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CONTEMPORARY DESIGN PHILOSOPHY  
IN AMERICAN ARCHITECTURE

by

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## CHAPTER I

### INTRODUCTION: THE MODERN MOVEMENT

Since the war, critics of the modern movement have contributed many articles and books pertaining to the status of contemporary design philosophy in American architecture. There have been almost as many opinions on the subject as there have been articles. This report will consist of an examination and evaluation of current American architectural thought by means of an investigation into its evolution and cultural heritage and a consideration of its functional and aesthetic qualities both now and in the future. It will cover the direction architecture is taking through insight into the work and philosophy of its exponents and the opinions of its critics.

Prior to examining current trends and opinions, a look at the modern movement's origins and developmental history to the present time will be necessary to bring to light our present-day situation.

According to Stephen A. Kliment, it is time to agree on the stylistic principles of the modern movement and to proceed to the finer points. What our architectural forebearers enjoyed and what we at the moment lack is the leisurely but purposeful environment of a new era of classicism. By classicism is meant a series of conditions in which a building will be judged not on the basis of a style, but on the basis of the execution of its style; its period in history being of no significance whatever. For modern architecture to evolve into a new classicism,

there must be general acceptance of its principles and of its visual and emotional properties. It is in the nature of classicism to require a common principle to enforce on architecture a discipline within which it can mature. For the first time since the Middle Ages, we have an original, unhistoric architecture derived from materials, such as steel, aluminum, reinforced concrete, and plastics, hitherto unused in building, and using structural processes in keeping with these materials. The first point of discipline is the need to subjugate to form, the enormous degree of variety possible from the new materials and processes at our disposal. The form can then be further developed and refined. And by disciplining and refining the new architecture as a nation, diversifying influences defying classicism can be offset and this work shown to the maximum number of people at its latest and best.<sup>1</sup>

#### Prior to the Chicago School

Throughout the history of architecture, there have been periods of fragmentation and periods of continuity. In Piranesi's prophetic etchings of 1745, Baroque harmonies of subordination, scale, climax, and release are fragmented and exploded into a vast new world of violence. Vast scale, the smallness of the individual, and violent continuity are its

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<sup>1</sup>Stephen A. Kliment, "Classicism in Architecture," Progressive Architecture, December 1958, 39:102-3, 186, 188, 192, 198, 200, 202, 204, 206.

themes. In the later eighteenth century, two fragmentation movements of the Baroque developed. Romantic-Classicism projects of Ledoux typify the impatient revolutionary search for harsh, pure, geometric order alone. Marie Antoinette's Hameau of 1783 with its apparently total freedom from geometry typify a Romantic-Naturalism not unlike our present West Coast suburban architecture.<sup>2</sup> In the nineteenth century, interest in the Renaissance brought about the republication of sixteenth century books, such as Vitruvius' Ten Books on Architecture, Vignola's Five Orders, Palladio's Four Books on Architecture, and Alberti's Ten Books on Architecture. Again, the Greek Revival was international in outlook, but it was hardly a classical style in the sense that it grew finer as it grew older. Instead, it sought to reproduce antique monuments, not to refine them.<sup>3</sup> John Ruskin taught in his The Seven Lamps of Architecture of 1849 that what is good morally will be great aesthetically and since Gothic architecture alone reflects a Christian society, one must build Gothic Revival monuments. This led to the formation in 1863 of the Society for the Advancement of Truth in Art by young New York architects to promote Ruskin's ideas and attack the Renaissance Style.<sup>4</sup>

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<sup>2</sup>Vincent J. Scully, Jr., "Towards a Redefinition of Style," Yale Perspecta, No. 4, 1957, 4:4-9.

<sup>3</sup>Kliment, loc. cit.

<sup>4</sup>Albert Bush-Brown, "The New Shell Game," Architectural Record, June 1957, 121:185-9.

## The Chicago School of Architecture

The architecture of Peter Harrison and the bland Georgian passed almost imperceptibly into the Classic Revivals of Latrobe, Strickland, and Shryock. When the Civil War broke almost everything that could seriously be called American Architecture could be found east of the Mississippi, most of it east of the Appalachians. The great acceleration of technological change promoted by the Civil War brought us new building materials, notably steel. The internal combustion engine, motor car, and the concrete highway struck another blow at the regionalism of the early English settlers. And the electric light bulb ultimately made the city a 24-hour proposition. Not much before 1890 could America begin with technological instruments, which might offer new opportunities and new problems for architecture. Although America might have been a greater force in the architecture that was past, it would be unrealistic to think of this architecture as uniquely American. Certain technological forces, such as the Bessemer process, the elevator, the internal combustion engine, and the superhighway, were likely to be international. Some, such as the electric light bulb, the telephone, the typewriter, the loudspeaker, and the television tube, were accepted in some places more than in others. America had become an exporter more than an importer of architecture. It was becoming more and more collective. Group effort was steadily becoming more dominant, and it was impossible for any man to know all that needed to be known, to do all that needed to be done. Against



this trend stood the most obdurate defenders of the individual. The more individualistic they persisted in trying to be, the less society could understand what they were trying to say. As the sculptor or painter had advanced or retreated into personal idiosyncrasy so the architect had retreated or advanced into the state of being a cooperative social animal. What emerged from this Chicago School of Architecture as the most important element of American architectural history was the principle of coordination which began to be understood by Burnham then and more fully later by Adler.<sup>5</sup>

Paxton's Crystal Palace in London in 1851, culminated in the Carson, Pirie, Scott Store in Chicago by Louis Sullivan, the most typical offspring of the new age in America. Sullivan prided himself on his original ornament, and his unbroken horizontal window later became the happy cliché of modernism.<sup>6</sup> After the Second World War, Mies van der Rohe gave the name, "skin and bones architecture," to this kind of construction. The structure became pure form by its reduction to skeleton and outer surface.<sup>7</sup> Whether Americans could forego this self-conscious seeking for a national architecture and achieve it

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<sup>5</sup>John Ely Burchard, "The Shape of an Architecture," Architectural Record, May 1957, 121:183-9.

<sup>6</sup>Lewis Mumford, "The Wavy Line Versus the Cube (1930)," Architectural Record, January 1964, 135:111-6.

<sup>7</sup>Allan Temko, "American Architecture: Down to Skin and Bones," American Institute of Architects Journal, November 1958, 30:19-23.

by the simple process of making good architecture in its own place and for its own time; whether they could accommodate their cities and their architecture to the automobile and the airplane; whether they could learn to exploit the aesthetic potentials of the electric light; whether they could accomplish an architecture which would at once and in a unified way use the talents of architect, painter, sculptor, and even some newer kinds of artists and craftsmen; whether they could solve the problem of collectivism as it bore on the organization and the practice of architecture; if these problems could be solved, there might yet be an American architecture or an American version of a world architecture, which could stand in the great halls of architectural history.<sup>8</sup>

#### L'Art Nouveau and Cubism

In Europe a parallel movement was underway before the turn of the century as witnessed in Victor Horta's *Maison du Peuple* in Brussels in 1897 and Charles Rennie Mackintosh's Glasgow School of Art in 1899. Through Horta and Antonio Gaudi, fluidity was intensified in Europe in the stylistic movement L'Art Nouveau. Romantic architects under Ruskin had recommended abstract forms and colored tiles as one form of modern ornament. Now, the Dutch architect, Van de Velde and others established the dogma of the living form of ornament and design and the wavy

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<sup>8</sup>Burchard, loc. cit.

line as its characteristic expression. The movement had little relation to the typical problems of the new age. In architecture, it confined itself largely to the monumental and luxurious, such as Van de Velde's theater for the Werkbund Exhibition in Cologne in 1914. Outside the areas of the jewelry of Lalique and the sculpture of Auguste Rodin, its word lacked logic and conviction, and the movement had almost spent itself before World War I. In recent years, Eero Saarinen's TWA Flight Center on Long Island has been compared to this movement. Concrete, steel, and fabricated wall compositions suggested new forms; the cantilever came into prominence. Buildings became rationally simple with their usual restriction of materials to concrete and stucco, abolishing ornament, and limiting color to white, gray, and black. Before World War I in Europe in the Dutch De Stijl group, the essential of art was no longer to represent or interpret living nature, but to embody the mathematics of special order, to reduce the living object to its mechanical components. This Cubism of Duchamps-Villon and Brancusi became the antithesis of L'Art Nouveau. It led to an interest in new materials, new methods of construction, and new processes. Called "Neue Sachlichkeit" in Germany and the "Work of New Pioneers" in America by Henry-Russell Hitchcock, it professed to be in harmony with modern industrial conditions and to express the Machine Age. Both L'Art Nouveau and Cubism sought in their applications to architecture to interpret modern life. One emphasized its plasticity and fluidity, the other its rigor and restraint; one prided itself upon its variations, the other upon its curt

acceptance of monotony; one sought to be unique and the other to be completely standardized.<sup>9</sup>

### The Organic Architecture of Frank Lloyd Wright

Often the ideas of our architecture have come from elsewhere, but the desire that we shall make our own persists. This was one of the tenets of the transcendentalists from Emerson and Thoreau to Whitman, Sullivan, and Wright. With the advent of Organic Architecture at the turn of the century under the tutorage of Frank Lloyd Wright, American architecture took on new dimensions. Organic Architecture concerned itself primarily with the juxtaposition of indoor-outdoor relationships and the idea that the man-made structure should become a part and one with its natural site. Wright presented his work with a transcendental message, linking it with christianity, ethnography, democracy, and humanism. He gave America and Western Civilization proof that residential design can be both modern and intensely personal. He raised regionalism to a new level, far above sentimentality, but with an earthbound vitality. Never before had an architect been so fired by love for his country and his people. The vexing conflict between devotion to pure nature and devotion to the age of the machine gave to the work of Wright's first creative period, up to 1920, its special power. All of Wright's designs from that first period show him in full

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<sup>9</sup>Mumford, loc. cit.

command of technological means as supporting elements auxiliary to the free choice of form and space. But when he left the sphere of individual commissions designed for specific personalities, his words often stood in his way. Architecture justified by literary sleight of hand turned up in his work with disquieting frequency in his later years. With Wright's reappearance on the architectural scene after a hiatus of fifteen years, what had been a dichotomy became open conflict between his organic roots and an obsessive want for structural originality at all cost. Louder grew the exhibitionism that had to prove to the world that the master was not of his times but far out in the future. This final enthusiasm no longer generated from his American vision but emerged from a vision of himself. In order to protect his freedom of design, Wright's latest projects all suffered from a disquieting duplicity of egomania and fitness. In spite of frantic attempts to remain in advance of the avant-garde, the ageing of Modern Architecture revealed itself in Wright's incomprehension of the demonstrable, objective compossibility of structure, form, and space. Wright's period was born of the nineteenth century which only now is running out its course. He pulled the nineteenth century along with him, refusing to acknowledge growing abbreviation of such rugged individualism and, as Paul M. Rudolph has remarked, refusing to face up to twentieth century urbanization. Wright's compulsion toward continuity was strong and had a direct influence, through the Wasmuth publications of 1910-1, upon Gropius and other Europeans. But his Taliesin West forms, for instance,

have reference to those of nature, not of man.<sup>10</sup> On the other hand, Dr. Richard J. Neutra, who had studied under Wright at Taliesin North in Wisconsin, was much concerned with the human involvement in architecture. He states, in part:

Architecture to us is applied biology. Correctly understood, it includes sociology, the continuous interdependence, the effects and counter-effects, the interaction of human individuals.<sup>11</sup>

### The International Style

In the early twentieth century in Europe there was reaction against L'Art Nouveau, Sullivan, and Wright continuity in favor of a machined permanence of classicizing by men, such as Auguste Perret, Peter Behrens, and Walter Gropius, Piet Mondrian's synthesis formed the basis for a compromise in design in the work of Gropius and the Bauhaus. This amalgamation became known as the "International Style," and with it came the Stoic philosophy of architectural unity. Actually, Alfred Barr coined the phrase "International Style."<sup>12</sup> Its emphasis on creating unity resulted in completely divorcing the building from the site. It carried with it an attitude of "architecture for architecture's sake" exemplified by clean, machine-like structures and by placing buildings on stilts. It was a direct

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<sup>10</sup>Sibyl Moholy-Nagy, "Flw and the Ageing of Modern Architecture," Progressive Architecture, May 1959, 40:135-42, and July 1959, 40:51, 56, 62, 66, 68.

<sup>11</sup>Richard Neutra, Life and Human Habitat, p. 25.

<sup>12</sup>Lewis Mumford, "The Case Against 'Modern Architecture'," Architectural Record, April 1962, 131:155-62.

revolt of the German Bauhaus influence against the Beaux-Arts historiography of the use of premeditated styles, and in this sense minimized the study of architectural history. For America, modern architecture really began with the famous show of 1932 at the Museum of Modern Art in New York. The modern movement, called "Usonian" by Wright and the "International Style" by Henry-Russell Hitchcock and Philip C. Johnson was defended primarily because it was "functional."<sup>13</sup>

In 1938, Bruno Taut stated the now fading ideology that "everything that functions well, looks well." Values were primarily "ethical" and "utilitarian," only secondarily "aesthetic." Modern architecture was "good" because it had "integrity" and was "honest," "frank," "pure," and "simple." It was politically desirable because it was "democratic," "unpretentious," "unassuming," and devoted its attentions to the problems of common man. The appearance of modern architecture in America coincided with the Great Depression and was identified with the social objectives of the New Deal. Consequently, discrediting traditional architecture was made much easier by its identification with the old order that caused the Depression. So sharp was the struggle to free architecture from the dead hand of tradition that critics accepted this moral reference frame, and so suspect was all traditional art that all enrichment was distrusted. Wright denounced Renaissance Art. Mies van der Rohe,

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<sup>13</sup>James M. Fitch, "The Shifting Bases of Contemporary Criticism," Progressive Architecture, June 1956, 37:143, 192, 194, 197, 202, 208, 210, 212, 218, 222.

the pupil and collaborator of Peter Behrens and the most romantic-classicist of all the German architects of the twenties, wrote that "less is more."<sup>14</sup> Mies owes much to the researches into continuity and its interruptions which had been carried on by such De Stijl artists as Van Doesburg. His "less is more" maxim was taken to heart by younger men, such as Gordon Bunshaft of Skidmore, Owings, and Merrill. Piet Mondrian's paintings have a good deal in common with Mies' rectangular buildings, and this tradition was kept alive until recently in the work of Mies' American-born disciple, Philip C. Johnson. It is impossible to overestimate the importance of this moral asceticism in contemporary art and architecture. But this very asceticism makes Mies much less as heir to Cartesian logic, as his admirers would claim, than to the Puritan tradition of the north.<sup>15</sup>

#### Mies van der Rohe

Pioneering books began to appear. Le Corbusier wrote Towards a New Architecture in 1923. In 1928, Henry-Russell Hitchcock published Modern Architecture, and in 1932, along with Philip Johnson, he published The International Style. These books have only been topped in 1941 when the most influential book, Space, Time and Architecture, by Sigfried Giedion was published. In the twenties, American universities were still under the restrictive influence of the rules taught by L'Ecole

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<sup>14</sup>Fitch, loc. cit.

<sup>15</sup>Temko, loc. cit.



des Beaux-Arts. But several prominent architects were induced to teach in America. Richard Neutra and R. M. Schindler had come in the twenties. By the late thirties, Walter Gropius and Marcel Breuer from the famous German Bauhaus were teaching at Harvard University. L. Moholy-Nagy came about this time and later Alvar Aalto to teach. In 1937, Mies came to the United States and the next year was named Director of Architecture at the Illinois Institute of Technology. At this time, Mies was given one of the most extensive commissions any modern architect has enjoyed. He was asked to design the Institute's campus.<sup>16</sup> When Mies came to the United States, there was a movement growing to reject the compulsive continuity of Wright and its concomitant asymmetry and to create instead a more fixed and symmetrical kind of design. Mies rejected the old International Style compromise and insisted upon the skeleton cage of steelframe.<sup>17</sup> There was something phantasmal about the geometrically perfect Illinois Institute of Technology buildings. In their machined precision, they lacked heart and seemed a willful indifference to human values. There was no surprise, only predictability. This "skin and bones" architecture developed into the "curtain wall" or "packaged" architecture of Skidmore, Owings, and Merrill and others. It had a smoothness of cellophane and almost nothing to do, personally or regionally, with the people who use it. But Mies' architecture in the hands of a few skilled

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<sup>16</sup>loc. cit.

<sup>17</sup>Scully, Jr., loc. cit.

architects has generally been less forbidding. Eero Saarinen has humanized the rectilinear scheme as in his sensitively organized General Motors Technical Center of 1951. Even Skidmore, Owings, and Merrill in their Air Force Academy made a significant departure from the Miesian doctrine in their expressionistic cadet chapel creation. Although Johnson and Saarinen have acknowledged their debt to Mies, they have attempted a humanistic search for more clear, permanent, and man-centered forms, such as Saarinen's M.I.T. Auditorium and Johnson's Portchester Synagogue.<sup>18</sup>

#### LeCorbusier

LeCorbusier, too, has grappled with this problem of function versus more humanist qualities from the very beginning of his design. The problem of the volume or space as interior and having essentially no exterior has concerned all architectural ages which have cared for the image of man. In LeCorbusier's Citrohan Houses of 1922, his interior space seeks the tumultuous and challenging qualities of cubism rather than the flow of Wright and DeStijl. His Swiss Pavilion of 1930 goes a step further with pilotis which have the muscular mass of weight supporting columns. A more integrated, humanist system is seen in his Marseilles Unite d'Habitation of 1946. But at Chandigarh, the human being returns to the landscape. Man no longer dissolves into it as he may do in the lovely dream of Wright. Finally, at

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<sup>18</sup>Temko, loc. cit.

Ronehamp Chapel one sees the capacity of architecture to function as sculptural presence. Ronehamp is more complicated, more primitive, and more impatient, like modern humanity.<sup>19</sup>

Returning to the architecture of the thirties the task of selling a wholly new kind of beauty could not make much headway until the nation was convinced of the bankruptcy of the old forms of beauty. It proceeded on Emerson's theory that the good and the true become ultimately the beautiful. Modern buildings which the critics saw as beautiful were described in elliptical terms. Hitchcock and Johnson stated that "technical" and "utilitarian" factors of the 1932 Museum Show had resulted in an architecture comparable in "beauty" to the styles of the past. Honesty, simplicity, and functional expressiveness were the primary values involved. In the early days of the modern movement, there was a strong current of anti-aesthetic opinion. LeCorbusier announced that a house was merely a machine for living in. Sigfried Giedion and Hannes Meyer claimed that interest in proportions or in problems of design for their own sake was an unfortunate remnant of nineteenth century ideology. It became an absurdity to talk about the modern style in terms of aesthetics at all.<sup>20</sup>

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<sup>19</sup>Scully, Jr., loc. cit.

<sup>20</sup>Fitch, loc. cit.

### The Present Situation

In the recent past, a change in emphasis has become increasingly apparent. Already, the phrase "International Style" has been long in disrepute. In fact, there is a hesitance about using the word "style" at all. "Functionalism" is under attack. Greenough and Sullivan are being disinterred to see if they really said "form follows function." Formal problems of aesthetics are increasingly prominent. "Beauty" is once more a perfectly legitimate word. One group, that assumed that modern architecture had accomplished all its given tasks and that nothing remained except the aesthetic refinement of accomplished forms, resolved to exploit new structural materials and techniques. Typical of this group is Aline Saarinen who stated that structure was the dominant element in architecture and if used in the most direct, reasonable, and economical way, would automatically produce beauty. But this "less is more" has produced buildings whose sheer visual impact is often impressive but with no references to efficient plan, to functional problems of adaptation to site and climate, and to biological and sociological well-being. This tendency toward isolating form from content replaced multi-dimensional performance with single-dimensional appearance. The structural approach and other attempts to reintroduce aesthetics in architecture has often resulted in buildings open to attack on functional grounds being defended on the grounds of their beauty. This line of development could lead to the sort of irrational subjectivism which has all but destroyed the

criticism of modern art. Although necessary to humanize architecture, the hazard of the "architecture of taste" of such authors as Russel Lynes and Wayne Andrews is that it substitutes a highly personal pet of literary and artistic values for purely architectural ones, susceptible to rational analysis and objective control. Although we need to refine the modern movement and interject humanism, we should be leery of discarding the original body of principles as merely a collection of "fallacies." We must remember that they furnished the platform on which the West could build the first authentically great and original system of architectural expression since the days of Saint Denis and Chartres.<sup>21</sup>

#### Design Trends in Architectural Education

To further visualize the trend-change in the modern movement, a look at Yale University's design trend in recent years might prove enlightening. From the end of the Second World War to 1950, student architectural projects derived a large part of their form and philosophy from Gropius and Breuer. Methods of the Bauhaus and International Style architecture, such as sun-angle calculations and flow charts, formed the plans. From 1950 to 1954, there arose with clear-cut suddenness an entirely new style within the school, obviously derived from the post-war work of Mies and based on the value of simplicity, unity of mass

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<sup>21</sup>loc. cit.

and structure, and refinement of proportion and detail. There was concern with spatial play and more dramatic structure. The student was beginning to establish himself as an artist. The old sun-god was ignored as often was the workability and practicality of a building in the drive to attain balance and clarity. At this time, Saarinen was working on the GM Technical Center and Johnson and the New Canaan group of Harvard-influenced architects were coming to the front. From 1954 to the sixties LeCorbusier became an important influence. Romanticism of the structure generally took the form of repetitive elements used in the roof plane, such as exposed bents, vaulting of all types, usually involving a thin shell, folded plates, paraboloids, and space frames. The study of history, which had been frowned upon by Gropius' Harvard group, and an acceptance of past forms as valid in themselves became a major concern. Ornament returned with a revival of popularity in Gaudian projects indicated a sculptural direction, quality of abstraction, and lack of scale. Student projects showed a desire to make sculpture of the building as Louis Kahn has done. All of this shows a definite relationship between work in school and that of practicing architects.<sup>22</sup>

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<sup>22</sup>Herbert McLaughlin, Jr., "The Style of Education," Progressive Architecture, July 1958, 39:11-13.

### The Rediscovery of History

Shortly after 1950, architectural theory was leaning so far towards sociology and technology as determinants of architectural form that there were demands to get back to architecture. In this much-debated revolution in architecture, the first phase of this return to operational lore was an appeal to the Classical tradition of the Italian Renaissance, whose symbol was the Vitruvian man, its hero Palladio, and its prophet Rudolph Wittkower. The publication of LeCorbusier's Modulor in 1950 and Wittkower's Architectural Principles in the Age of Humanism in 1949 were not appeals to the forms and details of Renaissance architecture, but to underlying proportional mathematics. The upshot was an aggressive axiality of plan and a reliance on modular devices as planning tools. Somewhere in this, lie the origins of the recent addiction to formality of the middle and elder generation among U.S. architects, such as Stone's New Delhi Embassy, Gropius' Athens Embassy, Mies' Baccardi Building, and Johnson's New Harmony Shrine. Critics, such as Scully, Wittkower, Colin Rowe, and Bruno Zevi, have done much to give history teaching a new dynamic, which has produced a re-assessment of the work of the masters who set the style for the future. Before the "rediscovery" of history, Mies' architecture was evaluated in "technological" terms instead of "traditional" terms or general knowledge. After the rediscovery of history, Richard Llewelyn-Davies and Gerald M. Kallmann replaced it by an emphasis on Mies as a classicist, on the axial symmetry,

regularity, and modular organization of his planning, and his debts to German Neo-Classicism.<sup>23</sup>

### Structural Experimentation

The New Empiricism of the Scandinavian North in the late forties has reappeared as Neoliberty in Italy. Both rely on purely local operational lore and the lore of public taste. Formalism, too, has in recent years been attached to the modern movement where tendencies exist that deviate from the functionalist norms of geometrical purity and plan-wise asymmetry. Perhaps the most significant aspect of the rigorous scrutiny of the history of the modern movement is the rediscovery of science as a dynamic force rather than the humble servant of architecture. Such is the "New Brutalism" in England where the mystique of materials "as found" involves resolute honesty in their use, and an insistence that all the qualities of a material are equally relevant. At Alison and Peter Smithson's school at Hunstanton even the makers' trademarks embossed on the exposed steel is given value. Nowadays, the desire to incorporate engineering forms into architectural designs is so overwhelming that engineers like Nervi, Candela, and Torroja enjoy a status both as collaborators with architects and as creators of imitable forms. This marriage of the logical objectivity of advanced science goes back to Perret, but roots in DeStijl and

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<sup>23</sup>Reyner Banham, "Stocktaking," Architectural Review, February 1960, 127:93-100.



Constructivism and culminates in the "logical formalism" of Mies. Many engineers have played a dominant and valuable role in architectural developments of the last fifteen years: in England, Samuely, Arup, and Jenkins; in U.S., Fred Severud, Ammann and Whitney, Mario Salvadori, Paul Weidlinger, T. Y. Lin, Robert LeRicolais, and Dr. August E. Komendant; in France, Bernard Laffaille and Rene Sarger. But areas, such as heating, lighting, ventilating, air conditioning, acoustics, and office machinery seem for the moment incapable of assimilation to the harmony established over the years between structural engineers and architects. Only a few liberated spirits, such as Louis I. Kahn with his "topological" science blocks for the University of Pennsylvania, and Marco Zanuso with his integrated structure and air conditioning schemes, seem to approach this harmony.<sup>24</sup>

With the end of the war and ensuing surge in building activity, architectural criticism became increasingly prolific. By the mid-twentieth century, with the modern movement firmly established in America but with evident concern over its principles, a new approach or direction in architecture seemed eminent. In 1951 in an article for the Magazine of Art, the highly respected architect, Matthew Nowicki, submitted an appraisal of the modern movement to date and established a new design philosophy for American architecture. The time was right. In the eyes of the younger avant-garde architects his article has since become the classic article for a new freedom within the modern movement.

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<sup>24</sup>loc. cit.

## CHAPTER II

### THE CLASSIC ARTICLE

Although Matthew Nowicki died in 1950 at the age of forty with few constructed projects to his name he did leave numerous unrealized ones and several thought-provoking essays. Perhaps his most influential article, "Origins and Trends in Modern Architecture," appeared the year after his death. The following is a paraphrasing of the highlights of that essay.<sup>1</sup>

Nowicki was emphatic in stating that some time ago our design became a style that is as pronounced, as defined, and as legitimate for our times as the style of the Renaissance was in its day. Further he insisted that we cannot keep on pretending that we are able to solve our problems without a precedent in form. What we must realize is that in the overwhelming majority of modern design, "form follows form, and not function." The answer to every architectural problem is a flexible space, with no reason why one flexible space should be different from another, and many practical reasons why they should be alike.

Nowicki was careful to stress that he was not advocating diversity in design for its own sake. Diversity is just a confirmation of the rule of regimentation that always is the result of a style. The more one attempts to escape one's period, the more he becomes part of it. Constructive diversity is the

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<sup>1</sup>Matthew Nowicki, "Origins and Trends in Modern Architecture," Magazine of Art, November 1951, 44:273-9.

result of creative sensitivity to the eternally changing circumstances. In turn, this sensitivity is the main source of freshness, and freshness is a physical part of youth. Some persons preserve this creative freshness in their maturity and become great artists. Some civilizations preserve this freshness for ages and become great cultures. Maturity aims at perfection and perfection must end with an unchanging standard of classical excellence. The magnitude of this scope is the measure of ambitions and strength of a civilization, and the prophecy of its future achievements.

"The modern period of design," Nowicki continued, "has passed its early youth." Experiments with form, with the new space concept, and the playfulness with the machine are more remote from us than the time-span alone would indicate. There was a freshness in those youthful days of the aesthetic revolution, a physical freshness of a beginning. There was diversity of forms that grew without any direct precedent in form. But Nowicki quickly reminded us that our present position is our strategic point of departure for the investigation of the full field of opportunity.

The beginning of modern architecture had its roots in the domestic structure of the late Renaissance. Architecture started to grow human. Architecture always had to satisfy a function--the beginning of its modern interpretation. In the alteration of the predominant scale and the introduction of problems of comfort, we can find the beginning of our architecture; the external desire to change being responsible for the violent shifts of attitude towards form throughout the nineteenth

century. K. F. Schinkel's search for new expression contributed perhaps as much as any other factor to the birth of modern architecture. But no new form of architecture could have been created without a new structure. Joseph Paxton's Crystal Palace's space concept of openness added to the creation of a new era. The ensuing use of cast iron and then ferro-concrete and steel, from then on, was dominant in modern building. Independence of the partitioning wall from the frame created the free plan. Thus, all elements of the new architecture were present at the beginning of our century.

Nowicki noted that architecture with its social, economic, and technical complexities never took the lead in aesthetic changes but followed other media of art. The change in taste was inspired by painters. The broad and open manner of Cézanne and the architectonic painting of synthetic cubism introduced a new taste for purity and simplicity of form. Problems of structure and materials became secondary in a period preoccupied with the aesthetics of form. Architecture became "idealized" and "dematerialized." Colorful planes meeting at the corners of the cube emphasized the lack of material thickness. Structural detail was eliminated. A column became simply a vertical among horizontals. In order to create the shape, a function was created or conveniently over-emphasized. For the International Style, truth in architecture was considered as the exact expression of every function but resulted in the decoration of function. The main purpose of architecture became the control of physical environment to the physical satisfaction of the user.

Nowicki next expanded the scope of the word, "function." Recent changes in modern architecture are perhaps as radical as those separating the twentics from their predecossors. Functionalism meant exactitude then, now it means flexibility. Often priority is given to the psychological rather than the physical function of humans. The concept of a short-lived structure to be removed with the rapid change of technology has been replaced by a notion of architecture that will be a contribution to the life of future generations. LeCorbusier introduced the module which is no longer the measure of functional space nor the measure of time, but a measure of beauty. The free plan is replaced by the modular plan. There is no longer the pre-occupation with the proximities of related functions but with the nature of space that leads from one function to another. We have jumped from a quantitative period into a qualitative one.

Nowicki stressed our present desire for decoration. Architecture has discovered its own medium of creation and the difference between this medium and others. We now rely in our expression on the potentialities of materials and structures. This interest in structure and materials may find within the building medium, decorative qualities of ornament that are much too involved for the purist of yesterday. The symbolic meaning of a support has also been rediscovered. The period of functional exactitude expressed its mysterious longings for ornament through the decoration of function; our period of functional flexibility expresses them in the decoration of structure. One much approach every problem with the consciousness that there is no single way

of solving it. Art may be one, but it has a thousand aspects. Nowicki's desire for new freedom in architecture is brought out in his suggestion that we must not deny the existence of style but try to enrich its existence by opening new roads for investigation and future refinements.

This article, emphasizing the establishment of the modern movement as a style that now needs experimental investigation and diversified refinement along with a new look at functionalism in the sense that form follows form and not function, gave a basis or direction along with a new freedom to mid-twentieth century architecture. At the same time, new structural methods and materials produced new structural forms, and minimizing of functionalism developed an architecture concerned more with aesthetic embellishment. Consequently, the initial reaction to this new approach brought about much-debated structural and aesthetic concepts.

## CHAPTER III

### STRUCTURAL EXPRESSIONISM

With the advent of new structural methods and materials especially in the area of reinforced concrete since the many architects have tended to utilize the engineers aesthetics creating a structural expressionism that has often resulted in new forms accused of being based on experimentation and even exhibitionism rather than sound architectural principles.

The architects' reliance on the structural engineer has caused concern as to the direction architecture is taking. Typical of this concern is Joseph Hudnut's statement that it is probable in the near future that the art of architecture will become identical with the method and in the spirit of engineers. Architecture will continue its distinct organization, but it is as engineers that they will be valued and respected. New modes of manufacture and distribution, new standardizations, new materials and mechanizations, and new currents of thought and evaluation will force upon architects the new conformities to which the engineering mind is already adapted. They will accept as their own the engineer's aesthetics. At least three principles of the engineer's aesthetics are now becoming cardinal in the art of architecture. One is that of purifying the patterns of structure from all emotional content other than that which is inherent in their actual and objective forms. Engineers do not admit romance as an ingredient. They do not interpret their works

with symbol or humanize them with ornament. They are indifferent to philosophies, to historic allusion, and to the guidance of academies. For them, beauty is a consequence of their reliance upon the potentialities of structure to express its own idea. Among engineers, purism is not a doctrine, but a practice which arose from reasonable adaptations of materials to the thing to be done. It rested, not upon a philosophy, but upon common sense. LeCorbusier had invited the architect, eager to relate his troubled art with the scheme of a mechanized universe, to share not only the engineer's purism but to share also the virility, self-discipline, honesty, usefulness, and innocence. Purism was a re-examination of the fundamentals of art made necessary by the dismal academic art of the time. It laid the bases of modern art and was responsible for some excellent architecture. Another of the engineer's aesthetics adopted by architects is beauty which arises directly from technological invention and daring. The origin of beauty being within and among structural elements. The third adopted principle is that of standards. Standards are one of the immediate prerequisites of civilization. The distinction between technological standards and those of art is one of great importance in the art of architecture. Until our time, standards of art existed as elements of form. Their beauty was the beauty of form and the contemplation of these elements was unalloyed by necessity or desire. The engineer's delight in standards does not rest upon a recognition of form. Standards have definitely an aesthetic character. In 1922, Mies showed



how a utilitarian device could be made continuous around the periphery of a building. The result was an apotheosis of a ribbon window. But from an apotheosis, the ribbon window descended rapidly to a cliché, from a cliché to a standard, and from a standard to a sterility. There still exists a need which architecture may yet satisfy. This is the need of expression, of holding before men the true content of their civilization of which technological thought and achievement are consequences.<sup>1</sup>

Perhaps the leading exponent of the intuitive design method in structural analysis and of the advantages of reinforced concrete is the Italian engineer, Pier Luigi Nervi. Nervi, who has had great structural influence on American architecture, claims that only a perfect synthesis of the elements of structural intuition, mathematical calculation, and construction procedure can realize the unlimited technological and architectural potentialities of reinforced concrete structures. He feels that it would be absurd to deny the usefulness of the results achieved by the mathematical theory of structures, which has been the heuristic method used in architectural schools to date. But it must be recognized that these theoretical results are a vague and approximate image of physical reality, especially in the complex and often indeterminate structures of reinforced concrete. One comes nearer to this reality only by adding to the mathematical results, the results of experiments, by observing

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<sup>1</sup>Joseph Hudnut, "The Engineer's Aesthetics," Architectural Record, January 1956, 119:139-46.

the actual phenomena, by establishing a conceptual basis of these phenomena, and above all by understanding intuitively the static behavior of structures. The fundamental assumption of the theory of structures is that structural materials are isotropic and perfectly elastic, which masonry and concrete are far from being. In addition, it considers buildings in a kind of eternal stability and invariability, which is far from true. The structural training in architectural schools was set up during the second half of the past century in a period of development in the mathematical theory of elasticity which clarified the analysis of statically indeterminate structures. This pre-eminence given to mathematics has given the architect and engineer a blind faith in their results. However, skin-resistant and highly indeterminate structures cannot be analyzed by mathematical theories. Present methods of stress analysis in solving complicated statically indeterminate systems is limited in comparison with the creative potentialities of the imaginative designer and the available construction methods. Furthermore, the formative stage of a design cannot make use of structural theory and must resort to intuition and schematic simplifications. When all these essential problems have been solved and the structure is thus completely defined, then and only then can we apply the formulas of the mathematical theory of elasticity to specify with greater accuracy its load resisting elements. The most effective artistic training should not go beyond the mastering of the means of expression. The real difficulty to be overcome is the general lack of intuitive

understanding about the structural behavior of resistant systems, and the difficulty of communicating such intuitive knowledge. Presently, engineers, such as Fred Severud, Mario Salvadori of Columbia University, and Dr. Sheeler of Notre Dame University have made tremendous strides in intuitive design of structures.<sup>2</sup>

Another trend in the modern movement is the interest in reinforced concrete. Nervi reiterates many contemporary architects' feelings when he exclaims that reinforced concrete is truly the most interesting and fertile structural material available to mankind today because of its high compressive strength, its exceptional weather resistance, its constructional simplicity, and its relatively low cost. Nonetheless, reinforced concrete presents some hidden deficiencies, such as its high thermal sensitivity, its shrinkage, and its plasticity, which make its structural behavior difficult to foresee exactly. Of great importance to such a structure's success is good formwork. The most specific characteristic of concrete which makes it so difficult to analyze is the remarkable variability of its stress-strain ratio or its imperfect elastic behavior. Today, many advances have been and are being made in concrete. Ferrocemento permits the development of thin slabs in which the proportion and subdivision of the reinforcement are increased to a maximum by surrounding layers of fine steel mesh, one on top of the other, with cement mortar. The fundamental idea behind

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<sup>2</sup>Pier Luigi Nervi, "A Philosophy for Building 'Correctly'," Architectural Record, April 1956, 119:257-64.

the new reinforced concrete material, ferro-cemento, is the well-known fact that concrete sustains large strains in the neighborhood of the reinforcement, and that the magnitude of the strains depends on the distribution of the reinforcement throughout the mass of concrete. Its most important and fruitful properties are the absence of cracks and the elimination of forms. Great strides have been made in poured-in-place and pre-case, pre-stressed concrete by men, such as Felix Candela of Mexico, Robert LeRicolais and Dr. August E. Komendant of Philadelphia, and T. Y. Lin of California. Already we are capable of building concrete bridges over 1,000 feet; Freyssinet designed one spanning over 3,000 feet, and we have thin shell barrels and domes spanning over 1,000 feet. Concrete is promising in the field of skin-resistant structures where strength is a direct consequence of the curvatures and corrugations of their surfaces, making it the most revolutionary material of our entire building history.<sup>3</sup>

On the other side, many have been critical of recent architectural structures claiming that the multitude of forms evolved are pure sensationalism or exhibitionism. They argue that very seldom is structure alone adequate to create environment or even to express architectural sensitivity. They argue that structure is an essential part of architecture and that the ultimate form should express the elements of structure. But they feel it is time to develop a much more mature critical

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<sup>3</sup>loc. cit.

evaluation of the relationship between structure and form and cease to be taken in by the very novelty and cleverness of the forms that the structural engineer has evolved. Their solution is to conceive of design with structure rather than through structure and to utilize the structural criteria of balance and harmony, purpose, scale, and design consistency.<sup>4</sup>

In a 1957 article for Architectural Record, Hudnut declared that structural forms derive from ideas and feelings, not from new materials and techniques as has been suggested. Previous historians have proposed that the appearances of buildings and their styles are determined by the practical techniques of construction. The column, the vault, the flying buttress, and the steel I-beam are made the prime movers in the evolution of architectural sources of expression. But as Hudnut points out, the Greeks celebrated quietude and sweetness and employed only the simplest of structural forms. The Romans achieved power and magnificence by the use of the great concrete vaults invented for that purpose. The Middle Ages had need for a symbol, ethereal and soaring, and for that purpose developed the pointed arch and the flying buttress. To the democratic passion of the American Revolution, Thomas Jefferson presented the Roman Revival as the architecture of popular sovereignty. To Victorian England, already persuaded of a morality in art, John Ruskin explained Gothic Architecture as the architecture of virtuous men. To a

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<sup>4</sup>Edgardo Contini, "Design and Structure," Progressive Architecture, February 1958, 39:152-3, 230, 232, 237.

more sophisticated audience, Geoffrey Scott defined Renaissance architecture as an art of superior sensibilities. According to Hudnut, skyscrapers were driven upward not by the science of engineers or increased property values but by romantic necessity. Sullivan's chief characteristic of the tall office building was its loftiness. The true excitant of the imagination then was not the steel structure and the necessity of confessing its presence, but that it had to be every inch a proud and soaring thing. It was at that moment, states Hudnut, that the skyscraper ceased to be a work of engineering and became a work of architecture. This collaboration of head and heart is a distinctive characteristic of the art of Louis Sullivan and a distinctive characteristic of American culture. In this precedence of idea over technique, in no instance was the eloquence of the architecture a consequence of a perfection in technological resources. Expression in architecture springs from idea and feeling. Structural expedients come into being as the means by which idea and feelings attain a visual language. Structural virtuosity and structural candor are secondary virtues in architecture. The ways in which buildings are adapted to new uses and to new techniques are of course of the greatest practical importance, but they have little to do with the substance of architecture. The arts have only one important function: to define and make eloquent the experiences of the heart. The notion that the arts progress with the evolution of techniques is the most dangerous fallacy in the architectural thought of our day.<sup>5</sup>

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<sup>5</sup>Joseph Hudnut, "A New Eloquence for Architecture," Architectural Record, July 1957, 122:177-82.

This minimizing of the importance of structure and function has resulted in a humanization or renewed interest in the artistic and ornamentation, resulting in an aesthetic revival.

## CHAPTER IV

### THE AESTHETIC REVIVAL

Functional design has overshadowed art as the first premise of architecture for more than a half century. The demolition of art as a first cause of architecture was the result of several attacks. The pragmatic experimentation of William James and John Dewey which originated in America rejected the assertion that there was an aesthetic experience of timeless form. According to Sibyl Moholy-Nagy, John Dewey's Art as Experience deprived students of the devotional experience of standing in awe before greatness by leading them into an absurd misjudgment of their own creative power. In 1912 in his Futurist Manifesto, F. T. Marinetti proclaimed the motor car more beautiful than the Victory of Samothrace, and in 1923, LeCorbusier in his Towards a New Architecture glorified silos and airplanes. The German Bauhaus, 1919-1928, which claimed such prominent instructors as Walter Gropius, Johannes Itten, Gerhard Marcks, Lyonel Feininger, Paul Klec, Oskar Schlemmer, Wassily Kandinsky, L. Moholy-Nagy, Josef Albers, Herbert Bayer, and Marcel Breuer, instigated a war on art for art's sake. For the Bauhaus, there was no essential difference between the artist and the artisan, and the new morality of art and architecture was the sobering effect of its social and economic usefulness. In addition, economic and structural demands, mechanical equipment, code regulations, and investment returns have relegated the artist-nature of the architect.



After forty years, this identification of art with functional design has produced more negative than positive results. Art is identity of form and idea. Design is identity of form and function. Art is most powerful when it transcends reality; design, when it identifies itself with the standards of the age. The purpose of architecture is to link the self-sufficiency of art with the efficient realism of design. The first cause of architecture should be to express that which is time-required and that which will remain valid through a composition of enclosing form and enclosed space. Mumford suggests that three substitute philosophies have replaced the defunct functional architecture. There is still the "significant form," coined in Clive Bell's Art of 1913. It claims LeCorbusier and Mies as ancestors with outstanding characteristics of two-dimensionality of form, undeviating uniformity of a basic module, and total neglect of interior space or plan. Another substitute philosophy is that of the traditional continuity, such as the "Connecticut Palladianism" of excessive symmetry of the early fifties and the rage in the later fifties of claims to Gothic heritage in the vaults of a airport and the diamond-shaped roof of a university library relating itself to "Collegiate Gothic." The other substitute philosophy is the expression of structure in ferro-cemento fan elements, hyperbolic paraboloids, tetrahedrons, and hung, warped, twisted, and stretched roofs, which lack the prime requisite of space in relationship to architectural form. Moholy-Nagy then goes on to say that today we have the freedom to build

with a choice of design concepts, making it beyond doubt that architects, who have developed this new vocabulary of volume or "space occupied," will not fail in their monumental task to develop a style.<sup>1</sup>

Since the war, functionalism has been the principle target of numerous architectural critics, the most vehement of whom were trained in functional architecture by Gropius at Harvard. Functional architecture is criticised for being too much concerned with efficiency and practicality. It is said that Form does not follow Function. Form in architecture may be borrowed from the past, the work of other architects, or may take a completely imaginative flight. Lingerin proponents of functionalism claim that this flight makes form take the lead and function fit in as best it can. They emphatically state that never did Gropius or anyone else in the Bauhaus intend that pure efficiency and practicality should be the genesis of architecture. That architectural form should not derive from function and that Gropius, LeCorbusier, and Sullivan were wrong, they emphatically disagree. They agree that a building has a life of its own. Its activities will determine what the design "wants to be" as Louis Kahn says. In every good building there must be a strong design idea directly related to the life within. Functionalism in its broadest sense means a complete expression of the activity in a building; the building grows from inner forces. The substitution

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<sup>1</sup>Sibyl Moholy-Nagy, "Architecture - Art or Design?" Progressive Architecture, January 1957, 38:13-4, 16, 22, 23, 26, 32.

of more artistic expression they label as "facadism," an evasion of architecture.<sup>2</sup>

On the other side are those who feel the time has come for a widespread artistic revival in the field. The evolution of science and of our controls over the material world has been so swift as to seem a revolution, yet there has been no corresponding and compensating evolution in the psychological world, in understanding of the deeper needs of society; in human relations, personality traits, and spiritual aptitudes; in ethics and in aesthetics. A realization of the world situation might be the impetus for a renaissance as great in its own way as the Renaissance of five centuries ago. Architecture is primarily a form of self-expression. It is an art and that art is an expression of the ego. Architects have built up a rationale called functionalism to justify the fact that the building has designed itself and that the program, not the architect, has dictated the form. Wright's Guggenheim Museum is not a functional building. It is a great burst of artistic energy as is LeCorbusier's Ronchamp Chapel and La Tourett Monastery. Kandinsky said what counts is not the "What," but the "How." There are several characteristics of this aesthetic revival. One is the renewed close collaboration between architects and allied artists. A better use of the word "function," so that it is not limited only to

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<sup>2</sup>Edward Larrabee Barnes, "One Man Panel on Architecture." Unpublished Mona B. Sheckman Lecture at Sarah Lawrence College, April 8, 1963.

mechanical and structural functions but to aesthetic ones as well. Another is the distinction between items subject to change and those not subject to change. Modern designers are not bound by the material, locality, or style, which are all subject to change, but to such inherent items as serenity and nobility which are changeless. Author Sigfried Giedion has stated that our thinking should be reorganized so that we realize the social, moral, and emotional demands of our work. Architect Richard Neutra feels that there is a need to bridge the gap between beauty and utility, and architect William Wurster feels the spiritual and creative aspects are most important of all. Architecture is a creative act, a vision, states architect Henry Churchill. Former Harvard architectural Dean Jose Sert argues for an architecture of good proportions, serene, and dignified, as did former Yale architectural Dean Paul M. Rudolph when he stated that the architect's prime responsibility is to give visual delight. Educator John Ely Burchard has claimed that this is no time to disclaim beauty but to seek incessantly the moving and the human.<sup>3</sup>

The promotion of the aesthetic is perhaps best summarized in architect Fred Bassetti's letter to Fortune Magazine when he wrote, in part, "They (most present-day buildings) have nothing to do with the future. They search for that simplicity which is

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<sup>3</sup>Hugh Ferriss, "Toward an Artistic Revival," Architectural Forum, March 1955, 102:143, 188, 194.

a necessity of art, but overlook the element of richness, of variety within unity, which is equally important."<sup>4</sup> Even more emphatic is Joseph Watterson, former editor of the American Institute of Architects Journal, who recently stated, in part:

Perhaps the primary approach to the evaluation of a building should be from the visual standpoint, regardless of whether it works or not. For whether a building works or doesn't work, it has to be seen by tens of thousands of passers-by; it has to be lived with by hundreds or thousands who live or work in the neighborhood . . . Perhaps buildings should be assessed from the standpoint of whether or not they make a welcome contribution to the environment.<sup>5</sup>

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<sup>4</sup>Fred Bassetti, Unpublished letter to Fortune Magazine, October 15, 1964.

<sup>5</sup>Joseph Watterson, "Re: Criticism and Integrity," American Institute of Architects Journal, March 1965, 43:6.

## CHAPTER V

### THE DIRECTION OF AMERICAN ARCHITECTURE

With the degrading of functionalism after the war and the impetus in the fifties toward diversity in individualistic experiments in the form structural expressionism and the aesthetic revival, there was great concern as to the status of architecture by the sixties. In 1961, Thomas H. Creighton, then editor of Progressive Architecture journal, formulated a symposium of over fifty leading American architects to discuss the state of American architecture in a chaotic world.<sup>1</sup>

In summarizing this symposium, there is a very unanimous agreement that confusion amounting to chaos exists in architecture today. But there is a common feeling that this confusion or diversity in design is correct and justifiable, though not always "a happy thing" as Louis Kahn says. Walter Netsch even described it as a "noticeable direction."

As Albert Camus developed a philosophy of the absurd with its own historic justification, so much the expositors of this chaoticism discover the reasons for its existence. But there is not even a common assessment of the inheritance from the early modern movement. There is frequent mention of the present influence of Wright, Mies, and LeCorbusier. Some see a style

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<sup>1</sup>Thomas H. Creighton, "The Sixties: A P/A Symposium on the State of Architecture," Progressive Architecture, March 1961, 42:122-33; April 1961, 42:164-9; May 1961, 42:136-41; June 1961, 42:206, 208; July 1961, 42:170; and August, 42:156, 158.

which developed early and is now stultifying new developments. Harry Weese and Kahn attribute today's diversity to the "license earned by the pioneers" who even today are "men who are working very differently from one another," and whose work is badly assimilated and thoughtlessly copied. Great pioneering work was done which is not now directly applicable to our social and technological situation. The reasons for the present state range from "the total cultural confusion" to the exuberance of individualism. Architecture reflects its age, and this is an age of chaos.

There is some agreement that no "style" will emerge within a short time. Some architects, notably Mies and Kahn, are mentioned a number of times as "architects who are not confused," but there is no implication that they are stylegivers. There is almost no denial that there should be some common denominator. There is an almost culpable agreement that in the chaos there should be an "organized complexity." Only Johnson speaks frankly for the "Principle of Uncertainty." All the old, indisputable, familiar architectural virtues--formalist, moral, romantic, humanist--are referred to, such as beauty, order, harmony, honesty, self-discipline, humility, serenity, delight, timeliness, inevitability, and appropriateness. It is interesting to note that these virtues were listed as "fallacies" some fifty years ago by Geoffrey Scott. There is Kahn's appeal to "make architecture strengthen the institutions we live in" by studying form and design more creatively, and Raphael Soriano's appeal to

"use our scientifically verified investigations."

The period of chaoticism is defended as a time during which extreme diversity of design is justified and to be expected. The nature of the times, the exploding technology, and the lessons gained from the early period of the modern movement have tended to produce an architectural phase in which no style should be expected. Neither a theory of design nor a method of practice is accepted as a deterrent for the great present diversity in architecture. In fact, a theory of design is rejected in favor of many theories with a rather nebulous and ill-defined common denominator. In general, the present chaotic state in design was defended rather than deplored. The period of chaoticism is sanctioned simply by asking the solution to each given problem to justify itself. Variety within the environment and within one man's work is warranted in this way. Through all this, there is an astoundingly hopeful "rugged and unafraid" feeling of optimism that this period will not necessarily lead to unity but will ultimately produce a great architecture of its own.



## CHAPTER VI

### CRITICISM OF CONTEMPORARY DESIGN PHILOSOPHY

Many have been critical of the current trends in architecture today as a chaotic individualism that has degenerated into exhibitionism and sensationalism. They insist that the unnecessary abandonment of functionalism has degenerated into decorative linearity creating a regression into the baroque.

Critics insist that the basic principles of architectural design have remained the same through the ages. Society does not demand perfection or beauty but seems to be satisfied with anything as long as it serves more or less its purpose. The functionalist theory in the early days of the emancipation of architecture from the old styles and dogmas was that a rational arrangement of functions would automatically produce beautiful form. Today, this theory is considered only a dream. But as an art, architecture is difficult to judge because of its complexity of needs and motives, its human limitations, with their constant and quickly changing values and requirements. Dissatisfied with the cold and sometimes inhuman aspects of the functionalist approach, others yearned with nostalgia for the richness and the sensuous quality of the forms of past ages. They tried to express, in new ways, the grace and beauty that had once been achieved. Critics feel that this led to weakness in design and prompted a reaction among more vigorous architects to advocate bolder and more brutal forms. Other architects, as

as has been pointed out, were convinced that the most promising approach is the true understanding of structure, while others claimed that structure looked better covered up rather than expressed. A more vocal group care little for structure, technology, or function, but think of architecture more as sculpture whose primary function is to express abstract human ideals. In the minds of the critics of this new freedom within the modern movement, all these approaches reflect the idea of Madison Avenue that has so saturated our environment with synthetic forms and cheap romantic images that confusion of values is the result.<sup>1</sup>

Since the early principles of the modern movement are presently under attack, perhaps the current thoughts of its pioneer, Walter Gropius, might shed insight on our present situation. In 1954, Gropius, the founder of the German Bauhaus of the twenties and the Chairman of Harvard's Department of Architecture in the late thirties and forties, put forth his thoughts toward a more solid architecture and at the same time tried to clarify misinterpretations of Bauhaus principles. He emphasized that the International School of Architecture never intended to develop a style. It would be better to forget the battle of styles and get to work on the development of architecture for better living, because any attempt to classify and interpret living art and architecture as a "style" or "ism" is

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<sup>1</sup>Hugh Stubbins. Unpublished speech before the American Institute of Architects, October 1964.

more likely to stifle than to stimulate creative activity. His rationalization is that the International Style is not a style in that it is still in flux; nor is it international in that its tendency is to find regional, indigenous expression derived from the environment, the climate, the landscape, and the habits of the people. Criticism of the freedom of today's design is seen in his suggestion that buildings should accommodate the flexible, dynamic features of modern life, not serve as monuments to the designer's genius. Current architects who are searching for new expression in design would even outdo the eclecticist by striving to be different, to seek the unique, the unheard of, and the stunt, when they should be directing their efforts toward finding the best common denominator. It is felt that one should diagnose the client's real needs to give him a consistent building and gain competence in all fields to earn his confidence and the right to captain the team. By finding the balance in the struggle for utilitarian, aesthetic, and psychological demands, one can make better use of science and the machine to serve human life. For Gropius, regionalism is not dead, but rather an expression of it must be sought. The Bauhaus work-study principle is brought out in his suggestion that architectural education be extended into the field to obtain a better balance between knowledge and experience. His collective team effort is evident in his urging adding community activity to office activity to become a leader as well as a servant. But even if Gropius should concede that the human factor is becoming

more and more dominant in our work, architecture should reveal these emotional qualities of the designer in the very bones of the buildings, not in the trimmings only.<sup>2</sup> This concern is an echo of Adolf Loos, whose polemics against ornament had much to do with forming the premises upon which the International Style of the twenties took form in Europe.<sup>3</sup>

Many critics are sympathetic with Gropius. There is the feeling that modern architecture is in crisis, because its principles have reached their greatest power and public acceptance, and there are so many new innovations and experiments in structure and crosscurrents of ornamentation, that the principles themselves are in serious question. Their fear is that until some unifying principle for modern architecture is worked out, there will be a furious fermentation. Functionalism was demolished, because it was not enough; it was materialistic, narrow, dull, even undemocratic, because it reduced man to skin and bones and denied him psychological demands, let alone spiritual aspirations. To the loyal Bauhaus group, simplicity remains, but current architects have renounced functionalism and practically the whole rationalist philosophy on which it was based. To them, the Bauhaus was no more obsessed with the desire to satisfy physical demands than any other reasonably conscientious group of architects. They were as much concerned with appearances

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<sup>2</sup>Walter Gropius, "Eight Steps Toward a Solid Architecture," Architectural Forum, February 1954, 100:156-7, 178, 182.

<sup>3</sup>Vincent J. Scully, Jr., "The Precisionist Strain in American Architecture," Art in America, No. 3, 1960, 3:46-53.

as any architect, but their concern was not aesthetic. The Bauhaus' moral code for building was for "honesty" in expression of functions, "truth" in construction, and "integrity" in the whole. Just as the arch-enemy of these European pioneers had been the esthete, present-day architecture is moving toward a theism without concern for such a moral code but sustained by a blinding faith in its one god, beauty. In the materialist philosophy of functionalism, pure architecture would stand alone, when fashion, taste, and style were sloughed off. Now this definable goal is being substituted with the indefinable qualities referred to as delight and beauty. To these critics, architecture has gradually lost sight of the beacon at the end. The old discipline became merely a nuisance that was restricting and irritatingly austere. Gradually the code was broken. Even Mies has tightened his own disciplines continuously as he moved further away from functionalism. They feel the new architecture will not be tied down to a definition of its goal but relies eventually on "pleasing effect." This new freedom constitutes a revolution back to mysticism, fundamentally opposed to the moderns' concept of fitness and appropriateness to the task.<sup>4</sup>

Critics of the new freedom feel that the Miesian age is regarded as boring because all its possibilities seem to have been exhausted, not because it is an unsatisfactory facade. To them, architectural historians looking upon the scene of the

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<sup>4</sup>Robin Boyd, "Has Success Spoiled Modern Architecture?," Architectural Forum, July 1959, 111:98-103.

mid-sixties, will probably call it a time of chaos in which escape from boredom may have been the dominant cry. And it is more discouraging because of the great and fresh promise offered by the revolution of the first quarter century. The doctrines which had held designers together in the earlier days now appear to have vanished. About all that seems to remain as interesting in architecture is its novelty. In this determination to be different, to achieve personal styles, and to avoid boredom, architects are rapidly seceding from each other. They are encouraged to believe that the search for the novel is the greatest search in architecture, and that in the new freedom, there may be no rules at all, not even the rules of scale, proportion, rhythm, and balance. This has come about because almost any form can be built at some price, almost any material employed, and plans can be forced by equipment to almost any function. The feeling is that as the world as a whole is moving to a greater collectivism and more things require group effect, the arts have become the last final refuge of the Renaissance philosophy of the individual. The critics' concern is that perhaps nothing can be done except to let this wildness run its course.<sup>5</sup>

In 1959, Sibyl Moholy-Nagy reminded architects that when Wright, LeCorbusier, and Mies accepted the machine, it was an ideological protest against the Academy des Beaux-Arts. They did not turn to machine-produced materials and assemblage

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<sup>5</sup>John Ely Burchard, "Architecture in a Restless Age," Architectural Record, May 1959, 125:174-7.

because they were cheaper and more efficient, but because this was a new means of expressing their personal convictions and giving form to their aesthetic concepts. Today's technological architecture must eschew ornamentation and decoration because its one essential aesthetic factor is the interaction of structural elements alone.<sup>6</sup>

Again in 1959, Robert Gardner-Medwin warned against what he called Sculptural Formalism in architecture, where form is exploited for its own sake in a sculptural rather than architectural manner. If we allow form to become detached from function, we lose what LeCorbusier called the "truth" and Wright, the "organic." To be functional in the purely practical sense is an important part of an architect's responsibility. If we are to produce great architecture in a world now on the threshold of still more startling scientific and technological advance, he further warns, this is the worst moment to take flight from functionalism. If we indulge in form for form's sake, our work will cease to have any significance for our age.<sup>7</sup>

Lewis Mumford in 1962 stated that although the advances in technology have opened those possibilities for the new forms that Eric Mendelsohn so brilliantly anticipated in his imaginative

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<sup>6</sup>Sibyl Moholy-Nagy, "Flw and the Ageing of Modern Architecture," Progressive Architecture, May 1959, 40:135-42, and July 1959, 40:51, 56, 62, 66, 68.

<sup>7</sup>Robert Gardner-Medwin, "A Flight from Functionalism," American Institute of Architects Journal, May 1959, 31:21-8.

sketches back in the twenties, a new architectural perversion has resulted. The utilization today of sensational methods of construction merely to produce equally sensational forms lacks a basis of order. And creativeness requires an underlying basis of order. Mumford feels this perversion is a revolt against the excessive regimentation that has gone on in every part of our lives, but even the most original form needs to be repeated, with modifications. If modern architecture is not to continue its disintegration into a multitude of sects and mannerisms, such as international stylists, empiricists, brutalists, and neo-romantics, it must rest on some principle of order. Organic order is based on variety, complexity, and balance, that provides continuity through change, stability through adaptation, and harmony through finding a place in conflict, chance, and limited disorder.<sup>8</sup>

Sam T. Hurst and John Ely Burchard published a series of articles in 1963 for Arts and Architecture magazine on what they called "compulsive expressionism." They pointed out that individualism is rampant with self-appointed form-givers. There are no canons of taste and no agreement as to principles. There is increasing general popularity for the new vulgar, undisciplined classicism of men like Stone and Minoru Yamasaki, which is largely a revulsion against the increasing brutalism of Jose Luis Sert and Rudolph. There is the new architectural concrete style of I. M.

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<sup>8</sup>Lewis Mumford, "The Case Against 'Modern Architecture'," Architectural Record, April 1962, 131:155-62.



Pei and the mystic medievalism of Kahn; the quiet work of The Architects' Collaborative (TAC) and Edward L. Barnes, the persistent consistency of Mies, and the harder-to-classify Marcel Breuer, Ralph Rapson, and Harry Weese. Since they feel this is the situation, there is no common theme and no common purpose. Therefore, the most urgent need today, in their minds, is for a comprehensive and systematic theory of architecture that brings order to this chaotic diversity of contemporary philosophy and practice.<sup>9</sup>

Again the same year, Burchard wrote of his uneasiness about today's architecture because of its abandonment of the indigenous with no practical replacement, its relative paucity of masterpieces, its ugly results of excessive zeal for innovation, its corruption of formerly lovely cities by new construction, its dreariness on the general urban scene, its utter failure to cope with the expanding population and the automobile, and the realization that most of the beauty of cities stems from the past and not the architectural present. In citing our present situation he states that bad taste is rampant in Italy, but especially in Greece and most especially in Lebanon. The English towns are architecturally dreary, and the big housing projects north of Mexico City are plain frightening. In America, Philadelphia's brave new plazas are dreary, unurbane places. New York's Avenue of the Americas north of the Time-Life Building is an unholy mess.

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<sup>9</sup>Sam T. Nurst and John Ely Burchard, "In Search of Theory," Arts and Architecture, June 1963, 80:17, and May 1964, 31:22-3, 32-4.

Park Avenue north of Grand Central is becoming a dismal array of glass with the exception of Lever House, Seagrams, Pepsi-Cola, and Union Carbide. Then there is the hyperthyroidal new Pan American tower. Boston is blighted by the two old and bad insurance company buildings and harmlessly nudged by Hugh Stubbins' modestly high luxury flats, compromised further by Sert's addition of two pinnacles. And the campuses of progressive Harvard, M.I.T., and Yale are collectively chaotic in Burchard's view.<sup>10</sup>

Bauhaus architect Hannes Meyer felt it an absurdity to talk about the modern style in terms of aesthetics at all. If a building provided for its purpose, it was a good building, regardless of its appearance. Arthur Schopenhauer stated that architecture cannot be called art; since it serves utility, it serves material needs rather than pure cognition. Friedrich Hegel thought of architecture as the lowest among the arts, because its medium is matter unsuitable for the representation of the spirit. With these statements in mind, Rudolf Arnheim in 1964 explained that function, far from being outside the aesthetic realm, is its very theme. Instead of camouflaging a building with a shell of sculpture, an architect must indeed start with a commitment to the purpose of the building.<sup>11</sup>

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<sup>10</sup>John Ely Burchard, "Beneath the Visiting Moon," Progressive Architecture, November 1963, 44:160-70; December 1963, 44:126-31; and January 1964, 45:8, 14.

<sup>11</sup>Rudolf Arnheim, "From Function to Expression," Journal of Aesthetics and Art Criticism, No. 1, Fall 1964, 1:29-41.

In 1965, Wolf von Eckardt deplored the rushing to ever-new stunts as leaving nothing but non-architecture.<sup>12</sup> And Raymond D. Reed explained that the Nietzschean cult of the all-sensitive, all-understanding, and all-infallible superman called the designer, has done much to destroy the worth of contemporary architecture by placing emphasis upon the artist rather than upon the work. He feels that what some consider to be a maturation of the concepts of Gropius, Mies, and Wright are in reality regressions into the baroque.<sup>13</sup>

This same year, Gregory Ain complained that sound standards of architectural excellence are in conflict with this prevailing adulation of momentarily conspicuous leaders. He cautioned that Significant Form is not to be sought as an end in itself. All form in architecture is significant, and the significance is often quite different from what the designer may have intended. The architect who strains for an original dramatic effect will probably produce only another self-conscious tour de force. Today, Ain feels, much of form follows contending factions found in every issue of the architectural press. The a priori emphasis on conspicuous uniqueness unites arbitrary conflicting and exhibitionistic styles. Ain feels these ephemeral styles bespeak the pervasive contemporary phenomenon, alienation.<sup>14</sup>

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<sup>12</sup>Wolf von Eckardt, "The Age of Anti-Architecture," Saturday Review, January 23, 1965, 48:19-21, 62.

<sup>13</sup>Raymond D. Reed, "The National State of Architecture," American Institute of Architects Journal, May 1965, 43:30-2.

<sup>14</sup>Gregory Ain, "Form Follows Faction," Architectural Record, May 1965, 137:108-9.

In Ludwig Hilberseimer's recent book on the roots and trends in contemporary architecture, he notes changes since the war even in the work of the masters of architecture. However, he considers changes in the work of Wright and Mies as the result of organic development, while LeCorbusier's have been more abrupt. The objectivity which characterized LeCorbusier's earlier work is no longer present. It is now highly subjective with his introduction of sculptural architecture. Hilberseimer strongly feels that our present period is pessimistic and shows comparatively less creative ability than in the twenties. Architecture is in confusion with no accepted principles and no directions. The belief is that self-expression can be found in the facade decoration, independent of structure, function or the contents of the building. The result of these tendencies, Hilberseimer feels, is to bring into being a new baroque, where everyone is bent on expressing himself but has little to say. Architecture must be based on standards and objectivity, just as proportion, detail, and a sense of harmony have always been and always will be the real solutions to architectural problems, in Hilberseimer's view.<sup>15</sup>

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<sup>15</sup>Ludwig Hilberseimer, Contemporary Architecture: Its Roots and Trends, pp. 202-21.

## CHAPTER VII

### THE NEW FREEDOM WITHIN THE MODERN MOVEMENT

To summarize the research to this point, in the seventeenth and eighteenth centuries, architects derived their architectural theories from their patrons, who in turn derived their ideas from the philosopher. In the nineteenth century, the architect began to outstrip the philosopher and patron as makers of theory. Pugin brought historical and moral arguments to bear for a new architecture. John Ruskin elaborated and polished the arguments in essay after essay. By the end of the century, it was apparent that "art for art's sake" was not a valid theory nor could it long sustain the active production of art and architecture. In the twentieth century, more positive theories began to appear. Louis Sullivan's form following function was expanded into the doctrine of functionalism. Viollet-le-Duc's proposition that structure should be expressed was filled out by Auguste Choisy. Truth to materials took on a new and sacrosanct character. Reactionary Geoffrey Scott appealed for yet one more look at the past in the name of Humanism in 1914. Giedion's space-time concept in 1941 hypnotized the architecture schools until Vincent J. Scully, Jr., drew attention to its faults in 1957.<sup>1</sup>

The first significant change in the weakening of the functional tradition was a general trend toward universal types of

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<sup>1</sup>Donald Smith, "Towards a Theory," Architectural Review, February 1965, 137:101-4.

space structure and envelope, tending to reduce all building type to abstract "packages" or indistinguishable boxes. A second important change was a loss in visual scale. New forms as large clear-span shell structures and curtain walls had no features that gave a clue to scale.<sup>2</sup> The classic disciplines had been discarded. In place of classic rules, there had been substituted for a time the dogmas of the International Style, just as doctrinate and rigid. Buildings were simple, direct, expressive of structure and function, with no decoration.

But there was a maturing group of younger architects who had begun to express themselves in very belligerent fashion before the war. Architects, such as Gregory Ain, Pietro Belluschi, George Fred Keck, Ernest J. Kump, G. Holmes Perkins, Ralph Rapson, A. G. Jan Ruhlenberg, Edward D. Stone, and Hugh A. Stubbins, revolted against the older generations unwillingness to experiment. Richard Neutra, R. M. Schindler, and Raphael Soriano had developed a regional architecture in the Los Angeles area, William Wilson Wurster and Garner A. Dailey had shown great concern for native influences in the San Francisco Bay region. This regional expression on the West Coast that had followed from Bernard R. Maybeck and the Greene Brothers (Charles Sumner and Henry Mather Greene) had its post-war heyday in the work of Henry Hill, John Dinwiddie, John Funk, Harwell Harris, John Yeon, and Paul Hayden Kirk. In fact, the Bay Area style was

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<sup>2</sup>Gerald M. Kallmann, "The 'Action' Architecture of a New Generation," Architectural Forum, October 1959, 111:132-7, 244.

the most frequently published style in the professional architectural magazines, and then later in the popular home journals. But disciplines based on regionalism rapidly disappeared. For one thing, it was found difficult, if not impossible, to translate regional expression into tall buildings. Also, as communication facilities and travel opportunities increased, materials once indigenous to a certain area became equally available in others, and educational backgrounds became more and more similar. For much the same reason, before the end of the war, in followers of Wright, such as Paul Schweikher, Alden B. Dow, Karl Kamrath, and Bruce Goff, there too soon appeared a kind of romantic fantasy.<sup>3</sup>

By the end of the war, all of the national architectural magazines were devoting more and more space to articles about modern architecture. By the fifties and sixties, American architecture became the dominant influence throughout the world. There was a strong tendency toward individualism and appropriate expressions, almost all different from one another and departing from any antecedents, even recent ones. As the decade of the fifties drew to a close, a great variety in design in America began to appear, perhaps most importantly in the work of those architects most admired by their colleagues. Some of the best designers, with the rediscovery of history, have looked to the past once more. Paul Rudolph recalled Gothic detail in his

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<sup>3</sup>Thomas H. Creighton, American Architecture, pp. 31-46.

Jewett Arts Center at Wellesley College. Philip Johnson has rediscovered classic intersecting vaults. Eero Saarinen's two colleges at Yale have obvious medieval leanings. Skidmore, Owings, and Merrill's John Hancock Building in San Francisco recalls earlier work in that city. Also there was the surge of the hyperbolic paraboloid and the folded plate roof which became, in a short while, so common that architects tended to turn quickly from them. The Vierendeel Truss threatened in its turn to become the next cliché. Other architects, tired of rigid disciplines and unornamented surfaces, reached for "delight" as Yamasaki expressed it or "a richness" as Stone said. This led to tracery-like mullions between windows, vaulted roof forms, and even applied ornament. It added more variety and humanism to the architectural scene.<sup>4</sup>

In the early sixties, American society was not restricted to one philosophy, one political attitude, nor even one religion. Many types of buildings used by many kinds of people demanded many design solutions, the architects contended. They argued that the variety of materials available and the endless structural schemes possible were not likely to produce an architecture of a single style. Perhaps the most profound new influence was the almost brutal plasticity, expressed characteristically in concrete, that marked the work of LeCorbusier. Forms and finishes were purposely rugged, and surfaces pushed

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<sup>4</sup>loc. cit.



and pulled to suit the concept. Structures were raised on pilotis, basic forms were given any character thought appropriate, and window and door openings were used as a painter would create a composition. Even though concrete gave the sculptural freedom LeCorbusier desired, he disciplined himself through a complicated system of proportioning of his own devising, based on human anatomy that he named the Modulor. His Marseille Apartment and his chapel at Ronchamp have been particularly influential in the United States.<sup>5</sup>

Around LeCorbusier has grown a cult of admirers known as New Brutalists because of their love of rugged, almost crude forms and Plasticists because of their wish to warp and pull a form to fit its particular purpose. In the beginning, New Brutalism was a term of Communist abuse, because it was considered as morally reprehensible deviations from the New Humanism or New Empiricism in Scandinavian architecture to diverge from the International Style. But among non-Marxists, there was a tendency to look toward LeCorbusier, and to be aware of something called le beton brut. The first use of the word was in reference to the work of the young, English husband and wife team of Alison and Peter Smithson. Their secondary school at Hunstanton, designed in the spring of 1950, is a ruthless adherence to one of the basic moral imperatives of the modern movement, honesty in structure and material. They handle the plan as they "found" it, and the

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<sup>5</sup>loc. cit.

materials as they "found" them too, just as they come from stock. The ceiling surface is simply the bottoms of prestressed concrete beams as delivered. Heating coils are naked along windows and brightly painted.<sup>6</sup> Scorning the rational systems of early modernism, design is developed out of the "actuality" of the job, the situation "as found," and out of "moments of decision." Structure is not idealized as in Miesian architecture but frankly exposed and allowed to develop. Form is "spontaneously" produced out of action processes close to the stimulus of each situation. There is preference for using brute concrete in the manner of LeCorbusier's Maison Jaoul houses and La Tourette Monastery and the heavyweight buildings of Kenzo Tange in Japan. It rejects all preconceived whole forms and concentrates on the autonomous development of parts. It is the building which must be emphasized, not as an expression of the materials' perfection or as architectural skin and bones, but as a building itself. There is the frequent use of traditional materials, notched outlines, and heavy members.<sup>7</sup> Many names have been tagged onto this movement besides New Brutalism, such as Action Architecture, Neo-Expressionism, Neo-Organic, Compositional Rigorism, Neo-Liberty, Compulsive Expressionism, Plasticism, and New Sensualism. But whatever it is called, it constitutes a "New Freedom" from the

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<sup>6</sup>Reyner Banham, "The New Brutalism," Architectural Review, December 1955, 118:355-61.

<sup>7</sup>Kallmann, loc. cit.

disciplines of the early phase of the modern movement.

Architects began to study the plastic possibilities of concrete and the opportunities it opened up for individual expression. Paul Rudolph developed an interest in plasticity which denied both traditional classicism and traditional modernism. In recent years, he has radically shifted his architectural philosophy from the Jewett Arts Center to this more boldly open and plastic image.<sup>8</sup> As Paul Schweikher says, "Rudolph is one of the liveliest architectural imaginations in the country with little doubt that he will produce significant work."<sup>9</sup> Or as Ada Louise Huxtable has pointed out, in part:

Rudolph is one of America's most talented and controversial architects. He is often accused of inconsistency because of the puzzling dissimilarity of his buildings. But there is no puzzle when one realizes that each design is based on the same intense, extroverted search for sensuous expression.<sup>10</sup>

Philip Johnson, the profoundest neo-classicist of all, is enveloping spaces in a variety of large, simple, but compact spaces. Beginning his practice after the Second World War, Johnson's early work brought out the historian in him, combining a classical, axial symmetry with meticulous detail. In fact, he associated with Mies on the Seagram Building, the culmination of Miesian architecture. Then came the science buildings at

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<sup>8</sup>William H. Jordy, "The Formal Image: USA," Architectural Review, March 1960, 127:157-65.

<sup>9</sup>Paul Schweikher, "Architecture: Pop, Opt, and Raster." Unpublished lecture at Alleghany College, January 25, 1965.

<sup>10</sup>Ada Louise Huxtable, "Twentieth-Century Architecture," Art in America, No. 4, 1960, 4:46-55.

Yale and the museum addition at Dumbarton Oaks which show a change in attitude. Although modern materials permit beams and columns to be extraordinarily slender, Johnson has decided to go back to masonry and oversize columns in his belief in the "Principle of Uncertainty."<sup>11</sup>

Edward D. Stone's use of concrete is reflected in his grillwork at the American Embassy in New Delhi. Minoru Yamasaki's lacy concrete panels are reflected in MacGregor Memorial Center for Wayne State University. Eero Saarinen's bold concrete experiments are visualized in his TWA Terminal at Idlewild Airport. Marcel Breuer, a Gropius student from the Bauhaus days, also has boldly designed concrete forms as witnessed by his Priory of the Annunciation in North Dakota. I. M. Pei, in a careful, rectangular use of concrete in large structures, with generous helpings from LeCorbusier's repertory, also stays at the top of sober, sound architecture. Other, lesser known architects, have shown the influence of LeCorbusier. Recently, Kallmann, McKinnell, and Knowles won the competition for a new City Hall in Boston (Plate I, Appendix B), done in the brutal, plastic manner.<sup>12</sup>

Louis Kahn seems to be the sturdiest of the avant-garde, the most sure-footed, and the least mannerist and tense. His buildings manage a dignity that the others do not achieve.

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<sup>11</sup>Schweikher, loc. cit.

<sup>12</sup>Schweikher, loc. cit.

Space is neither archaized by classical rules nor rhythmic repetitive forms as in early modern; rather space is "phenomenologically" determined. A new topology emerges out of "servant and served spaces." Building equipment is allowed to develop its own significant expression. Brutalist ties are shown in the way the "parts" take command and achieve a ruthless, unbridled image, yet they are keyed integrally with these spaces in a disciplined and non-brutalist way. Kahn is the most articulate one among those affected by LeCorbusier's approach and has influenced many younger people directly through his teaching at the University of Pennsylvania. The indirect effect of his work has been very great on those who have simply seen one of his buildings, such as the Richards Medical Research Building at the University of Pennsylvania, or merely studied his published designs.<sup>13</sup>

In 1952, Osbert Lancaster appealed for abandonment of the most cherished principles of the modern movement in order for a live and profitable movement to develop from this early beginning. He called for a revival of interest in past architecture, a rejection of functionalism, and acceptance of clichés.<sup>14</sup>

In 1953, J. M. Richards warned that architecture, at this moment, so sorely needs its plagiarists. The first contemporary clichés, the cantilever, the superstructure perched on pilotis,

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<sup>13</sup>Kallmann, loc. cit.

<sup>14</sup>Osbert Lancaster, "The End of the Modern Movement in Architecture," Architectural Record, September 1952, 112:115-23.

the glass-enclosed staircase tower, and the ribbon window, were emphasized as the trademarks of the new style, because the new architecture was largely inspired by new structural developments. Besides these constructional clichés, there were the tricks of style that went with them, such as the projecting window frame, the isolated rubble wall, and the rhomboid staircase. Their proper role is not a means of appearing up-to-date, but a means of ensuring a civilized standard of design, by providing a range of well-tried, culturally vital, forms and motifs. According to Richards, from this shared experience, one can benefit so that each design task does not mean a fresh start. The function of the plagiarists is to act collectively, working through the numerous clichés until by common agreement some find their way into a common language; until the cliché has become, not a fashionable mannerism but the accepted contemporary way of solving a problem or finishing off a detail. A new language is not made simply by collecting clichés. On the other hand, it is stifled by pouring contempt on everything that can be called a cliché.<sup>15</sup>

Again, the same year, Robert Woods Kennedy pronounced the International Style as just as untimely as traditionalism and must be superseded. Its failure lies in the narrowness of its definition of man, and in the inaccuracies of its application of technology to building. "The house is a machine for living"

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<sup>15</sup>J. M. Richards, "In Defense of the Cliché," Architectural Review, August 1953, 114:75-7.

and the overemphasis on biology and physiology tend to obscure the fact that buildings are environmental in nature, and that man's spirit and intelligence as as important to his total adjustment as his body is. Kennedy suggested that what he calls "Directivism," a new resolution of style, environment, tradition, and of form, function, and expression in an aesthetically directed manner, will sooner or later supersede the earlier modern movement.<sup>16</sup>

About the same time, Pietro Belluschi suggested that we more deeply understand human nature and provide forms which will satisfy man's physical and emotional demands in order to make the nature of man the reference of architectural thinking. He also supported attempts by the few very creative intellects to find visual aesthetic symbols and explore structure as a source of form.<sup>17</sup>

The following year, Nikolaus Pevsner voiced his opinion in favor of the "picturesque." He felt that although the qualities of the modern movement were not developed to please the eye, without them no workable or functioning architecture is possible in our age.<sup>18</sup> Sigfried Giedion, too, condemned the International Style as "bloodless" and points out the need for something more

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<sup>16</sup>Robert Woods Kennedy, "After the International Style-- Then What?," Architectural Forum, September 1953, 99:130-3, 186, 190, 194, 198.

<sup>17</sup>Pietro Belluschi, "The Spirit of the New Architecture," Architectural Record, October 1953, 114:143-9.

<sup>18</sup>Nikolaus Pevsner, "Picturesque," Architectural Review, April 1954, 115:227-9.

than the bare interpretation of functional requirements.<sup>19</sup>

John Ely Burchard, who later condemned the new freedom within the modern movement, in 1955 exclaimed that it is no longer true that if the function is well served, delight will follow. He then noted that modern technology had made many of the original practical considerations no longer relevant. According to Burchard, it is the great hope of contemporary architecture in its advance, that it has finally become possible to do things irrationally and with delight.<sup>20</sup>

In 1959, after reviewing the past few years of Progressive Architecture magazine's annual design awards, Thomas H. Creighton noted that although the business-oriented architect had not yet recognized the trend, there was a strong pro-plasticity or pro-sensualism tendency in recent architectural philosophy. He then set out to demonstrate that all of the current urges of expressionism, formalism, sculpturalism, structuralism, and searches for "beauty" and "delight," were part of a single movement with common aims and a mutual philosophy. Creighton concluded that this common goal was a stress on the imagery addressing the senses as the chief element of beauty and labeled it, the New Sensualism. Noting the disregarding of the rectangular module and structural purism, he felt that greater use of ornament and a

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<sup>19</sup>Sigfried Giedion, "The State of Contemporary Architecture," Architectural Record, January 1954, 115:132-7, and February 1954, 115:186-91.

<sup>20</sup>John Ely Burchard, "The Dilemma of Architecture," Architectural Record, May 1955, 117:193-8.



deeper understanding of surface plasticity could enrich the barer skeletons one was accustomed to.<sup>21</sup>

Later that year, Albert Bush-Brown asserted that it was erroneous to assume that a great building must express its use, materials, structure, metaphysical base, client, architect, site, nation, region, climate, technology, or age, because a building may express all these axioms and still not be a work of art. He further stated that Nowicki had killed the leading functional slogan, once and for all, with the phrase "form follows form."<sup>22</sup>

The following year, Ada Louise Huxtable made a similar observation, which she called a return to romanticism. She stressed that what was right for the climate of the twenties, such as Adolf Loos' dramatic dictum "ornament is crime," no longer serves forty years later. Since the Second World War, there is more tolerant respect for the intrinsic qualities of all materials, new and old. The creed of pure and practical functionalism is being more loosely interpreted, and enrichment is permitted. She noted that at no period in history have more avenues been open or have there been fewer creative restrictions to an excellence which may yet prove to be the greatest of the arts of our time.<sup>23</sup>

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<sup>21</sup>Thomas H. Creighton, "The New Sensualism," Progressive Architecture, January 1957, 38:89; September 1959, 40:141-7; October 1959, 40:180-7; and November 1959, 40:51, 53, 61, 64, 68, 236-7, 241.

<sup>22</sup>Albert Bush-Brown, "Notes Toward a Basis for Criticism," Architectural Record, October 1959, 125:183-94.

<sup>23</sup>Huxtable, loc. cit.

The guess is that this plastic influence will increase and the new freedom will be the next dominant phase of American architecture. Even though Kahn's influence may not be long-lived, the deeper impact of LeCorbusier seems to have possibilities of outlasting that of Wright, the great moulder of space, or Mies, the great disciplined technician.

## CHAPTER VIII

### THE NEW FREEDOM'S AVANT-GARDE

In June 1956, Time magazine sponsored an architectural questionnaire which was sent to the deans of the leading schools of architecture and to the leading architects in the United States and abroad. One of the results of this research was a compilation of opinion at that time as to the significant founders of the modern movement and its outstanding architectural representatives.<sup>1</sup>

The profession seemed in agreement as to the important founders:

Frank Lloyd Wright, 1869-1959, 1949 AIA Gold Medal winner, whose architecture has since proved somewhat too personal and romantic for today's avant-garde.

Dr. Walter Gropius, born 1883, FAIA and 1959 AIA Gold Medal winner, whose Bauhaus tradition and exclusion of history has since been rejected.

Dr. Ludwig Mies van der Rohe, born 1886, FAIA and 1960 AIA Gold Medal winner, whose functionalism and puristic structuralism was even then being abandoned.

Alvar Aalto, born 1898, FAIA and 1963 AIA Gold Medal winner, who received fewer votes in 1956 than any other founder and whose rather conservative romanticism has

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<sup>1</sup>"Views Compared by Leading Architects," Architectural Forum, September 1956, 105:146-9, 168, 172, 176.

never fully become a part of the movement.

Dr. Charles-Edouard Jeanneret-Gris (LeCorbusier), 1887-1965, 1961 AIA Gold Medal winner, whose more brutal, plastic approach has made him the most influential founder of the modern movement among the present avant-garde.

In addition to the founders of the modern movement, the consensus of opinion from the questionnaire listed sixteen architects as this country's most outstanding architects:

Charles Eames, whose experiments in prefabricated housing and furnishings was then popular.

Vernon Armand DeMars, born 1908, FAIA, who had been concerned primarily with housing problems.

William Wilson Wurster, born 1895, FAIA, whose West Coast Style died in its rather unsuccessful attempt at tall buildings.

Pietro Belluschi, born 1899, FAIA, whose brick and wood church buildings recalled Eliel Saarinen's romantic architecture.

Wallace Kirkman Harrison, born 1895, FAIA, and Max Abramovitz, born 1908, FAIA, whose curtain-wall architecture was then the rage.

Gordon Bunshaft, born 1909, FAIA, Chief of Design for Skidmore, Owings, and Merrill's New York office and Arnold W. Brunner Memorial Prize winner in Architecture by the National Institute of Arts and Letters, whose Miesian principles were still accepted in 1956.

These six men still remain outstanding architects producing significant work, but none is even mentioned in the recent book, Modern Architecture by Vincent J. Scully, Jr., the avant-gardes' historian. The other ten architects now remain as the leaders in the New Freedom's avant-garde:

Louis Isadore Kahn, born 1901, FAIA and Arnold W. Brunner Memorial Prize winner in Architecture by the National Institute of Arts and Letters.

Paul Marvin Rudolph, born 1918, AIA member and Arnold W. Brunner Memorial Prize winner in Architecture by the National Institute of Arts and Letters.

Philip Cortelyou Johnson, born 1906, FAIA.

Marcel Lajos Breuer, born 1902, FAIA.

Eero Saarinen, 1910-1961, FAIA and 1962 AIA Gold Medal winner as his father, Eliel, was.

Ieoh Ming Pei, born 1917, FAIA and Arnold W. Brunner Memorial Prize winner in Architecture by the National Institute of Arts and Letters.

Minoru Yamasaki, born 1912, FAIA.

Edward Durell Stone, born 1902, FAIA.

Harry Mohr Weese, born 1915, FAIA and Arnold W. Brunner Memorial Prize winner in Architecture by the National Institute of Arts and Letters.

Ralph Rapson, born 1914, FAIA.

The following will consist of a summary of the life and work of these ten men and their most important form-giver, LeCorbusier.

Dr. Charles-Edouard Jeanneret-Gris (LeCorbusier), 1887-1965.

LeCorbusier, who took this pseudonym from one of his ancestors, was born at La-Chaux-de-Fonds in the Swiss Jura Mountains but became a French citizen in 1930. His father was a dial-painter; his mother and his brother, Albert, were musicians. At the age of thirteen, he left elementary school for the La-Chaux-de-Fonds Art School, where he was taught by L'Eplattenier the history of art and engraving and chiseling. On L'Eplattenier's advice, he spent three years, 1906-9, on the roads of Europe with a knapsack over his shoulder and a sketchbook in his pocket. LeCorbusier was forever dazzled by Greece, where he got some of the major themes of his work, such as his way of integrating constructions into the landscape, the human scale, and the mastery of light. In 1908, he went to Paris to the atelier of Auguste Perret, the first great promoter and user of reinforced concrete. Perret, like himself, was self-taught and had not received diplomas from official schools. Before the First World War, LeCorbusier frequented Peter Behren's studio in Germany and became acquainted with the Werkbund. After the war, in 1920, he became one of the founders of a fighting, avant-garde magazine, L'Esprit Nouveau. Articles from this magazine were published in his major book, Towards a New Architecture, of 1923. In 1928, he sponsored the International Congresses of Modern Architecture (CIAM) which were to play a most important role in the history of modern architecture and urbanism. From this, LeCorbusier published its principles, the Athens Charter, in 1942.

LeCorbusier was not a patient man, but rough, at times despotic. But by temperament, he was a Cartesian with logical reasoning as the framework, if not the objective, of all his enterprises. His preliminary destruction did not stop at the level of critical analysis. He formally proposed that existing cities be pruned, and that their centers which were unfit for traffic be demolished with only monuments of historical interest deserving preservation. LeCorbusier never dissociated town planning from architecture. Building was essentially a social action aimed at man and at the solution of his problems. This humanitarian logic developed around the idea that men were all equal, endowed with the same fundamental needs no matter what their cultural levels. Because of this, all men had a right to happiness.

Defined by the exigences of psychosomatic comfort, LeCorbusier's needs of universal man were thermic regulation by air conditioning, ventilation, and sonic insulation. The problem of ventilation preoccupied him since the thirties and led to the creation of a new element in modern architecture, the ventilator. In 1948, he created his Modulor which served to calculate the elements of all his buildings. The measurements and the gestures of the human body served as a unit of measurement: an hour of walking became the unit for town-planning, while the height of a man, his pace, the reach of his arm, his foot, and his thumb served to calculate the size of doors and windows as well as Corbusian trademarks, such as the free plan, the pillar foundation

or pilotis, the glass wall with integral sun breaks or brise-soleil, and the roof terrace.

Besides the rationalist and human factors is the plastic, poetic one, LeCorbusier's main factor. For LeCorbusier, architecture was, first of all, the organization of masses. It was the masterly, correct, and magnificent play of the forms of light. After the Second World War, his forms remained simple, but they combined in marvelous inventions, where each architectural element became an opportunity for sculpture. And like the ancient Greeks, he had not been afraid of colorwashing his buildings in vivid colors. Further, his simple volumes contrast with those of other great concrete masters, like Pier Luigi Nervi, Laffaille, and Felix Candela, in that the most important function of his forms was often that of expression. He gave value to the accidents and malformations inherent in his concrete. LeCorbusier exposed without shame the concrete, the stone masonry, or the simple brick in the interior of his buildings. This taste for truth was often identical with that of brutality, for he loved rough materials, unpolished, not denatured.

In 1918, LeCorbusier had adopted the cubist movement and became friends with Fernand Léger. Consequently, his 1922 Citrohan houses show this influence. In connection with these houses, he used his famous expression, "machine to live in," which gave rise to repeated misunderstandings and taxed him with the label of functionalism. The pilotis, which appeared for the first time in the plans for the Citrohan houses, became one of the constants of LeCorbusier's architecture, but its form



evolved from the thin cylindrical columns at the 1931 Villa Savoye at Poissy to the powerful shanks of the Marseille Block and the Brazil Pavilion. In 1923, he invented the logical complement of the glass wall, the sun break, the dimensions of which are calculated with reference to the sun's course on the horizon, and which is designed to control its effects. His La Roche House at this time also showed his real virtuosity in the freedom of his plans. Further, his logic of concrete allowed the systematic construction of terraced roofs which conquered new spaces for his houses. Perhaps his greatest success during his early period was the Swiss Pavilion at the Paris Cité Universitaire in 1932. After the Second World War, he had practically no part in France's reconstruction, but his Radiant City, the Marseille Block Apartments (Plate II, Appendix B) was realized in 1946-52. This apartment was the summation and symbol of all his theories concerning town planning and dwellings. At the same time that he was busy with these vertical cities, he built some of his best-executed private mansions, notably the Maison Jaoul houses at Neuilly in 1952-6. In addition to these dwelling units, LeCorbusier also devoted his talent to other great human activities, building the Duval Works at St. Dié (1946-51), the Brazil Pavilion at University City (1956-9), the Philips Pavilion at the Brussels Fair (1958), the Tokyo Museum (1959), and the convent of Sainte Marie de La Tourette near Lyon (1959) (Plate V, Appendix B), the austerity and rigor of which contrast with the less controlled lyricism of the Chapel of

Notre Dame du Haut at Ronchamp (1955) (Plate IV, Appendix B), a sculptural watchtower built in the foothills of the Bosges.

In 1951, LeCorbusier was officially entrusted with directing the planning and construction of the city of Chandigarh in India, created on an empty plain at the foot of the Himalayas. He applied his town planning theories and personally attacked the problem of the administration center, the Capitol (Plate III, Appendix B), which contains essentially the High Court of Justice, the Palace of the Seven Ministries, the Government Palace, and the Parliament. These rough concrete buildings, visual and sculptural, mark the peak of LeCorbusier's work. Completely free of formulas, as well as of any popular influence, they are adapted to the climatic imperatives through the use of giant sun breaks and umbrella roofs in the shape of concrete shells. They bear witness both to LeCorbusier's faithfulness to himself and to the permanent spirit of invention which have made him at once an architect and an incomparable artist. These buildings represent the climax of his plastic work.

In 1963, LeCorbusier's only American building, Carpenter Center for the Visual Arts (Plate VI, Appendix B), was completed at Harvard University. At the time of his death, he left Sainte Etienne Church at Firmity (Plate VII, Appendix B) to be built which might prove to be another Ronchamp. LeCorbusier's greatest contribution to twentieth century architecture is probably that of having rediscovered man, who had become lost in the frenetic development of the International Style technique. Certainly his

more brutal, plastic forms and his love of concrete have made him the most influential of all the early founders of the modern movement on America's avant-garde.<sup>2</sup>

Louis Isadore Kahn, FAIA, Born 1901

Kahn was born on the island of Osel in Estonia. His father was an artist and stained glass worker; his mother, a harpist. As a small boy, whose upbringing was wholly Jewish, he was badly seared when the apron in which he was carrying hot coals from the communal fire flared up in his face. In 1906, his parents settled in Philadelphia, where during his teens, he won annual drawing prizes and two scholarships to the Pennsylvania Academy of Fine Arts. But at the age of sixteen, he decided to be an architect and chose to study at the University of Pennsylvania from which he received a degree in 1924. During the twenties, the architectural school at this university was conceded to be the most successful Beaux-Arts institution in the country under the direction of Paul P. Cret. Kahn was a part of that academic education centered upon the French Ecole des Beaux-Arts, from which recent researches of Reyner Banham and Robert A. M. Stern have recognized the tenacious solidity of much of its academic theory. That theory insisted upon a masonry architecture of palpable mass and weight wherein clearly defined and ordered spaces were to be formed and characterized by the structural

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<sup>2</sup>Francoise Choay, LeCorbusier, pp. 9-26.

solids themselves. This contrasted with the International Style of the same period which generally concentrated upon lightness, maximum thinness in the solids, and fluid spaces, usually defined not by the structural skeleton but by nonstructural planes and skins of wall. But a generation brought up on Hitchcock's and Johnson's International Style of 1932 or even Giedion's Space, Time and Architecture of 1941 could hardly hope to perceive Kahn's quality at once. But his achievement of a single decade now places him unquestionably first in professional importance among living American architects. He is the one architect whom all others admire, and his reputation is international.<sup>3</sup>

Kahn's own realization was slow in developing. Even though his early thoughts about order were discussed with Albert Einstein, full realization did not come until about 1955. In Kahn's philosophy, form is immaterial, almost platonic ideal. It is the general shape that the program under consideration "wants to be"; not simply function, but a conceived order. For Kahn, form is symmetry, probably because of his Beaux-Arts background; and through design, form is made material and modified by how it can be built and by what all its specific functions "want to be." He is profoundly intensified by structural demands and by the fact that he desperately wants to be told everything about possible uses for various areas so that he can derive "meaningful" new shapes from the functional processes themselves. The process from form to design is from what is first imagined,

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<sup>3</sup>Vincent J. Scully, Jr., Louis I. Kahn, pp. 10-44, 113-21.

really out of what the human mind already knows, to what is then step-by-step felt for and so re-imagined. Philip Johnson had advanced a rather similar concept, though with less emphasis on the later steps. The deeper meaning and purpose of man's activities is constantly in mind and constantly kept in the forefront. This results in buildings that have not only a powerful space and mass concept, but also a bold and personal expression of all the elements and all the details; it frees the designer from the curse of preconceived ideas, fashion-following, and nervous copyism. Kahn's volumes do not interpenetrate one another as Wright's did. But certainly medieval cathedrals do not suffer from the looseness and irregularity of some of their secondary elements, their stuck-on chapels and towers of different heights. The main mass of the nave is enough to hold the composition together and to give coherence and expression to the whole. It is the combination of the power of the central idea with the romanticism of secondary ideas that makes us not only admire but also love medieval cathedrals. And it is the same with the "served and servant spaces" in the architecture of Kahn. His organic qualities in architecture stem from an intuitive understanding of order, the order of spaces, of structure, of building, of services, of movement, all taken separately and together.<sup>4</sup>

Kahn's first job was with the office of the Philadelphia

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<sup>4</sup>Jan C. Rowan, "Wanting To Be: The Philadelphia School," Progressive Architecture, April 1961, 42:130-63; June 1961, 42:206; July, 1961, 42:170-2; and August 1961, 42:158.

city architect, where he was in charge of design for the Sesquicentennial Exposition of 1926. In 1928, Oscar Stonorov arrived in Philadelphia, and through this architect, Kahn first became aware of the modern movement and of LeCorbusier's writing. In 1930, Kahn met George Howe, who designed the Philadelphia Saving Fund Society Building, and their friendship lasted until Howe's death in 1955. With Howe's building, the modern movement came to Philadelphia. Kahn revered Gropius the man and the apostle of sociological responsibility, though not especially his buildings. LeCorbusier's books were especially important to him as he stated, "I came to live in a beautiful city called LeCorbusier." His own drawings recall those of LeCorbusier, which he apparently traced in these years. He worked for a while in the office of Cret, and in 1941, he associated with Howe. A year later, Stonorov joined them. In 1947, Kahn was hired as Visiting Critic and soon became Chief Critic of Design at Yale. The impression of him at this time was of deep warmth and force; compact physical strength; a printless, cat-like walk; glistening Tartar's eyes of bright blue; a disordered aureole of whitening hair, once red; and a black suit, loose tie, and pencil-shaped cigar. He has since given up smoking and wears a gray suit. At Yale, Kahn was in close contact with Philip Johnson and with that architect's then very fresh principles of classicizing order. 1950-1, he spent as Resident Architect at the American Academy in Rome. While in Europe, he visited LeCorbusier's Unité d'Habitation at Marseilles and, like the

English Brutalists, was permanently influenced by the Maison Jaoul houses. Kahn's architectural renewal of the early fifties owed much to the pervasive influence of LeCorbusier and to the new direction taken by the modern movement as a whole during those years.<sup>5</sup>

In 1951-3, Kahn designed the Yale University Art Gallery and Design Center, in which the concrete was left rough with the marks of the forms upon it as LeCorbusier had treated that material, but Kahn's shapes were crystalline, not muscular. A later gallery regime mutilated the interior by sheathing over most of the columns and concrete block walls. This gave added impetus to Kahn's thinking about how spaces should have been ordered and constructed so that what they "wanted to be" might have been made so clear that alterations would have been inconceivable. By 1955, he had worked himself back to a point where he could begin to design architecture afresh, literally from the ground up. He was beginning where almost nobody ever gets to be, at the beginning. As Kahn stated, "It is good for the mind to go back to the beginning because the beginning of any established activity of man is its most wonderful moment."<sup>6</sup>

An extremely close parallel exists between Wright's development between 1902-6 and Kahn's of 1955-60. His fully mature projects can be said to have begun only with his archaic Trenton

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<sup>5</sup>Scully, Jr., loc. cit.

<sup>6</sup>Scully, Jr., loc. cit.

Bath House of 1956 (Plate VIII, Appendix B) which recalls Wright's Hillside Home School of 1902. After this project, Kahn said, "Now, I could not work for Corbu." However, Kahn's spaces are not continuous, but separate. The squares do not interlock, each volume has its own roof cap, and the plan is static and fixed. In the Trenton Community Center, which recalls the hollow piers of Wright's Unity Temple, it is the structure that makes the space and the hollow piers containing essential services which together produce a convincingly fresh and powerful form.<sup>7</sup>

In 1957, Kahn departed from Yale for the University of Pennsylvania. Here, he became associated with two remarkable engineers: G. Robert LeRicolas, poetic visionary and theorist on the behavior of materials, and Dr. August E. Komendant, authority on precast, prestressed concrete. Also at Philadelphia were Dean Holmes Perkins, Chairman of the Planning Commission, who rebuilt and redefined the University of Pennsylvania's Division of Architecture and made the city the laboratory, and Edmund N. Bacon, Executive Director of the Planning Commission. With this atmosphere in Philadelphia and through Kahn's teaching at the university, Jan C. Rowan proclaimed this influence as "The Philadelphia School" movement. Proponents of Kahn's philosophy are Robert C. Venturi, Jr., who had been Associate Professor of Architecture at the University of Pennsylvania; Ehrman Burkman

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<sup>7</sup>Vincent J. Scully, Jr., "Wright, International Style and Kahn," Arts, March 1962, 36:67-71, 77.



Mitchell and D. Romaldo Giurgola, who had been Professor of Architecture at the University of Pennsylvania and is now Head of the Department of Architecture at Columbia University; Robert L. Geedes, who was Professor of Architecture at the University of Pennsylvania and is now Dean of the College of Architecture at Princeton University, and George W. Qualls, Associate Professor of Architecture at the University of Pennsylvania.<sup>8</sup>

Kahn's 1957-61 Richards Memorial Medical Laboratories (Plate IX, Appendix B) and the Biology addition (Plate X, Appendix B) at the University of Pennsylvania affected for good the techniques of the whole concrete industry from the factory to the site. Its vertical service towers, clad in brick, house stairways and ventilating ducts, and floor levels are defined by horizontal spandrels plaited through vertical piers. This building has often been compared with Wright's Larkin Building in its form, but that is where the comparison ends for there is much difference in concept. Wright's spaces pull in the observer and soothe him in an expansive harmony; Kahn's spaces are exposed, pushed out by the structural members, not sequential but fundamentally separate. Whereas Wright develops fluid spatial sequences and overrides structure in favor of space, Kahn develops units of space and overrides space in favor of structure. And whereas Wright emphasizes continuous plastic unity of parts and insists upon the expansiveness and serenity

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<sup>8</sup>Rowan, loc. cit.

of the environment, Kahn emphasizes the jointed separateness of parts and insists upon the pressures, difficulties, and demands of the environment. Perhaps, their differences of attitude are best explained as Wright's late nineteenth century view of reality and Kahn's mid-twentieth century view of reality.<sup>9</sup> The medical building shows one of Kahn's major problems at this time. He could not yet wholly conceive of the building facade in terms of structural and spatial order. He has since paid for the glass set flush with the front plane of the structure as the scientists have resorted to covering several of them with aluminum foil in order to reduce the sun's heat and glare. But in his 1959-61 Tribune Review Publishing Building in Greensburg, Pennsylvania, the wall, with which Kahn had always experienced some difficulties, now began to function for him in terms of light. The window treatment here is purely Kahn's, and a prototype for much of his later work. His recent work includes the proposed First Unitarian Church of Rochester, N.Y. (1959); Philadelphia's Mill Creek Housing (1962); the U.S. Consulate in Luanda, Portuguese Angola (1962); the Jonas Salk Institute for Biological Studies in La Jolla, California (1965) (Plate XI, Appendix B); and Erdman Hall Dormitories at Bryn Mawr College (1965).

Many architects and critics have paid Kahn rare compliments. Lewis Mumford refers to him as "a man of exceptional talents and authentic originality." Minoru Yamasaki considers him "one of

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<sup>9</sup>Scully, Jr., loc. cit.

the very great architects of our time." Tasso Katselas feels Kahn's buildings "bring stimulus, vigor, and a true sense of discipline to a confused architectural scene." Fred Bassetti looks upon him as "that rare person in whom is combined a creative intelligence, great personal force, and genuine modesty." Kahn has understood and written about "putting to creative use what the mind can know" more directly and humanely than any other contemporary architect. He earnestly seeks the good question which is always "better than the most brilliant answer" and learns from everyone. It has been suggested that he is the perfect modern complement to LeCorbusier.<sup>10</sup>

**Paul Marvin Rudolph, AIA, Born 1918**

Rudolph was born in Elkton, Kentucky, of a parson father and a painter mother. In 1940, he received his bachelor's degree in architecture from the Alabama Polytechnic Institute and immediately went to Harvard Graduate School of Design, from which he received his master's degree in 1946. Upon completing his undergraduate education in 1940, he received his first commission, a house. From 1943-6, he served as Officer-in-Charge of Ship Construction in the Brooklyn Navy Yard. Gropius and Giedion were his strongest impressions during this period. From 1946-52, Rudolph was in partnership at Sarasota, Florida, with R. S. Twitchell, except for the period 1948-9, when he

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<sup>10</sup>Rowan, loc. cit.

traveled in England, France, Italy, Switzerland, and Belgium on a Wheelwright Fellowship. From 1956-65, he was Head of the Department of Architecture at Yale University. Rudolph appears as the all-American young man with his boyish smile, Ivy League haircut, and slight frame, but there is an iron will in his air of quiet determination. His gift for impressive but noncommittal utterances might well be the envy of the most experienced senator.<sup>11</sup>

As early as 1954, he expounded on his philosophy of architecture. In stressing the need for creativity as well as unity, he suggested that architecture was tragically lacking in eloquent space concepts. In stating that today's architecture should be related to the Renaissance rather than to the Gothic as Mies' architecture is, he reminded that one still longs innately for the old play of light and shadow, for something curved. Praising LeCorbusier's work along this line and the visual delight of his ventilator forms, Rudolph suggested that visual exploitation of mechanical equipment could become the sculpture of our time. For Rudolph, the architects' prime responsibility is to give visual delight and his prime determinant, the treatment of space. He stated that the architect should be concerned with a building's appearance in the rain or on a summer's day, its profile on a misty day, the different treatment required for that which is many stories above ground, and with angles of vision, symbolism, and content. Rudolph remarked that architecture is in a transition

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<sup>11</sup>"Genetrix: Personal Contributions to American Architecture," Architectural Review, May 1957, 121:378.

period where ideals of beauty are in flux.<sup>12</sup>

Six years later, in supporting Nowicki's claim that architecture cannot be solved without a precedent in form because the concept of functionalism as the prime determinant creates difficulties, he added other determinants of form, such as monumentality, symbolism, and decoration. Also needed are sequences of space which arouse one's curiosity and give a sense of anticipation. He deplored the use of uniform ceiling heights that deny the psychological effect of varying spaces, the lack of interest in the relationship of the building to the sky and to other buildings, and the poor handling of natural light.<sup>13</sup>

In 1959 in an article on the creative use of materials, Rudolph, in complimenting LeCorbusier's architecture, remarked that to take a material and transform it in order to heighten the spirit of the building is art in its highest form. In the final analysis, as Rudolph says, it is the atmosphere and symbolism which really count.<sup>14</sup>

As a speaker for the 1963 American Institute of Architects' convention, Rudolph's search for direction in architecture was

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<sup>12</sup>Paul M. Rudolph, "The Changing Philosophy of Architecture," Architectural Forum, July 1954, 101:120-1, and February 1955, 102:119.

<sup>13</sup>Paul M. Rudolph, "The Six Determinants of Architectural Form," Architectural Record, October 1956, 120:183-90.

<sup>14</sup>Paul M. Rudolph, "Creative Use of Architectural Materials," Progressive Architecture, April 1959, 40:92-4.

very evident. He claimed that the architect must search for his own way because there is no universal outlook; that an age expresses through its artists certain preferences and attitudes which are inherent to that age, but no man can ascertain at the time those which have validity. Rudolph further bluntly stated that certain problems must be ignored if a great work of art is to be created, and that it is possible for a building to be great and not function. In any event, a kind of poetry is necessary too. Rudolph feels, as Kahn does, that there is a difference between that which is pretty or even beautiful and that which is significant. Quite often a given form of art will seem terribly awkward when introduced, be brutal when first seen. But in time quite often this aspect becomes less.<sup>15</sup>

Rudolph leaped to fame in 1951 by producing one of the most ingenious and original summer cottages with a plastic roof in tension. His buildings not only have the appearance of being unrelated to the work of other architects but do not seem related to one another in character, materials, or structural systems. Perhaps he best justifies his work by frankly explaining that he has as yet no fixed principles, and asserts that he is still searching. He clearly intends to reject the idea that architectural forms develop by a cooperative evolutionary process. Rudolph received his graduate training at Harvard under Gropius

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<sup>15</sup>Paul M. Rudolph and others, "The Quest for Quality," American Institute of Architects Journal, July 1963, 40:29-52, 57-60, 79-84.

and is now reacting against this uncongenial discipline of the Bauhaus and is now temperamentally a disciple of LeCorbusier. The creative methods of LeCorbusier and Gropius are irreconcilable, despite Giedion's attempt to give them a superficial unity. LeCorbusier understood that architecture is something personal and cannot be taught by traditional academic systems. Gropius has always insisted that architecture is simply the art of building, which can and must be systematically taught. So thoroughly has Rudolph now absorbed the LeCorbusier aesthetic, that he has rejected all forms of brickwork in favor of rough-faced concrete, as used in all LeCorbusier's most recent European works. Certainly, his nondenominational chapel for the Tuskegee Institute in Alabama is unashamedly inspired by LeCorbusier's chapel at Ronchamp.<sup>16</sup>

Much of Rudolph's work in the last fifteen years has been very original and sculptural residences, such as his house on stilts with hinged wall panels at Sieta Key, Florida, which won the 1955 Progressive Architecture First Design Award; SAE Fraternity at the University of Miami; a Homestyle Center house at Grand Rapids, Michigan, whose mechanically lifted plastic panels could convert it into either a completely enclosed or open pavilion (1956); Deering House at Sieta Key, Florida, which used concrete blocks finished with silicone and exposed as a finished wall inside and out, and whose five levels

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<sup>16</sup>Peter Collins, "Whither Paul Rudolph?," Progressive Architecture, August 1961, 42:130-3.

give a dramatic sequence of spaces (1959); Milam House in St. John's County, Florida (Plate XII, Appendix B), a seven-level sculptural house of concrete block where the floor and ceiling planes become active as space definers (1961); and Wallace House at Athens, Alabama, which contains thirty-two circular brick columns.

In 1957, Rudolph designed the U.S. Embassy for Jordan and the St. Boniface Episcopal Church at Sarasota, Florida. In 1959, the "Collegiate Gothic-appearing" Mary Cooper Jewett Art Center at Wellesley College and the Sarasota High School (Plate XIII, Appendix B) were completed. The fixed sunshades of precast white concrete establish the character of the north and south facades of the high school. All concrete was left exposed except the areas sprayed with acoustical plaster, and a white concrete brick was used for infilling walls. An effort was made to make the mechanical space eloquent and integrated into the whole. Problems of natural lighting and ventilation in this building became the prime determinants of the architectural form. Also that same year, Rudolph's Greeley Memorial Laboratory for the Yale University School of Forestry was completed. It was conceived as a pavilion with a single hovering roof supported on precast columns.

A further example of Rudolph's concern for mechanical systems is seen in his 1960 Blue Cross-Blue Shield Headquarters in Boston. Here, hot and cold air intake ducts are on the exterior faces of the paired structural concrete columns, with a return air duct in a single slender shaft between each two pairs of



columns. An air mixing chamber projects every ten feet along the spandrels and plays a part in the rhythmic pattern of the facade.

In 1961, Rudolph produced several other concrete structures and projects. His Temple Street Parking Garage in New Haven, Connecticut (Plate XIV, Appendix B), was a reinforced concrete structure, made of two dimensional curves formed by strips of wood. His Married Student Dormitories at Yale University were designed to look like a village, where the spaces between the units became important as courtyards, terraces, paths, and entrances. Here the construction is based on a completely precast concrete aesthetic. O'Brien's Motor Lodge in Waverly, New York, is fractured into separate, but interlocking and interpenetrating components. It is constructed of poured-in-place concrete with balconies of poured concrete and concrete tables and seats as integral parts of the form. Rudolph also was commissioned by the Portland Cement Association to design a "Galaxon" exhibition structure devoted to man in the space age. This structure is composed of a series of circles of prestressed, precast elements pinned to each other and cantilevered from a central, cast-in-place ring.

In 1962, he designed the Lake Region Yacht and Country Club at Winter Haven, Florida. Here, uniform rows of white concrete columns and precast sunshades surround the structure on all sides. Their repetitive forms dominate all views into and out of the building.

With the opening in 1963 of the School of Art and Architecture at Yale University (Plate XV, Appendix B), Rudolph's rejection of the "universal space" had never been so complete as in this building. Spaces interlock in a most exciting way, not only horizontally but also vertically, and not only inside of the building but also between the inside and outside world. Its mnemonic quality of its spaces, its light, its ventive furnishings, and its use of art work, create vistas throughout. There are thirty-seven different levels manipulated so as to mold spaces to their intended functions. The architectural drafting room is the most dramatic, plastic space in the building. It has five levels, one for each year of the curriculum, yet it is still one room. To emphasize its monolithic quality, the building is constructed of concrete with major structural support by four hollow central piers and by similar perimeter piers. Hot and cold air are supplied through the perimeter piers and returned through the interior columns. The architectural philosophy is iconoclastic, individualistic, yet decidedly having a sense of progression from the wellheads of the modern movement.

Rudolph's latest projects also emphasize the plastic quality of concrete. The Endo Pharmaceutical Center in Garden City, New York (Plate XVI, Appendix B), externalized what most architects bury within a building, such as staircases, heating pipes, and air ducts. It is a small Carcassonne, a bastion of corduroy-textured concrete, a fortress of suspended turrets and slender windowed embrasures. The Creative Arts Center at Colgate

University serves as a gateway to the campus by extending the building's covered entrance. Here, as at the Yale Architecture Building, Rudolph uses reinforced concrete poured into a corrugated form with the leading edges broken to expose the aggregate as the building material. The three buildings proposed for the State Government Center in Boston (Plate XVII, Appendix B) are purposely designed by Rudolph as Coordinating Architect so that they form a specific space for pedestrians only and read as a single entity.

Rudolph's architecture concerns itself with those relationships of size, shape, and surface which speak directly to the senses. It possesses that studied intricacy of parts within a frame of comprehensive unity which renders it rich through the elaborate profiles and abundant surfaces which achieve both fine scale and plastic spaces, and simple through the discipline of strong, overall shapes and the insistent regularity of its principle structural parts. The refreshing absence of a stereotype in his projects bears significant witness to concern for harmony between form and functions, whether these be read at literal levels or in terms of symbols well known and much needed. Perhaps it is in this last fact that the architecture of Paul Rudolph suggests its greatest strength. It promises a provocative resolution of both the new and the known.<sup>17</sup>

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<sup>17</sup>"The Current Work of Paul Rudolph," Architectural Record, February 1957, 121:161-76.

Philip Cortelyou Johnson, FAIA, Born 1906

For one of the leaders of architecture's avant-garde, Johnson, born in Cleveland, actually received his bachelor's degree from Harvard in 1927 in philosophy. This was the time when Gropius' Bauhaus was under construction (1925-6). He first became interested in modern architecture during a post-graduation trip to Europe. His prime admiration was for Mies, who he first met in 1930. With a formidable knowledge of architecture and its history, Johnson in collaboration with Henry-Russell Hitchcock coined the term "International Style." From 1932-54, he served as Chairman of the Department of Architecture of the Museum of Modern Art in New York. At the age of thirty-three, he re-entered Harvard and received a bachelor's degree in architecture. He was very much influenced by Breuer, who was then teaching at Harvard. Johnson, who began as a critic and historian of architecture, did not develop his personal manner of design until about 1950. In the fifties, he designed from the style of Mies but has since adopted a radical design philosophy. Johnson is a biographer and interpreter of Mies. But with Mies, the external skin of a building shares an equal importance with the spaces that it encloses. Johnson has frequently upset this balance, so that the spaces, their scale and relationships, assume priority over the neutral surfaces that enclose and define them. Johnson has implicitly indicated recently that he is working in the fashion of the late Baroque eighteenth century European architects. He admires Alberto Giacometti and Theodore J. Roszak and

has shown interest in vaulted forms and Antonio Gaudi.<sup>18</sup>

Johnson's philosophy is perhaps the most radical of all the avant-garde. He believes solely in the Principle of Uncertainty. For him, the aim of architecture is the creation of beautiful spaces; everything else is subordinate.<sup>19</sup> As he states, "Forms always follow forms and not function." In addition, he feels that "structural honesty is one of the bugaboos that we should free ourselves from very quickly." Further, he warns that environmental controls cannot dictate architecture.<sup>20</sup> For Johnson, architecture is unquestionably an art; it is a form of sculpture.<sup>21</sup> He feels that what is needed is more plasticity, more delight, and more human adventure, but that there should not be any requirements, except freedom in architecture.<sup>22</sup>

Johnson's work begins at a point near where Mies leaves off, and he persistently reconsiders the entire problem in terms of the relationships of various elements, particularly interior compartments and exterior areas. His own glass home of 1949 in

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<sup>18</sup>John M. Jacobus, Jr., Philip Johnson, pp. 11-43.

<sup>19</sup>Philip C. Johnson, "The Responsibility of the Architect," Yale Perspecta, No. 2, 1954, 2:45-57.

<sup>20</sup>Philip C. Johnson, "The Seven Crutches of Modern Architecture," Yale Perspecta, No. 3, 1955, 3:40-4.

<sup>21</sup>Jonathan Barnett, "Philip Johnson Interview," Architectural Record, December 1960, 128:16, 238.

<sup>22</sup>Philip C. Johnson, Minoru Yamasaki, and others, "Individual Theories of Design," American Institute of Architects Journal, August 1959, 32:49-59.

New Canaan, Connecticut, derived from innovations of the International Style. Johnson's evolution toward a greater sense of compartmentation and enclosure proceeds hand in hand with the emergence of a solid, abstract monumentality in his buildings of the later fifties. In 1958, in collaboration with Mies, he designed the Seagram Building in New York which is perhaps the culmination of the International Style architecture. With the Eric Boissonnas House (1956-62) in Cap Benat, France, he brought the first phase of his work to a vigorous conclusion and provided a point of departure for his present, more overtly monumental phase. The Sheldon Art Gallery at the University of Nebraska, completed in 1962, shows the fondness for understatement that was characteristic of his work at least until the late fifties. Since 1956, Johnson's work is increasingly devoted to large-scale non-domestic projects, whereas until that date, his creative development had been primarily in the field of domestic work. Gone is the glass wall and thin, fragile-seeming brick slab in his 1956 Synagogue for the Congregation Kneses Tifereth Israel in Port Chester, New York (Plate XVIII, Appendix B). Here, a sense of sturdy plasticity is further heightened by a domed oval vestibule and butterfly ceiling canopy. The Munson-Williams-Proctor Institute Museum in Utica, New York (1957-60), the Amon Carter Museum of Western Art, Fort Worth Texas (1961), and the New York State Theater at Lincoln Center (1959-61) point to a new emphasis upon expressive monumentality or traditional space configurations. In 1960, he designed Sarah Lawrence College

Dormitories at Bronxville, New York, and the Shrine at New Harmony, Indiana (Plate XIX, Appendix B), which placed a premium upon the invention of appropriate yet subjective and emotion-stimulating exterior shapes. More recent projects are the Philip Johnson Pavilion in New Canaan; the Kline Science Center at Yale University (Plate XXI, Appendix B); the Henry L. Moses Building at Montefiore Hospital in the Bronx; the Oetker Museum in Bielefeld, Germany (Plate XXII, Appendix B); and St. Anselm's Abbey and the Dumbarton Oaks Wing (Plate XX, Appendix B) in Washington, D.C.<sup>23</sup>

Johnson's present buildings seem to indicate three distinct facets of architectural reality: an ebttide in the development of a new architecture, as in the Sarah Lawrence Dormitories; a determined effort to regain certain stylistic conceptions of the classic and academic past while retaining a nominally modern vernacular style, as in the Utica Museum; and a venturing into a new realm of creative activity, as in Rehovot Reactor.

Marcel Lajos Breuer, FAIA, Born 1902

Bruer, who was born in Hungary, is an outstanding product of the Bauhaus' most brilliant period (1920-4). He both studied and taught there, designing the Bauhaus' most famous artifact, the steel tube chair. Next, he collaborated for two years with F. R. S. Yorke in London, England, and in 1937, he entered a

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<sup>23</sup>Jacobus, Jr., loc. cit.

designing-teaching partnership at Harvard with Gropius. The partnership was dissolved in 1941, but Breuer continued to teach until 1946. Since then he has collaborated in Europe with Bernard Henri Zehrfuss, Pier Luigi Nervi, and A. Elzas. From 1945-55, most of his work was in houses marked by an extensive, original, and authoritative employment of wood and stone. Since this time, his work has taken on an unforcedly personal, but never individualistic, turn.<sup>24</sup>

In housing in the fifties, Breuer designed such residences as his own house in New Canaan, Connecticut; Clarke House in Orange, Connecticut; Caesar Cottage in Lakeville, Connecticut; Wolfson House in Pleasant Plains, New York; Gagarin House in Connecticut; and Starkey House in Duluth, Minnesota. In the sixties, he designed such houses as Laaff House in Andover, Massachusetts; a vacation house for Aspen, Colorado; Stachelin House in Feldmeilen, Switzerland; Hooper House in Baltimore, Maryland; and the Fairview Heights Housing Development in Ithaca, New York, which is concrete throughout and rests on concrete pilotis.

From 1952-8, Breuer, along with the team of Zehrfuss and Nervi, developed the UNESCO Headquarters for Paris (Plate XXIII, Appendix B). The complex consists of the seven-story "Y" which houses the secretariat and the trapezoidally planned, butterfly-roofed conference hall which is connected to the secretariat.

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<sup>24</sup>"Genetrix: Personal Contributions to American Architecture," Architectural Review, May 1957, 121:348.



Each is notably different in form but fit together in remarkable serenity and unity. There is no sense of an over-proliferation of materials, though many have been used. The circulation is readily comprehended and pleasant. The approach to the plenary hall is easy and cheerful while sufficiently impressive. The major elements fit well together. The general scale, proportions, form, texture, and colors are very ingratiating. The vistas of the lobby, framed usually by the majesty of Nervi's pillars, are fluent and commodious. The inner and outer end walls and the roof and ceiling of the conference hall are grand. The conference hall is a clear masterpiece. The end walls are majestic with their great ribs of concrete. All this comes to a climax in the interior of the plenary hall whose front wall and ceiling work majestically and powerfully upon each other. The painting and sculpture of Pablo Picasso, Fernand Léger, Joan Miró, Hans Arp, Isamu Noguchi, Alexander Calder, Henry Moore, Rufino Tamayo, Afro Basaldella, Roberto Matta Echaurren, Karel Appel, Brassai (Gyula Halász), and Jean René Bazane adorn the interior and exterior.

In the period from 1953-61, Breuer, along with Nervi as structural engineer, designed the Benedictine monastery, St. John's Abbey, at Collegeville, Minnesota (Plate XXIV, Appendix B). Not only has Breuer put into this work all his subtle skill in instrumenting the discordant range of modern materials, of playing calculated crude against calculated perfect finishes, quickly impressed coarse concrete against polished glass, bright raw

elementary paint colors against porous soft natural hues, but he has also gone into an expression, sculptural forms of structure, new to him. In front of the church stands a symbolically modern bell tower, a pierced banner of reinforced concrete. The bell tower not only carries the bells so they can be heard by the monks at work but also as a distinctive silhouette to be carried in the mind. It provides a continuous calm surface in relation to the corrugated rhythm of the church itself. It is a notable entry to the church, suddenly revealing the glass end wall. The structural system is one which returns to the clarity and honesty of the Romanesque, which Breuer admires above all other historical styles. The concrete is faced with granite on the outside, but inside it is left with the scars of formwork still on it to contrast ruggedly with a gilded ceiling and red brick floor.

Breuer's overseas work includes the Van Leer Office Building in Amstelveen, Holland (1958); the U.S. Embassy Office Building in the Hague, Netherlands (1960); and the El Recreo Center in Caracas, Venezuela (1960). His IBM Development Engineering Laboratory in La Gaude, France (1960) (Plate XXVI, Appendix B), preserves the existing quality of the site insofar as was possible by raising the building on columns and allowing the land with its cover of scrub pine to run uninterrupted below. His Torrington Nivelles Factory in Nivelles, Belgium (1965), uses prefabricated concrete panels made by the Schokbeton process, recently brought to America.

In 1959, Breuer, along with Eduardo Catalano as structural

consultant, designed the Library and Administration Building for the Bronx Campus of Hunter College (Plate XXV, Appendix B). The library uses six umbrellas, each divided into four hyperbolic-paraboloidal quadrants whose thin concrete members transmit stresses to heavy ribs which in turn carry them to the supporting columns.

In 1961, Breuer, along with Paul Weidlinger as structural consultant, designed the convent, Priory of the Annunciation, at Bismarck, North Dakota (Plate XXVII, Appendix B). Its 100-foot high cantilevered bell tower serves as symbol, landmark, and belfry. Concrete is used in several ways: as a sculptural material, bush-hammered to reveal aggregate, for fireplaces and stairs; as a patterned natural surface of controlled texture and recessed lines; and as an expression of generating geometry, as in the bell tower.

In 1962, Breuer planned the University Heights Campus at New York University. Here, exposed concrete has been extensively used in combination with a buff brick which closely matches that used on the original campus buildings. The lecture hall's wing is raised above ground to the level of the second floor of the laboratory building. The building has been designed to be an exact envelope for its interior spaces, fitted to their particular functions. The dramatic concrete form which results is without precedent.

Presently, Breuer has planned the Engineering and Applied Science Laboratory at Yale University and the Housing and Home

Finance Agency Office Building in Washington, whose concrete and cast stone structure is supported by forty-four twin tapered columns.

#### Eero Saarinen, FAIA, 1917-1961

Saarinen, born in Finland, had two uncles, besides his father, who were practicing architects. His mother was a sculptor, weaver, photographer, and maker of architectural models. His father, Eliel, took second prize in 1922 in the international competition for the Chicago Tribune Tower. In 1923, the entire family moved to Midwest United States where Eliel established his Cranbrook Academy of Art. At this masterpiece of environmental planning, Cranbrook, an extremely talented group of young designers had clustered about Eliel. Charles Eames and Harry Bertoia taught there, and Harry Weese and Ralph Rapson came to learn. Eero, who sketched precociously with either hand as a child, was first educated at his father's atelier. He seriously intended to become a sculptor and spent a year at the Grande Chaumière in Paris. In 1934, he graduated from Yale in architecture with a wealth of honors. Yale was then still a stronghold of Beaux-Arts classicism. A traveling fellowship then took him back to Europe for two years. In the forties while his father clung to an outdated monumentalism, Eero attempted to arrive at a functionalist, economical architecture liberated from pictorial considerations, and by the end of the war, his office had become one of the most widely known in the country. Eero was a sensitive,

thoughtful, soft-spoken, robustly energetic man, who had a tendency to design for character, to dramatize, and to make each building something special.<sup>25</sup>

Eero Saarinen was the first modern architect fortunate enough to work on a titanic scale without serious budgetary restrictions. His General Motors Technical Center in Warren, Michigan (1951-7), earned him the reputation of a leading Miesian, along with Bunshaft and Johnson. Although its design was firmly based on the structural aesthetic developed by Mies, it is much less Mies than is commonly supposed. In fact, the center belongs to the most liberal range of the International Style. With Joseph Lacy in charge of project management and John Dinkeloo in charge of technical development, Saarinen designed the M.I.T. Auditorium and Chapel in 1955 (Plate XXVIII, Appendix B). The auditorium's shell was the first thin concrete covering of its size in the United States. Saarinen moved, quite distinctly, toward decorativeness, as Yamasaki had done and which Rudolph would follow at Wellesley. He designed the Emma Hartman Noyes Dormitory at Vassar College (1954-8) and the University of Chicago Law School (1956-60). From 1953-8, he produced Concordia College at Fort Wayne, Indiana.<sup>26</sup>

Saarinen shared Stone's and Yamasaki's opinion that Internationalist austerity was a purgative no longer required.

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<sup>25</sup>Ibid., p. 360.

<sup>26</sup>Allan Temko, Eero Saarinen, pp. 13-48, 113-23.

He revised, as his friend Nowicki had, the dictum "form follows function" to read, "function influences but doesn't dictate form." Saarinen declared LeCorbusier as the "Leonardo da Vinci of our time" and Wright as "the Michelangelo." It was about this time that the Irish architect, Kevin Roche, became chief of his design staff, and his personal happiness was bolstered by a remarkably compatible second marriage to art critic, Aline Louchheim.<sup>27</sup>

In 1957, he designed the Milwaukee War Memorial and in 1958, the Ingalls Hockey Rink at Yale University (Plate XXIX, Appendix B) with Fred Serverud as structural engineer. In his famous TWA Terminal at Idlewild Airport (1956-62) (Plate XXX, Appendix B) with Ammann and Whitney as engineers, he relied on model design to a degree unparalleled in the contemporary movement and found the method so rewarding that it was elaborated steadily in later projects. The structure was mistaken by some as a Mendelssohnian depiction of a giant bird, but it was meant only as an abstraction of spatial liberty. The rather small building is already functionally and symbolically out-dated by Saarinen's own consummate masterpiece, the jet-age Dulles International Airport for Washington (1962) (Plate XXXI, Appendix B), with the same engineering team. The Dulles Airport is one large airport, the Brasilia terminal being perhaps the only other, where the traveler is humanely considered from his arrival to departure. This was

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<sup>27</sup>loc. cit.

accomplished by combining the departure lounge and the moving vehicle into a single convenience, and by combining that with a dovered gangplank which hitches directly to the plane. Saarinen thought of the building as a low, hovering mass, "something between earth and sky," but it could not be an inert mass: it must express its essential "spirit" and be "all one thing." The supporting pylons are overstructured for the sake of overexpression. The roof is lower in back to shelter incoming passengers and higher in front for monumental presence. It has been proclaimed as one of the great works of its time, and its crowning glory is its space. In 1962, Saarinen, in collaboration with Gordon Bunshaft, developed the Vivian Beaumont Theater for Lincoln Center for the Performing Arts. His Samuel F. B. Morse and Ezra Stiles Colleges at Yale University (1962) (Plate XXXII, Appendix B) show once and for all that a modern architect may build honestly within the historical discipline of an existing neo-Gothic environment. In the colleges, the Norwegian process of a technological masonry wall was used by filling forms with rough stones, injecting concrete grout under pressure, and later troweling out the excess mortar. His last project, completed after his death in 1965, was the Columbia Broadcasting System skyscraper in New York.

Since his death, Eero Saarinen Associates, composed of Joseph Lacy, John Dinkeloo, and Kevin Roche, have carried on the Saarinen tradition with such projects as the Ford Foundation Headquarters in New York, the Knights of Columbus Building in

New Haven, and the Air Force Museum at Wright-Patterson Air Force Base.

Ieoh Ming Pei, FAIA, Born 1917

This intense, yet urbane man, born in Canton, China, came to the United States in 1935 to study architecture at M.I.T. After his graduation in 1939, he traveled on an M.I.T. fellowship, did research at Bemis Foundation, and worked briefly for Stone and Webster. In 1942, he was on the National Defense Research Committee at Princeton, at which time, he entered the Harvard Graduate School of Design from which he received his master of architecture degree in 1946. After the war, 1945-8, he was a faculty member at Harvard while working for Hugh Stubbins. In 1951, he received a Harvard Wheelwright Fellowship, and in 1954 he became a naturalized citizen of the United States. In conjunction with his collaboration with William A. Zeckendorf, head of Webb and Knapp, Inc., developers, he spent a three-year research (1955-8) to find a construction system suitable for high-rise apartment buildings, which would not only be economically competitive with conventional methods, but which would also offer a great aesthetic potential. Edward L. Friedman of I. M. Pei and Associates was architect in charge of research into concrete technology. The outcome of this research involved the quite radical theory in speculative building that concealing the perfectly good reinforced concrete frame of a high-rise apartment behind a facade tended in fact to be a rather extravagant



way of building. Instead, he put a little more effort into the finish of the concrete frame and let it become the facade. In 1963, he became a member of the Department of Art of the National Institute of Arts and Letters, an associate member of the National Academy of Design, and was awarded the Medal of Honor by the New York Chapter of the American Institute of Architects. His great admiration has been for LeCorbusier and Picasso.<sup>28</sup>

Among several projects for Webb and Knapp, Pei designed the Kips Bay Apartments in New York (1958) and the Place Ville-Marie Commercial Center in Montreal (1959). In 1960, he won a competition for a multi-airline terminal for Idlewild International Airport, with Ammann and Whitnes as structural engineers. The terminal is a space frame of steel tetrahedrons supported by massive concrete pylons which form a vast column-free interior. That same year, he completed the Society Hill Apartments in Philadelphia (Plate XXXIII, Appendix B). In 1962, Pei developed a standard control tower for the Federal Aviation Agency and the Everson Museum in Syracuse, New York. In the museum, in order to give more prominence to the comparatively small structure, the building was designed on a podium within which are housed subsidiary functions and minor gallery spaces. The concrete cantilevered galleries will be the predominating elements, and all exterior surfaces will be treated as a product of a sculptor's tool and have a rough, bush-hammered finish. It is one of the

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<sup>28</sup>Genetrix: Personal Contributions to American Architecture," Architecture Review, May 1957, 121:376.

strongest statements yet to come from Pei and is quite consciously a piece of abstract sculpture.

Pei's most recent works have shown his interest in concrete. His Earth Sciences Building at M.I.T. (Plate XXXIV, Appendix B), with Fred Severud as structural engineer, is of special significance as a vertical concrete expression, a sharp break from a distinctive and long-established pattern of campus development at M.I.T. His School of Journalism at Syracuse University (Plate XXXV, Appendix B) employs post-tensioned, long spans with exposed aggregate concrete finish. His National Center for Atmospheric Research at Boulder, Colorado, contains massive concrete bearing walls with a bush-hammered finish of reddish sandstone aggregate.

Minoru Yamasaki, FAIA, Born 1912

Yamasaki, born in Seattle, was influenced by an architect uncle to take architecture as a career. In 1934, he received his bachelor of architecture degree at the University of Washington, after a summer trip to Japan. He has worked for Githens and Keally, library specialists; Shreve, Lamb, and Harmon; Harrison, Fouilhoux, and Abramovitz; Raymond Lowey Associates; and was Chief Designer for Smith, Hinchman, and Grylls in Detroit. His honors include a Progressive Architecture First Design Award, awards of honor and merit from the American Institute of Architects, and the title of "Most Distinguished Alumnus" from the University of Washington. He most admires

Mies and feels it is unlikely that there is much future for regionalism.<sup>29</sup>

Although Yamasaki admires Mies, he feels that to remain permanently within the principles set by his architectural thinking would be to stifle and restrict the future of architecture. To stop at function would not even be commencing with architecture.<sup>30</sup> Though he feels Mies' monumentality, dignity, and elegance are superbly conceived, there is missing a joyful quality and to simply copy Mies' techniques is to lose sight of his greatness. In addition to the basic requirements of space, proportion, and refinement, Yamasaki is concerned with the more obvious means of contrasting textures or ornament, modeling of buildings to reflect the play of sun and shadow, the use of the drama and interest of silhouette against the sky, the interweaving of surprise to break the monotony of regimented plans, and the utilization of overhead daylight to give variety.<sup>31</sup> He clearly admits that many of his buildings are facades only and warns that we must not be trapped by architectural techniques or dogmas of any kind.<sup>32</sup> His humanistic

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<sup>29</sup>Ibid., p. 366.

<sup>30</sup>Minoru Yamasaki, "Toward an Architecture for Enjoyment," Architectural Record, August 1955, 118:142-9.

<sup>31</sup>Minoru Yamasaki, "I Am for Delight in Architecture," Progressive Architecture, May 1959, 40:154-5.

<sup>32</sup>Philip C. Johnson, Minoru Yamasaki, and others, "Individual Theories of Design," American Institute of Architects Journal, August 1959, 32:49-59.

philosophy goes beyond the basic necessities of structural stability, utility, and compatibility with economics to a recognition of the human characteristics of love, gentility, joy, serenity, beauty, and hope. At the root of Yamasaki's design philosophy lies the belief that buildings should be friendly rather than impressive, and that architecture should reflect the dignity and individuality of man and the ideals and aspirations of our whole society.<sup>33</sup>

Perhaps no other building has ever exhibited as clearly the physical qualities and architectural possibilities of concrete as his American Concrete Institute Building in Detroit (1958). The tensile strength of concrete when coupled with steel reinforcement is well illustrated by the cantilevered folded-plate roof. The compressive strength of concrete is manifested by the "box," which is the basement, and by the two bearing corridor partitions from which the precast roof sections spring. Concrete's architectural possibilities are evident in the precast concrete elements, such as the pierced window grills for the basement, and the spandrel sections at the main level, the block assembly for the garden wall, and the sun screen and walls. The concrete roof slab has plastic applied to visually create the same quality of continuity that the concrete has. That same year, Yamasaki designed his famous MacGregor Memorial Conference Center at Wayne State University and the U.S. Consulate General Headquarters

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<sup>33</sup>"Six New Projects by Yamasaki," Architectural Record, July 1961, 130:125-40.

in Kobe, Japan. In addition to the Conservatory of Music Administration Building at Oberlin College, he designed in 1959, with Ammann and Whitney as structural engineers, the Parke-Davis Warehouse and Office Building in Menlo Park, California, and the Reynolds Metals Building in Detroit. The warehouse is an assembled concrete building using only four basic components: the L-shaped column and roof-support bent, the spherical-triangular roof shell, and two sizes of wall panels. The Reynolds Building has eaves, skylights, walls, and screens calculated to admit and exclude or modulate the light in useful and stimulating ways. Much of this building's excitement stems from its interplay of substance and space. In 1960, he designed the Art School for the Society of Arts and Crafts in Detroit and the Warren Methodist Church in Warren, Michigan; in 1961, the Behavioral Sciences Building and the Engineering Laboratory at Harvard University (Plate XXXVI, Appendix B), the Library at Butler University, and the Japanese Cultural Center in San Francisco; in 1962, the U.S. Science Pavilion for the Seattle Fair and the College of Education at Wayne State University; in 1963, the Civil Air Terminal in Dhahran, Saudi Arabia (Plate XXXVII, Appendix B), the Michigan Consolidated Gas Headquarters in Detroit, and the Northwest YMCA in Detroit; in 1964, the North Shore Congregational Israel Synagogue in Glencoe, Illinois (Plate XXXVIII, Appendix B), Queen Emma Gardens Apartments in Honolulu, the Northwestern National Life Insurance Building in Minneapolis, and the World Trade Center for New York. Recent projects include the IBM Office

Building for Seattle (Plate XXXIX, Appendix B), the Woodrow Wilson School of Public-International Affairs at Princeton University, and the Carleton College Men's Gymnasium in Northfield, Minnesota.

Yamasaki's work is clearly and consistently demonstrating a search for the means of achieving once again a whole architecture. His ultimate concern is a broad and penetrating experience of space, employing the ancient tools of silhouette, sunlight, surface, and surprise.<sup>34</sup>

Edward Durell Stone, FAIA, Born 1902

Stone, born in Fayetteville, Arkansas, is the only architect to have earned the rarely-dispensed admiration of Wright, who called him "a young man with a brilliant future." His brother, James Hicks Stone, is an architect in Boston. At the age of twelve, he won first prize in a bird house competition. Although he has never received a degree in architecture, he has studied at the University of Arkansas, Harvard, and M.I.T. and traveled in Europe on a Rotch Scholarship. After designing Radio City Music Hall, Stone established his own office in New York in 1936 and the following year designed the Museum of Modern Art in collaboration with Philip Goodwin. This museum was the first building in the International Style in New York City. Stone feels that architecture is idealistically permanent and should

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<sup>34</sup>"Minoru Yamasaki," Architectural Record, May 1957, 121: 167-82.

find its inspiration in the accumulated experience of history. Perhaps this is why in addition to admiring Alexander Calder, Henry Moore, and Henri Matisse, he admires the town planning of Bath, Piazza San Marco, and Baroque Rome.<sup>35</sup> Further, he feels that ideally buildings should bear the architect's stamp and signature, which perhaps explains his own trademarks, the pierced screen and deep eaves.<sup>36</sup>

Stone's El Panama Hotel in Panama City, Canal Zone, in 1946 became a prototype for the modern resort hotel with its bedrooms opening wide to balconies. Perhaps, his most famous buildings are the U.S. Embassy for New Delhi (Plate XL, Appendix B) and the American Pavilion for the Brussels World's Fair in Belgium (Plate XLI, Appendix B), both designed in 1957. The Brussels Fair building with its light, airy pavilion is the largest free-span circular building yet constructed. His more current projects include: the Huntington Hartford Gallery of Modern Art in New York; the National Cultural Center in Washington; the New York World's Fair House; the Christian Science Building for the New York World's Fair; the National Geographic Society in Washington; Beckman Auditorium at the California Institute of Technology; the Vernon Plaza Office Building in Arlington; and the General Motors Tower in New York.

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<sup>35</sup>Edward D. Stone, "Design," American Institute of Architects Journal, August 1959, 32:25-8.

<sup>36</sup>Jonathan Barnett, "Edward D. Stone Interview," Architectural Record, September 1961, 130:10.

## Harry Mohr Weese, FAIA, Born 1915

Weese, born in Chicago, has two younger architect brothers; one is with Skidmore, Ownings, and Merrill. His education consists of a bachelor of architecture degree from M.I.T. in 1938, study at Yale, and a Fellowship in City Planning under Eliel Saarinen at Cranbrook Academy of Art. In 1940, he worked as a designer under Gordon Bunshaft in Skidmore, Owings, and Merrill's Chicago office. During the war, he spent four years as an engineering officer on a destroyer. Two of his strong influential friends were Moholy-Nagy and Giedion in the early forties, but his current preferences are LeCorbusier, Arne Jacobsen, John Hash, Albert Giacometti, Marino Marini, Giovanni Lorenzo Bernini, Piero della Francesca, Paul Klee, Joan Miró, and Victor Pasmore. His work has been compared with that of Breuer.<sup>37</sup>

Weese's own Studio and Summer House in Barrington, Illinois (1959), has a medieval-looking roof that is of structural interest, since the central peaked segment is suspended from the two end elements and is not framed into them in conventional fashion. In his State Bank of Clearing in Chicago (1958-60) (Plate XLII, Appendix B), there is more than simple expression of structure. The form and nature of the structure stem from the architect's concept of the shape, arrangement, and lighting of the banking

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<sup>37</sup>"Genetrix: Personal Contributions to American Architecture," Architectural Review, May 1957, 121:374.



space itself, as well as its relationship to the immediate environment and the automobile. In his Men's Residence Hall for the University of Chicago (1959-60), the pavilion's hyperbolic paraboloidal undulations serve visually to unify the entire composition, and act as an effective separation for the pavilion's horizontality and tower's verticality. Unique in his Arena Stage in Washington (1960) is its emphasis on the acting area and the audience as one. In his Center for the Visually Handicapped in Chicago (1963), masonry of an almost Richardsonian character is played against a fenestration of glass without frames and windows turned at right angles to the wall to create an original architecture distinctly of today but rooted in tradition. Window fenestration is similar to Kahn's prototype. In his Beloit College Science Building in Beloit, Wisconsin (1963), a series of wide, hollow columns run along each side of the building and support precast concrete beams. These U-shaped columns also serve as exhaust duct space, similar to Kahn's Medical Building. Other projects include the Paepcke Swiss Chalet for Aspen, Colorado; the Reed College Arts Center in Portland, Oregon; the Cincinnati Riverfront Redevelopment; a concert hall for Orlando, Florida (Plate XLIII, Appendix B); the Irwin Union Branch Bank in Columbus, Indiana; a Library and College of Liberal Arts for the new Rochester Institute of Technology; and the IBM Headquarters in Milwaukee, whose precast columns serve as structure and house utilities.

## Ralph Rapson, FAIA, Born 1914

Rapson, born in Alma, Michigan, was graduated from the University of Michigan with a two-year scholarship in Regional and Urban Planning under Eliel Saarinen at Cranbrook Academy of Art. His first job was as a designer for Saarinen and Saarinen, after which he worked with George Fred Keck, Paul Schweikher, and Laszlo Moholy-Nagy. For four years, he was Head of the Architecture Department at Moholy's Institute of Design. Rapson established his own practice in 1946 and is presently Professor and Head of the School of Architecture at the University of Minnesota.<sup>38</sup>

Of his projects, two are outstanding. The Sir Tyrone Guthrie Theater in Minneapolis (1963) (Plate XLIV, Appendix B) has been heralded as a significant advance in stage and auditorium design. It is a single form theater that has an asymmetrical open stage surrounded by seating on three sides in an arc of over 200 degrees. Behind the open stage is a shallow fly loft that permits the director to present his actors against a pictorial background. Of the 1400 asymmetrically-planned seats, none is more than fifteen rows from the stage. The balcony is irregular in plan as well as in section. Groups of seats seem arranged as boxes, some deep and some shallow. The exterior is a composite of a free-standing screen of waterproof laminated plywood covered with granulox and a glass wall behind. It is

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<sup>38</sup>Ibid., p. 372.

an abstract frame of asymmetrically placed polygons and pennant-like fins that reiterate the fantasia of the auditorium.

The other project, the University Office for the State Capitol Credit Union in Minneapolis (1964) (Plate XLV, Appendix B), is a single concrete canopy covering an interior where each banking activity has been fragmented into its own articulated space. The irregular perimeter of interior space has a clerestory prior to the waffle slab concrete roof. The irregularity and complexity of the plan is reiterated in the section. The strong roof form is supported on sixteen tapered cruciform, concrete columns. The design of the entire waffle slab serves to reiterate the asymmetrical plan. Its skylights project below the level of the ceiling and are placed over major interior spaces so that they further define them, incorporating artificial lighting into the skylights and coffers to further vary their depth. The result is a ceiling composed of projections and setbacks that reinforces the spatial variety of the building and recalls LeCorbusier's natural lighting techniques.

## CHAPTER IX

### SUMMARY AND CONCLUSION

At the turn of the century, eclecticism was dominant in American architecture. Classic, Medieval, and Renaissance styles were being copied profusely. The eclectic period had deteriorated into an ornate mannerism using an over-abundance of ornament in the name of beauty. Each building was individually designed with no consideration for adjoining buildings or its environment. There were no over-all rules or principles involved. In the twenties in Europe and in the thirties in America, architects began to recognize the need for an architectural revolution that would utilize the advance of technology and new materials. With the advent of the modern movement at this time, came the realization that architecture should be stripped of its Beaux-Arts tradition. It was inevitable and necessary that a paradigm in its own right and more in keeping with its time should evolve. Buildings began to express outwardly their interior functions, and pure structure was allowed to dictate the form. "Form follows function" became the dogma of the modern movement in order to have some basis for design. "Function" was restricted purely to "use." The relatively new material, steel, lended itself to more modular situations with its clean, sharp lines being exposed for what they were. The load-bearing wall gave way to this structural module with the non-load bearing curtain wall between.

It was evident that the modern movement, if it were to accomplish its purpose, would have to make drastic changes. "Beauty" in the form of ornament became an unacceptable word. Simplicity through the principle of "less is more" became the theme, and beauty, the result of pure expression of structure and function. Because of the Beaux-Arts crutch of copying previous styles, all knowledge of previous architectural history was necessarily abandoned. And because classical styles had relied much on symmetry, asymmetrical arrangement had its heyday. Collectivism through teamwork took precedent over individualism so that the cityscape could become a unified whole. The modern movement's principles were a necessary reaction against the centuries of eclecticism in American architecture.

But by the end of the Second World War, the "less is more" and "form follows function" philosophies of the modern movement in architecture had itself deteriorated into the austere, monotonous "curtain wall" or "packaged" architecture of Madison Avenue. With the movement now firmly established, there was the sudden realization that perhaps something, which previous styles had captured, was lost in the process of evolution; something called "humanism" or "enrichment."

Whether the result of this realization is a new style itself or a further refinement of the modern movement, it is too early yet to tell. In any event, it does constitute a New Freedom within the modern movement with characteristics of its own and in contrast to the early principles of the movement. These

characteristics are more distinct than is commonly thought.

Functionalism is under attack. Mies' architecture and his "less is more" philosophy is being replaced by a return to humanism in architecture. Horatio Greenough and Louis Sullivan are being disinterred to see if they really said "form follows function" or if they really meant "form follows form." There is a desire to make sculpture of the total building; to use function as an integral part of the design and not as the thing from which the external shape develops. The goal is to make form and function an insoluble unit. For the avant-garde, beauty does exist, and it relates to form. And through form it does determine to a very large degree which buildings are considered preferable to others. It is the form that determines beauty in architecture, not function.<sup>1</sup>

Infallible rules are giving way to diversity and variety. The Bauhaus rules are considered too limiting, and the International Style is in disrepute. Formal problems of aesthetics are increasingly prominent. There is renewed interest in ornament which was denied by the Bauhaus. "Beauty," "delight," "enjoyment," and "enrichment" are once more perfectly acceptable words. Pure structural expression has given way to a more complex one. Simplicity is achieved through complexity rather than through its most elementary terms. Asymmetrical arrangement now permits

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<sup>1</sup>Donald Leslie Johnson, "Form and Architecture," Progressive Architecture, June 1961, 42:168-70.

symmetrical arrangement, and mass is becoming dominant over voids. There is a "rediscovery" and "rethinking" of history which was denied by the Bauhaus. Traditional materials and techniques are again respected. Collectivism or group effort has given way to individualism, and indigenous regionalism has been abandoned because of the advances in communication. Mies has been replaced by LeCorbusier as the avant-garde's idol, and with this change the smooth skin is replaced by articulation, steel is replaced by concrete, and modularity is replaced by plasticity.

The new avant-garde's philosophy has changed too. They believe in the act rather than the behavior; in following their own compulsions rather than what is considered good manners. They believe in assertion rather than adjustment, and they search for image and meaning rather than charm; in origins rather than influences. They do not require certainty and no longer worship technology or scientific truth, but practice architecture as an art. The avant-garde have accepted the element of change and uncertainty and do not believe in social uplift, pretentiousness, moralizing, or respectability in their work. They deal with the fragmentary rather than the complete and are interested in process rather than finality; interested in human imperfection, if necessary, rather than idealism. They have faith in the emerging idea rather than in the preconceived idea, and their buildings express growth as an accretion of forms. In their striving for beauty through significant form, they are less rational, less regulated, less formal, and less modular than their

predecessors.<sup>2</sup>

Perhaps this new freedom will eventually find its anomaly in a degeneration into a mannerism as the eclectic period did, and another paradigm movement in architecture will be established. Since times change, creating new approaches to problems, and new ways of solving these problems, most likely this will be the long-range result, which has been true of all endeavors. But whatever the far-reaching result, it is inevitable that a new freedom within the modern movement is a necessary direction for architecture at this time.

---

<sup>2</sup>John MacLane Johansen, and others, "Philosophical Horizons," American Institute of Architects Journal, June 1960, 34:93-102.



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APPENDIX A  
Letter of Inquiry



APPENDIX A  
Letter of Inquiry

In compiling research material on contemporary design philosophy in American architecture, information was secured by soliciting the help of forty-seven of America's leading architects through letters of inquiry. Thirty architects responded with replies varying from the perfectly legitimate suggestion that architects should design buildings rather than talk about architecture, to personally written essays, copies of published and unpublished material, complimentary books, and references to books and periodicals.

Material received was too voluminous to include in this appendix, but a copy of a typical letter of inquiry along with a list of the architects solicited is enclosed.

K E D W A R D L A Y J R  
A R C H I T E C T  
M A R G A R E T F L A Y A S L A  
L A N D S C A P E A R C H I T E C T

COPY

College of Architecture and Design  
Kansas State University  
Manhattan, Kansas  
28 January 1965

Dr. Walter Gropius, FAIA  
63 Brattle Street  
Cambridge 38, Massachusetts

Dear Dr. Gropius:

The purpose of this letter is to solicit your help on a research project. I am a registered architect currently with the faculty of the College of Architecture and Design at Kansas State University. Formerly, I was engaged as a designer in various architectural firms in the East.

The research is concerned with current design philosophy in American architecture. In undertaking this investigation, I find it necessary to establish contact with the originators of this philosophy, in other words, you, the architectural innovator. In order to better facilitate this study, I am asking you and several other architects, whom I consider to have made similar significant contributions to present-day architecture, to state your opinion and philosophy of contemporary architectural trends. I am particularly concerned with your own design philosophy, including an interpretation of your own projects which you consider consistent with your philosophy.

I realize, that in order to do justice to any such undertaking, more pages than your time permits might be required. If this is so, perhaps you could briefly cover the salient points of your philosophy. Photographs and references to periodicals or books which express your tenets would also be of significant value.

Enclosed you will find a stamped, self-addressed envelope for your convenience.

I shall appreciate any information you can contribute and look forward to reviewing your statements on contemporary architectural thought.

Sincerely,

K. Edward Lay, Jr.

## LIST OF ARCHITECTS WHO WERE SENT LETTER OF INQUIRY

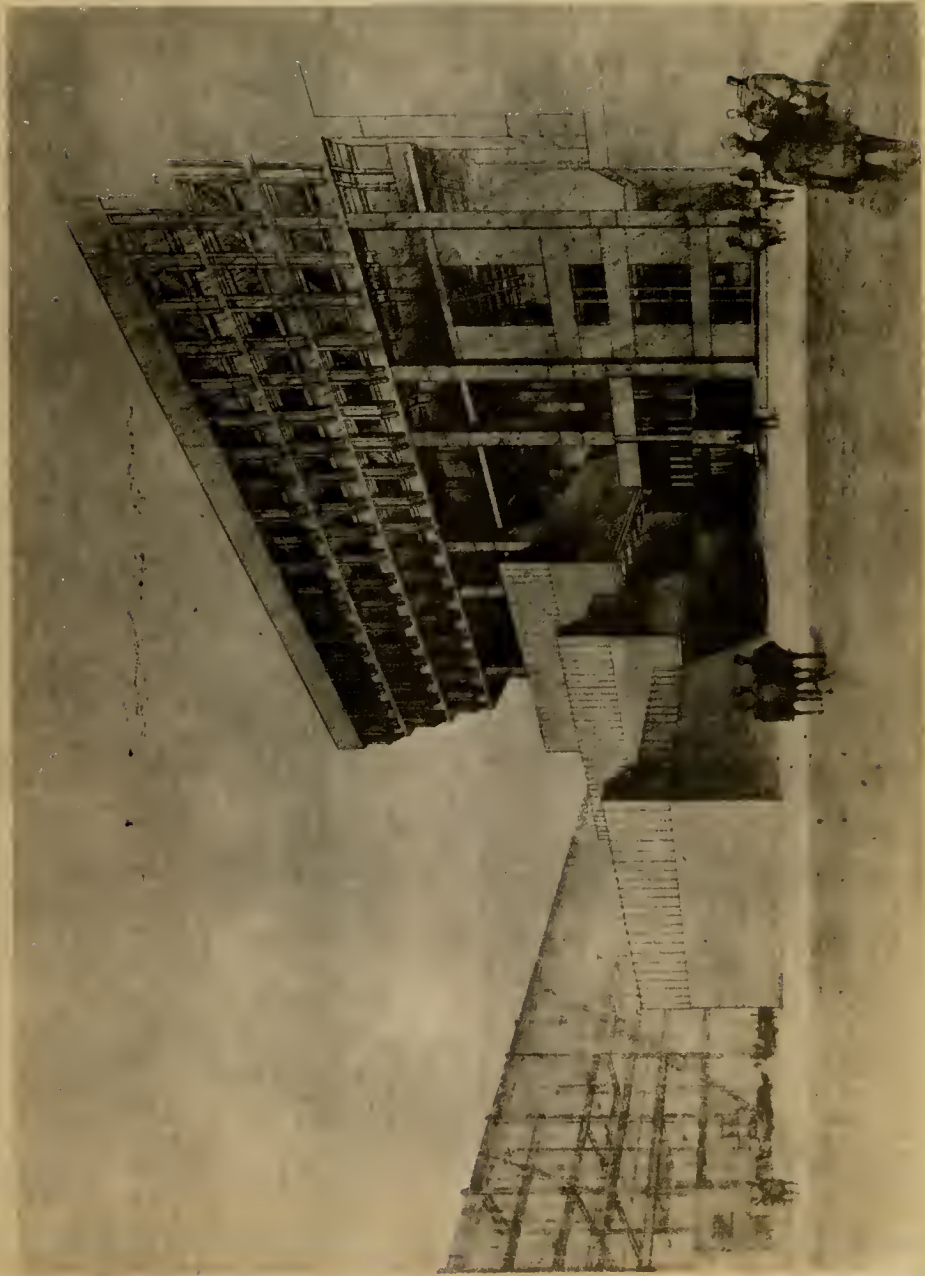
<u>NAME</u>	<u>BIRTH DATE</u>	<u>REPLIED</u>
William Stephen Allen, FAIA, of Anshen & Allen	1912	No
Edward Larrabee Barnes, AIA	1922	Yes
Fred Bassetti, AIA	1917	Yes
Welton David Becket, FAIA	1902	Yes
Pietro Belluschi, FAIA	1899	Yes
Gunnar Birkerts, AIA	1925	Yes
Marcel Lajos Breuer, FAIA	1902	No
Gordon Bunshaft, FAIA, of Skidmore, Owings and Merrill	1909	Yes
Earl P. Carlin, AIA	1923	No
William Wayne Caudill, AIA	1914	Yes
Winston Elting, FAIA	1907	No
Ulrich Franzen, AIA	1921	No
Richard Buckminster Fuller, AIA	1895	Yes
Robert L. Geddes, AIA	1923	Yes
Dr. Walter Gropius, FAIA	1883	Yes
Victor David Gruen, FAIA	1903	Yes
Wallace Kirkman Harrison, FAIA, of Harrison and Abramovitz	1895	Yes
Henry Hill, AIA	1913	Yes
John MacLane Johansen, AIA	1916	Yes
Philip Cortelyou Johnson, FAIA	1906	Yes
Louis Isadore Kahn, FAIA	1901	Yes
Tasso G. Katselas, AIA	1927	No
Frederick John Kiesler	1896-1965	Yes

<u>NAME</u>	<u>BIRTH DATE</u>	<u>REPLIED</u>
Vincent George Kling, FAIA	1916	Yes
Ernest Joseph Kump, FAIA	1911	Yes
Joseph Newton Lacy, AIA, of Eero Saarinen Associates	--	Yes
Victor Alfred Lundy, AIA	1923	No
Dr. Ludwig Mies van der Rohe, FAIA	1886	Yes
Ehrman Burkman Mitchell, Jr., AIA, of Mitchell and Giurgola	1924	No
Dr. Richard Joseph Neutra, FAIA	1892	Yes
Eliot Fette Noyes, FAIA	1910	No
Gyo Obata, AIA, of Hellmuth, Obata and Kassabaum	1923	No
Ieoh Ming Pei, FAIA	1917	Yes
William L. Pereira, FAIA	1909	No
Ladislav Leland Rado, FAIA	1909	Yes
Ralph Rapson, FAIA	1914	No
Paul Marvin Rudolph, AIA	1918	Yes
Paul Schweikher, AIA	1903	Yes
Jose Luis Sert, FAIA	1902	No
Raphael Simon Soriano, AIA	1904	No
Edward Durell Stone, FAIA	1902	Yes
Hugh Stubbins, FAIA	1912	Yes
Paul Alfred Thiry, AIA	1904	Yes
Stanley Tigerman, AIA	--	No
Harry Mohr Weese, FAIA	1915	No
William Wilson Wurster, FAIA	1895	Yes
Minoru Yamasaki, FAIA	1912	No

**APPENDIX B**  
**Illustrations**

EXPLANATION OF PLATE I

1963. Boston City Hall,  
Boston, Massachusetts. Kallmann,  
McKinnell, and Knowles, architects.



*Northeast corner of the building; the proposed motel is shown under construction.*



L E C O R B U S I E R



EXPLANATION OF PLATE II

1946-1952. Roof of Unite  
d'Habitation, Radiant City Apartments,  
Marseille, France. LeCorbusier, architect.



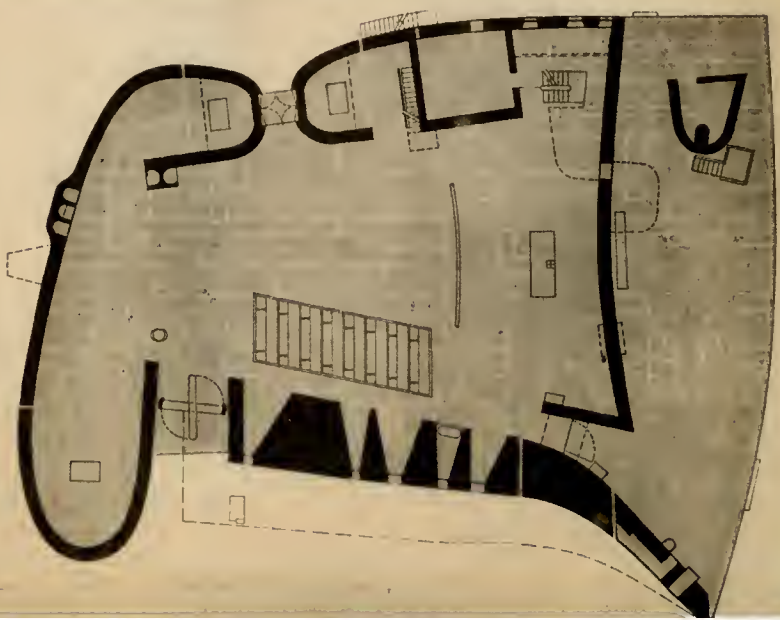
EXPLANATION OF PLATE III

1951. High Court Building, The  
Capitol, Chandigarh, India. LeCorbusier,  
architect.



EXPLANATION OF PLATE IV

1955. Elevation and plan of  
Chapel of Notre Dame du Haut, Ronchamp,  
France. LeCorbusier, architect.



EXPLANATION OF PLATE V

1959. Sainte Marie de La  
Tourette, Lyon, France. LeCorbusier,  
architect.



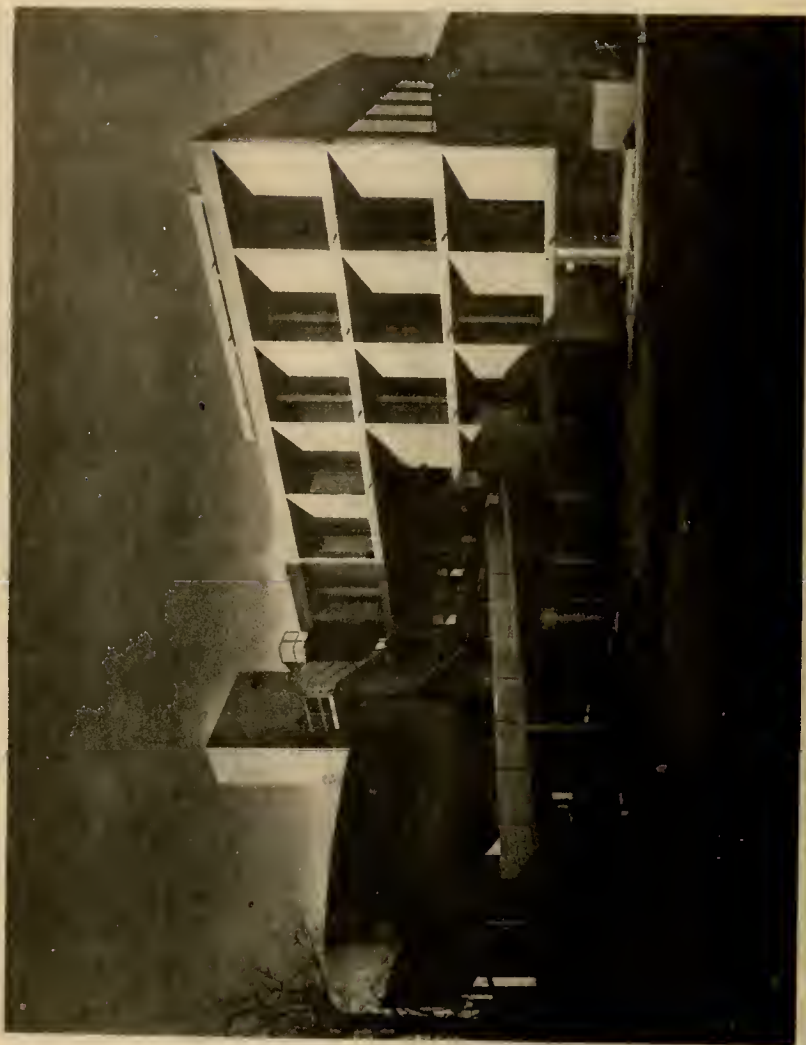
LE CORBUSIER'S

*LA TOURETTE*



EXPLANATION OF PLATE VI

1963. Carpenter Center for  
the Visual Arts, Harvard University,  
LeCorbusier, architect.

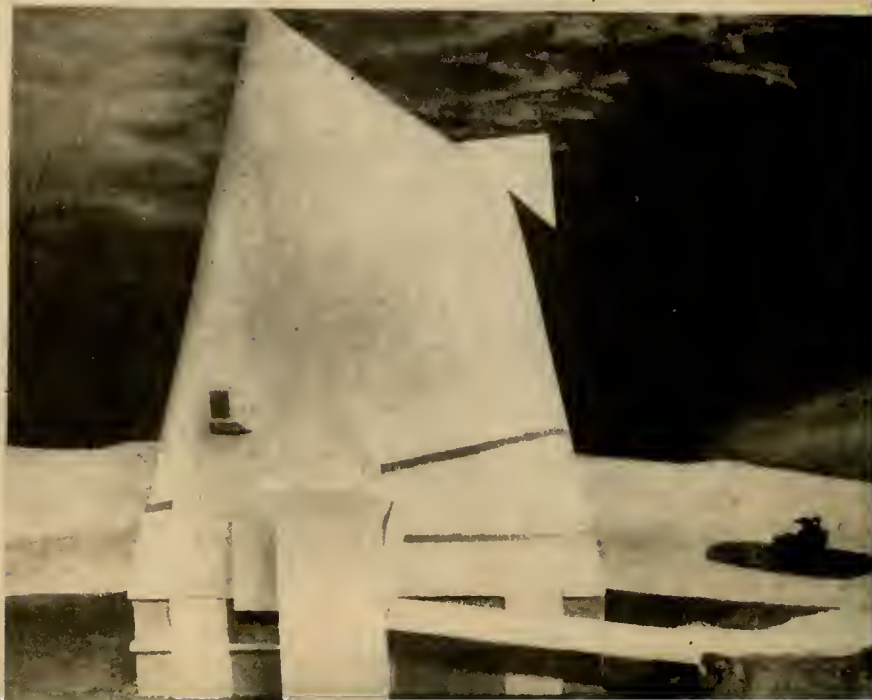


Eastern entrance. Rease staff at left and west entrance at right.

EXPLANATION OF PLATE VII

Proposed 1965. Two views of the  
model for Sainte Etienne Church, Firminy,  
France. LeCorbusier, architect.

PLATE VII

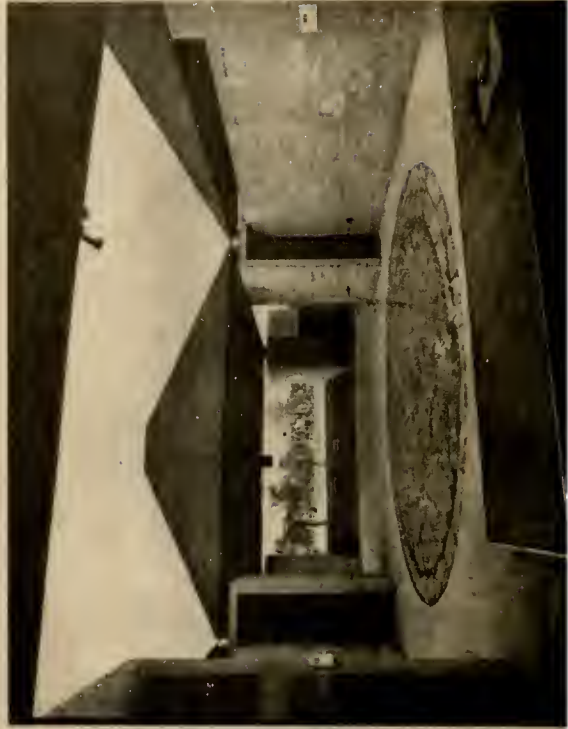




K A H N

EXPLANATION OF PLATE VIII

1956. Bath House, Trenton,  
New Jersey. Louis Kahn, architect.



EXPLANATION OF PLATE IX

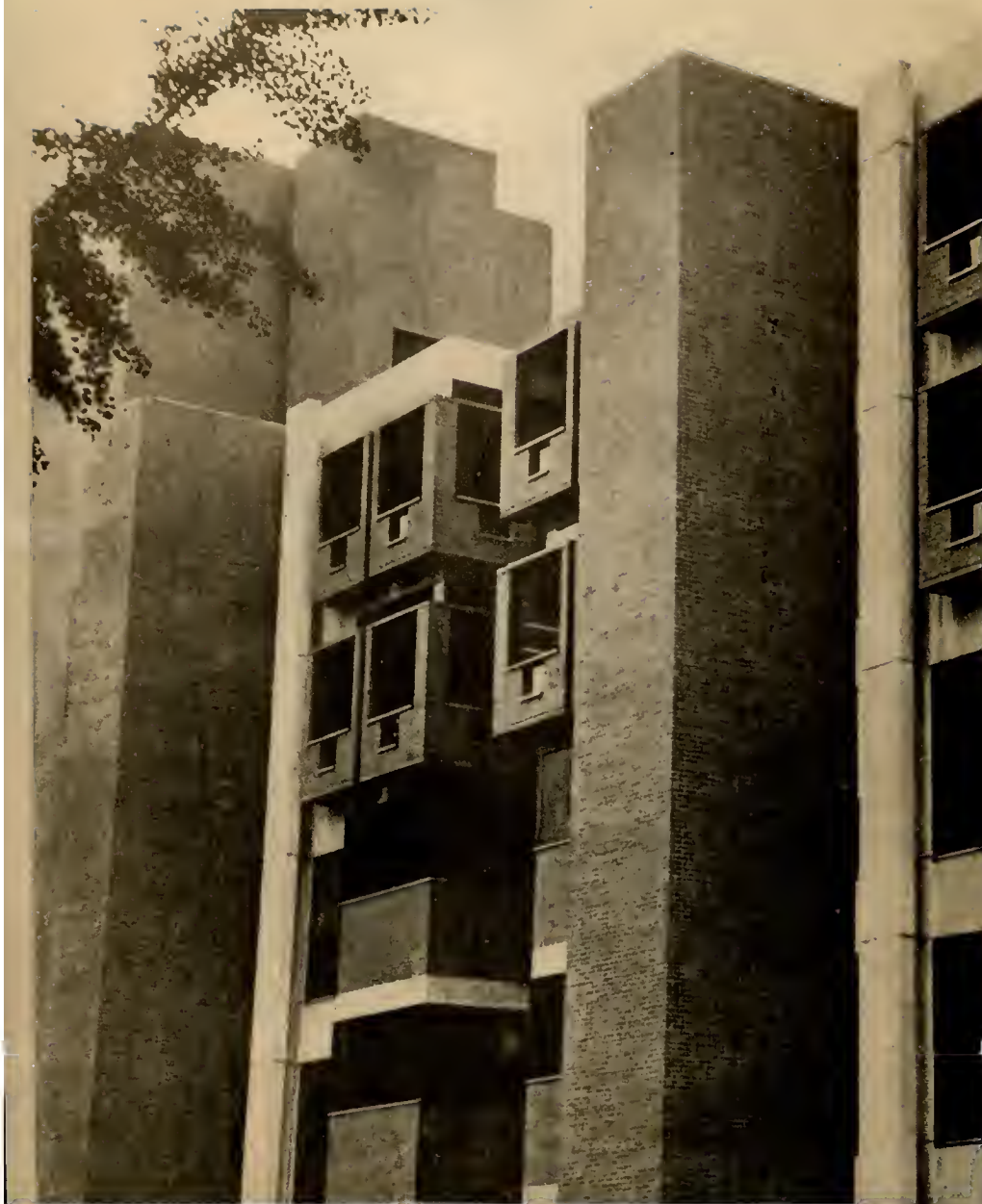
1957-1961. Richards Memorial  
Medical Laboratories, University of  
Pennsylvania. Louis Kahn, architect.





EXPLANATION OF PLATE X

1964. Biology Building, University  
of Pennsylvania. Louis Kahn, architect.



EXPLANATION OF PLATE XI

1965. Jonas Salk Institute for Biological  
Studies, LaJolla, California. Louis, Kahn,  
architect.

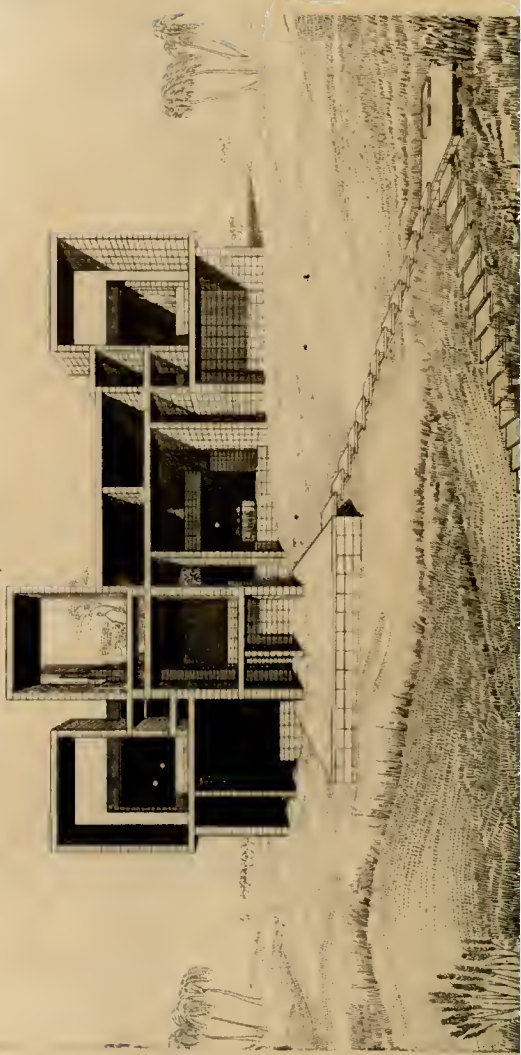




R U D O L P H

EXPLANATION OF PLATE XII

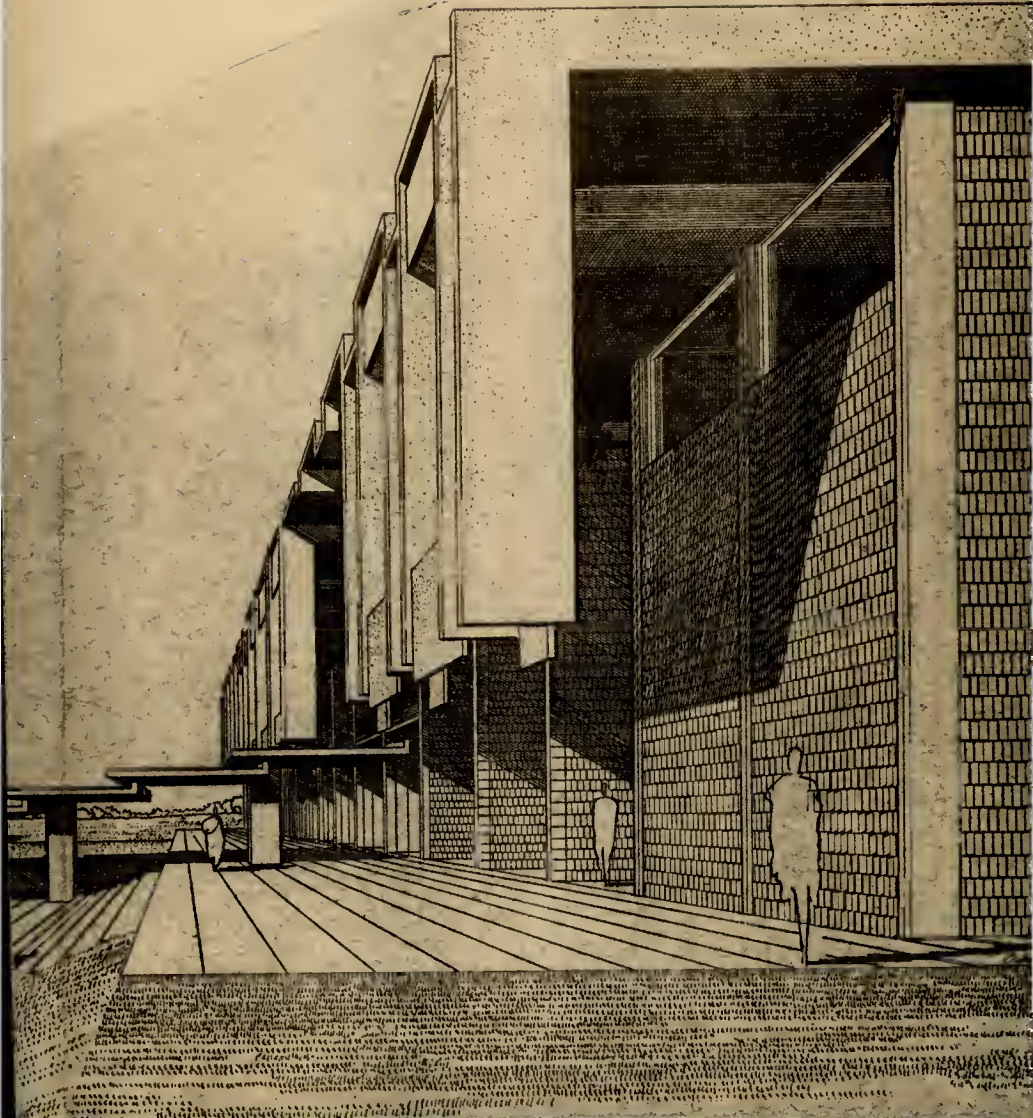
1961. Milan Residence, Paul  
St. John's County, Florida. Paul  
Rudolph, architect.





EXPLANATION OF PLATE XIII

1959. Sarasota High School,  
Sarasota, Florida. Paul Rudolph,  
architect.

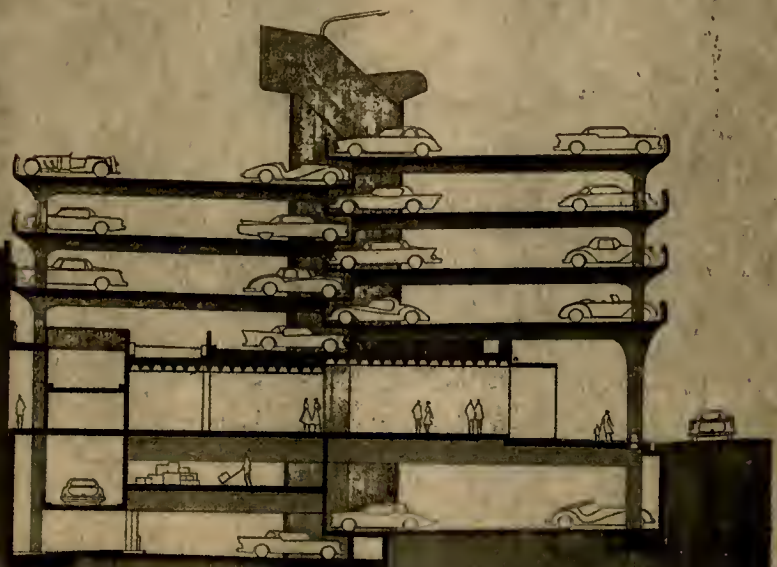


EXPLANATION OF PLATE XIV

1961. Perspective and section  
of Temple Street Parking Garage, New  
Haven, Connecticut. Paul Rudolph,  
architect.

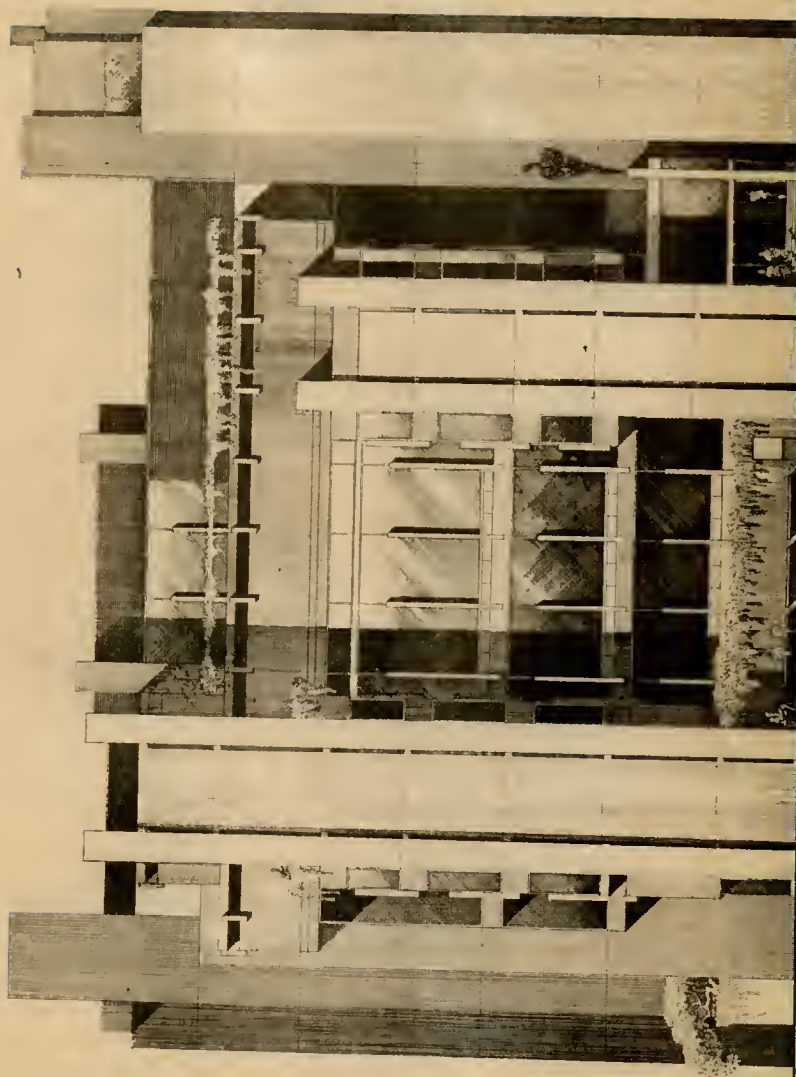


Garage is located near New Haven's Oak Street connection which links New Haven's shopping and commercial district with the Connecticut turnpike. Perspective shows garage spanning major traffic artery, section shows staggered levels for economical use of space.



EXPLANATION OF PLATE XV

1963. School of Art and  
Architecture, Yale University. Paul  
Rudolph, architect.



EXPLANATION OF PLATE XVI

1964. Elevation and entrance  
perspective of Endo Pharmaceutical  
Center, Garden City, New York. Paul  
Rudolph, architect.





EXPLANATION OF PLATE XVII

Proposed 1965. State Government  
Center, Boston, Massachusetts. Paul  
Rudolph, architect.





J O H N S O N

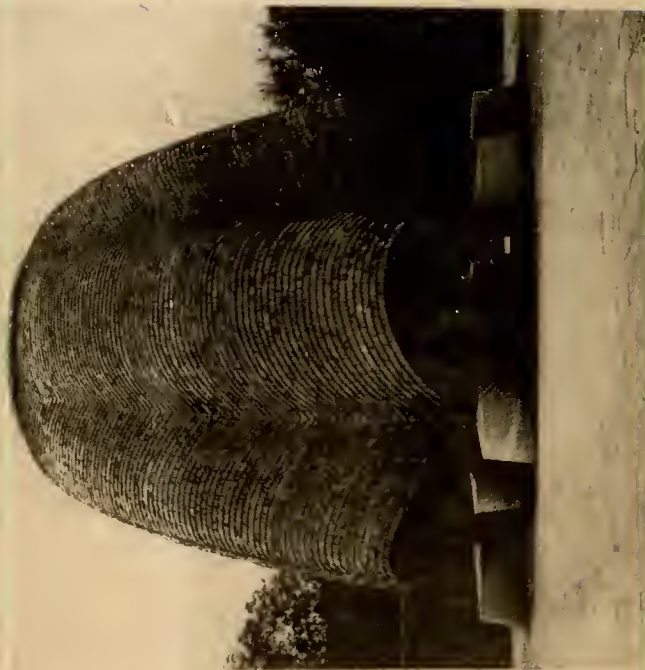
EXPLANATION OF PLATE XVIII

1956. Synagogue for the  
Congregation Kneses Tifereth Israel,  
Port Chester, New York. Philip Johnson,  
architect.



EXPLANATION OF PLATE XIX

1960. Shrine, New Harmony,  
Indiana. Philip Johnson, architect.



EXPLANATION OF PLATE XX

1962. Dumbarton Oaks Wing,  
Washington, D.C. Philip Johnson, architect.

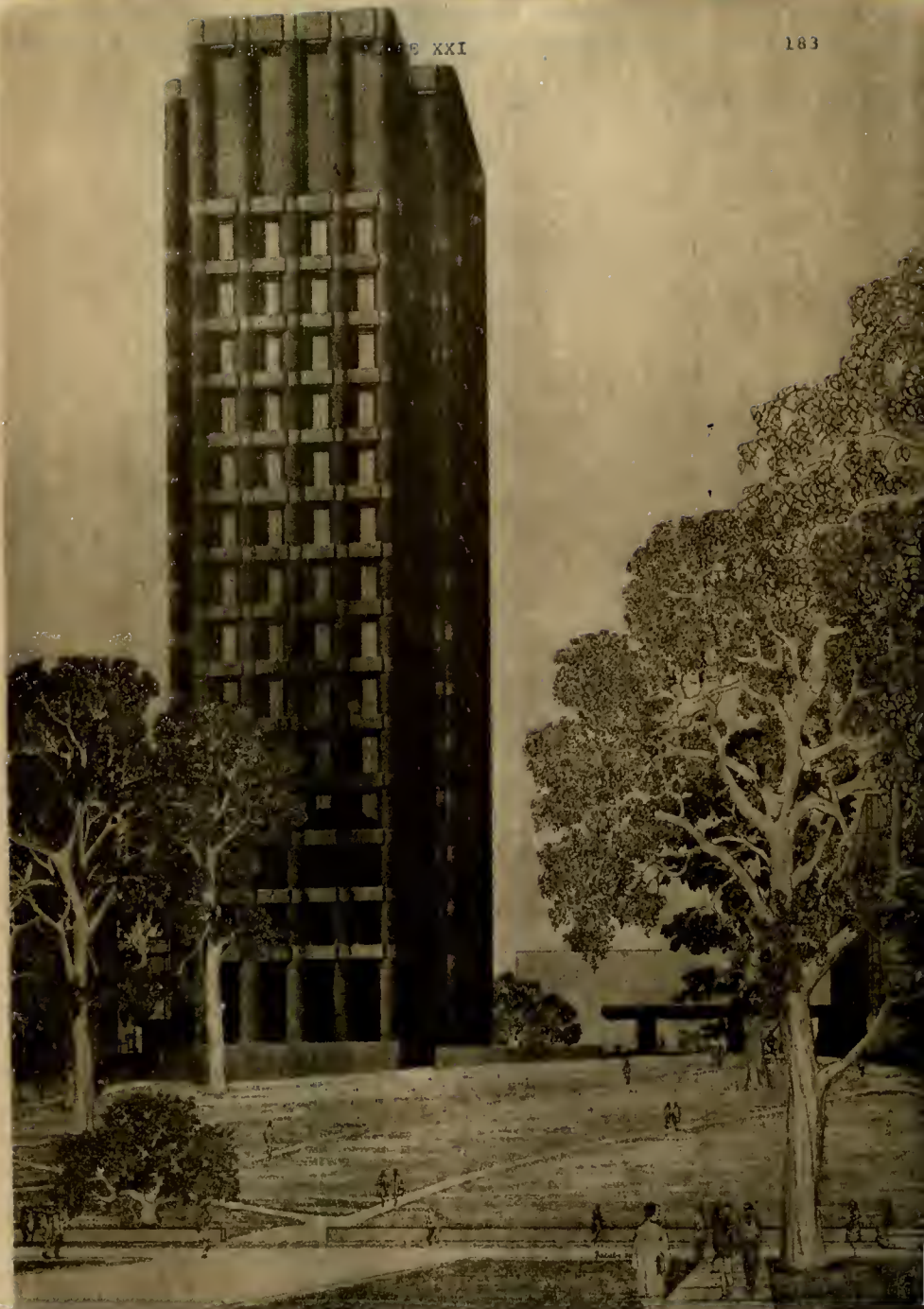


DUMBARTON OAKS WING, WASHINGTON, D. C.



EXPLANATION OF PLATE XXI

1964. Kline Science Center,  
Yale University. Philip Johnson,  
architect.



EXPLANATION OF PLATE XXII

Proposed 1965. Oetker Museum,  
Bielefeld, Germany. Philip Johnson,  
architect.





B R E U E R

EXPLANATION OF PLATE XXIII

1952-1958. Two elevations of  
UNESCO Headquarters, Paris, France.  
Marcel Breuer, architect.



*East facade displays water end wall of conference building*



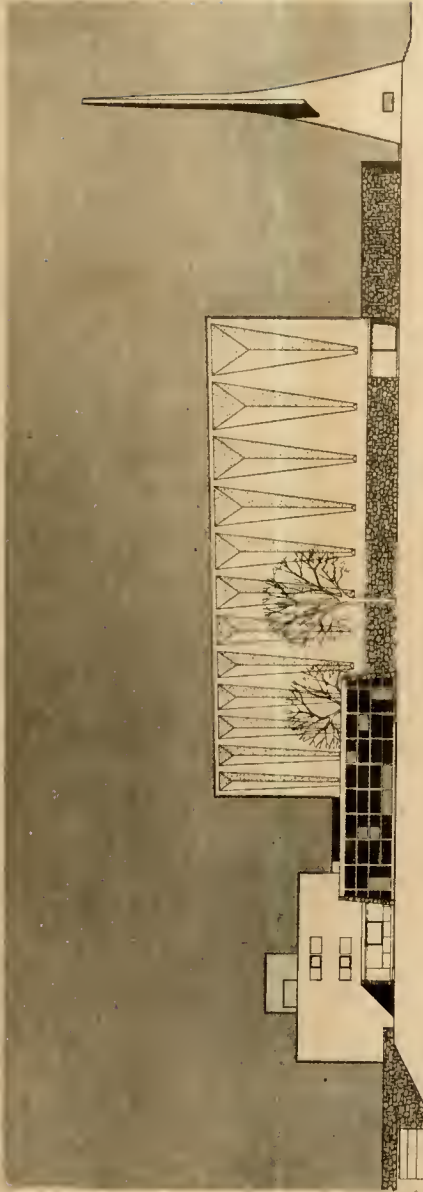
*Southwest facade viewed from main pedestrian approach through plaza*



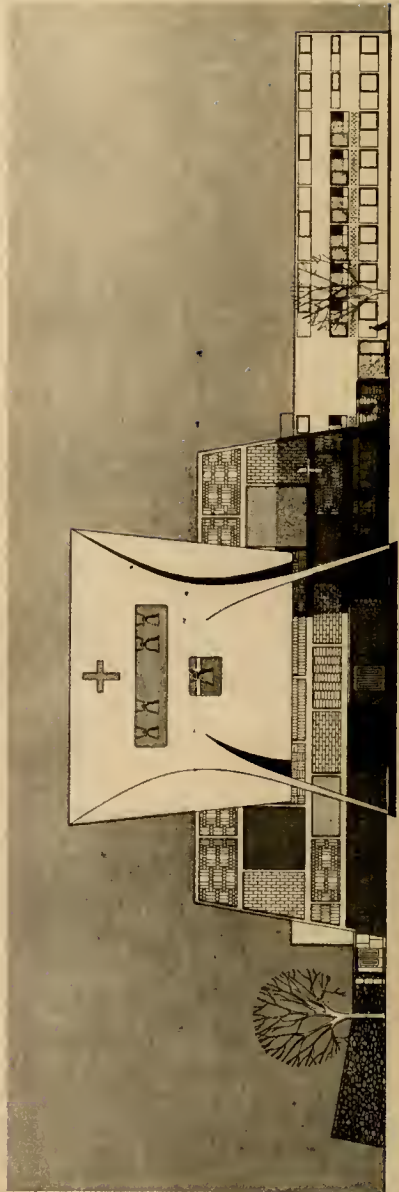
EXPLANATION OF PLATE XXIV

1953-1961. Two elevations of  
St. John's Abbey, Benedictine Monastery,  
Collegeville, Minnesota. Marcel Breuer,  
architect.

BENEDICTINE MONASTERY

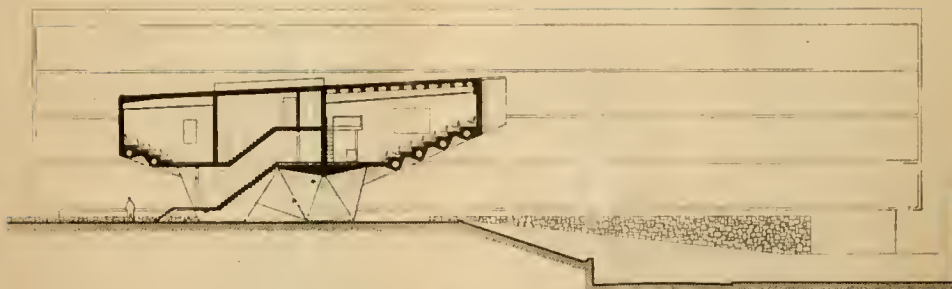


East elevation: serrations in concrete sidewall, are for structural stiffness



EXPLANATION OF PLATE XXV

1959. Section through lecture  
hall and perspective of Bronx Campus,  
Hunter College. Marcel Breuer, architect.



EXPLANATION OF PLATE XXVI

1960. IBM Development Engineering  
Laboratory, La Gaude, France. Marcel  
Breuer, architect.



EXPLANATION OF PLATE XXVII

1961. Belfry for the Priory  
of the Annunciation, Bismarck, North  
Dakota. Marcel Breuer, architect.



NORTH DAKOTA COMMUNITY FOR  
THE BENEDICTINE SISTERS

Priory of the Annunciation, by architect Marcel Breuer, is  
notable for effective use of form and material

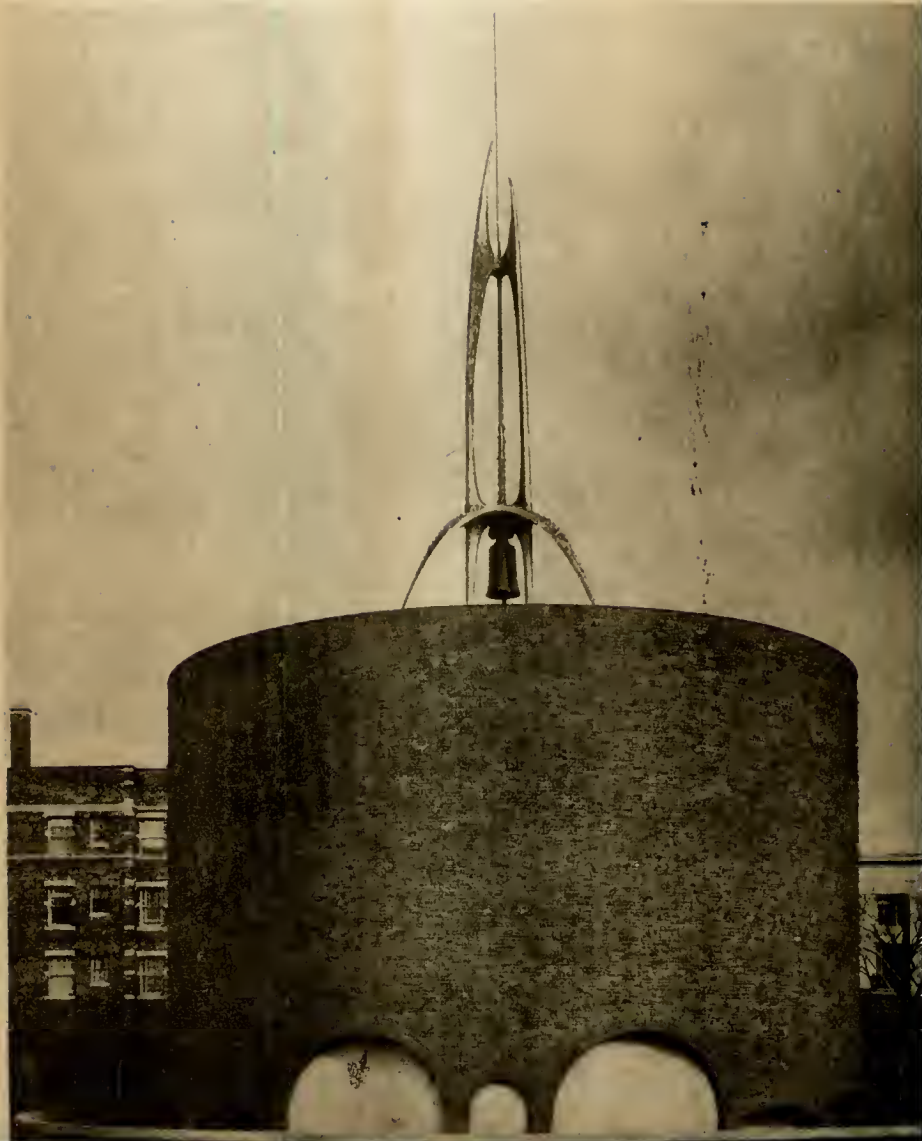




S A A R I N E N

EXPLANATION OF PLATE XXVIII

1955. Chapel, Massachusetts  
Institute of Technology. Eero Saarinen,  
architect.



EXPLANATION OF PLATE XXIX

1958. Ingalls Hockey Rink, Yale University. Eero Saarinen, architect.



EXPLANATION OF PLATE XXX

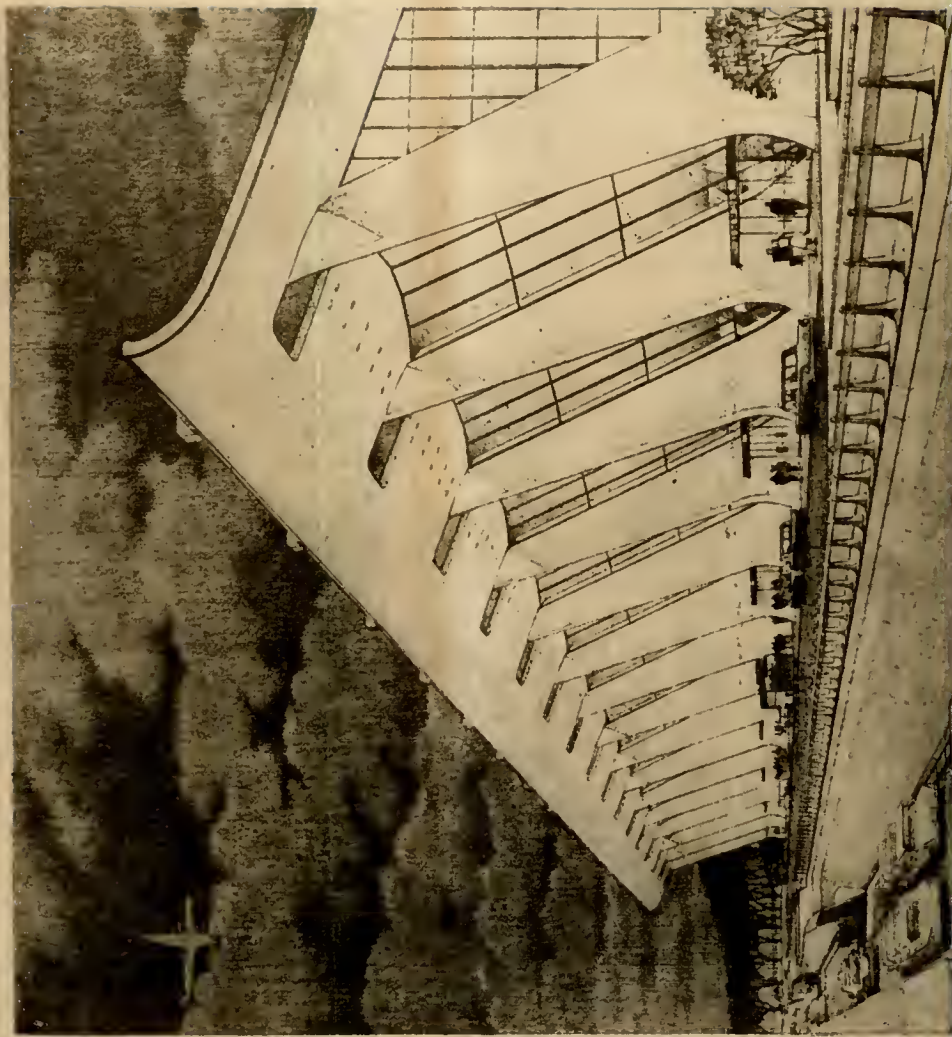
1956-1962. TWA Terminal, Idlewild  
Airport. Eero Saarinen, architect.



EXPLANATION OF PLATE XXXI

1962. Dulles International Airport,  
Washington, D.C. Eero Saarinen, architect.





EXPLANATION OF PLATE XXXII

1962. Samuel F. B. Morse and  
Ezra Stiles Colleges, Yale University,  
Eero Saarinen, architect.



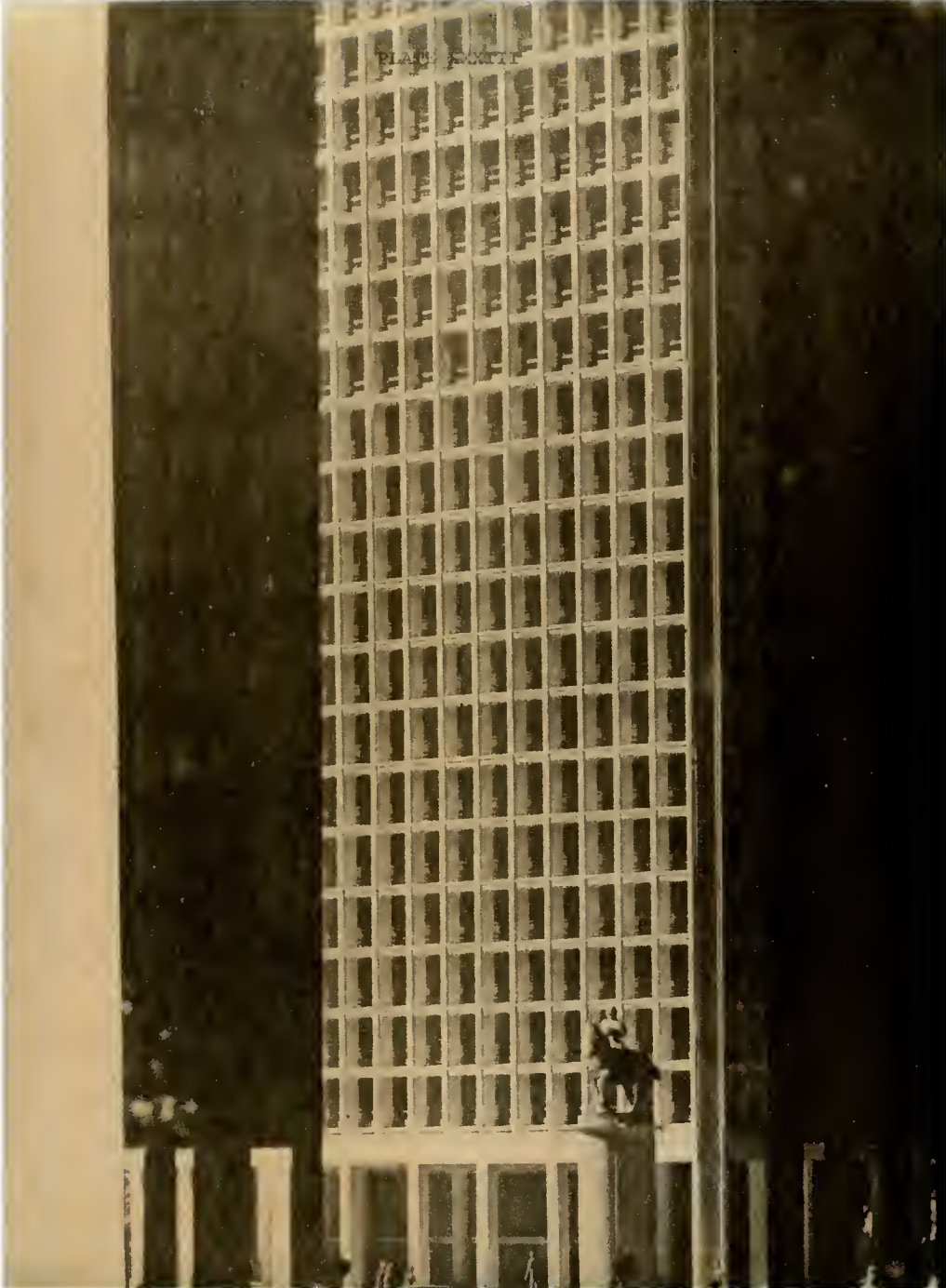


P E I

EXPLANATION OF PLATE XXXIII

1960. Society Hill Apartments,  
Philadelphia, Pennsylvania. I. M. Pei,  
architect.

PLAZA SOUTH



EXPLANATION OF PLATE XXXIV

1964. Earth Science Building,  
Massachusetts Institute of Technology.  
I. M. Pei, architect.





EXPLANATION OF PLATE XXXV

1965. School of Journalism,  
Syracuse University. I. M. Pei, architect.

PLACE XXXV





Y A M A S A K I

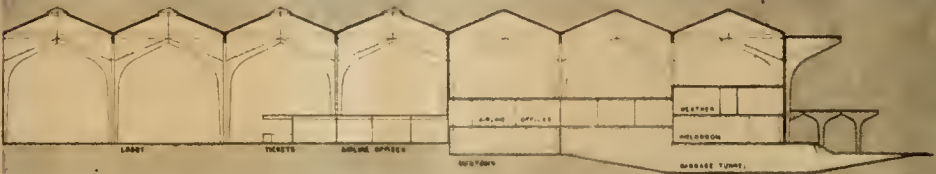
EXPLANATION OF PLATE XXXVI

1961. Behavioral Sciences Building,  
Harvard University. Minoru Yamasaki,  
architect.



EXPLANATION OF PLATE XXXVII

1963. Perspective and two sections  
of Civil Air Terminal, Dhahran, Saudi  
Arabia. Minoru Yamasaki, architect.



LONGITUDINAL SECTION



EXPLANATION OF PLATE XXXVIII

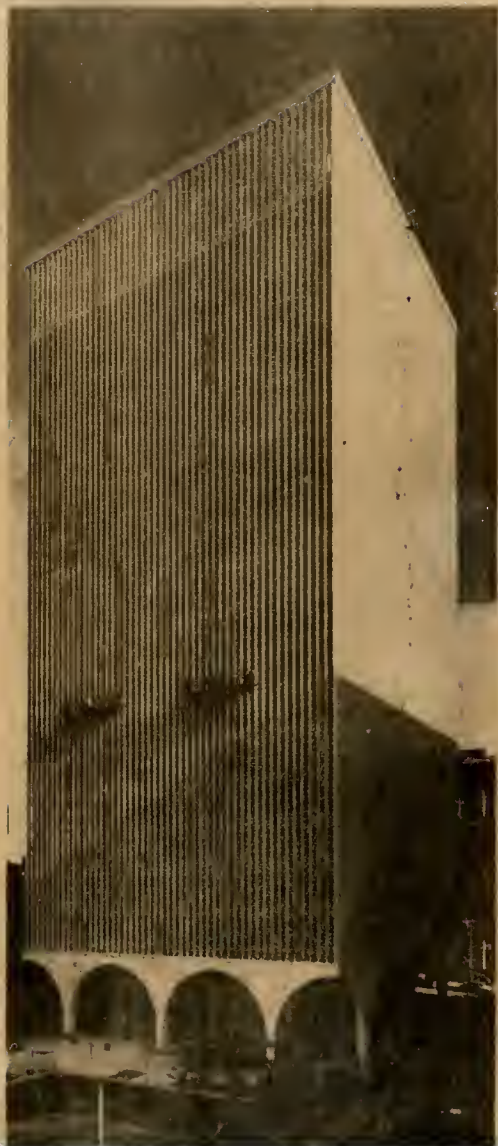
1964. North Shore Congregational  
Israel Synagogue, Glencoe, Illinois.  
Minoru Yamasaki, architect.





EXPLANATION OF PLATE XXXIX

1965. IBM Office Building, Seattle,  
Washington. Minoru Yamasaki, architect.

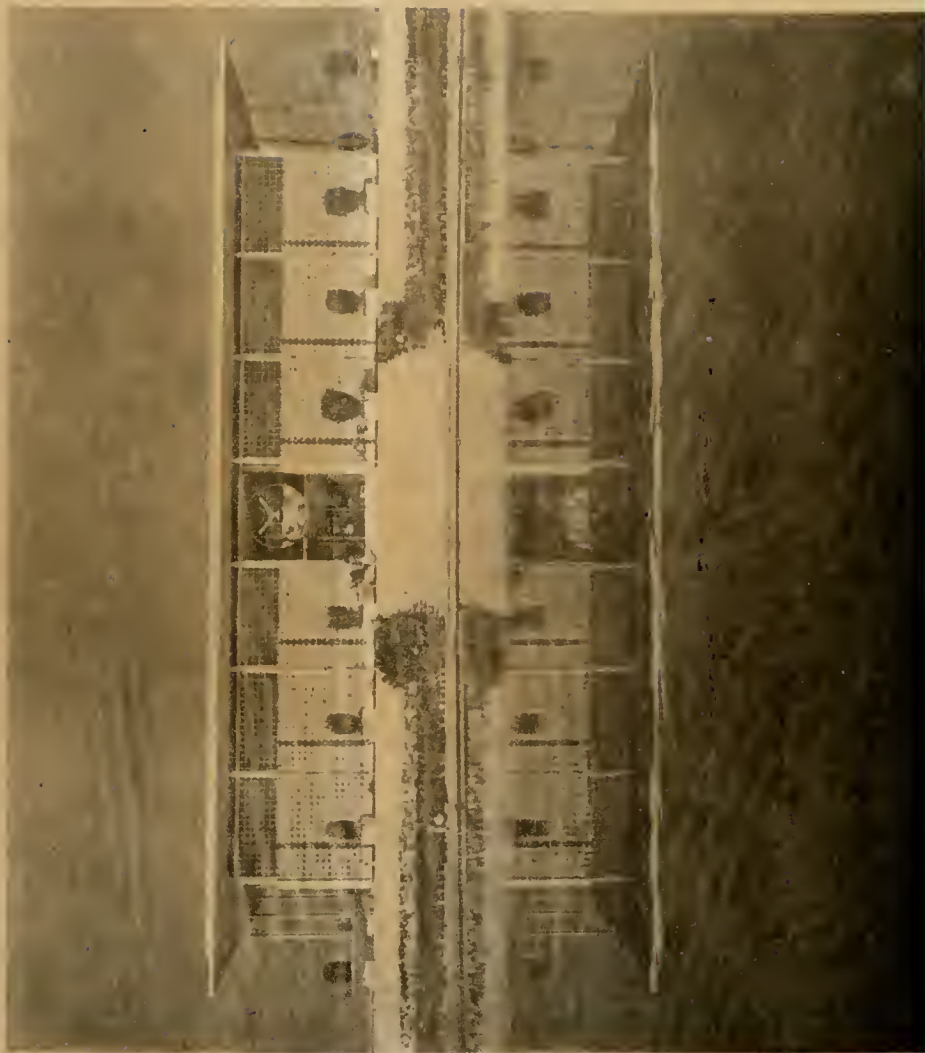




S T O N E

EXPLANATION OF PLATE XL

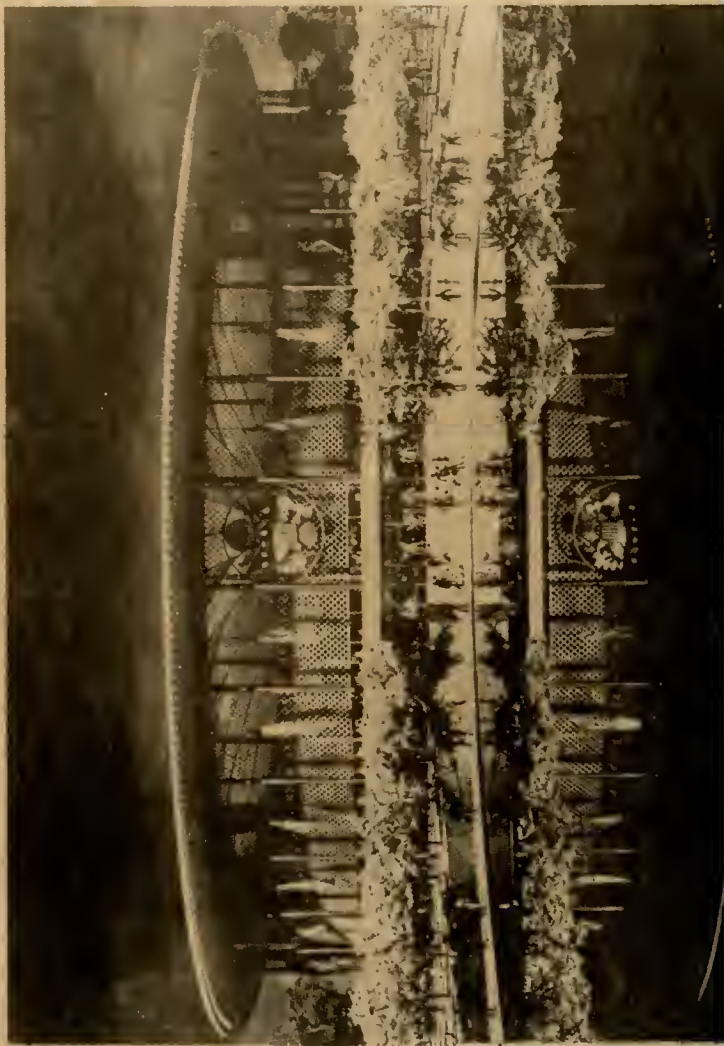
1957. U.S. Embassy, New Delhi,  
India. Edward D. Stone, architect.



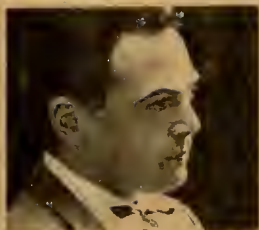
EXPLANATION OF PLATE XLI

1957. American Pavilion,  
Brussels World's Fair, Brussels,  
Belgium. Edward D. Stone, architect.

EDWARD D. STONE. BRUSSELS PAVILION



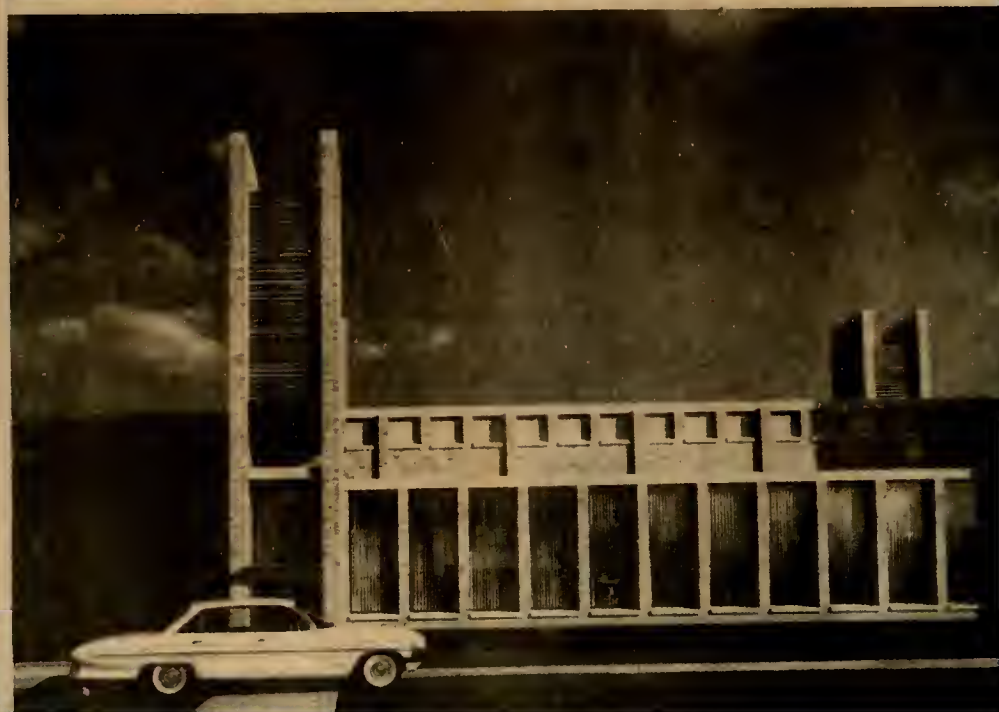
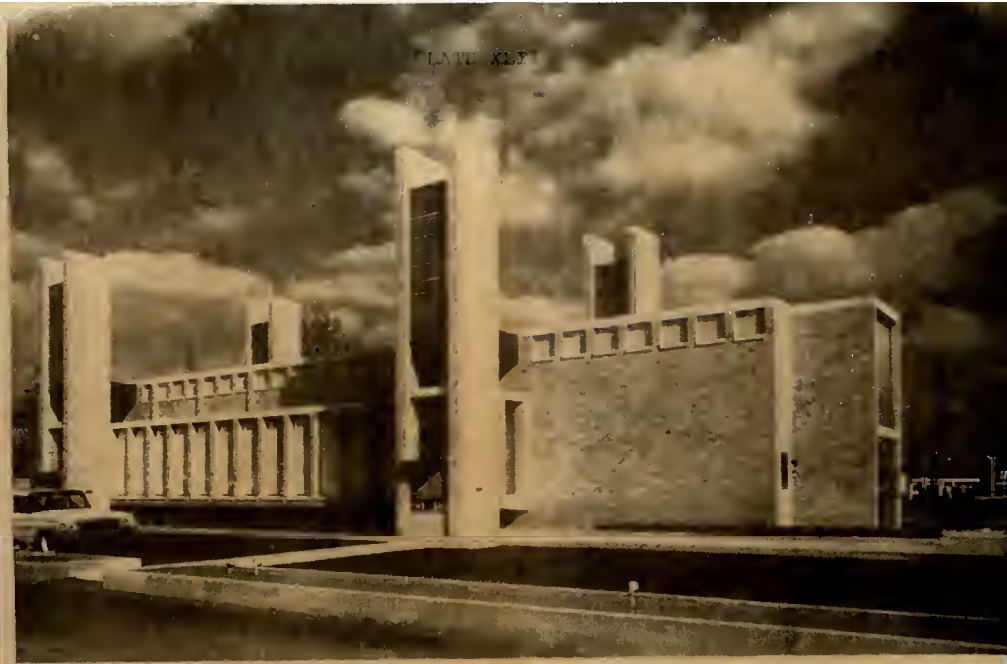




W E E S E

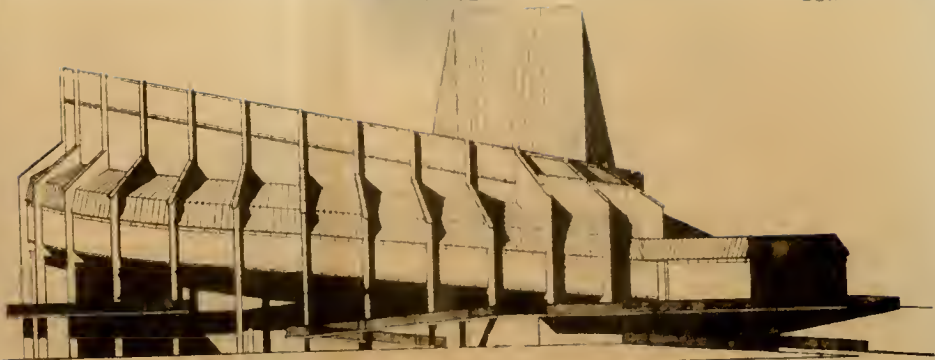
EXPLANATION OF PLATE XLII

1958-1960. Perspective and  
elevation of State Bank of Clearing,  
Chicago, Illinois. Harry Weese, architect.



EXPLANATION OF PLATE XLIII

1964. Elevation, site plan, and section of a Concert Hall, Orlando, Florida. Harry Weese, architect.



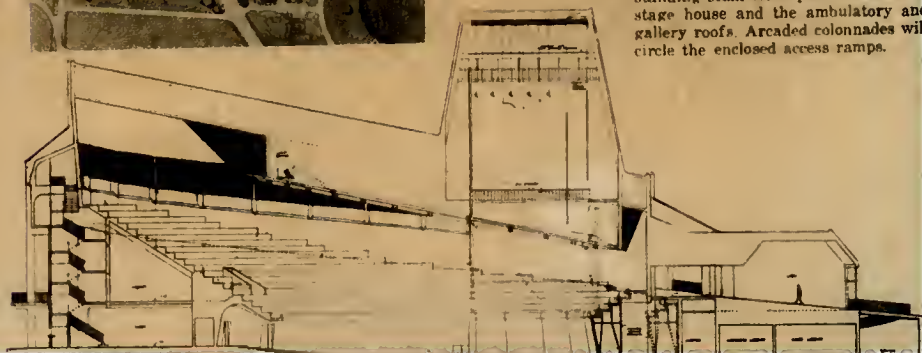
## Theater Without a Back Door



ORLANDO, FLA. An oval concert hall and theater has been designed for Orlando by Harry Weese & Associates of Chicago. Intended for the production of drama, music, and ballet, the building will have a circular form proclaiming the functions which occur inside.

The most-surrounded building will be entered on one side by a ramp to the ambulatory, which will lead to the balcony, and on the other side through the main lobby and ticket office entrance leading to the orchestra. The 360-seat gallery, to be screened by natural wood slats, will follow the slope of the ambulatory and be directly above it. With a total capacity of 3034, the hall will be flexible enough to provide 2761 seats for a wide proscenium presentation and 2205 seats for a 65-ft proscenium production. There will be 293 seats located above and behind the stage that disappear on tracks into the wall. A fireproof wall will separate the auditorium from backstage when it is arranged for drama. Stage rigging will allow handling of productions up to and including grand opera.

Structure will be white cement stucco, and sand-finished plaster, with standing seam terne plate to cover the stage house and the ambulatory and gallery roofs. Arcaded colonnades will circle the enclosed access ramps.

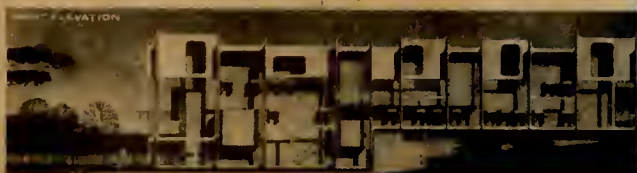
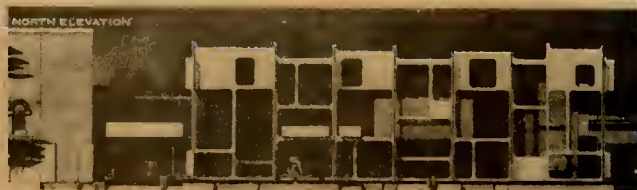




R A P S O N

EXPLANATION OF PLATE XLIV

1963. Various views of the  
Tyrone Guthrie Theater, Minneapolis,  
Minnesota. Ralph Rapson, architect.





EXPLANATION OF PLATE XLV

1964. Interior ceiling perspective, section, and exterior perspective of University Office for State Capitol Credit Union, Minneapolis, Minnesota. Ralph Rapson, architect.



CONTEMPORARY DESIGN PHILOSOPHY  
IN AMERICAN ARCHITECTURE

by

KENNETH EDWARD LAY, JR.

B. Arch., The Pennsylvania State University, 1956

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AN ABSTRACT OF A MASTER'S REPORT

submitted in partial fulfillment of the

requirements for the degree

MASTER OF ARCHITECTURE

College of Architecture and Design

KANSAS STATE UNIVERSITY  
Manhattan, Kansas

1966

## CONTEMPORARY DESIGN PHILOSOPHY IN AMERICAN ARCHITECTURE

Since the war, critics of the modern movement in architecture have contributed many articles and books pertaining to the status of contemporary design philosophy in American architecture. There have been almost as many opinions on the subject as there have been articles.

This report consists of an evaluation of current American architectural thought as recorded in recent books and periodicals by means of an investigation into the evolution of the modern movement, an examination of recent structural expressionism and aesthetic revivalism, a review of criticism, and concluding with the work and philosophy of current architectural leaders.

By the end of the Second World War, the "less is more" and "form follows function" philosophies of the modern movement had deteriorated into the austere "curtain wall" architecture of Madison Avenue. There was the sudden realization that perhaps something was lost in the process of evolution; something called "humanism" or "enrichment." Whether the result of this realization is a new style itself or a further refinement of the modern movement, it is too early yet to tell. In any event, it is shown that it does constitute a "new freedom" within the modern movement with characteristics of its own and in contrast to the early principles of the movement. These characteristics are more distinct than is commonly thought.

Functionalism is now under attack with form being the determinate of beauty. There is a desire to make sculpture of the

total building. The infallible Bauhaus rules are giving way to diversity and variety. There is a "rediscovery" of history and a renewed interest in ornament and aesthetics. Mies has been replaced by LeCorbusier as this new freedom's idol, and with this change the smooth skin is replaced by articulation, steel is replaced by concrete, and modularity is replaced by plasticity.

The avant-garde of this new freedom have changed their philosophy too. They believe in following their own compulsions rather than what is considered good manners. They believe in assertion rather than adjustment. They do not require certainty and no longer worship technology or scientific truth, but practice architecture as an art. They accept change and uncertainty and are interested in human imperfection, if necessary, rather than idealism. They have faith in the emerging idea rather than in the preconceived idea, and their buildings express growth as an accretion of forms. In their striving for beauty through significant form, they are less rational, less regulated, less formal, and less modular than their predecessors.

Perhaps this new freedom will eventually find its anomaly in a degeneration into a mannerism as the eclectic period did, and another paradigm movement in architecture will be established. Since times change, creating new approaches to problems and new ways of solving these problems, most likely this will be the long-range result. But whatever the far-reaching result, it is inevitable that a new freedom within the modern movement is a necessary direction for architecture at this time.