by persons with whom he has daily contact. The books are available on loan to corporate members.

AMERICAN INSTITUTE OF REAL ESTATE APPRAISERS. The Appraisal of Real Estate. 3d ed. Chicago, 1960. 475 pp

A basic book of appraisal concepts and procedures, endeavoring to record the best of current thinking on the subject.

ARNOLD, RAY H. How to Estimate Market Value in Selling Real Estate. Englewood Cliffs, NJ., Prentice-Hall, 1962. 250 pp

A presentation of accredited ways of estimating costs, making analyses of property, location and neighborhood and understanding the use of capitalization methods, rate making, interest tables, etc.

BERNARD, MICHAEL M. Airspace in Urban Development. Washington, Urban Land Institute, 1963. 20 pp

Points out that if reasonably priced conventional sites are unobtainable, the use of air rights may be sought by real estate investors. Presents four aspects of airspace: over-surface transportation facilities, airspace in air travel, in condominium and in scenic easements.

BRYANT, WILLIS R. Mortgage Lending; Fundamentals and Practices. NY, McGraw-Hill, 1956. 375 pp

Information regarding procedures of mortgage lending with an appraisal of its social significance and an account of how activities of lenders are affected by law.

FRIEDMAN, EDITH J. Handbook of Real Estate Forms. Englewood Cliffs, NJ, Prentice-Hall, 1957. 441 pp

Specimens of forms covering transactions relating to real property discriminately selected for their legal soundness, clarity of language and general effectiveness.

INSTITUTE OF REAL ESTATE MANAGEMENT. Cooperative Apartments: Their Organization and Profitable Operation. Chicago, 1961. 96 pp

An assemblage of source materials bringing into focus aspects and problems of cooperative apartments. This edition contains information on condominiums.

NELSON, A. THOMAS. The Impact of Leases on Financial Analysis. East Lansing, Michigan State University, 1963. 107 pp

Studies the use and accounting treatment of current financial statement reporting, pointing out the inadequacies of traditional methods. Proposes three alternatives to make statements more meaningful for the purpose of financial analysis.

NELSON, RICHARD L. The Selection of Retail Locations. New York, Dodge, 1958. 422 pp

Emphasizes that increasingly complex urban problems and accelerated pace of technological change are critical in location of retail business. Presents techniques for research, market analysis and other considerations of locational factors.

NORTHEASTERN ILLINOIS METROPOLITAN AREA, PLANNING COMMISSION. Land Use Handbook; a Guide to Land Use Surveys. Chicago, 1961. 32 pp

A practical, standardized system for classifying land according to its use with a brief introduction to the methods and purposes of land use mapping.

PICKARD, JEROME P. AND ARLENE G. BALABAN. Urban Real Estate Research [1946-58; 1959; 1960; 1961] Washington, Urban Land Institute, 1949-63. 4 vol

Comprehensive and useful inventories of urban real estate research, reviewing significant periodical and book materials on the physical, economic and social aspects of land utilization and related topics.

SEMENOW, ROBERT W. Questions and Answers on Real Estate. 4th ed. Englewood Cliffs, NJ, Prentice-Hall, 1961. 602 pp

Addressed primarily to persons preparing for license examinations but useful also as an aid to anyone concerned with real estate transactions. Includes current material on mortgage financing.

SOCIETY OF RESIDENTIAL APPRAISERS, STANDARDIZATION COMMITTEE. Real Estate Appraisal: Principles and Terminology. Chicago, 1960. 166 pp

An endeavor to standardize definitions and basic principles in real estate appraising.

VOGEL, HAROLD N. The Co-Op Apartment; a Guide for Co-Op Buyers and Owners. New York, Libra, 1960. 119 pp

Presents the merits and drawbacks of investment in a cooperative apartment. Gives an explanation of several types and characteristics of each.

WEIMER, ARTHUR M. Investors and Downtown Real Estate; Opinion and Comment. Washington, Urban Land Institute, 1960. 24 pp

An examination of the status and prospects of real estate development in the central business districts of several large cities.

WEIMER, ARTHUR M. AND HOMER HOYT. Principles of Real Estate. 4th ed. New York, Ronald Press, 1960. 716 pp

Discusses the principles and practices involved in such subjects as real properties, valuation, financing, location, marketing, and economic and governmental factors affecting property incomes and values.

WINNICK, LOUIS. Rental Housing: Opportunities for Private Investment. New York, McGraw-Hill, 1958. 295 pp

An investigation of why equity investment in new private rental housing declined following the Korean War and an assessment of the extent to which market forces will continue or reverse this trend. Indicates areas in which changes in policy may expand private rental construction.

Mary E. Osman

Book Reviews

Two More Volumes in the Art of the World Series. Reviewed for the AIA Journal by Eric Pawley AIA.

Art of China—Spirit and Society. Werner Speiser. 1960 257 pp

Art of the Stone Age. Hans-Georg Bandi et al. 1961 249 pp
New York, Crown Publishers, illus 7" x 9" $5.95

Seventh of this excellent Art of the World series to be reviewed for *AIA Journal,* "Art of China" maintains the high standards of the others at the same low price. In this case, however, there are some sixty tipped-in color plates and only a few black-and-white text illustrations. As in the other volumes, the author is a career-expert, university professor and Director of the Museum of East Asian Art in Cologne.

In China there are still immense reserves of works of art and books unknown to us. That land has, in thousands of years of history, given the world the choicest treasures of porcelain, silk, lacquer, paper and matchless intellectual achievements of philosophy and poetry.

Professor Speiser has succeeded in expressing through their art the spirit of successive Chinese epochs based on states of society: antiquity—the feudal age—the unified state (Han)—time of troubles—classical age (T'ang)—withdrawal (Sung)—the Academy—the bourgeoisie (Ming and Yüan)—the age of political thought (K'ang-hsi). His text is concise indeed when one realizes that he covers three thousand years.

As usual in this series, emphasis is not upon architecture, although certain characterizing aspects of it are described and illustrated, but upon art objects of metal, ceramic, stone, lacquer, remains of frescoes, silk and paper paintings, and calligraphy (one of the greatest of Chinese arts). Comprehensive chronological parallels, indices, a bibliography and maps (the latter of lesser quality—almost the only defect of this series) increase the usefulness of the book as a reference but the translation by George Lawrence is readable enough to be enjoyed for itself as a whole, for general cultural understanding.

"Art of the Stone Age," also illustrated by sixty tipped-in color reproductions and many marginal black-and-whites, goes back to origins with a series of essays on rock-paintings and rock-engravings spanning 40,000 years.

The traditional story is that this art was first discovered by the West at Altamira in Northern Spain (1879) by the five-year-old daughter of an aristocratic "spelunker." These murals (after considerable controversy) enlarged the scope of anthropologists/archeologists who until then sought only for small stone artifacts or potsherds. It was believed that nothing else had or could have survived 400 centuries.

Now a whole group of specialist-prehistorians has formed and this book has contributions under the general editorship of Professor Bandi (University of Berne) who writes of Eastern Spain. Breuil and Berger-Kirchner write on the Franco-Cantabrian areas, Lhote on North Africa and Sahara, Holm on South Africa, and Lommel (Munich) on Australia. This is a limited selection—many more examples and areas are not covered—but it is an excellent introduction.

Man's development for millenia divides into three ways of life: hunters, cultivators and cattle-raisers. The Stone Age men responsible for these works of ritual art were in the "advanced hunter culture" beginning some 50,000 years ago and still extant in the case of the Bushmen of the Kalahiri Desert in southwestern Africa. There are tens of thousands of examples of such work known farther north in the mountainous regions of the Sahara alone.

Studies of South African art have been aided by the incomparable advantage of learning from living natives something of the subtle mythology it symbolized. Dr Holm is convinced that similar myths are basic to most other regions of rock-art.

Siegfried Giedion, in a brief essay without illustrations in a remarkable small book* has written of some aspects of prehistoric art in a way that reveals its significance for architects today. This twenty-page essay on space conceptions should be required reading for all architectural students. The present volume skirts the subject tantalizingly and we could wish for still another book fully illustrating Giedion's thesis.

Annual of Architecture, Structure & Town-Planning. Calcutta, Publishing Corp of India, 1962. USA distrib, Wittenborn & Co, New York. illus 10" x 7½" $8.00

This third annual contains a number of interesting articles with informative materials not readily available elsewhere. There are articles on town planning in Dacca, Burma, Islamabad, Rajasthan and the Middle East. The volume contains a section on the works of Felix Candela, successfully augmented by

* Explorations in Communication. Carpenter and McLuhan. Beacon Press, 1960 $4.00

illustrations and drawings. Among the provocative articles are those by Kenzo Tange on "Architecture and the City," by Richard Neutra on "Design a Human Issue," and by Philip Johnson on "Actual Theatre Design." In addition, there are a variety of contributions ranging in subject from solar energy for space cooling to an account of architectural education in various Oriental and African countries.

M. E. O.

Visual Space Perception. William H. Ittelson. New York, Springer Publishing Co, 1960. 212 pp illus 6¼″ x 9¼″ $6.00

Architects with a real concern for the visual and spatial experiences of people within the spaces they create will find this non-easy book to be a rewarding study. It is based to a large extent on the important contributions of the late Adelbert Ames to the psychology of perception. Dr Ittelson, who is Associate Professor of Psychology at Brooklyn College, and Dr Albert H. Hastorf, formerly at Dartmouth, both participated in the AIA Conference on Research for Architecture held at Ann Arbor in 1959. Both Ittelson and Hastorf belong, with other students of Ames, in a special group of "functional" or "transactional" psychologists. The fundamental difference between these men and traditional psychologists is that they view perception as "a creative process carried on by the organism" and always in relationship to the whole "transaction." Dr. Ittelson quotes P. W. Bridgman at one point—"The observer must somehow be included in the system. . ." He quotes also his former associate Dr Hadley Cantril in a definition of living, ". . . as a process in which an organism participates in the creation of an environment through which it can carry out its purpose. . . ."

We approach architecture and urbanism more closely here with the distinction that collective or social man creates the common physical environment and each individual creates for himself the psychological world of his own experiences.

The famous distorted perspectives of the Ames experiments proved how much we depend upon our individual assumptions for what we see. The author explores this area as well in the theory of perception set forth in the first section of this book.

The second part defines and classifies various visual space cues with a certain amount of mathematical analysis. The reader seeking an understanding of these elements of perception need not follow each step—geometrical relationships are clearly diagrammed and on every page there are fresh and stimulating insights for the space designer. The dynamic aspects experienced by a person moving through space are not neglected and of course are the essence of experiencing architecture. In the context of this way of thinking the observer creates effects within his own consciousness, radically affected by his assumptions about his environment which may or may not be shared by other individuals.

In a summary statement we read "It is impossible to speak of the visual cues as offered by the environment to the waiting organism. Rather they must be treated as abstractions created by the organism as it carries out its purposeful activity in an ever-changing relationship with its environment." Note that "purposeful activity"—it too is part of the transaction and affects perception.

Part Three deals with special problems in visual space perception, effects of time, perceptual conflicts, and a final, in some ways rather startling chapter on visual perception of persons. This is concerned with what might be called subjective feedback—how our feelings affect even our visual impressions of people.

Seven pages of references spanning forty years, and an ample index, complete this book. Now we need studies to bring these underlying concepts into architectural applications.

E.P.

Auditoriums and Arenas, Facts from a Survey by the International Association of Auditorium Managers. Francis Deering, Don Jewell, Lindsley C. Lueddeke, Chairman. Chicago, Public Administration Service, 1961. 86 pp illus tables 8½″ x 11″ $5

Based on a survey made in 1958 and 1959 this report gives statistical data about 82 auditoriums and arenas throughout the country and Canada. Text chapters summarize the statistics under the following headings: administrative responsibility; construction costs and financing; the site; building facilities; financing auditorium operations; other financial problems; personnel: duties, salaries, benefits.

The table on building facilities gives total number of seats, as well as seating capacity of the three principal rooms if that many. The summary chapter notes the confusion caused by the interchangeable use of such terms as auditorium, arena, theatre, convention hall, coliseum, exhibit hall, etc. It calls upon AIA members, among others, to familiarize themselves with the correct terms and to use them correctly, regardless of what the local "auditorium" may be called.

Of primary use for financial and management information.

G.E.P.

Encyclopedic Guide to Planning & Establishing an Auditorium, Arena, Coliseum or Multi-Purpose Building. Herman J. Penn. Greenville, SC, Pen-Fleming Publications Inc, c1963 604 pp illus 7″ x 10″ $45.00

A compendium of information that should be helpful to anyone faced with the problems of planning an auditorium. The author gives ample evidence of his experience in this field as he touches on many topics which are not immediately obvious. Beginning with the selection of the site, the author ranges over almost every conceivable topic connected with the running of an auditorium, that could affect its design in some way.

Noting that for many architects an auditorium commission may be a once-in-a-lifetime project, he stresses the necessity of the architect's securing expert advice. He also points out the desirability of employing the auditorium manager before building, so as to have the advantage of his advice. The present volume offers much that will be helpful both to the architect and manager.

Among the more technical topics discussed are sight-lines, traffic flow, acoustics (by quoting authorities), concrete shell structure, etc. The author stresses the need of facilities for the handicapped, such as a wheel-chair entrance. The ticket department is considered at some length, with an indication of the equipment needed. Among more minor items discussed are music stands, revolving mirror ball, and, to the gratification of this reviewer, a recognition of the need of keeping copies of souvenir programs for future requests and historical purposes.

Other features are lists of sources of supply for many items of equipment, an extensive section of pictures illustrating many of the points made, and a lengthy index.

The book does suffer from some faults as the author tends to be prolix and repetitious. He recognizes this in his preface saying there are many related features in the field. Although true, this reviewer feels that the book would have benefited from condensation and a general tightening up. This would have undoubtedly meant a lower price, which would have been beneficial, for even in this day of increased book prices $45 seems rather excessive for a book of this physical makeup.

Admittedly, the market is limited, but those who read it carefully and consider the points the author makes, will undoubtedly end up with a better auditorium. G.E.P.

Structure and Form in Modern Architecture. Curt Siegel. New York, Reinhold, 1962. 308 pp illus 10″ x 10½″ $14.00

The same need for this sort of communication which we noted in connection with another recent excellent, if more modest, work on the esthetics of structure * is met on a broader front by this handsome book. Some six hundred illustrations in clear ink-line drawings, marginal sketches and full-page photographs give a comprehensive view of contemporary structural form.

The material is in three parts: *Skeleton, Construction, V-Shaped Supports* and *Space Structures.* More than somewhat a structural purist, Professor Siegel devotes a considerable amount of text and illustration to pointing out common pseudo-structures resulting from a non-analytical adoption of facade patterns and clichés.

While the paper used is an excellent non-glossy stock we found the light sans-serif type far too anemic, and while its use in gray areas completely innocent of subheadings may delight some twiggy-wristed typographers it is not good information design. A noble attempt has been made to keep illustrations near text references to them. The source bibliography contains more than 150 references. The clear and readable translation from the original Callwey German edition (1960) is by Thomas E Burton. E.P.

* Angerer: Surface Structures in Building. New York, Reinhold, 1961. 142 p $6.75

Exhibitions, Architecture, Display. Roberto Aloi. Hoepli, 1960. 338 pp illus $20.00

Just about everything that has been built for important industrial and cultural affairs and expositions both in Europe and the US in the past decade is presented in good photos and drawings and often inadequate descriptions. Much of the material (such as the exhibition architecture at Brussels in 1958) has been covered elsewhere. Much is less well-known and interesting. Some is merely gimmicky. The introduction might have been a fascinating essay on the evolution of modern exhibition techniques and their influence on architecture and industrial design. But, alas, it is not. Yet with one world's fair just over and another coming up, a lot of designers looking for ideas will find this book well worth scanning. W. VON E.

Exhibition Techniques. James H. Carmel. New York, Reinhold, 1962. 216 pp illus 8½″ x 10½″ $12.50

The best available book on traveling and temporary exhibition methods. Mr Carmel has compiled a fine series of illustrations with a brief text packed with practical information on every important aspect of this evolving art: planning, production (including packaging and transporting), presentation (including contracts and insurance). There is a final sixteen-page section on structural framing systems—always a problem when shows must be put on in other people's space.

Almost every architect is faced with this problem in one form or another—in his own office, preparing material for exhibitions and competitions, or actual gallery or museum work. This is your up-to-date how-to-do-it.

Exhibitions. Klaus Franck. New York, Praeger, 1961. 252 pp illus 11½″ x 9″ $17.50

Three brief and rather elementary essays on exhibition design and planning:

- the object and its spatial surroundings
- exhibition and communications media
- exhibition systems

Illustrations for each paper are drawn from the quite good compilation of 128 examples of exhibitions (1949-1960) which comprises the final 200 pages of this large, slick-paper book.

Layout, typeface and glossy paper all fight against easy reading—captions are divorced from pictures in order to form neat blocks of small, lightface sans-serif type surrounded by conspicuous white space.

Best part is that on systems, primarily small-dimension demountable framing with a wide variety of sections and ingenious connectors. In some examples these elements are far too obtrusive due to worship of black and concern for the formalism of the exhibition rather than its content. This is indeed the essence of the problem of exhibition—how to create a containing order which clarifies organization and sequence without distracting the viewers' attention from objects shown. E.P.

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

Hospital Departmental Area Studies

SOME YEARS AGO, the *Journal* published a three-part tabulation of hospital departmental area studies. The project, result of a two-year-plus effort by the AIA Committee on Hospitals and Health (now Committee on Hospital Architecture), was a study covering seventy-five hospitals.

The present compilation of data on nineteen hospitals is part of a continuing series of such studies.

A few caveats, stated in the foreword to the 1957 tabulation, are applicable equally to the present study, and are therefore quoted here:

"This information has already proved of value in hospital planning. An obvious finding was that there is practically no correlation between hospitals. Because of program, site and budget differences, standardization of this complex building type would be an impossible task, even if it were desirable.

"Two hospitals of the same unit areas—the same SF/bed—will differ in program and services offered. . . . This lack of correlation means that it is not valid to place much importance on *comparisons* between hospitals—these data are, rather, a tool for *analysis* of specific jobs."

To avoid wrong and possibly harmful comparisons, identifying information has been omitted. Each job has been given a number, and location listed only by state, without name of hospital or architect.

A blank space in the tabulation indicates that the information was either not available or not applicable. Figures under "Departmental Areas" have been rounded off to the first decimal; therefore total percentages may deviate very slightly from 100. "100 per cent" has been used as a symbol to express totality.

The fifty- and 100-bed hospitals of the California Department of Public Health represent the Department's standards.

Frequently, figures for certain departmental areas which appear to be unusually large or small are explained by comments listed under "Other Features" or as footnotes.

Ground-rules to insure uniformity of reporting areas were as follows:

Gross Floor Area:

- measure to outside of walls
- include porches, balconies, etc at half gross area

Departmental Areas:

- measure to inside face of exterior walls
- to room side of partitions along corridors, stairs, elevators, other circulation spaces
- to center of partitions adjoining other departments
- include partitions, columns, small ducts, chases, shafts, etc within departments

Detailed listing of rooms suggests assignment to departments according to USPHS "Appendix A." Areas are calculated only for entire departments and major subdivisions.

Gross Floor Areas

Acute General Hospitals

up to 250 Beds

Hospital Location	No. 1 Wisconsin
Date Completed	1961
Total Beds	254 *
Med. and Surg.	150
Maternity	53
Pediatric	23
Other	28 Neuropsychiatric
Special Features or Comment	* 390 when 6th and 7th floors are finished
Shape of Plan	Tee-Double Corridor
Gross Floor Area (sq ft)	186,315

Departmental Areas—Figures give gross area in sq ft—			
1. Administration	9,258	36.5	5.0
2. Adjunct Facilities	**15,739**	**62.0**	**8.6**
a. Laboratory	5,199	20.5	2.9
b. Radiology	6,732	26.5	3.7
1. Diagnostic			
2. Treatment			
c. Physical Medicine	2,630	10.5	1.4
d. Pharmacy	1,178	4.5	.6
3. Nursing Departments	**69,413**	**233.9**	**32.4**
a. Bed Units	49,754	156.5	21.7
1. Med. and Surg.	22,880	90.2	12.5
2. Maternity	10,296	40.5	5.6
3. Ped. and Others	16,578 [1]	25.8	3.6
b. Operating Suite	10,560	41.5	5.8
c. OB Delivery Suite	6,997	27.6	3.8
d. Emergency	2,102	8.3	1.1
4. Service Departments	**31,835**	**125.4**	**19.1**
a. Dietary	12,516	49.3	6.8
b. Housekeeping	7,683	30.3	4.2
c. Employee Facilities	2,940	11.6	1.6
d. Storage (incl. CGS)	6,011	23.6	3.3
e. Cent. Sterile Supply	2,685	10.6	1.5
5. Outpatient Department	3,058	12.0	1.7
6. Residential Quarters			
7. All Other Space	**57,012**	**252.0**	**34.9**
a. Circulation	32,293	154.5	21.5
b. Educational	528	2.3	.3
c. Mechanical	9,650	37.9	5.3
d. Other Usable	4,576 [2]	19.1	2.6
e. Walls—Dead Space	9,965	38.2	5.3
8. Totals	**186,315**	**721.8**	**100.0**
Area Per Bed (sq ft)		721.8	

Functional Data		
Number of Operating Rooms	11	
General Surgery	6	
Orthopedic	1	
Eye and ENT	2	
Cystoscopy	1-Cysto 1-Proctoscopic	
Other		
Pharmacy Functions		
Dispensing	Yes	
Compounding	Yes	
Manufacturing	Yes	
Type of Food Service	Trayveyor	
No. of Meals Per Day		
Seats in Dining Rooms		
Quantity of Laundry Done	37,622 lbs./wk.	
No. of Delivery Rooms	3	
No. of Labor Rooms	8	
No. of Bassinets	40	
Radiographic Rooms	2	
Combined	2	
Superficial Therapy		
Deep Therapy	1	
No. of Staff Lockers	M	F
Nurses-Technicians	74	139
Others		
Doctors	55 (Plus Coat Room)	
Outpatient Exam. Rooms	4	
Residence Beds in Hosp.		
Other Features	Room for future Cobalt 2-Hydrotherapy, 1-Exercise Recovery Room	

[1] Incl. 3146 sq ft for neuropsychiatric
[2] Laundry
[3] 4 Normal; 2 prem, 1 obs

No. 2 Michigan	No. 3 California	No. 4 New York	No. 5 Georgia
1961	1964	1956	1963
231	219	210	152
170	185	115	92
34	12	67	32
27	10	28	16
	12 Ortho		12 Intensive Care
Rectangular (ancillary unit), double corridor, L-shaped patient area	Tee	Offset Tee	Cross
127,385	114,480	216,566	103,042

Area per bed—% of total

6,543	28.1	5.0	7,350	33.6	6.4	13,271	63.1	6.1	6,803	44.8	6.6
9,315	**30.2**	**7.3**	**8,520**	**38.9**	**7.2**	**10,969**	**52.2**	**5.1**	**3,756**	**24.7**	**3.6**
4,140	17.8	3.3	2,500	11.4	2.2	3,876	18.4	1.8	1,958	12.9	1.9
3,695	16.0	2.9	3,750	17.1	3.2	4,298	20.4	2.0	1,388	9.1	1.3
2,775	12.0	2.2	2,720			3,787	17.9	1.7	1,388	9.1	1.3
920	4.0	.7	1,030			513	2.4	.2			
1,065	4.6	.8	1,250	5.7	1.0	1,529	1.3	.7			
415	1.8	.3	1,020	4.7	.8	1,266	6.0	.6	410	2.7	.4
47,727	**206.4**	**37.4**	**40,060**	**183.2**	**35.8**	**51,055**	**243.1**	**23.6**	**40,652**	**266.9**	**39.4**
38,452	166.3	30.2	29,980	137.5	27.0	39,385	187.5	17.2	30,778	202.5	29.9
28,727	124.3	22.6	27,050			18,459	87.9	8.5	19,287	126.9	18.7
7,509	32.5	5.9	1,680			15,064	71.7	6.9	8,525	56.1	8.3
2,216	9.5	1.7	1,350			5,862	27.9	2.7	2,966	19.5	2.9
5,275	22.8	4.1	5,860	26.5	5.1	6,971	33.1	3.2	4,689	30.8	4.5
2,880	12.5	2.2	3,570	16.3	3.2	3,375	16.2	1.6	3,694	24.3	3.6
1,120	4.8	.9	650	2.9	.5	1,324	6.3	.6	1,419	9.3	1.4
14,082	**61.0**	**11.3**	**11,630**	**52.8**	**9.6**	**24,968**	**118.5**	**11.5**	**16,767**	**110.2**	**16.2**
5,872	25.5	4.6	5,500	25.1	4.7	9,362	44.6	4.3	5,434	35.7	5.3
2,780	12.0	2.2	2,400	10.9	2.0	5,612	26.7	2.6	2,570	16.9	2.5
605	2.6	.5	780	3.6	.7	2,935	13.9	1.3	1,999	13.1	1.9
3,600	15.6	2.8	2,400	10.9	2.0	5,663	26.9	2.6	5,203	34.2	5.0
1,225	5.3	1.0	550	2.3	.2	1,396	6.6	.6	1,561	10.3	1.5
245	1.1	.2	1,950	8.7	1.5	5,428	25.8	2.5	569	3.7	.5
						11,643	55.4	5.4			
49,473	**214.1**	**38.9**	**44,970**	**205.5**	**39.5**	**99,232**	**472.5**	**45.8**	**34,587**	**227.3**	**33.4**
26,097	113.0	20.5	40,440	184.1	36.0	42,453	202.1	19.6	20,557	135.2	19.9
248	1.1	.2				719	3.4	.3			
12,470	54.0	9.8	1,870	8.5	1.5	20,557	97.8	9.5	7,163	47.1	6.9
						16,155	76.9	7.5			
10,658	46.0	8.4	2,660	12.9	2.0	19,348	92.2	8.9	6,847	45.0	6.6
127,385	**551.4**	**100.0**	**114,480**	**522.7**	**100.0**	**216,566**	**1036.6**	**100.0**	**103,042**	**677.6**	**100.0**
	551.4			522.7			1036.6			677.6	

8		8		6		6	
6		4		4		3	
1		1				1	
		1					
1		1		1 (in X-ray)		1	
		1 Broncho		1 Minor in OPD		1 Minor	
Yes		Yes		Yes		Yes	
		Yes		Yes		Yes	
		Yes		Yes			
Central Tray		Trayveyor					
1300							
110							
25,000 lbs./wk.		24,500 lbs./wk.					
3		1		3		2	
8		2		5		3	
40		12		44		7 Nurseries[3]	
1		2		2		2	
3		2		2			
1							
1		1		1			
M	F	M	F	M	F	M	F
	66				143		73
11	7			59	51	18	86
58				39		30	
		8				3	
2							
		Existing Laundry and Boiler Plant Used				Recovery Room 6-Beds Surg., 3 Beds Del.	

Hospital Location	No. 6 Michigan			No. 7 Kentucky			No. 8 Illinois		
Date Completed	1962			1954			1961-1963		
Total Beds	152			148			141		
Med. and Surg.	112			92			104		
Maternity	16			20			26		
Pediatric	24			36			11		
Other	23 (cribs)						12 Intensive Care		
Special Features or Comment							No Laundry		
Shape of Plan	Rectangular (ancillary unit), double corridor, L-shaped patient area.			Tee with attached wings in basement & first floor			Tee		
Gross Floor Area (sq ft)	82,810			99,556			75,373		
Departmental Areas—Figures give gross area in sq ft—Area per bed—% of total									
1. Administration	3,490	23.0	4.2	4,615	31.2	4.6	5,023	35.7	6.7
2. Adjunct Facilities	**3,700**	**24.0**	**4.4**	**5,744**	**38.9**	**5.8**	**3,491**	**24.7**	**4.6**
a. Laboratory	1,630	10.4	1.9	2,104	14.2	2.1	1,553	11.0	2.1
b. Radiology	1,640	10.8	2.0	2,126	14.5	2.1	1,452	10.3	1.9
1. Diagnostic	1,455	9.6	1.8	1,734	11.8	1.7	704	5.0	.9
2. Treatment	185	1.2	.2	392	2.6	.4	748	5.3	1.0
c. Physical Medicine				1,256	8.5	1.3			
d. Pharmacy	430	2.8	.5	257	1.7	.3	486	3.4	.6
3. Nursing Departments	**26,752**	**192.5**	**32.1**	**29,448**	**199.0**	**29.6**	**28,203**	**199.9**	**37.4**
a. Bed Units	20,899	137.5	25.1	23,007	155.4	23.1			
1. Med. and Surg.	15,169	99.8	18.2	14,721	99.4	14.8	13,937	98.8	18.5
2. Maternity	3,219	21.2	3.9	3,929	26.6	3.9	4,846	34.3	6.4
3. Ped. and Others	2,511	16.5	3.0	4,357	29.4	4.4	1,592	11.3	2.1
b. Operating Suite	2,857	18.8	3.4	3,909	27.0	3.9	3,464	24.6	4.6
c. OB Delivery Suite	2,011	13.2	2.4	1,922	13.0	1.9	3,092	21.9	4.1
d. Emergency	985	6.5	1.2	610	4.1	.6	1,312	9.3	1.7
4. Service Departments	**6,145**	**40.4**	**7.4**	**14,558**	**98.3**	**14.6**	**8,740**	**61.9**	**11.6**
a. Dietary	2,630	17.3	3.2	6,301	42.6	6.3	4,135	29.3	5.5
b. Housekeeping	410	2.7	.5	639	4.3	.6	750	5.3	1.0
c. Employee Facilities	855	5.6	1.0	2,101	14.2	2.1	994	7.0	1.3
d. Storage (incl. CGS)	1,400	9.2	1.7	4,316	29.2	4.3	2,316	16.4	3.1
e. Cent. Sterile Supply	850	5.6	1.0	1,200	8.1	1.2	545	3.9	.7
5. Outpatient Department				4,505	30.4	4.5	304	2.2	.4
6. Residential Quarters									
7. All Other Space	**42,723**	**281.1**	**51.7**	**40,686**	**274.2**	**40.9**	**29,572**	**209.5**	**39.3**
a. Circulation	17,305	113.8	20.8	20,373	137.1	20.5	15,660	111.1	20.8
b. Educational				2,363	15.9	2.4	236	1.7	.3
c. Mechanical	8,865	58.3	10.4	5,603	37.8	5.6	7,088	50.1	9.4
d. Other Usable				106	.7	.1			
e. Walls—Dead Space	16,553	109.0	20.5	12,241	82.7	12.3	6,588	46.6	8.8
8. Totals	**82,810**	**544.8**	**100.0**	**99,556**	**672.1**	**100.0**	**75,373**	**534.5**	**100.0**
Area Per Bed (sq ft)		544.8			672.1			534.5	
Functional Data									
Number of Operating Rooms	4			5			3		
General Surgery	2			3			2		
Orthopedic	1								
Eye and ENT	1								
Cystoscopy				1 (in X-ray)			1		
Other				1 Dental in OPD					
Pharmacy Functions									
Dispensing	Yes			Yes			Yes		
Compounding							Yes		
Manufacturing									
Type of Food Service	Central Tray			Central Conveyor			Central Tray		
No. of Meals Per Day	900								
Seats in Dining Rooms	55						54		
Quantity of Laundry Done	12,700 lbs./wk.								
No. of Delivery Rooms	2			2			2		
No. of Labor Rooms	4			1			3		
No. of Bassinets	19			25			28		
Radiographic Rooms							2		
Combined	3			2			2		
Superficial Therapy				1			1		
Deep Therapy	1								
No. of Staff Lockers	M	F		M	F		M	F	
Nurses-Technicians		39			161				
Others	8	9		42	41		54	100	
Doctors	9			39			Lockers Surg. and OB		
Outpatient Exam. Rooms								3	
Residence Beds in Hosp.								2	
Other Features	* (ancillary unit will expand to total of 250 beds in future)			* (shares laundry, other services with 3 other hospitals) (prem. nursery in pediatric unit)					

No. 9 Illinois			No. 10 California			No. 11 Wisconsin			No. 12 Washington		
1963						1962			1962		
113			100			94			57		
80						74			26		
20						10			10		
13						10			3		
									18 (Nursing Home)		
						Large Residential					
Tee						Cross			Central Core and Fingers		
64,471			58,920			133,173			33,375		
4,313	38.0	6.7	2,800	28.0	4.6	8,891	95.0	6.7	2,695	47.4	8.1
4,405	**39.0**	**6.8**	**3,000**	**30.0**	**4.9**	**9,481**	**101.0**	**7.3**	**1,447**	**25.4**	**5.1**
1,610	14.0	2.5	1,400	14.0	2.3	2,741	29.0	2.3	450	7.9	1.2
1,780	16.0	2.8	800	8.0	1.3	2,351	25.0	1.7	645	11.3	1.9
1,546	14.0	2.4				2,351	25.0	1.7	645	11.3	1.9
234	2.0	.4	250 [1]	2.5	.4						
499	4.0	.7	500	5.0	.8	2,226	24.0	1.7	214	3.7	.6
516	5.0	.8	300	3.0	.5	2,163	23.0	1.6	138	2.5	.4
24,571	**215.0**	**38.0**	**22,500**	**225.0**	**37.5**	**31,805**	**336.0**	**23.6**	**16,060**	**282.3**	**48.1**
17,625	154.0	27.3	18,000	180.0	30.0	22,026	233.0	16.4	10,865	191.1	32.6
11,360	99.0	17.6				15,535	165.0	11.6	4,446	78.0	13.3
4,260	37.0	6.6	800 [2]	8.0	1.3	4,642	49.0	3.4	2,584	45.4	7.8
2,005	18.0	3.1				1,849	19.0	1.4	3,835 [3]	67.7	11.5
3,769	33.0	5.8	2,700	27.0	4.5	5,607	59.0	4.2	2,759	48.5	8.3
2,157	19.0	3.3	1,400	14.0	2.3	2,679	28.0	1.9	1,888	33.1	5.6
1,020	9.0	1.6	400	4.0	.7	1,493	16.0	1.1	548	9.6	1.6
9,414	**83.0**	**14.7**	**6,050**	**60.5**	**10.1**	**22,637**	**239.0**	**16.9**	**4,845**	**85.0**	**14.3**
3,597	31.0	5.6	2,800	28.0	4.7	7,922	84.0	5.9	1,945	34.2	5.8
2,065	18.0	3.2	200	2.0	.3	5,400	57.0	4.1	440	7.7	1.3
315	3.0	.5	400	4.0	.7	2,025	21.0	1.5	555	9.7	1.6
2,622	23.0	4.1	2,000	20.0	3.3	5,750	61.0	4.3	1,086	19.1	3.2
760	7.0	1.2	650	6.5	1.1	1,540	16.0	1.1	819	14.3	2.4
55	1.0	.1									
						14,920	160.0	11.2			
21,768	**191.0**	**33.7**	**24,570**	**245.7**	**40.8**	**45,439**	**483.0**	**34.2**	**8,328**	**146.1**	**25.0**
12,781	112.0	19.8	14,000	140.0	23.3	28,892	307.0	21.8	6,127	107.5	18.4
4,192	37.0	6.5	3,200	32.0	5.3	7,351	78.0	5.5	772	13.5	2.3
4,795	42.0	7.4	7,370	73.7	12.2	9,196	98.0	6.9	1,429	25.1	4.3
64,471	**566.0**	**100.0**	**58,920**	**589.2**	**100.0**	**133,173**	**1414.0**	**100.0**	**33,375**	**586.2**	**100.0**
	566.0			589.2			1414.0			586.2	
4						4			2		
3						2			2		
						1					
						1 (Fracture)					
1											
Yes						Yes			Yes		
Yes						Yes					
						Yes					
Central Tray						Tray Carts			Food Cart		
						750			240-250		
75						80			20 Staff;		
12,600 lbs./wk.									25 Nursing Home		
2						2			1		
3						1			2		
24						12			12		
									1		
2						2					
1											
M	F					M	F		M	F	
	100						48			12	
20	140					15	46		12		
8 (surgery)						22					
2											
1						27					

* (Factor of 1.14 used to convert net [incl. circulation] to gross [incl. walls, dead space])

[1] X-ray Therapy
[2] Nurseries
[3] Pediatrics 333, Nursing Home 3,502

Hospital Location	No. 13 California	No. 14 Georgia	No. 15 Tennessee
Date Completed		1963	1962
Total Beds	50	50	49
Med. and Surg.		34	38
Maternity		16	8
Pediatric			3
Other			
Special Features or Comment		1 nursing station serves all beds—sized for 50-bed addition.	
Shape of Plan		Tee	Tee
Gross Floor Area (sq ft)	27,500	41,566	31,043

Departmental Areas—Figures give gross area in sq ft—Area per bed—% of total

	No. 13			No. 14			No. 15		
1. Administration	1,035	20.7	3.8	2,695	53.9	6.5	1,655	33.8	5.3
2. Adjunct Facilities				**1,603**	**32.1**	**3.9**	**1,844**	**37.6**	**5.9**
a. Laboratory	600	12.0	2.2	617	12.3	1.5	896	18.3	2.9
b. Radiology	400	8.0	1.4	830	16.6	2.0	722	14.7	2.3
1. Diagnostic				830	16.6	2.0	722	14.7	2.3
2. Treatment									
c. Physical Medicine									
d. Pharmacy	240	4.8	.9	156	3.2	.4	226	4.6	.7
3. Nursing Departments				**13,999**	**279.9**	**33.6**	**12,382**	**252.6**	**39.8**
a. Bed Units	9,000	180.0	32.7	8,417	168.3	20.2	7,801	159.2	25.1
1. Med. and Surg.							5,936	121.1	19.1
2. Maternity	300 [1]	6.0	1.1				1,463	29.9	4.7
3. Ped. and Others							402	8.2	1.3
b. Operating Suite	1,200	24.0	4.4	2,499	49.9	6.0	2,244	45.8	7.2
c. OB Delivery Suite	975	19.5	3.5	2,190	43.8	5.3	1,890	38.5	6.1
d. Emergency				893	17.9	2.1	447	9.1	1.4
4. Service Departments				**7,656**	**153.1**	**18.3**	**4,907**	**100.1**	**16.1**
a. Dietary	1,000	20.0	3.6	2,723	54.4	6.5	2,265	46.2	7.3
b. Housekeeping	200	4.0	.7	1,385	27.7	3.3	191	3.9	.6
c. Employee Facilities	200	4.0	.7	1,093	21.9	2.6	714	14.6	2.3
d. Storage (incl. CGS)	1,000	20.0	3.6	1,545	30.9	3.7	796	16.2	2.6
e. Cent. Sterile Supply	500	10.0	1.8	910	18.2	2.2	941	19.2	3.3
5. Outpatient Department				398	7.9	1.0			
6. Residential Quarters									
7. All Other Space				**15,215**	**304.4**	**36.6**	**10,254**	**209.3**	**32.9**
a. Circulation	6,100	125.0	22.2	8,490	169.8	20.4	5,294	108.1	17.0
b. Educational									
c. Mechanical	1,300	26.0	4.7	4,306	86.2	10.4	2,388	48.7	7.7
d. Other Usable									
e. Walls—Dead Space	3,450	69.0	12.5	2,419	48.4	5.8	2,572	52.5	8.2
8. Totals	**27,500**	**550.0**	**100.0**	**41,566**	**831.3**	**100.0**	**31,042**	**633.5**	**100.0**
Area Per Bed (sq ft)		550.0			831.3			633.5	

Functional Data

	No. 13	No. 14		No. 15	
Number of Operating Rooms		3		2	
General Surgery		2		2	
Orthopedic					
Eye and ENT					
Cystoscopy		1			
Other					
Pharmacy Functions					
Dispensing		Yes		Yes	
Compounding		Yes		Yes	
Manufacturing					
Type of Food Service		Central Tray		Central Tray	
No. of Meals Per Day					
Seats in Dining Rooms				43	
Quantity of Laundry Done					
No. of Delivery Rooms		2		1	
No. of Labor Rooms		2		2	
No. of Bassinets		18		11	
Radiographic Rooms		1		1	
Combined					
Superficial Therapy					
Deep Therapy					
No. of Staff Lockers		M	F	M	F
Nurses-Technicians			50	8	25
Others		11	9	28	37
Doctors		11		29	
Outpatient Exam. Rooms		4			
Residence Beds in Hosp.					
Other Features	[1] Nurseries.	3 Solaria, 4 Recovery Beds			

No. 16 Indiana			No. 17 Georgia			No. 18 Tennessee			No. 19 Washington		
1963			1959			1962			1957		
48			45			30			16		
30			35			24			12		
12			10			6			4		
4											
2											
						Proprietary with 4-doctor clinic expandable to 42 beds.					
Rectangular			Tee			Cross			Tee		
39,074			29,441			20,312			11,816		
2,878	60.0	7.4	2,443	54.2	8.3	2,596	86.4	12.8	505	31.5	4.3
2,491	**51.8**	**6.4**	**1,261**	**28.0**	**4.8**	**1,033**	**34.5**	**5.0**	**448**	**28.0**	**3.8**
1,014	21.0	2.6	399	8.9	1.3	275	9.2	1.3	91	5.7	.8
						516	17.2	2.5	357	22.3	3.0
1,282	26.7	3.3	758	16.8	2.9	516	17.2	2.5	357	22.3	3.0
195	4.1	.5	104	2.3	.6	242	8.1	1.2	Incl. in Laboratory		
12,984	**279.1**	**33.2**	**12,391**	**275.4**	**42.0**	**6,776**	**22.6**	**33.3**	**3,840**	**240.1**	**32.5**
8,616	187.9	22.0	9,264	205.9	31.5	4,718	157.4	23.3	2,029	127.0	17.2
4,936	112.0	12.6	7,208	160.2	24.5	3,764	125.6	18.6			
2,767	57.5	7.1	2,056	45.7	7.0	954	31.8	4.7			
913	18.4	2.3									
1,628	34.0	4.2	1,380	30.7	4.6	893	29.8	4.3	699	43.6	5.9
1,569	32.8	4.0	1,125	25.0	3.8	878	29.2	4.3	737	46.1	6.2
1,171	24.4	3.0	622	13.8	2.1	287	9.6	1.4	375	23.4	3.2
7,412	**154.6**	**19.0**	**4,261**	**94.7**	**14.0**	**2,706**	**90.1**	**13.2**	**2,272**	**142.0**	**19.2**
2,718	56.6	7.0	1,709	37.9	5.6	1,047	34.8	5.1	794	49.6	6.7
434	9.1	1.1	468	10.4	1.4				415	26.0	3.5
429	9.0	1.1	709	15.7	2.4	345	11.5	1.7	48	3.0	.4
3,308	69.0	8.5	1,375	30.7	4.6	888	29.6	4.3	753	47.0	6.4
523	10.9	1.3				426	14.2	2.1	262	16.4	2.2
351	7.3	.9				955	31.8	4.7			
12,958	**271.6**	**33.2**	**9,085**	**201.9**	**30.9**	**6,246**	**208.3**	**31.0**	**4,751**	**297.5**	**40.0**
6,943	145.0	17.8	5,598	124.3	19.0	3,929	131.0	19.5	1,940	122.0	16.4
3,829	81.0	9.8	1,856	41.2	6.3	664	22.1	3.3			
2,186	45.6	5.6	1,631	36.4	5.6	1,653	55.2	8.2	2,811	175.5	23.8
39,074	**824.4**	**100.0**	**29,441**	**654.2**	**100.0**	**20,312**	**677.1**	**100.0**	**11,816**	**739.1**	**100.0**
	824.4			654.2			677.1			739.1	
3			1			1			1		
2			1			1			1		
1											
Yes			Yes			Yes			Yes		
Central Tray			Central Tray			Central Tray			Food Cart		
						120			78		
			30			8			12		
2			1			1			1		
2			2			1			1		
18			13			6			5		
			1			1			1		
2											
M	F		M	F		M	F		M	F	
	19			12		4	12			10	
	15		6	10							
8			8			8			7		
1						8					
			3 Recovery Beds								

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

A Basic Checklist for Supplementary General Conditions

LEON B. SENTOR FAIA

IT WOULD BE IMPOSSIBLE to write a General Condition that will be appropriate for each and every project. This may be due to geographic location, laws of the place of building, owner's requirements, special requirements and many other reasons. To correct these conditions and to tailor them to the project at hand, Supplementary General Conditions are written. The numbering of the articles in the Supplementary General Conditions may start with succeeding article of General Conditions, or a new system of numbering may be employed.

In writing the Supplementary General Conditions, the specification writer must first be thoroughly familiar with the articles of the AIA General Conditions, Documents A201 and A202, latest edition. He should study the "Comments" in Chapter 13 of the AIA "Architect's Handbook of Professional Practice" after each of the articles of the General Conditions. He must know the import each article has with regard to the project at hand and modify or delete in its entirety such articles as are at variance with the requirements of the particular project for which specifications are being written.

Nothing should be written in the Supplementary General Conditions that can be taken care of in the specifications for the various trades; therefore, many of the subjects listed should be used as a checklist by the specification writer to make sure such an item is fully covered in the Specifications.

The following list of subjects may or may not require additional information to that given in the General Conditions or the Specifications, or they may be new subjects not covered in either the Specifications or the General Conditions.

Numbers in parenthesis refer to articles in the General Conditions, and they should be reviewed by the specification writer, in using the checklist, along with the "Comments" in the "Handbook," for in many cases the check item is not included in the articles of the General Conditions.

Acceptance of Building—
- By Owner
- By Architect
- By Tenant

Accident Prevention— (12)
- Safety precautions
- Warning signs
- Danger lights
- Barricades

Access to Work— (13)
- Architect's right
- Owner's right
- Contractor's right

Allowances— (41)
- Cash
- Materials
- Betterment
- Contingency

Alternates—
- Materials
- Equipment

Application for Payment— (24)
- Time of payment
- Method of application
- Subcontractor's participation (37)

Barricades and Barriers— (12)
- Sidewalks
- Excavations
- Stair & elevator wells
- Openings in floors
- Fences

Batter Boards—
- Provide and maintain

Bonds— (30)
- Completion & payment
- Requirements of law at place of building
- Premiums for bonds to be included in contract price

Bonus and Penalty—
- In re completion time

Bracing and Shoring— (12)
- Adjacent property
- Excavations
- Form work
- New construction

Broken Glass—

Building Permits— (11)
- Building
- Taken out by Contractor or Owner
- See Permits, next page

Cash Allowances— (41)

Certificate for Payments— (25)

Changes in the Work— (15)

Chases—

Claims for Extras— (16)

Cleaning— (44)
- Cleaning during construction
- Cleaning at completion

Completion Time—
- Number of days
- Calendar or working days
- Bonus for early completion
- Penalty for delayed completion

Contract Documents— (2)

Contractor's Right to Stop Work and/or Terminate Contract— (23)
- Specification writer should study the time limits set out in Article 23 of the General Conditions and, if necessary, increase the number of days for each phase, ie, change 7-7-7 to 14-21-30 or any other number of days to allow sufficient time for the processing required to be done so as to protect the Owner from a quick contract cancellation by the Contractor

Construction Procedure—
- Special requirements

Cooperation— (37)
- Between Contractor and Subcontractors
- Between Subcontractors
- All others involved
- Between Prime Contractors

Correction of Work After Final Payment— (20)

Cutting and Patching— (43)

Damages— (31)

Definitions— (1)

Delays and Extension of Time— (18)

Deletions in General Conditions—

Discrepancies in Documents—

Drainage—
- Site
- Excavation during construction

Drawings— (3) (4) (5) (6) (7)
- Re-use without Architect's permission
- Ownership
- Copies furnished and charges
- Shop Drawings (5)
- Drawing & Specification on the Work (6)

Electric—
- Temporary lighting
- Temporary power

Elevators—
- Conditions of temporary use by the trades during construction

Errors and Omissions—

Excavations—

Extension of Time— (18)

Final Inspection—
- By Architect
- By Owner

Future Extensions and Additions—

Heating—
- Building during construction
- Concrete protection

Hoists and Ladders—
- Material hoists
- Personnel hoists

Insurance— (27) (28) (29)
- Specification writer should consult an Insurance Counselor and make sure insurance of every kind of coverage required for the Project is provided
- Specify who takes out and pays for insurance, the Contractor or Owner
- Consult with your Client and obtain in writing the amounts of insurance the Client requires

Instructions—
- To Bidders
- To Contractors
- Special operating
- Manufacturers
- Installation

Jurisdiction—
- Contractor's responsibility (14) (19) (34) (37)
- Owner's rights (21) (22)
- Architect's status (38)
- Project Representative

Layout of Work—
- By competent Engineer
- Bench mark
- Batter boards

Liens—

Lights and Warning Lanterns—
- Temporary use of building lights during final phase of construction
- Temporary lighting and wiring
- Warning lights at all danger areas
- Lanterns
- Lights under sidewalk barricades

Liquidated Damages and Forfeitures—
- See completion time, above

Materials—

Measurements and Dimensions—
- Contractor to verify
- Report to Architect immediately any errors
- Contractor responsible for coordination of adjacent manufactured items

Notices—
- Contractor to post
- Warning of danger
- Special notices
- Building permit
- Wage rates
- Smoking regulations

Overtime Work—
- As anticipated
- Emergency
- By whom paid

Payments—
- Exceptions (23-24-25-26)
- Retainage
- Time for payments

Permits— (11)
- Building—taken out and paid for by Contractor or Owner
- Street use for work area and storage of materials
- Special permits

Photographs—
- Progress photos, size, number furnished and to whom, frequency
- Exterior and interior

Progress Reports—
- By Architect to Owner
- By Contractor to Architect
- How often

Proposal Blanks—
- By Architect for use of Bidders
- Other Agencies

Protection— (12)
- Adjacent property
- Public property
- Against accident or death, to the public and workmen
- Trees and shrubs
- Work under construction
- Against freezing weather
- Coverings
- Pumping water

Repair—
- Contractor to keep work in repair

Reports—
- Required by local jurisdiction

Roads and Delivery of Materials—
- Specify as applicable

Royalties and Patents— (10)

Samples— (8)
- To whom furnished
- Of what materials
- Who will approve
- When furnished

Sanitary Facilities—
- Toilet facilities for workmen
- Drinking water during construction

Scaffolding—
- By general or subcontractor
- Type
- Erection and removal

Schedules—
- Progress
- Costs
- Payments
- Material Suppliers and Subcontractors for the Architect's approval

Separate Contracts— (35)

Sidewalks—
- Temporary use during construction
- Public and private
- Show on plot plan

Signs—
- Project sign on site
- Size and location
- Names to appear
- Warning and danger signs inside and outside project
- See Notices, first column

Site—
- Description
- Examination
- Clearance
- Surveys and topo map and checking by Surveyor
- Easements
- Setbacks
- Grades, lines and levels
- Zoning classification

Sheds—
- Temporary for storage of materials and equipment
- Where located

Soil Tests and Analyses—
- Core drilling and cores
- Laboratory analyses
- Bearing capacity of soil
- Subsurface water

Stoppage of Work Due to Weather—

Storage—

Subcontractors— (36) (37)
- Approval of Architect
- General Contractor responsibility

Substitutions —

Taxes— (11)
- Sales, use, local taxes
- Federal taxes
- Applicable taxes required by the laws of the place of building
- Exemptions

Telephones—
- Temporary job telephone
- Telephone for Architect's job office

Temporary Building—
- Contractor's job office and equipment
- Architect's job office and equipment
- See sheds, above

Tests—
- Materials
- Concrete, strength, slump, cement, water ratio, sand
- Soil bearing
- Special tests

Use of Premises— (42)
- Special requirements or conditions
- In case of additions to or alterations in occupied buildings
- Concessions, vending

Utilities Altered—

Wage Rates—

Warranties—

Water—
- Temporary
- Construction water
- Excavations to be kept free of water
- Building to be kept free of water after enclosure

Watchman—
- Contractor to provide
- Hours on duty

Weather—
- Protection
- Concrete
- Mortar
- Water in plumbing ◄

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

A Guide for Planning Buildings for Christian Science

MILTON L. GRIGG FAIA

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

CHRISTIAN SCIENCE as an organized religion is slightly less than one hundred years old, but it finds the roots of its religious teachings in the Bible and original Christianity. It is within the broad Protestant tradition, though differing from it at significant doctrinal points. The denomination was founded by Mary Baker Eddy, then a devout Congregationalist churchwoman of Lynn, Mass, and has been described by her as the applicability of Christian faith and principles in all areas of human experience, physical as well as moral. It employs a method of religious teaching and practice based on the words and examples of Jesus.

Mrs Eddy had observed and studied mental causes and effects and the relationship of these to her profoundly religious nature for many years prior to 1866, but the identification of what she termed "divine metaphysics" dates from that year when she received an immediate healing of a near-fatal injury after reading an account of healing recounted in the Gospel according to St Matthew 9, verses 1-8. She said, "I knew the Principle of all harmonious Mind-action to be God, and that cures were produced in primitive Christian healing by holy, uplifting faith; but I must know the Science of this healing, and I won my way to absolute conclusions through divine revelation, reason, and demonstration." [1]

Nine years following this revelation, in 1875, Mrs Eddy produced the first of many later published works, "Science and Health." This afterwards was revised and republished under the title "Science and Health with Key to the Scriptures," which now is the denominational textbook of Christian Science, studied in conjunction with the Biblical Scriptures. The subsequent establishment of an entirely new denomination was not a part of Mrs Eddy's original concept or purpose; she hoped that the discovery revealed by her would be accepted and assimilated into the theology of the established orthodox and traditional churches then in existence. This was not possible, however, for it was soon evident that a distinctive environment was needed in which the newly-discovered faith could be practiced within an atmosphere which engenders cooperation and unity between those who practice the new faith with faithfulness and integrity of interpretation of Mrs Eddy's discoveries.

So it was that in 1879, Mrs Eddy with her followers founded the Church of Christ, Scientist, in Boston. To this first congregation were added groups in other places. Soon local churches as well as a Mother Church or central organization became necessary. A reorganization occurred in 1892 and resulted in the organizational concept in existence to our day; it was in this year that Mrs Eddy and her followers secured a Massachusetts charter for the Christian Science Mother Church, The First Church of Christ, Scientist, and of this parent church in Boston all of the local churches and societies now existing throughout the world are regarded as branches.

The first Christian Science building was erected in Oconto, Wis, in 1886. The original edifice for The Mother Church in Boston was completed in 1894. At present there are some 3200 branches of The Mother Church throughout the world and over 280 college organizations besides many study groups not yet formally organized and recognized. While a greater number of branches are to be found in North America, a large membership is recorded in Great Britain and in Germany. Followers of Christian Science are chiefly found among those who read English but translations of the key publications are available to adherents everywhere. The organic order of Christian Science as set forth in the Church Manual conveyed final and definitive authority to an administrative board known as the Christian Science Board of Directors. Always, however, until Mrs Eddy passed away in 1910, her leadership and initiative marked every step in the movement's progress. While this relationship lasted, scarcely any decision of moment was made without her approval, and her passing was to prove the adequacy of the organizational concept as set forth by her in the Church Manual as an organic law. The intervening years have been altogether harmonious and productive in the history of Christian Science.

[1] "Science and Health with Key to the Scriptures"

Basic Beliefs

Christian Science may be summarized in the statement that God is the only might or Mind; that He is "the divine Principle of all that really is." [2] To define God further, it employs such terms as Life, Truth, Love, Soul, Spirit and infinite Person. Justice, mercy, wisdom, and infinite goodness are considered attributes or qualities of God. While Christian Science accepts His divine or spiritual origin, it holds that Jesus was not God, but showed the nature of God most fully in human history. Concerning Jesus the Christ and his relation to God and man, it distinguishes between what is scriptural and what is in the creeds, doctrines and dogmas of later times. Christian Scientists accept St Paul's statement, "There is one God, and one mediator between God and men, the man Christ Jesus." [3] Christian Scientists speak of Jesus often as the "Wayshower" and they regard his atonement as the indispensable "exemplification of man's unity with God, whereby man reflects divine Truth, Life and Love." [4] The doctrine of the Trinity is qualified in Christian Science in that it means the unity of Father, Son and Holy Spirit, "the same in essence, though multiform in office." [5]

The doctrine of the virgin birth is accepted as are the resurrection and ascension although these are not regarded as miracles but as manifestations of spiritual law. The most distinguishing feature of Christian Science teaching is that it observes a distinction between what is real and what is apparent or seems, but is unreal. This distinction Mrs Eddy explains as follows: "All reality is in God and His creation, harmonious and eternal. That which He creates is good, and He makes all that is made. Therefore the only reality of sin, sickness or death is the awful fact that unrealities seem real to human, erring belief, until God strips off their disguise. They are not true, because they are not of God." [6]

The practice of Christian Science is not merely mental; it must also be spiritual. Indeed, it is truly mental only as it is absolutely spiritual. The non-spiritual in the human mind does not contribute to harmony or health. A practitioner, a Christian Scientist who devotes full time to the healing ministry, must know or realize spiritually and his ability to do this is derived from the divine Mind. Therefore, he must agree with the Teacher and Wayshower who said, "I can of mine own self do nothing," [7] and must prepare for the healing ministry and keep himself in condition for it by living in the fullest the life of a totally committed Christian. The practice of Christian Science is not preoccupied, as is commonly supposed, in the healing of physical illness but includes also the healing of sin. Temperance in all things and abstinence from the use of tobacco and intoxicants is required. Further, Christian Scientists regard their religion as applicable to every human situation, or in the words of its founder, "Divine Love always has met and always will meet every human need." [8]

[2] ibid [3] I Timothy 2:5
[4] "Science and Health with Key to the Scriptures"
[5] ibid [6] ibid [7] John 5:30
[8] "The First Church of Christ, Scientist," and miscellany

The unique content of the belief requires specialized study and interpretative materials, therefore the publication and production of specialized textual materials was one of the early projects introduced into the Church's activity.

Publications of the Church are issued by the Christian Science Publishing Society of Boston and include *The Christian Science Journal* first published in 1883, the *Christian Science Quarterly* since 1890, the *Christian Science Sentinel* from 1898, and *The Herald of Christian Science* published in eleven foreign languages, in English and in Braille. The daily newspaper, *The Christian Science Monitor,* founded in 1908, is the best known of these and because of its unique reportorial and editorial policy is influential in many areas of contemporary thought and culture.

Emphasis on continuing spiritual progress through divinely directed and revealing study has resulted in a unique structural innovation, the Reading Room. This facility is generally located remote from the Church edifice, most often being found in business districts.

It combines the elements of a research library, the atmosphere of which is meditative, literature distribution and sale facilities.

Church Government and Authority

In 1899 Mrs Eddy wrote concerning the organization and government of the religion, "Essentially democratic, its government is administered by the common consent of the governed, wherein and whereby man governed by his creator is self-governed. The Church is the mouthpiece of Christian Science,—its laws and gospel are according to Christ Jesus; its rules are health, holiness and immortality, —equal rights and privileges, equality of the sexes, rotation in office." This concept is fixed and has been retained through the years. While there is strong central control, this cannot be described as hierarchical in any sense. The control comes from strict adherence to the Church Manual, the sole source of authority, as faithfully administered and interpreted by the Board of Directors rather than from any individual, administrative or theological pronouncement.

The basic organization is The Mother Church, The First Church of Christ, Scientist, in Boston, Massachusetts, and its worldwide branches and societies. The Church Manual sets forth the standards necessary for the creation of a branch *church;* a *society* exists where regular services are held but the number of adherents and the physical facilities are not sufficient to meet the Church Manual's minimum requirements. While all of these congregations are branches of The Mother Church in Boston, each forms its own rules and bylaws within the general framework of the Manual of The Mother Church which cannot be altered or revised. Mrs Eddy wrote, "The branch churches enjoy the largest local autonomy, whilst held to the central organization by a bond outwardly slight though spiritually powerful." [9] This autonomy is significant in connection with

[9] ibid

the construction of an edifice since, except for comparatively minor Manual requirements (hereafter noted in detail), the local church is necessarily the producer of its program concepts, its "metaphorical" [10] or symbolic expressions and its statement of purely local mission. Each church or society selects its own Board of Directors and Readers and officers. The category of Reader is unique among Scientists in that in lieu of an ordained or recognized clergy, two Readers are chosen by election and these conduct the formal church services of the membership. In addition to the Readers there usually are found in each congregation practitioners who are listed in a directory included in a monthly denominational periodical and are specifically prepared in a ministry of spiritual healing. There is a committee in each congregation charged with free distribution of the various publications of the church.

Buildings

The formal activities of the Christian Scientists generally consist of a Sunday morning service, a Wednesday evening service, a Sunday School generally held simultaneously with the Sunday morning service, and annual or biennial lectures which are presented by members of a Board of Lectureship and which are open to the community. The content of each of these is outlined.

The Sunday Morning Service: The Sunday morning service follows the order of service outlined in the Church Manual and observed in The Mother Church. The same lesson-sermon from the Christian Science Quarterly is read on Sundays in every Christian Science service throughout the world. It is customary for the membership to arrive somewhat in advance of the opening of the service where a quiet contemplative atmosphere is conducive to preparation for a corporate worship experience. Congregational hymn-singing is fervent and of high musical and philosophical content. The Christian Science Hymnal contains, in addition to some of the traditional hymns, seven of Mrs Eddy's poems in various hymn settings. There are no choirs; instead, in most churches will be found a soloist, musically trained, who at a point in the service will render a sacred selection. Silent prayer is a distinctive feature of the Christian Science service; the Lord's Prayer with its spiritual interpretation as given in the Christian Science textbook, is the only audible prayer used.

The lesson-sermons which consist entirely of passages from the Bible and from Science and Health are prepared by a standing committee of The Mother Church which devotes time and thought to this all-important work. The sermon subjects were chosen by Mrs Eddy, and each is used twice in the course of a year, the committee's function being to treat these subjects in various ways and in terms of contemporary application so that there is no monotony or recognizable similarity. This lesson-sermon is the distinctive feature of the Sunday service. It is read by the First and Second Readers, one of whom generally is a man and the other a woman. During the service, the two Readers are seated on a central platform adjacent to the reading desk; the soloist performs from this same platform. The soloist stands only during the solo and, of course, rises with the Readers and congregation during hymns. The organ console and organist are usually concealed from the congregation but visible to the soloist. Since sacraments (Communion and Baptism) are not administered traditionally with physical elements, no physical provisions are made for these. Christian Science church edifices are not used for weddings or funerals, and no structural provisions are required for such services.

The Wednesday Evening Meeting: Each congregation holds a church service on Wednesday evening. This service includes time for testimony or accounts of healing and the sharing of gratitude and cheer and encouragement with others by examples from one's own experiences; about a half-hour is allotted for this.

During the Wednesday services only the First Reader presides. The first part of the meeting is conducted by the First Reader and consists of readings from the Bible and from "Science and Health," two hymns, silent prayer and the Lord's Prayer, in which the membership joins. Unlike the lesson-sermon read on Sunday, the readings on Wednesday are prepared by the First Reader himself. The remainder of the hour is given over to the congregation, which is invited to share "experiences, testimonies, and remarks" on the subject of Christian Science. The meeting is brought to a close with the singing of a hymn.

The Sunday School: The Sunday School forms an integral unit in the activities of a Christian Science church. The usual occurrence of this service simultaneously with the Sunday worship service imposes requirements for physical and auditory isolation for the two services. The method of congregating or grouping also requires unique arrangements since, although there are multiple class groupings of comparatively small numbers, the entire school membership joins in opening and closing exercises led by a Sunday School superintendent. Opening exercises include the singing of a hymn and recitation of a responsive reading and the Lord's Prayer. This is followed immediately by instruction in class groups by teachers who are members of the branch church. The instruction method at all ages is wholly verbal and consists of reading or questions and answers and discussion, so that nursery equipment, toys, and manual or visual instructional aids are not required. Sunday School activities do not include entertainments or pageants, fellowship activities, sales, or other informal and peripheral activities. Each branch church adheres strictly to the rules pertaining to a Christian Science Sunday School found in the Church Manual.

Lectures: The extension or "missionary" work of Christian Science is carried on quite differently from that of most other religious organizations. No attempt is made to mark out any place or people for missionary work and no one is designated as a missionary. However, this work is furthered by the ac-

[10] "Science and Health with Key to the Scriptures"

tivities of the central Board of Lectureship which makes available to local congregations lecturers whose special function is to present the public with accurate information about the teachings of Christian Science, to show that they are in accord with revelation and the teachings of Scripture, to interpret them in terms of contemporary life and to counter misconceptions concerning the faith which may be current at the time. These lectures are delivered not only in America but in Europe and elsewhere and whenever possible are in the indigenous tongues. This activity is especially intended for the outside world and the churches undertake this work with zeal. The church which invites the lecturer bears the cost of his fee and travel. The lecture may be held in the church or other large public hall to which the public is invited by advertising and promotional activity.

Types of Buildings

A high quality of construction and conservative restrained taste may be said to characterize Christian Science church edifices. Funds come primarily from the local membership, and there are no formal "building fund campaigns." For the most part giving is anonymous and unidentified but often above the average of other denominations in generosity. It is considered to be expressive of the worthy intent of the giver to endow a structure of above-average permanence and sacred dignity. Stylistically there is no characteristic idiom. The original edifice of The Mother Church in Boston, as built in 1894, was constructed of light grey granite with pink granite trim in a neo-Romanesque style strongly flavored by the Richardsonian. As it reflected the influences of the last years of the Romantic Revival, so edifices built in later times reflect local traditions and the current fashions and tastes. For a time it seemed that the Greek Temple might become the outward symbol of this religion, but a few years later and, indeed, in some areas even to the present, the "cult of the Colonial" was all-influencing. Edifices in contemporary styling are becoming more common, and less academic styling seems to reflect an awareness on the part of the builders that Christian Science is now of maturity and capable of architectural expression as unique in form as it is in spiritual and intellectual content.

Mandatory Planning Requirements

The Christian Science Church does not publish any mandatory requirements. It is unfortunate that the Board of Directors has not prepared fuller material to supplement that very brief and inadequate general statement bulletin made available only to local church or society executive boards. This lack of a pooling and sharing of experiences normally made available by other denominations imposes serious demand and requirements for detailed study both on the part of the building committees and their architects. It requires an extreme of concentration on the part of the building committee in the determining and defining of a program and specific spelling out of space and physical requirements. Hence, the architect for a Christian Science building should be prepared to provide more than normal counseling and educational services to the committee and should further make early insistence on thorough study by the committee in the preparation of its formal program. He must tactfully break through the reticence which frequently inhibits full discussion of the belief and content of the faith.

The program prepared by the local church building committee may be checked against the following general criteria:

Narthex: This should be adequate to accommodate approximately ten per cent of the capacity of the auditorium, and because of the simultaneous arrival of adults and Sunday School children, sound isolation and acoustical control are essential. Cloak rooms are customary in connection with the narthex, as is also a small area where Christian Science literature may be offered following the services. Since there is often emphasis on formality of ushering, ushers' closets and in some cases dressing rooms are provided adjacent to the narthex. While most auditorium spaces are specifically designed for inherent acoustical quality without resort to electronic amplification, should such be employed the controls should be in the narthex or ushers' closet, and visual means of following the service should be furnished the operator through view panels or otherwise.

Auditorium: The proportions of the auditorium are important since the Christian Science service is emphatically an auditory and communal form; all must *hear* rather than just *see,* and this requirement is particularly important in view of the congregational participation and testimony during the Wednesday evening meetings.

The quality and intensity of lighting, both natural and artificial, need be given special consideration. While the Sunday morning service is dominant in importance and perhaps will be illuminated by natural daylight, the Wednesday evening service is also important, and its lighting should contribute to the proper religious atmosphere for that particular service. It is suggested that the widest flexibility be provided in the intensity and the source of the artificial illumination, and if natural illumination is used every care should be employed to prevent the distraction of glare and the discomfort of direct sun.

Fixed seating is usually employed, and it is not uncommon for Christian Science auditoriums to be equipped with theater-type seats rather than conventional pews. In instances where pews are used, these are frequently upholstered and sometimes equipped with individual folding seats with arms. Book-racks are required and underseat hat-racks are frequently used but no provision need be made for kneelers, cup-racks or other usual pew fittings.

The Readers' desk is usually in the form of a combined or dual lectern occupied simultaneously by the two Readers. This should be equipped for maximum flexibility of reading height, and in view of the possible use of the auditorium for lectures, it is desirable that the upper portion be removable for such occasions. Uncrowded seats for two should be provided adjacent to the pulpit since during portions of the service the Readers are seated.

There is no choir, and while the music for the service is important, it is secondary to the essential readings from the desk. The musical instrument is most often an organ, either wind or electronic. It is considered best for the console to be removed from sight, as should also be the fixed seating for the soloist.

Adjacent to the worship center or platform there should be provided access to this area from preparation rooms for the Readers. Two rooms with closets are required, these being used for dressing and pre-service meditation. A similar room should be provided for the soloist, and these three rooms should be convenient to separate toilet facilities and preferably accessible from other than the auditorium area.

Decoration: Within the auditorium, as well as throughout the edifice, there should be no employment of trite pseudo-religious or decorative symbolic embellishment. Symbolism as such is not acceptable in these churches although in her writings Mrs Eddy has referred to the "metaphorical" quality of light as expressing the omnipresence of God. It is to be noted that pictorial stained glass was used in The Mother Church in Boston and patterned stained or colored glass has been used in other Christian Science church buildings. It is customary as the only element of superficial decoration to employ one or two selected quotations from the Bible and Mrs Eddy's writings on the walls, generally at the front of the church auditorium; the text for these from Mrs Eddy's writings is prescribed and limited to three specific quotations, which follow:

"Divine Love always has met and always will meet every human need."

MARY BAKER EDDY

"Christianity is again demonstrating the Life that is Truth, and the Truth that is Life."

MARY BAKER EDDY

"Jesus' three days' work in the sepulchre set the seal of eternity on time. He proved Life to be deathless and Love to be the master of hate."

MARY BAKER EDDY

Sunday School Requirements: There should be convenient, but sound-locked, circulation from the narthex to the Sunday School area and, immediately adjacent, a registration desk or registration office which may be combined with or adjacent to an office for the Sunday School superintendent. These should have storage facilities for literature. There should be adequate hanging space for garments outside the classroom area. Class areas will be of size and capacity as indicated by Sunday School enrollment, but these must either be convenient to a central assembly hall (a concept not frequently used because of extravagance in floor area) or these class areas must open with full vision toward the superintendent's platform from which the opening service of the Sunday School is conducted. Individual class instruction can be carried out in a large undivided area, providing suitable acoustical controls are employed to isolate the instructional groups.

The instructional curriculum is such as to require no play areas, sand-boxes or spaces for coloring or similar activities. However, provision should be made for a nursery for children not ready for the formal Sunday School service. This should provide for cribs, nursery equipment and sanitary facilities for infant care. The nursery is a unique facility separate from the Sunday School and has no instructional function.

It is customary to provide a room or rooms convenient to the narthex for committee work meetings. These can combine storage and book-serving facilities with provisions for the receipt and preparation of literaure which will be distributed by outside delivery.

Toilet areas should be provided in convenient locations in addition to those required for the platform area. They should be convenient to the narthex, the Sunday School and nursery areas.

Administrative Facilities: There should be a Board Room with suitable storage for records, and this should be finished in a dignified and formal manner. There is often provided adjacent to this area an office for the clerk of the Board where the church records are maintained; in this area there should be a vault of fireproof construction.

Parking Facilities: Experience indicates that more than usual ratio of parking to seating is required for this religion. One car space for each one-and-one-half seatings is not excessive in many areas.

Reading Rooms: Reading Rooms most often are apart from the main edifice; often they are located in business districts and are of various forms depending upon the local circumstances and program. Frequently they are located in commercial office buildings, although sometimes individual structures are built. These facilities are characterized by quiet dignity of appointments, accurate control of temperature, light and especially a high quality of sound isolation and absorption. Frequently there is provision for private listening to recorded texts or music. Individual reading lights are desirable, and full accessibility to stacks or book storage areas is a basic requirement. The Reading Room is administered by a trained custodian who also is available for the sale of the recommended books and publications. A work area is required for the receipt, assembly and repair of books, and toilet facilities should be provided.

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Computer Technology: *New Tool for Planning*

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In Dallas in 1962, President Phil Will prophesied that "the resources of the earth's surface, the new technology, the muscle and mind of man will be devoted . . . to a better life through a better physical environment." The authors demonstrate how a facet of the new technology —use of automated data-processing equipment and techniques—can complement, but never replace, the architect's creative intuition and mature judgment as he designs that better environment

ARCHITECTS FOR THE PAST SEVERAL YEARS have been going through the folk routine of publicly bolstering their courage to charge the undulating unsafe walls of urban decay. We have cited glories past and proclaimed our disgust with the efforts of our narrower contemporaries toward the creation of existing environments for living. But this is no more than a decadent dance, a rousing of tribal self-confidence, unless we can produce.

If we are honest, we can say that the task is demanding, that we have little specific training for handling it and little to equip ourselves to understand, let alone control, the urban setting. Yet because we understand more than others the qualities which distinguish some buildings and some towns as delightful, we delude ourselves that we are masters of an art that has not been mastered in our century.

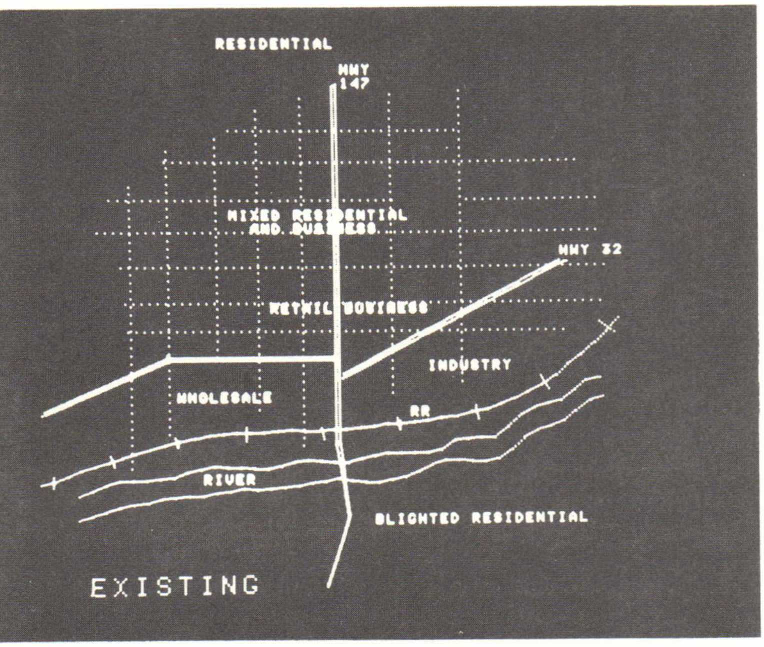
Our houses and our cities are no longer cherished by generations but shed and replaced with a dynamism that only now we are suddenly aware of. The vicissitudes of Georgetown, Capitol Hill and Foggy Bottom in Washington since the turn of the century are dramatic evidence of a cycle that is never still. A society on fast wheels seeks different values than a society on slow wheels; so to firmness, commodity and delight must be added a short walk to the laundromat and a fast trip across town to grandmother's house. Is a common pattern of social objective discernible? Probably not; it is more likely that there are many patterns and that they will have to be found and described before the urban renewal process can fit the society for which it is being designed. The situation is not without precedent: it has always been true that a problem must be stated before it can be solved; else it will solve itself and not necessarily to our liking.

Le Corbusier said to us in 1961 at Philadelphia, "I only believe what I have seen; and to see everything in architecture is a dog's life." This was the most disarmingly pointed comment offered at that convention. Almost buried in an outpouring of romanticism, idealism, innocent ruthlessness, pragmatism, befuddled hopefulness and clever iconoclasm, Corbu's statement shines with the humility of honesty. It speaks for all of us who would claim the role of leadership in remaking our shelter and our cities, and it may be expanded into a simple, common cry of distress: I am a man. I am an architect. I have the skill. I have the intuition. I have the guts. Where do I start?

One way to start, well worn but fruitful, is to take stock of our capabilities, to see how they may be applied and how they may be enhanced.

The Architect's Stock in Trade

The strengths of architecture lie in not one but several distinguishable areas. First among these strengths is the understanding of the facts of building technology. Next is perspective of the growth of technology in parallel with the growth and change of civilization. Even more important is the special skill of eliciting the clear expression of a client's or a community's needs and hopes. Then comes the measured judgment that matches needs and hopes and resources in ordered and thoughtful design. Most important of all is the creative intutition that makes this exercise an art. It is the strength and clarity of his intuition that finally determines an architect's place in the sun.



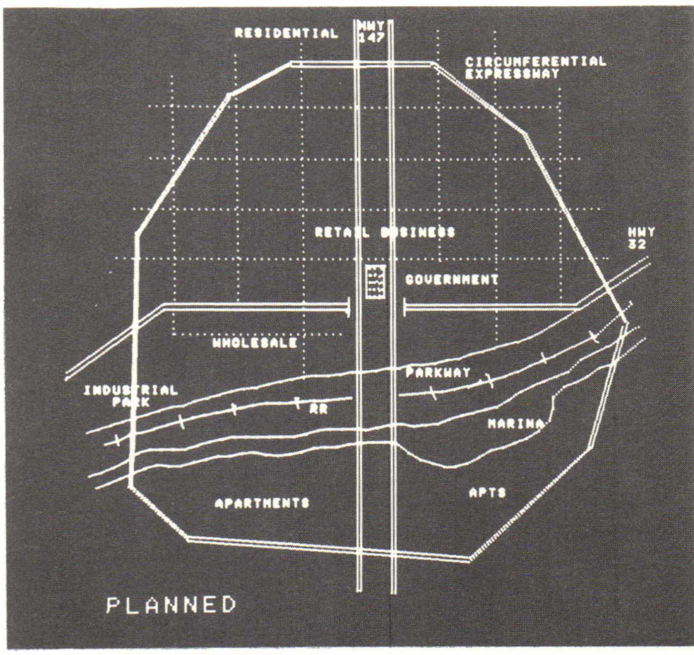
Maps of an urban area, stored in the computer by tracing with a graphic input device or sketching directly on the display scope with a light pen, can be used in land use comparisons, traffic flow simulations, display of population and building conditions

But how far can intuition be pushed? And what toll is taken by the growing task of marshaling more and more facts, understanding not a small and slow-paced social environment but a complex and dynamic one, making judgments so numerous that to relate them all to a common purpose in simultaneity is more than a man can do? The comments of Zevi and Mumford and Chermayeff and Doxiadis, and numerous less-articulate men, in the past several years, all point to the perplexity of finding the individual or the family in our society and making a stimulating ambiance for him in a world whose metastasizing urbanism is fast crowding out the patterns of living that have for centuries been thought ideal.

The facts available to architecture and planning have never before been so plentiful. Technology has never had more to offer. But the whirling, spreading horizon of responsibility has become more than a match for architecture, and we submit that the frustration of trying to comprehend this growth and bring order to it saps the strength of intuition and leaves it wanting where it is needed most, in the creation of solutions after understanding is achieved.

New Tools

Today, while architecture and planning fumble with assertions of leadership which they have not yet demonstrated, science and engineering have found new approaches to handling vast quantities of information in ways which support and stimulate creative thinking. The intricacies of putting men in space demand, for example, a nicer comprehension of the connective relationships among many critical and dynamic factors than does the planning of shelter or the planning of urban environment. Granted that the mechanisms of control in space exploration are simple in comparison with those available to planning in a free society, comprehension on the part of architects and planners is the first great step toward leading society to self-understanding and self-control of its patterns of growth.



The systematic handling of information and the development of new capabilities for active use of great quantities of information in the process of creative or innovative planning and design are striking characteristics of the rapidly increasing sophistication of science and engineering in the last twenty years. These new techniques are heavily dependent on a fast growing electronic computer technology which architects should understand—because here, clearly, are new tools which can extend the traditional strengths of architecture as they have already done for other disciplines.

The territory to be explored is not entirely foreign to architecture. While the process of systems analysis has been exploited and largely claimed by engineers, it is really a formalization of an analytical process which has always been familiar to architects and planners. It is a very useful formalization because it is structured in an orderly way which makes comparison and measurement more possible and more precise. Architects may well find in systems analysis and computer techniques the tools they need to master the complexities of twentieth century practice.

Some Useful Concepts

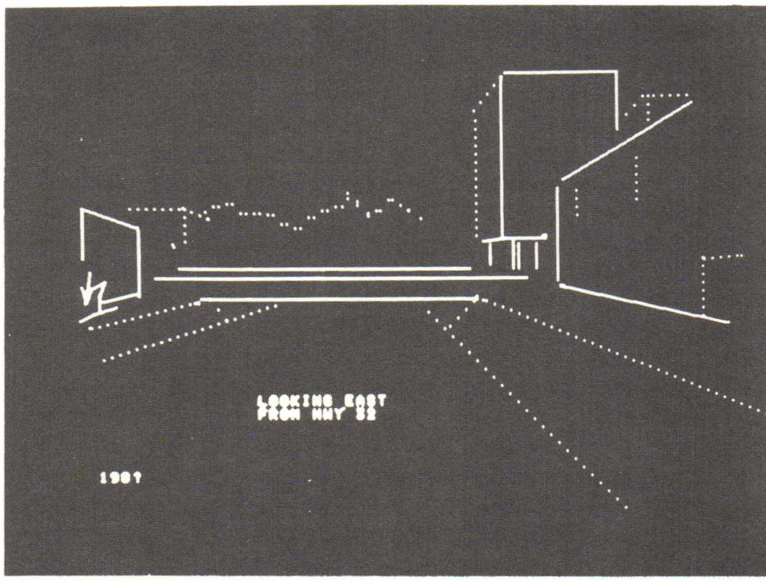
The exploration requires some initial mapping of the notions that will be encountered along the way. Other architects may find other or better definitions of terms than we, but to guide this discussion we ask acceptance for the moment of a series of definitions that we have found useful.

The first important concept to be defined is planning. The word has many uses and connotations. To some it is a loaded word. Thus, such terms as economic planning, family planning, redevelopment planning used as labels can stir strong emotions in men of certain views. Further, the modifiers used with the word tend to suggest isolated endeavors with little common method; the descriptions of estate planning, urban planning and production planning given by, respectively, a banker, an architect and a factory superintendent would not likely be too similar.

Yet a common thread is present. We suggest the following definition to guide the discussions to follow on these pages:

We label as planning the process of allocating available resources in support of anticipated future activities.

Such a mouthful of words must carry some message; suppose we delve further, taking this definition piece by piece. The phrase "in support of . . . activities" suggests that we are concerned not with an abstract work of art—an entity in itself—but with facilities, shelter and organization for social purposes. By "anticipated future" we imply that planning is a predictive operation wherein we use our present knowledge to forecast the shape of things to come. "Resources" include people, as individuals and members of social organizations, and things such as building sites, tools and construction materials. The words "allocating available resources" point up that our resources are not infinite and that choices between alternative ways of committing them are necessary. Finally, by "process" we imply a dynamic rather than a static orientation. The means and ends for planning are in constant flux. The world today is



A computer, programmed to generate perspective displays from site plan and building dimension data, can present the changing vistas of the city as seen in various modes and speeds of travel to aid planners in studying urban form. (This illustration was "drawn" on the computer scope by hand, using a light pen)

not the same as the world yesterday, and the planner must be sensitive to the important differences more than to the sameness.

Another important concept is that of systems. The combination of materials shaped into physical plant and personnel organized into an operating agency, the two serving together for a particular set of activities, we can call a *system.* Any such system is embedded within an environment which provides inputs to and accepts outputs from the system. A hospital is a good example of such a system. Organized groups of medical, paramedical and service personnel function within a specialized physical plant. The hospital system operates within a community environment which provides sick people as inputs and accepts well people as outputs.[1]

This concept of system and environment, common in current engineering technology, seems to us to be very useful for the architect and planner. It focuses attention on the interrelationships between particular organizations of people, their shelter, and the outside world.

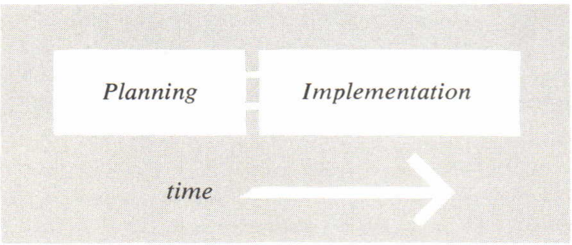
Our description of the hospital as a system may seem arbitrary. Why do we not instead refer to the collection of all hospital facilities in the community as the system? The essential point is that we are not discovering *the* structure of the hospital, or community, but are postulating *a* structure that squares with the facts we have and is convenient for the purpose at hand. We are constructing a conceptual model. Our choice for the extent of the system depends on which parts and relations we want to include and

[1] For more detailed discussion of this concept see Souder, Clark, Elkind and Brown, "Planning for Hospitals: A Systems Approach with Computer-Aided Techniques," American Hospital Association, Chicago, 1963.

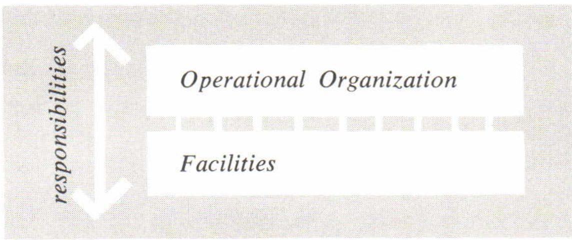
which to exclude from our planning approach. A man designing a street-corner newsstand is free to consider the whole urban complex as the system, but from a purely practical point of view he might better confine himself to kiosk and newsboy as system with delivery trucks, newspapers and passers-by as inputs and outputs. He would only waste his time modeling a larger system over which he could exercise no control.

The Planning Process

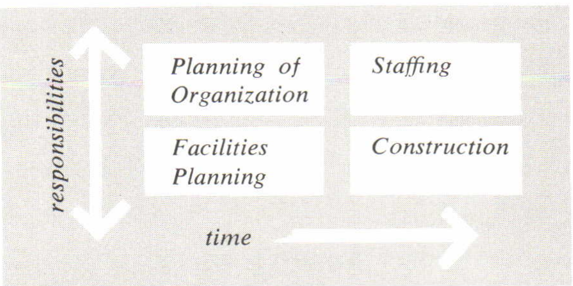
The process of developing a system obviously involves many disciplines and extends over time. Looking along the time dimension we might describe the process in a simple diagram:



Or, looking in another way at the process of developing a system we might suggest a division of areas of responsibility such as this:



One might be tempted to split both ways, creating four areas of effort, and acquiring four specialists, or groups of specialists, like this:



The responsibilities for planning a system are distributed over many disciplines and the execution of those responsibilities would lead to chaos if the final responsibility of coordination were not fixed. It is the acceptance of this coordinating responsibility which gives to architecture the motivation and the right to assert leadership in the world of building.

While the architect is guiding the process to an ultimate design his coordination touches so many other disciplines—engineering, sociology, economics, administration and those for which the system itself is being planned—that the prospect of achieving a true team endeavor, a clear statement and evaluation of many points of view is enhanced by the establishment of a structured framework for the process. The framework may be seen as a model or theoretical projection of a possible system of relationships.

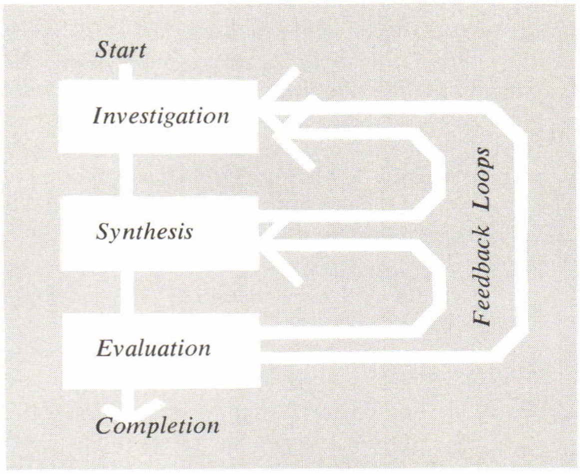
We think of planning as comprising three distinct operations: these three we can call investigation, synthesis and evaluation.

Investigation consists in acquiring and assimilating information on requirements, previous successful solutions, available resources and constraints, such as budgets and site.

Synthesis describes the invention of physical arrangements and operational patterns to satisfy the system requirements.

Evaluation involves choosing between alternative syntheses and assessing the adequacy of a synthesis—that is, deciding, whether the relevant requirements have been satisfied.

Our model of the planning process can be diagrammed like this:



That this model is simplified and idealized should be readily apparent. Planning for one portion of a system may be in the synthesis stage, while for another portion it is still in the investigation stage, and for yet another portion it may already be completed.

The model described here is *iterative,* as is illustrated by the feedback loops. Thus, synthesis may be interrupted for further investigation; evaluation may suggest or lead to another synthesis or further evaluation. Another more subtle feature of the model we suggest is that it is *recursive.* At any point in the process, the complete process may be invoked for the solution of a problem at a different level of detail.

Our model of the planning process implies that yardsticks can be found for assessing the adequacy of solutions and comparing alternative solutions. To some extent this is true, but there are important restrictions. The distinctions between what we can and cannot evaluate quantitatively have an important bearing on our approach to planning.

Systems Involving Architecture

When we talk of measuring something, we really are talking of measuring its properties—perhaps its usefulness or its beauty. Before any measurement can occur, it is necessary to describe the properties to be considered and the kinds of measures to be employed. A set of properties useful to architecture and urban planning may be quite different from the properties of other kinds of systems.

The properties that characterize a system comprising physical environment and people are best clarified, we believe, under three labels: utility, amenity and expression. These are common words with many shades of meaning; for this discussion we define them as follows:

Utility: the capability of the system to provide those services for which it exists. The utility of a hospital is its capability of providing for the functional health care needs of a community.

Amenity: the satisfaction of individual needs of people within the system, apart from its express utilitarian purpose. Comfort, privacy, pleasant lighting and attractive vistas are examples of amenity.

Expression: the fulfillment of its symbolic function in the eyes (and minds) of the community as a whole. The corporate image expressed in a Park Avenue office building, the monumentality of a governmental edifice, the stark simplicity of a discount clothing store—these are symbolic expressions of the systems they house.

Then, having described the properties of concern to the planning process, we must talk about measuring the properties against scales that have been defined and are understood; or we may have to devise some scales that are both understandable and acceptable.

For example, the length of a board is measured by comparing it with a scale graduated in standard units—feet, inches or meters. The temperature in a room we measure with a thermometer, in degrees Fahrenheit. These measures of length and temperature we can call objective measures: they are substantially independent of which of us does the measuring, and with whose scale. Some properties of the systems we are concerned with can be assessed with objective measures; others cannot. These others are matters in which the attitudes and emotions of people are involved, or judgments can be based only on previous experiences rather than any independent objective standard. They require subjective measures.

Because the subjective measures are not as neat and precise as those devised from a well-defined objective standard, they are often scorned as "soft" data. Actually, the subjective measures are simply abstractions of a higher level than the purely objective measures which refer to such observable physical properties as length, temperature and time. Some of these higher level abstractions—words about words—can at least be given operational definitions. Thus we can "define" the amenity property in terms of some things we can measure—travel distances, waiting times, acoustical privacy, etc—that we take to be components of the over-all property.

Our model of the planning process is a simple one which describes the functions of planning in relation to each other in very broad terms. It merely expresses in an orderly way a process which in real life is very complex and, by observation, more often random than ordered.

In much the same way the concepts of systems and properties of systems permit orderly statement of the goals for complex planning problems. As an example, the hospital is typical of very complex problems. Yet if we visualize it as a system, the analysis of its functions and the determination of appropriate planning goals is made clear. One way to do this is to see the hospital as being composed of a group of interrelated subsystems which have their individual responsibilities, methods and standards of operation but a common goal, which is the hospital goal: patient care. Thus we can describe the subsystems of medical care, nursing care, supply, administration and transport.

We can further describe in an orderly way the tasks which each of these subsystems performs and some measures by which we can determine whether they are performed well or poorly. Knowledge of each of these tasks is important to the architect, whether we are planning the individual work site or planning the grand *parti* that makes transport, the movement from site to site in support of patient care, a contribution rather than a hindrance to attaining the patient care quality goal for the hospital.

In the course of investigation we can determine for each task the relative importance of its demand for utility, amenity and expression, and this determination will guide our syntheses and evaluations. This relative importance, of course, is not fixed. Utility may be the dominant property in relation to the task of preparing sterile solutions, while amenity is dominant for the task of admitting patients and expression dominant in receiving the public in the forecourt and the main lobby. In each case the other properties are present and to be measured, but their importances are relatively smaller.

In the same sense we might analyze a telephone substation, a museum, a school or a community, and in fact this is what architects do in a variety of ways, sometimes deliberately and sometimes unconsciously.

A Conceptual Framework for Planning

In moments of enthusiasm we talk of a theory of architecture and planning. But theories are nominally the province of the sciences, and we are dealing more with art than science. About the best we can hope for in our time is the emergence of a somewhat loose and imprecise conceptual framework to describe and to guide the planning process. We submit that the notions discussed above are important, though small, parts of such a framework.

The concepts discussed here and others that are pertinent can lead to hypotheses about the nature of the planning process.[2] One such hypothesis, roughly stated, is that the criteria for expression and amenity, expressible for the most part only in subjective terms, serve largely as constraints on the planning solution;

[2] A number of hypotheses that might be appropriate for a framework of the planning process are developed in Chapt 5, "A Conceptual Framework for Hospital Planning," of Ref 1.

within the limits of those constraints a range of alternatives can be analyzed in an effort to maximize the utility property.

Such a hypothesis might be examined in the light of present reality to determine the areas of practice for which it is valid, to modify and restate it, or to reject it entirely. As other hypotheses in turn are stated and tested, a body of propositions might be built up as a framework of the planning process. This framework would probably not be useful to the intensely creative individuals among us, but should at least be a good pedagogic tool and an instrument for improving communication with our perhaps more scientific-minded fellow men.

The concept of systems and the structured model of the planning process are arbitrary rationalizations of some things which exist. They do not lessen the problem. Indeed they may increase the demands on architecture by demonstrating an increased array of problems to be solved; but they make possible the introduction of techniques which other disciplines use for the solution of very complex problems.

Traditionally the architect or planner seeks out and identifies his problems, describes their relationships in some way such as flow diagrams, and devises some answers to them in terms of plans. By measurement of the quality of plan either objectively, as in the case of area, or subjectively as in the case of scale, he evaluates the plans and accepts or rejects them. Intellectually he visualizes the performance of real-life tasks in these planning projections of his thoughts. In other words, he visualizes a simulation of the activity which would occur if his plans were translated into buildings. He is rarely satisfied with his first result in either of these phases and so he repeats them in a trial and error, or iterative, way until judgment tells him he has found an optimum or at least a satisfactory solution to the set of problems he is dealing with.

Were the architect able to identify his problems in greater depth, to explore and measure their relationships in more positive terms and to simulate the performance of his plans as graphically as he portrays the plans, and more rapidly, several advantages would accrue to the quality of his work. It would be more thorough. It would offer more opportunity for the concentration of his intuitive judgment on those parts of planning which can be judged in no other way. Conceivably it could be faster.

If the planner for a community or the renewal of a community were able to simulate the dynamics of social and economic inputs and outputs in a variety of arrangements of land use and communication and controls, his efforts would be similarly strengthened.

The possibilities for seeking, relating, measuring and simulating the interaction of great numbers of planning considerations, or variables, exist in modern computer technology. Developed, really, for other kinds of planning processes, computer techniques are available and extremely useful to architecture and urban planning. An examination of the kinds of things computers can do and the kinds of things they cannot do may clarify the very distinct roles played by architect and the computing tool in the many-faceted process of community planning.

Meanwhile, in the course of examination, the architect need not presume that he must learn a whole new group of skills in order to use this tool, though some of his juniors in the universities today are learning them. It is quite possible for him to employ the talents of people trained in providing computer service just as he employs any other specialized talent, as structural engineering, which is useful to his purpose.

Computers are sometimes described as giant brains and, as often, as fast morons. Neither description is apt. Looking at the similarities between computers and people is not as fruitful as looking at the differences. The key to effective application of computers is to use them on things they do well but people do poorly—or grudgingly. We attempt, further on, to define complementary roles for people and computers in an approach to planning problems. But first, let us describe what we mean by computers and by computer programs, and what are the main applications, in the present state of the art, where computers can be useful.

The kind of machine we are concerned with here is the general-purpose digital computer. There are other kinds; special-purpose analog computers, for example, are used in engineering to model and study certain physical processes. We refer to the arithmetic and comparison circuits, the storage or memory units, and the input and output devices as the hardware; our special-purpose programs, together with utility programs and translation programs that convert our language into computer language, are often called software.

Input of data and programs to a digital computer and output of results are commonly accomplished by punched cards or paper tape and by typewriters, printers, plotters and oscilloscope displays which are part of the hardware. The modern digital computer operates by executing a sequence of instructions, the program, that has been stored in its memory. Each instruction is only a tiny step—comparison of two symbols or addition of two numbers, for example—but the steps are taken at a rate of many thousand per second. If these individual instructions had to be entered into the computer one by one in the computer's language, the process would not be feasible except for the most repetitive operations. To overcome this limitation, computer users have developed translation programs that accept problem descriptions in the languages of algebra, symbolic logic and even everyday business terms. These translation programs and the source languages they can handle vary widely, depending on the size and make of hardware, the kinds of problems to be handled and the philosophy of the user.

If one believes all the news stories, he must conclude that computers can now do nearly anything! Applications range from processing income tax returns to computing satellite trajectories, from operating machine-tools to playing chess. The newspaper accounts often end in fruitless speculations: Can computers think? Will computers replace, or dominate people? In the general sense these questions are meaningless; in specific instances computers *do* perform operations that may be described as thinking, and computers *are* replacing people in certain tasks.

A brief survey of the kinds of computer applications should help us to see where computers can be useful in architecture and planning in contrast to their usefulness for other purposes.

Business payroll accounting is a good example of repetitive clerical work. The early punch card machines came into use because they could perform most of the necessary operations faster and more reliably than clerks. Modern digital computers simply perform the same operations faster.

Numerical computations more difficult than the bookkeeper's sums were the real impetus for development of high-speed digital computers in the 1950's. Many scientific and engineering calculations which can be done in seconds or minutes on a modern computer were just not feasible before with desk calculator and sliderule.

Both of these clerical and computational uses of computers are ordinarily handled as batch processes by computer service groups. The input data and programs developed by the man with the problem are usually transferred to punched cards by clerical personnel. Computer operators copy the cards from batches of jobs onto magnetic tapes which serve as inputs and outputs for the large-scale computers. The results from the computer run are translated back into punched cards or printed pages of answers which are delivered back to the man with the problem. This mode of operation is very efficient from the standpoint of machine utilization. Unfortunately, several days may elapse before the man with the problem gets answers (or diagnostic clues about program errors).

The time-lag between problems statement and results and the buffer created by key-punch and computer operators are intolerable barriers to some computer applications. An alternative approach to computer use is best described as on-line processing. One example of on-line operation is process monitoring and control which might be described as *machine-machine communication.* A computer, tied directly to the switches, valves and indicators of a process, say a refinery unit, monitors the operation. If a part of the process goes out of operating limits, or if a change is commanded by human intervention, the computer calculates new settings, initiates the control actions and continues to monitor the resulting operation. The key point is feedback—communication between the computer and the process being controlled.

An example of a digital computer facility especially designed for close communication between man and computer. Emphasis in the kind of computer utilization described here is on man-machine communication—interaction between humans and computers

The ability to perform rapid calculations and logical manipulations, as in clerical and numerical computation, can be useful in planning. The on-line operation concept used in process control is even more valuable. Both of these capabilities are embraced in a kind of application we can call information processing and communication. The emphasis here is on *man-machine communication*—interaction between humans and computers holding stores of data and coded experience. Licklider [3] has described the underlying concept, which he calls man-computer symbiosis, of computers used to complement human capabilities.

Military command and control systems such as that for air defense are examples of on-line man-computer interaction wherein the computer system serves to communicate between control consoles and radar equipment, to calculate positions and possible deployment of resources, and to display conditions and action alternatives for human decision. Airline reservation systems utilize central computers linked to many remote consoles to provide rapid communication of ticketing, seat allocations and schedules. Computer-based hospital communication systems [4, 5] offer a way of streamlining clerical paperwork, and of improving the quality of and access to patients' medical information. Man-machine interaction is central to the use of computers as teaching machines. On-line computation and preparation of computer programs by the man with the problem, rather than by indirect batch processing, is common now on small-scale computers, and is being implemented on large computers by multi-user time-sharing.

The idea of a continuing conversation between man and computer as the man develops his thoughts and states and solves his problems is vastly more appealing than the indirect batch-process computer service. We suggest that it is the only kind of computer aid that makes much sense in the creative aspects of architecture and planning.

To achieve this ideal of computer-aided planning we must delineate the roles to be taken by human planners and by computer. For our near-future planning tasks the division of labors is clear. Those tasks requiring a selection of goals, formulation of hypotheses, determination of consequences and handling of unlikely eventualities should be retained by humans; [6] those tasks which involve rapid and accurate storage or retrieval of large quantities of data, accurate and fast calculations, and tedious manipulations should be relegated to a computer.[7] In the investigative phase of planning, the human may formulate a series of questions about the actual performance of existing facilities and direct the computer to search through stored data and then display the answers. In synthesis the planners may describe their creative formulations directly to the computer to be stored for future manipulation, or may use computer programs to modify and combine previously stored schemes. During the course of evaluation the planners may cause the computer to generate samples of anticipated events and with these to simulate and measure the performance of the system being planned. Some examples may help to make this discussion more concrete. Let us first consider urban planning on a broad scale, then some illustrations of one approach to computer-aided planning on problems of smaller scope.

The real goal of the urban planner is to gain an overview of the entire community as it is and as it might be in a variety of circumstances. His ideal tool, perhaps, would be a working model whose parts are interchangeable so that he might assemble them in any one of the many possible ways, press a button and see the community come to life. Then, if there were some built-in mechanisms for comparing community performance in one setting with that in another he could calculate objective measures of worth and apply his intuitional values to the subjective ones. He could not only visualize more readily the growth and replacement potentials of his grand design but could see how the renewal process may be used most effectively to anticipate the needs of shifting urban demand.

Modern computer technology makes just such a model possible. Let us cite a few instances here. Computer techniques are being used to maintain up-to-date records of landholding and land use, census data and other information about the urban scene. The more imaginative applications provide for printing these data for easy transfer to maps and other graphic formats.[8] Traffic flows are being simulated by computer.[9]

Now, to aid the urban planner in gaining his overview of the entire community the available data on population, on local and regional traffic and communication, on economic, social and physical resources, on growth potential and on requirements

[3] Licklider, J. C. R., "Man-Computer Symbiosis," *IRE Transactions on Human Factors in Electronics*, Vol HFE-1, No 1, March 1960

[4] Roach, C. J., "Patient Data Processing—Key to Hospital Automation," *Am J Medical Electronics*, Vol I, p 51, 1962

[5] Baruch, J. J., "Hospital Research and Administration with a Digital Computer," *Circulation Research*, September 1962, Vol XI, No 3, Part 2

[6] We do not imply that computers cannot be programmed to perform some of these more abstract and elusive operations. Indeed they can, as workers in the field of artificial intelligence have shown. Our contention is that, for the present at least, these operations can be done most effectively by the humans in planning applications.

[7] Licklider, J. C. R. and W. E. Clark, "On-line Man-computer Communication," Proc 1962 Spring Joint Computer Conference, San Francisco, May 1-3, 1962, Vol 21

[8] As an example, the programs developed by Professor E. M. Horwood and his staff at the University of Washington allow rapid analysis and graphic format outputs of census data, etc, using commonly available computer equipment. Their work has been presented in a series of short courses at universities across the country.

[9] One interesting study is reported in Stack, M. C., "Computer Simulation of Street Traffic," National Bureau of Standards Technical Note 119, US Dept of Commerce, Office of Technical Services, Washington, DC.

for community services could all be stored in computer memory. Then, in the investigation phase of planning this information could be sorted and compared in any desired number of ways or, perhaps more interestingly, modified to generate hypothetical data reflecting new concepts of urban living.

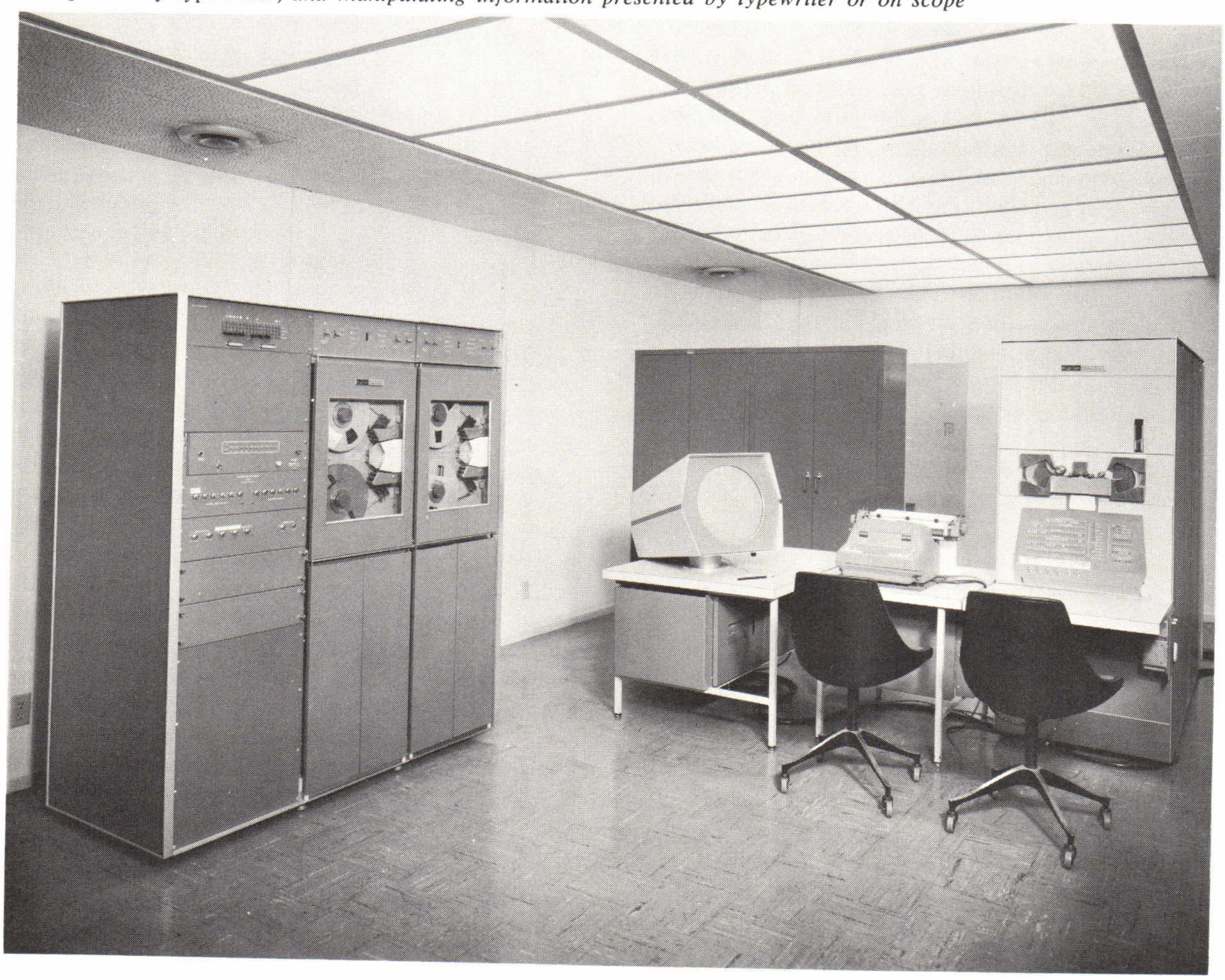
In the second phase of planning, the synthesis of plans and pieces of plans could be explored graphically, with a variety of planning arrangements displayed on the computer oscilloscope. The daily activities of the community could then be simulated in these patterns, and the pattern performance could be evaluated in terms of cost to the individual and cost to the community as a whole. The community's activities could be simulated at today's population level and tomorrow's. Its land-use patterns could be examined to optimize their capability for expanding or contracting demand and their effect on total movement. Radically different patterns could be explored to determine whether there is long-range gain in them which might be achieved with the methods (or new methods) available to urban renewal. In short, imagination could be given free play with some assurance to the planner and to the community that real-life values are employed in measuring its product and that its predictions are demonstrable and measurable.

We noted earlier that the planning process, as we see it, is iterative and recursive, and that persons of many disciplines are involved in planning a single system. Techniques that can improve communication between these people and shorten the time required to explore many (perhaps dead-end) avenues should then improve the planning endeavor. Our suggestion is that the on-line use of computers, man-machine interaction, is such a technique.

Consider a hospital planning group convened at the console of a computer.[10] They can retrieve and display data on the workings of existing, comparable hospitals as graphs, charts and diagrams on the computer oscilloscope. These graphs they can modify as their experience, intuition and expectations for the proposed hospital dictate. The modified graphs can be used to simulate the anticipated goings-on in the proposed hospital. The planning group can also describe to the computer, by drawing on the oscilloscope face with a light-pen, and display for their own visualization and discussion several possible ar-

[10] An extended discussion of computer-aided planning with a variety of examples and description of a prototype program system, Coplanner, is presented in Chapters 9 and 10 and Appendix A of Ref 1.

In this facility, a small group of planners can work at the console, entering instructions and queries by typewriter, and manipulating information presented by typewriter or on scope



rangements of the major building elements and departments.[11]

The simulated workings of the hospital, say in terms of interdepartmental movements of people, supplies and information, can be tested against the alternative plan arrangements and quantifiable "costs" such as the time spent in interdepartmental movements by personnel of various categories can be computed and displayed. Assessment of these may suggest still different physical arrangements and/or alternative policies of job assignment. The effects of different locations for elevators and other conveyances can also be tested by such a trial and error process.

We must reiterate our belief that such techniques do not lessen the need for planning skill and experience, but rather allow the planners to make more effective use of their skills and to visualize more easily the problems and suggestions of their colleagues.

There remain the questions of how the architect and planner avail themselves of these techniques and how costly they may be. In the current state of the art there are admittedly not many architects and planners who have acquired the skills that enable them to use computer techniques without specialist help. Also, because no one problem is sufficiently demanding of computer time to support the cost of the equipment, it is unlikely that the average architect or the small planning agency will acquire its own equipment and programming staff. Services and equipment are available from a number of consulting firms and in a number of universities and university related research institutions. Display oscilloscopes and other hardware for on-line operation are developed but are not yet in really widespread use, partly, we feel, because those who could use them to greatest advantage are not yet computer-minded.

Costs are related directly to the demands on personnel and equipment which the problems present. In our own, limited experience cost has seemed to be a concern, perhaps because of the newness of the techniques and their output, but not an obstacle. Initial costs for developing program systems appropriate for typical problems will be higher than the costs of using those programs, or modifications of them, for succeeding applications of the same type. Because the logic of planning is the same for almost all situations the program preparation for a small problem will not be substantially less work than that for a large problem, which suggests that the large problems be attacked first or that there be supported research in the development of programs in order that the techniques may be made generally available at reasonable cost. The situation is not unlike that of the development of new products or construction techniques.

[11] Another, somewhat similar approach to presentation of graphic information to a computer for manipulation has been developed by Sutherland, and extended by others, of MIT; see Sutherland, I. E., "Sketchpad: A Man-Machine Graphical Communication System," Proceedings of 1963 Spring Joint Computer Conference, May 21-23, 1963, Detroit.

The Outlook

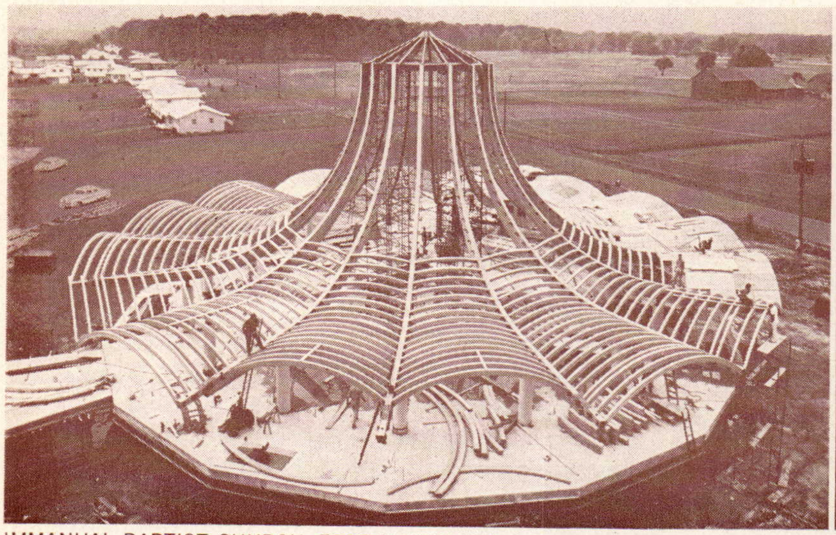
One cannot set himself up as a wise man without being wise—unless he is without conscience or is willing to endure constant indigestion. Conversely, no experience is more rewarding than teaching or sharing truth. There is security and source for courage in being well-informed which gives able men the confidence to step forward and lead. If we rebel against an eclecticism which we think has screened America from architecture rather than educating her in her cultural heritage; if we rebel, too, against the cool rigidity of the international style, do we then turn simply to a newer, romantic humanism and drift inevitably to the personal excesses which mark the end of another cycle? Architecture changes with time and the architect; so let the architect impose on himself the discipline of knowing the stuff he deals with and then applying order to his dealings. Let his invaluable intuition be the extra, special understanding of man's need which carries his work beyond the plain of adequacy to the plateau, even the mountain of art.

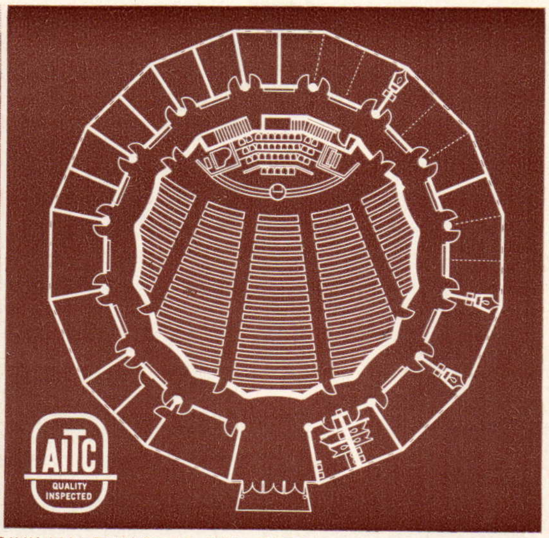
Such achievement, we suggest, is not to be attained with the means historically at our disposal. We no longer have the time to use those means exhaustively on even very simple problems, let alone problems of restless, shifting complexity. The added tools which we describe here do not change the definition of our strengths but only the capacity and durability of our strengths. We propose to use these new tools not in a mechanistic architecture but in a searching architecture, particularly in the architecture of cities. Surely, for the architect, the capability to see, then to comprehend, then to manipulate the great array of variables which planning deals with, and to deal with them at a pace and depth of his choice, must free much of his energy and intuition for the ultimate goal. And just as surely, these capabilities must demonstrate to our clients the thoroughness of our investigations, syntheses and evaluations, so that they gain understanding and confidence in what we do and respect the art which is greater than the sum of the facts.

Historically we have used simple tools willingly —literature, handbooks, catalogues, modular drafting, even slide rules and calculators. All of them have been contributive and subordinate to thought. This relationship between tools and thought must always prevail, though its intimacy will grow as the tools become more quickly responsive to the thought process. There is no reason to fear that man will be overtaken by his own inventiveness. On the contrary, there is reason to fear that unless man makes full use of his inventiveness, he will spend his life in the chaos of environmental happenstance.

Alvar Aalto is quoted by Emerson Goble as saying, "It is not the words that count, but the lines." Only very few men have had the great understanding of their fellow men and the great articulateness to make lines that count.

The very great in history may always make lines without need for tools. Certainly tools will not make great men but they can enhance the strengths of *all* men, and we dare not ignore them. ◀





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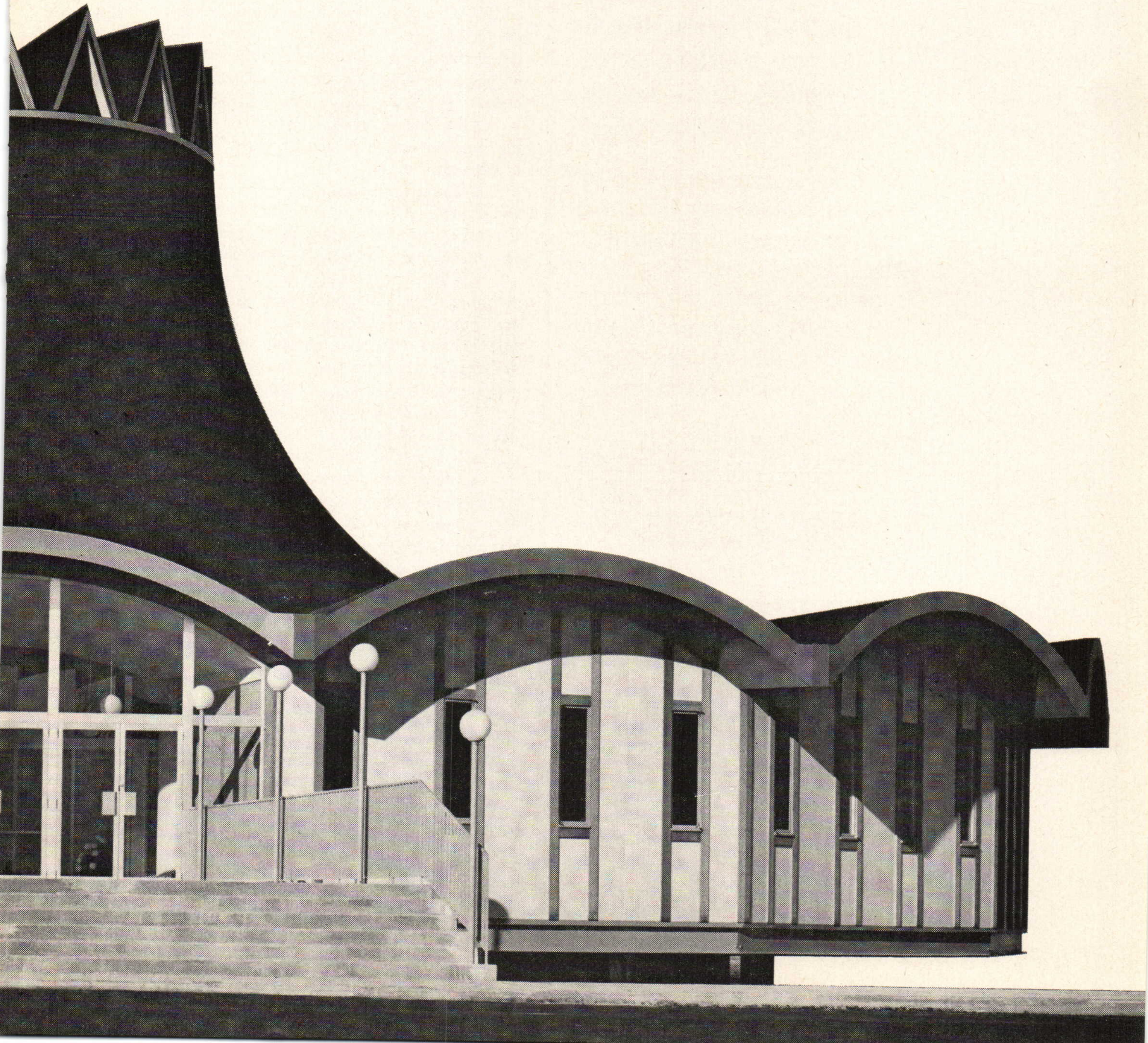


Committee Reports

Housing for the Aging

This Committee has as its objectives the investigation and coordination of planning principles and techniques for the design of housing for elderly citizens, including their total living environment; the distribution of this information to the Institute membership; and collaboration with public agencies and private organizations active in this field.

In pursuing these objectives, the Committee has in progress research into such technical design tools as specialized plumbing equipment, door sizes and hardware, safety devices of all kinds, room layout standards and general environment requirements.

Several comprehensive articles have been published in the *AIA Journal*, reprints sent to interested governmental agencies and private associations, and additional articles are in preparation on financing, sheltered care buildings and communal facilities. After publication of these articles, the Committee proposes to republish the complete series in handbook form as a guide to this field of practice.

Also under investigation is the application of the comprehensive services concept to this field of architectural practice.

Committee representatives have maintained active contacts with the National Council on the Aging, the American Association of Homes for the Aging and the Housing and Home Finance Agency.

An important conference on ways and means for improving design standards in this field was recently held at the Octagon under the sponsorship of HHFA and the chairmanship of Sidney Spector, assistant to Dr Raymond Weaver. The Institute was represented by George Kassabaum of this Committee, Francis D. Lethbridge, Chairman of the Committee on Residential Architecture, Henry D. Whitney, Chairman of the Committee on Public Housing Administration and Morris Ketchum Jr, FAIA, Chairman of the Commission on Architectural Design. One important result of the meeting was a common agreement on productive collaboration between the Institute and governmental agencies concerned with housing for the aging.

JOSEPH DOUGLAS WEISS AIA, *Chairman*

Religious Buildings

The Religious Buildings Committee has the responsibility to provide professional leadership in the study of planning ecclesiastical facilities including the "total religious environment." It also must provide organizational liaison at national and regional levels in matters pertaining to religious architecture.

Membership of the Committee consists of seven regular members, including the chairman and six corresponding members. Two meetings of the Committee are held each year, plus participation by the chairman in the annual meeting of all Institute chair-men at the Octagon, the annual Conference of the Church Architectural Guild and other noteworthy national conferences devoted to religious architecture.

The Committee has interpreted its mandate from the Institute for study of the total religious environment to take the leadership in a research and awards program devoted to investigation of religious needs in the contemporary society and thus pinpointing through an awards program exemplary religious architecture satisfying these needs. It is also involved in drafting a series of planning guides relating to historical background and liturgical requirements of major religious faiths in this country. These guides currently are being published in serial form in the *AIA Journal* and eventually may be collected in book form.

Future activities of the Committee include research into ways for making useful church facilities throughout the week instead of mainly on Sunday, expanded services in the religious architectural field, methods for improving communications between the architect and his church building committees, and adequate response to a growing number of inquiries on religious architectural matters directed to the Institute.

K. E. RICHARDSON AIA, *Chairman*

Building Codes and Disaster Studies

Committee members have represented the AIA on and maintained liaison with the following organizations:

- Building Officials Conference of America (BOCA)
- International Conference of Building Officials (ICBO)
- Southern Building Code Congress (SBCC)
- American Standards Associations—Construction Standards Board
- Building Research Institute—Planning Committee on Fire Protection of Buildings and Safety to Life
- National Academy of Sciences—National Research Council—Subcommittee on Protective Structures of the Advisory Committee on Civil Defense
- National Fire Protection Association—Safety to Life Committee and Heights and Areas Committee
- National Safety Council—Technical Committee of the Home Conference

The Committee was instrumental in arranging a meeting at the Octagon August 10, 1963, with representatives of the major national building code organizations and of the Department of Defense, Office of Civil Defense, to discuss mutual problems with respect to inclusion of building code provisions for protective construction and particularly fallout shelters in buildings. Another such meeting is scheduled in November.

In addition, the Committee authored a Technical Reference Guide on "Snow, Sleet and Blizzards" in the *AIA Journal* and is preparing another on "Lighting."

RALPH O. MOTT AIA, *Chairman*

BOYS CLUB UTILIZES STAINLESS

STEEL FOR FUNCTION AND DESIGN

The Robert R. McCormick Chicago Boys Club, one of 17 Chicago Boys Clubs serving more than 17,000 youths in the metropolitan area, is a distinctive structure. A contributing reason is that stainless steel has been used to meet both functional and aesthetic requirements of an exterior sunshade.

Designed by Architects Perkins & Will, Chicago, the sunshade consists of groups of vertical, Z-shaped louvers of stainless steel separated by alternate vertical panels of blue porcelain enamel. These elements begin above the first floor and extend above the flat roof to serve as a shield for roof-top activities.

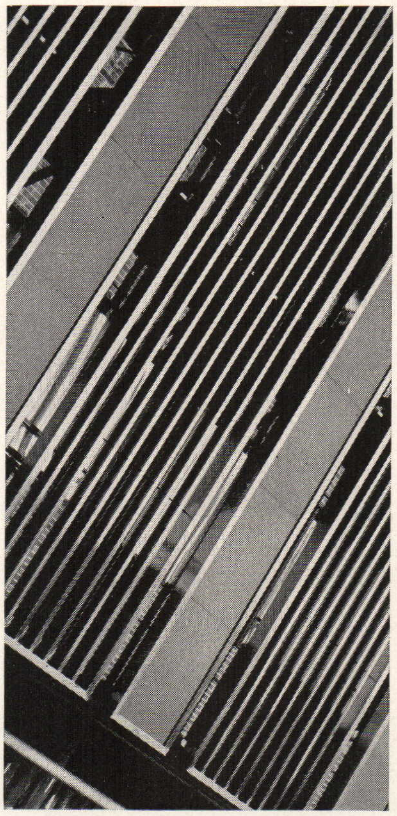
Design details

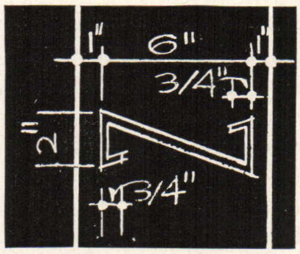
The formed Z-shaped vertical louvers are of 14 gage stainless steel, spaced 9 inches on center, with 8 louvers in each $6^1/_2$-foot-wide grouping. Height of sunshade, extending $4^1/_2$ feet from building face, is $32^1/_2$ feet. Framing of the louvers, as well as the porcelain enamel, is also in 14-gage stainless.

* * *

Armco is a leading producer of stainless steel sheets, strip, bar and wire in a wide range of types and finishes for architectural applications. For more information, write for the book "Armco Stainless Steels in Architecture." Also ask for data on Armco Enameling Iron, the "world's standard" material for porcelain enameling. **Armco Division, Armco Steel Corporation, Dept. A-3583, P. O. Box 600, Middletown, Ohio.**

RIGHT: Stainless steel sunshade extension also serves as a privacy fence for roof-top activities.





Blueprint extract shows cross-section of "Z" panels.

LEFT: Close-up emphasizes pattern of stainless steel "Z" louvers and porcelain enamel alternates.

Photographs by Hedrich-Blessing, Chicago

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News

Architect Heads Peruvian Government

Peruvian President Fernando Belaúnde Terry is a US-educated architect and urban planner, whose son is presently studying architecture at his father's alma mater, the University of Texas.

Most of the President's schooling was in Peru, but upon the political exile of his father—Rafael Belaúnde, himself a vigorous public figure—he continued in Paris at the Ecole de Electricité et Mecanique Industrielles. Later he studied at the University of Miami, where his father was a onetime professor, and at Texas, obtaining his architectural degree in 1935.

Mr Belaúnde returned to Peru a year later to begin his professional career, founding the magazine *El Arquitecto Peruano,* of which he is still a director. He was instrumental in creating the Department of Architecture in the National University of Engineering and served as dean from 1948-60. He is recognized as a pioneer in housing development and popular recreation programs in Peru.

The President began his political activity in 1944 when he was elected Federal Deputy from Lima. In that post he authored several bills for social-economic development, especially those related to the establishment of the National Housing Corporation. He personally drew up plans and supervised the building of major low-cost housing projects.

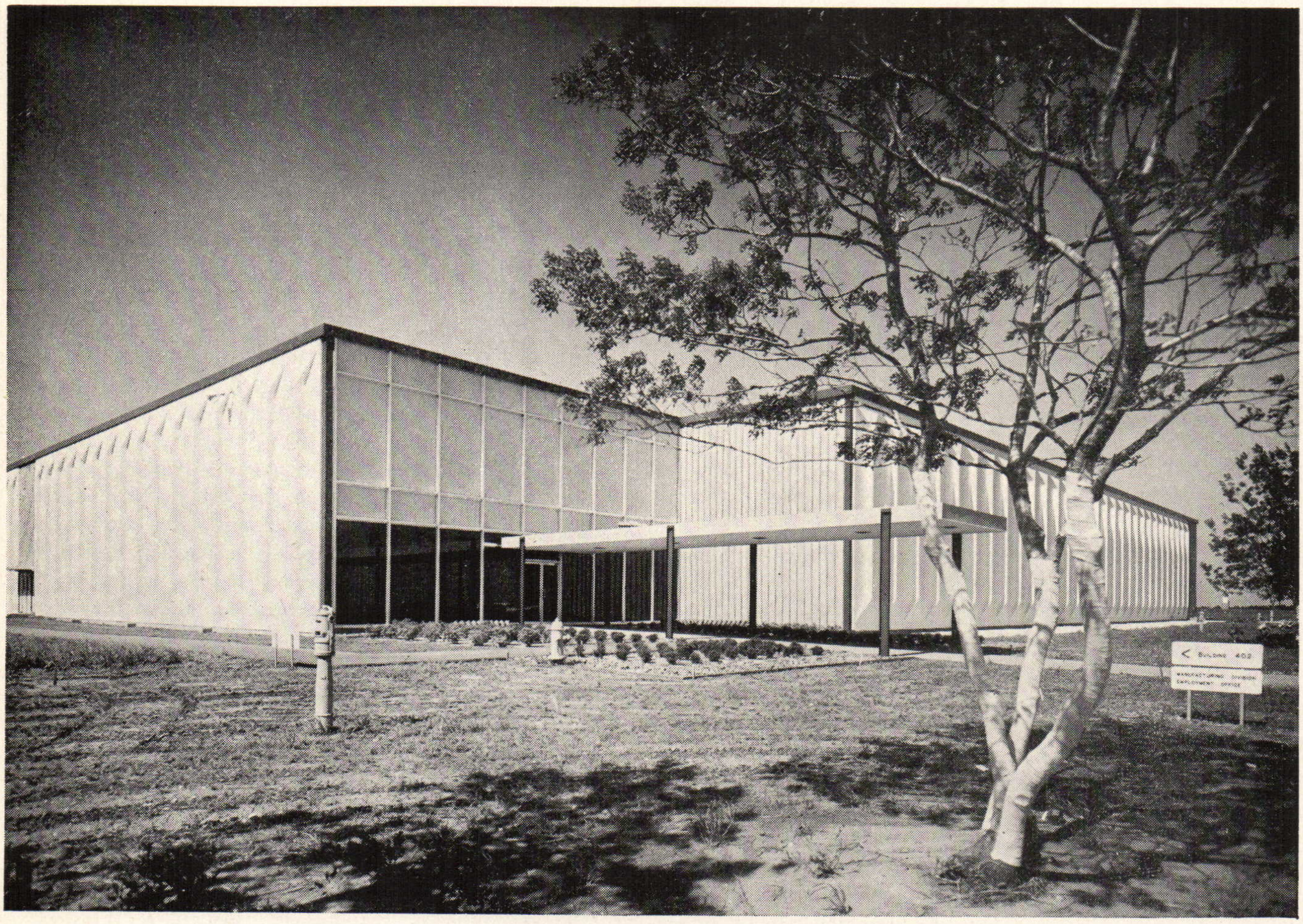
Mr Belaúnde founded the Popular Action Party in 1956 and was defeated in his race for the presidency by a narrow margin by Dr Manuel Prado. Last June's election found him the victor, and he assumed office the following month.

The basic tenets of his thinking are found in his book, "La Conquista del Perú por los Peruanos," (the Conquest of Peru by the Peruvians) based on the geography, history and sociology of the country.

Exhibition at Octagon

"Historic Annapolis," which the Smithsonian Institution currently is circulating, will be shown at the Octagon October 17-November 10. The thirteen panels will feature photographs of newspaper clippings, maps and prints tracing the historical and architectural development of Annapolis from the late seventeenth century to the present day.

Photographs of extant city residences, state buildings and churches by Marion Warren highlight the exceptionally fine quality of stone masonry and wood carving. Like the Palladian-style eighteenth century English country houses, the distinguished city houses of Annapolis (1760-1775) were built on the five-part plan.



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Precast White Concrete Curtain Walls...

During construction of a new Collins Radio manufacturing plant in Richardson, Texas, the builders put up 162 square feet of exterior and interior walls with every swing of the crane. How? By using pre-cast, contoured white concrete curtain wall panels. Each panel was 6 feet wide by 27 feet high and was made of Trinity White and white marble aggregate.

Precast white concrete curtain walls gave the designers these four advantages—One—a building of startling beauty. Two—speedy, economical construction. Three—a maintenance-free exterior. Four—a building simple to alter as plant expansion is needed. Additional panels can be produced at any time from the original molds.

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Allied Arts

Creative Island

WOLF VON ECKARDT, HON AIA

There isn't much to do on Monhegan. That's why everyone is so busy.

Some people, I am told, set out on the hour-and-a-quarter boat ride to spend their vacation on this beautiful island off the coast of Maine, take one look around, find no pizza bars, no golf courses, no hootenannies, no automobiles, not even electric lights (save in two or three houses which put up with noisily puttering generators) and line up for the next boat back to civilization.

Others came just for a look and have come back summer after summer for decades. They found on these wild rocks, on the ambling trails through the island's woods, in the non-stop drama of sea and sky a comfort no expensive resort can offer—serenity.

The two-dozen or so fishermen who live on Monhegan all year have hard and busy lives, I suppose. But they, too, are aware of this unique quality. They are, thank Heaven, in no hurry for progress. In the twenty years since our last visit, there had been little change. Hurricanes had swept two shipwrecks onto the rocks of Lobster Cove and Ida Proper had died. She was a writer and painter and had served us tea and unforgettable marmalade.

Even the most casual summer guests are immediately caught up in the nature of Monhegan, which is Nature with a capital N and includes the lobster traps and kerosene lamps and which transports you beyond yourself. "It was beautiful again, wasn't it," they'd say to a stranger as they join the small crowd in front of the postoffice, waiting until the mail is sorted. And the stranger would know they meant last night's sunset.

They'd start out in pairs, but when they reach a particularly beautiful spot on the cliffs, they would matter-of-factly separate and sit some distance apart to enjoy serenity in solitude. Some of them then paint and some scribble, a sonnet, perhaps, or a letter. Some sing or compose. Or a girl might strum a guitar on the rocks, her melody counterpointed by the screeching of the seagulls. Some just sit.

And after a while they'd walk back for supper, hand-in-hand, perhaps, if they are couples, but all of them smiling unwearied smiles that last beyond Labor Day.

The regulars come as early as April and seek not recreation but creation in art. They don't walk around much, except to meet the boat occasionally or to shop and chat in the General Store. The serenity of Monhegan is precious to them. For here they can work, as they cannot work in New York or in their college art departments, free from the pressure "to find themselves," to develop an "individual style" and to be forever "saying something," which the art of our time imposes on the artist.

There are quite a few professional artists on Monhegan but it is not an "art colony," like Provincetown, say, or Carmel or Taos. That would be the winter's chase of dubious values all over again, a quest not for art but for the aura of art which titillates the tourists, critics and sophisticates.

You have to leave your labels on the mainland as you visit the artists of Monhegan. There aren't enough labels to cover them, anyway. Philip Shumaker, for instance, paints the island's seascape in the romantically realistic manner of a Winslow Homer, with a skill and intensity that is rare these days. Joe DeMartini's very strong, often haunting canvases have touches of Picasso's effervescence and Matisse's bold simplicity, but they express a kind of stark, declaratory poetry that reminds me of Bert Brecht. Frances Schafer does a very spontaneous, bold calligraphy in watercolor and black ink which has the power of capturing the wild richness of Monhegan, though it is decidedly abstract. Reuben Tam abstracts the island even more but it is there, rendered with delicate craftsmanship.

A particular delight are the metal sculptures of Herbert Kallem. Some of his work is composed and welded of junk metal, machine parts and the like. But the majority of the pieces I saw are wrinkled and crumpled of thin copper sheets worked over with a blowtorch. In both techniques, Kallem creates utterly charming, whimsical human figures which combine the esoteric symbolic qualities of a Paul Klee with the earthly satire of a Daumier. Architects might well note this New York sculptor whose work could give real enchantment to architectural space.

A stroll through the workshops of Monhegan, in short, is an altogether different experience from a walk through most of our fashionable galleries. Monhegan I found exhilarating. The perpetual avant-garism which substitutes stunts for honest search and narcissistic introspection for meaning, I find depressing.

There must be dozens of such places in our land and hundreds such artists who seek not publicity but creativity. And that is very good to know. ◀

Editor's Page *Cont'd*

appeared in the "green spaces," utilities broke down, filth accumulated in the corridors and staircases, and blocks came under the control of gangs. To be sure, much has been done by now to clean up this situation. But the lesson is obvious—the people must be housed in the type of housing they are accustomed to, and that they can afford.

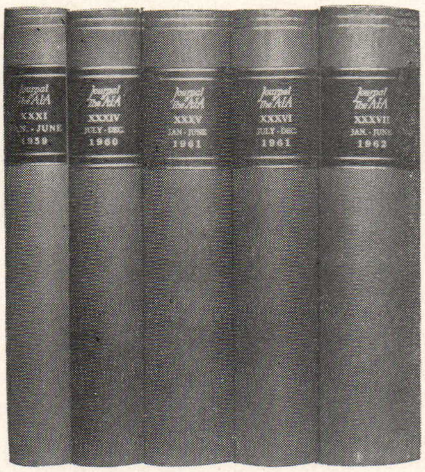
I said above that these communities are not as bad as they sound. This is why: These homeowners take a great deal of pride in their houses. They got them the hard way, and even after they reach a point where they could afford to move to a better neighborhood, they stick. Most of the *barriadas* have very strong and active community associations, which grew from the initial group which organized to create the village. They pass on new applicants, stake out new land, set up local regulations much as a legally-authorized government would. Although the *favelas,* or *barriadas,* have a bad name as centers of vice and crime in the cities at large, the individual owners and the community associations fight this "false" image and try to control and police their own sector.

But the most amazing thing about them is the *sheer achievement* of housing tens of thousands of families in a few months, in a few years. No government, no "authority," no private investor, could accomplish what simple, unskilled, desperately poor men have achieved. They have built entire cities, planned and built by their own hands—poorly planned and primitively built by our standards, but entirely adequate by theirs, and better than anything they had known before. "Socially and quantitatively, even if not architecturally, the *barriadas* are, undoubtedly, the most effective solution yet offered to the problem of urbanization in Peru."

Where does the architect come in? Surely the answer is obvious. The architect cannot back away from it. It would seem that the proper housing of hundreds of thousands of people is perhaps the most important part of our great self-appointed responsibility for man's environment. These people have strong backs and great will to *do.* They need technical guidance, instruction, tools and improved plans for certain building types with which they are familiar and which they need, and which can be built by their techniques. The governments of the various countries are doing some things to help—they need guidance too. "Self-help" has accomplished great things in South America. It could accomplish it so very much better if some one just showed them how.

I have traveled quite a way from Dos Passos' book. I must get back to it on the bus tonight and read about Brasilia. I'm afraid the dusty wastes of that half-born capital and the thought of the vast sums and resources expended upon it will seem barren and lifeless after having traveled through a *favela.*

Jim



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