INTRODUCTION

The Idea of Style

The light and airy systems of construction of the Gothic cathedrals, the freedom and slenderness of their supporting skeleton, afford, as it were, a presage of a style that began to develop in the nineteenth century, that of metallic architecture. With the use of metal, and of concrete reinforced by metal bars, modern builders could equal the most daring feats of Gothic architects without endangering the solidity of the structure. In the conflict that obtains between the two elements of construction, solidity and open space, everything seems to show that the principle of free spaces will prevail, that the palaces and houses of the future will be flooded with air and light. Thus the formula popularized by Gothic architecture has a great future before it. Following on the revival of Græco-Roman architecture which prevailed from the sixteenth century to our own day, we shall see, with the
full application of different materials, a yet more enduring rebirth of the
Gothic style.

Salomon Reinach, Apollo, 1904

Since the middle of the eighteenth century there have been
recurrent attempts to achieve and to impose a controlling style in
architecture such as existed in the earlier epochs of the past. The
two chief of these attempts were the Classical Revival and the
Mediæval Revival. Out of the compromises between these two
opposing schools and the difficulties of reconciling either sort of
revivalism with the new needs and the new methods of construc-
tion of the day grew the stylistic confusion of the last hundred
years.

The nineteenth century failed to create a style of architecture
because it was unable to achieve a general discipline of structure
and of design in the terms of the day. The revived “styles” were
but a decorative garment to architecture, not the interior prin-
ciples according to which it lived and grew. On the whole the de-
development of engineering in building went on regardless of the
Classical or Mediæval architectural forms which were borrowed
from the past. Thus the chaos of eclecticism served to give the
very idea of style a bad name in the estimation of the first modern
architects of the end of the nineteenth and the beginning of the
twentieth century.

In the nineteenth century there was always not one style, but
“styles,” and the idea of “styles” implied a choice. The individu-
alistic revolt of the first modern architects destroyed the prestige
of the “styles,” but it did not remove the implication that there
was a possibility of choice between one æsthetic conception of
design and another. In their reaction against revivalism these
men sought rather to explore a great variety of free possibilities.
The result, on the whole, added to the confusion of continuing eclecticism, although the new work possessed a general vitality which the later revivalists had quite lost. The revolt from stylistic discipline to extreme individualism at the beginning of the twentieth century was justified as the surest issue from an impasse of imitation and sterility. The individualists decried submission to fixed aesthetic principles as the imposition of a dead hand upon the living material of architecture, holding up the failure of the revivals as a proof that the very idea of style was an unhealthy delusion.

Today the strict issue of reviving the styles of the distant past is no longer one of serious consequence. But the peculiar traditions of imitation and modification of the styles of the past, which eclecticism inherited from the earlier Classical and Mediæval Revivals, have not been easily forgotten. The influence of the past still most to be feared is that of the nineteenth century with its cheapening of the very idea of style. Modern architecture has nothing but the healthiest lessons to learn from the art of the further past, if that art be studied scientifically and not in a spirit of imitation. Now that it is possible to emulate the great styles of the past in their essence without imitating their surface, the problem of establishing one dominant style, which the nineteenth century set itself in terms of alternative revivals, is coming to a solution.

The idea of style, which began to degenerate when the revivals destroyed the disciplines of the Baroque, has become real and fertile again. Today a single new style has come into existence. The æsthetic conceptions on which its disciplines are based derive from the experimentation of the individualists. They and not the revivalists were the immediate masters of those who have created the new style. This contemporary style, which exists throughout the world, is unified and inclusive, not fragmentary and contradictory like so much of the production of the first gen-
eration of modern architects. In the last decade it has produced sufficient monuments of distinction to display its validity and its vitality. It may fairly be compared in significance with the styles of the past. In the handling of the problems of structure it is related to the Gothic, in the handling of the problems of design it is more akin to the Classical. In the preëminence given to the handling of function it is distinguished from both.

The unconscious and halting architectural developments of the nineteenth century, the confused and contradictory experimentation of the beginning of the twentieth, have been succeeded by a directed evolution. There is now a single body of discipline, fixed enough to integrate contemporary style as a reality and yet elastic enough to permit individual interpretation and to encourage general growth.

The idea of style as the frame of potential growth, rather than as a fixed and crushing mould, has developed with the recognition of underlying principles such as archaeologists discern in the great styles of the past. The principles are few and broad. They are not mere formulas of proportion such as distinguish the Doric from the Ionic order; they are fundamental, like the organic verticality of the Gothic or the rhythmical symmetry of the Baroque. There is, first, a new conception of architecture as volume rather than as mass. Secondly, regularity rather than axial symmetry serves as the chief means of ordering design. These two principles, with a third proscribing arbitrary applied decoration, mark the productions of the international style. This new style is not international in the sense that the production of one country is just like that of another. Nor is it so rigid that the work of various leaders is not clearly distinguishable. The international style has become evident and definable only gradually as different innovators throughout the world have successfully carried out parallel experiments.
In stating the general principles of the contemporary style, in analysing their derivation from structure and their modification by function, the appearance of a certain dogmatism can hardly be avoided. In opposition to those who claim that a new style of architecture is impossible or undesirable, it is necessary to stress the coherence of the results obtained within the range of possibilities thus far explored. For the international style already exists in the present; it is not merely something the future may hold in store. Architecture is always a set of actual monuments, not a vague corpus of theory.
The style of the twelfth and thirteenth century was the last before our own day to be created on the basis of a new type of construction. The break away from the High Gothic in the later Middle Ages was an aesthetic break without significant structural development. The Renaissance was a surface change of style generally coupled with actual regression in terms of structure. The Baroque and a fortiori the Romantic Age concerned themselves all but exclusively with problems of design. When a century ago new structural developments in the use of metal made their appearance they remained outside the art of architecture. The Crystal Palace at the London Exposition of 1851, Paxton's
magnificent iron and glass construction, has far more in common with the architecture of our day than with that of its own. Ferroconcrete, to which the contemporary style owes so much, was invented in 1849. Yet it was at least fifty years before it first began to play a considerable part in architectural construction.

Metal had begun to be used incidentally in architecture before the end of the eighteenth century. Thenceforth it achieved a place of increasing importance, even in buildings of the most traditional design. Finally in the eighties it made possible the first skyscrapers. But on the whole the "arcades," the train sheds, the conservatories and the exhibition halls, of which the London Crystal Palace was the earliest and the finest, were adjuncts to, or substitutes for, conventional masonry buildings.

Behind the conventional story of nineteenth century revivals and eclecticism there are two further histories of architecture. One deals with the science of building alone. It traces the development of new engineering methods of construction and the gradual replacement of traditional masonry structure by successive innovations. The other history deals with the development of the art of architectural design regardless of specific imitations. Design was freed here and there from the control of the past. Some architects even sought novel forms and many aimed at a more direct expression of the new methods of construction. A new art of proportioning plane surfaces, a free study of silhouette, even a frank use of metal appear in the work of most of the leading nineteenth century architects. Soane in England, Schinkel and his followers in Germany, and Labrouste in France, were among these early precursors of modern architecture.

Within the Classical Revival there developed a new sense of design, purer and more rational than that of the Renaissance or the Baroque, yet not restricted merely to the purity and rationalism of the Greeks. Within the Mediæval Revival there grew up a
body of doctrine, based on the practice of the builders of the Middle Ages, which foreshadowed the theories of our own day. There is not much to change today in the passage that has been quoted from Salomon Reinach’s *Apollo*. As late as 1904 it was possible to conceive of modern architecture chiefly as a sort of renaissance of the Gothic. Yet it should be stressed that the relation of the modern style to the Gothic is ideological rather than visual, a matter of principle rather than a matter of practice. In design, indeed, the leading modern architects aim at Greek serenity rather than Gothic aspiration.

In writing on modern architecture some few years ago it was possible to accept that the individualists of the end of the nineteenth century and the beginning of the twentieth, who first broke consciously with the nominal discipline of the revivals, established tentatively a *New Tradition*. It appeared then as a sort of style in which the greatest common denominator of the various revivals was preserved and fused with the new science of building. Today it seems more accurate to describe the work of the older generation of architects as half-modern. Each architect broke in his own way with the immediate past, each sought in his own direction the positive elements which have been combined in the last decade. But there was no real stylistic integration until after the War.

The industrial architecture of Peter Behrens in Germany in the years before the War was already extremely simplified and regular. The effect of volume began to replace the traditional effect of mass. Otto Wagner, a decade earlier in Vienna, cultivated qualities of lightness and developed the plane surfaces of his architecture for their own sake. The Belgian Van de Velde experimented with continuity of surface, making much use of curves. Berlage at Amsterdam based his compositions on geometry and handled both old and new materials with unusual straightfor-
wardness. In the constructions of Perret in France the use of ferroconcrete led to a visible articulation of the supporting skeleton with the walls treated as mere screens between the posts. Thus in the different countries of Europe before the War the conceptions of the international style had come independently into existence. It remained for the younger generation to combine and crystallize the various aesthetic and technical results of the experimentation of their elders.

But it was in America that the promise of a new style appeared first and, up to the War, advanced most rapidly. Richardson in the seventies and eighties often went as far as did the next generation on the Continent in simplification of design and in direct expression of structure. Following him, Root and Sullivan deduced from steel skyscraper construction principles which have been modified but not essentially changed by later generations. Their work of the eighties and nineties in Chicago is still too little known. We have in America only a few commercial buildings of 1900 to compare with the radical steel and glass department stores of Europe; but these few are more notable than all the skyscrapers of the following twenty-five years.

In the first decades of the new century Frank Lloyd Wright continued brilliantly the work of the Chicago school in other fields of architecture. He introduced many innovations, particularly in domestic building, quite as important as those of the Art Nouveau and Jugendstil in France and Germany. His open planning broke the mould of the traditional house, to which Europe clung down to the War. He also was the first to conceive of architectural design in terms of planes existing freely in three dimensions rather than in terms of enclosed blocks. Wagner, Behrens and Perret lightened the solid massiveness of traditional architecture; Wright dynamited it.

While much of the innovation in Europe merely consisted in
expressing more frankly new methods of construction within a framework of design still essentially Classical or Mediæval, Wright from the beginning was radical in his æsthetic experimentation. One may regret the lack of continuity in his development and his unwillingness to absorb the innovations of his contemporaries and his juniors in Europe. But one cannot deny that among the architects of the older generation Wright made more contributions than any other. His consciously novel ornament may appear to lack even the vitality of the semi-traditional ornament of the first quarter of the century in Europe. Perret was, perhaps, a more important innovator in construction; Van de Velde showed a greater consistency and a purer taste in his æsthetic experiments. But Wright preserved better the balance between the mere expression of structure and the achievement of positive form.

There is, however, a definite breach between Wright and the younger architects who created the contemporary style after the War. Ever since the days when he was Sullivan’s disciple, Wright has remained an individualist. A rebel by temperament, he has refused even the disciplines of his own theories. Instead of developing some one of the manners which he has initiated, he has begun again and again with a different material or a different problem and arrived at a quite new manner. The new manner often enough contradicts some of the essential qualities of his previous work, qualities which European followers have emulated with distinction and used as the basis of further advance. In his refusal of the shackles of a fixed style he has created the illusion of infinite possible styles, like the mathematicians who have invented non-Euclidean geometries. His eternally young spirit rebels against the new style as vigorously as he rebelled against the “styles” of the nineteenth century.
Wright belongs to the international style no more than Behrens or Perret or Van de Velde. Some of these men have been ready to learn from their juniors. They have submitted in part to the disciplines of the international style. But their work is still marked by traces of the individualistic manners they achieved in their prime. Without their work the style could hardly have come into being. Yet their individualism and their relation to the past, for all its tenuousness, makes of them not so much the creators of a new style as the last representatives of Romanticism. They are more akin to the men of a hundred years ago than to the generation which has come to the fore since the War.

The continued existence of Romantic individualism is not a question of architecture alone. There is a dichotomy in the spirit more profound than any mere style can ever resolve. The case against individualism in architecture lies in the fact that Wright has been almost alone in America in achieving a distinguished architecture; while in Europe, and indeed in other parts of the world as well, an increasingly large group of architects work successfully within the disciplines of the new style.

There is a basic cleavage between the international style and the half-modern architecture of the beginning of the present century. We must not forget the debt that Le Corbusier, Gropius, Miës van der Rohe, Oud and the rest owe to the older men with whom they studied. We must not forget such exceptional monuments of the nineteenth century as the Crystal Palace. We must not dismiss as lacking historical significance the fine sense of proportion and the vigorous purity of the Classical Revival, or the splendid theories and the stupid practice of the Gothic Revival. Even the absurdities of Romantic artificial ruins and the linear and naturalistic ornament of 1900 have a place in the pedigree of the contemporary style. But the new style after ten years of exis-
tence and growth may now be studied for itself without continual reference to the immediate past.

There are certain times when a new period truly begins despite all the preparation that may be traced behind the event. Such a time came immediately after the War, when the international style came into being in France, in Holland, and in Germany. Indeed, if we follow the projects of the War years made by the Austrian Loos and the Italian Sant’ Elia, it may appear that the new style was preparing on an even broader front. While the innovations of the half-moderns were individual and independent to the point of divergence, the innovations of their juniors were parallel and complementary, already informed by the coherent spirit of a style in the making.

It is particularly in the early work of three men, Walter Gropius in Germany, Oud in Holland, and Le Corbusier in France, that the various steps in the inception of the new style must be sought. These three with Mies van der Rohe in Germany remain the great leaders of modern architecture.

Gropius’ factory at Alfeld, built just before the War, came nearer to an integration of the new style than any other edifice built before 1922. In industrial architecture the tradition of the styles of the past was not repressive, as many factories of the nineteenth century well illustrate. The need for using modern construction throughout and for serving function directly was peculiarly evident. Hence it was easier for Gropius to advance in this field beyond his master, Behrens, than it would have been in any other. The walls of the Alfeld factory are screens of glass with spandrels of metal at the floor levels. The crowning band of brickwork does not project beyond these screens. The purely mechanical elements are frankly handled and give interest to a design fundamentally so regular as to approach monotony. There is
no applied ornamental decoration except the lettering. The organ-
ization of the parts of the complex structure is ordered by logic
and consistency rather than by axial symmetry.

Yet there are traces still of the conceptions of traditional ar-
chitecture. The glass screens are treated like projecting bays be-
tween the visible supports. These supports are sheathed with
brick so that they appear like the last fragments of the solid ma-
sonry wall of the past. The entrance is symmetrical and heavy.
For all its simplicity it is treated with a decorative emphasis.
Gropius was not destined to achieve again so fine and so coher-
ent a production in the contemporary style before the Bauhaus in
1926. There he profited from the intervening aesthetic experi-
mentation of the Dutch Neoplasticists. The Bauhaus is some-
thing more than a mere development from the technical triumph
of the Alfeld factory. (See illustrations on pages 150 ff.)

During the years of the War, Oud in Holland came into con-
tact with the group of Dutch cubist painters led by Mondriaan
and Van Doesburg, who called themselves Neoplasticists. Their
positive influence on his work at first was negligible. Oud re-
mained for a time still a disciple of Berlage, whose half-modern
manner he had previously followed rather closely. He profited
also by his study of the innovations of Wright, whose work was
already better known in Europe than in America. Then he sought
consciously to achieve a Neoplasticist architecture and, from
1917 on, the influence of Berlage and Wright began to diminish.
At the same time he found in concrete an adequate material for
the expression of new conceptions of form. Oud's projects were
increasingly simple, vigorous and geometrical. On the analogy of
abstract painting he came to realize the aesthetic potentialities of
planes in three dimensions with which Wright had already ex-
perimented. He reacted sharply against the picturesqueness of
the other followers of Berlage and sought with almost Greek fervor to arrive at a scheme of proportions ever purer and more regular.

In his first housing projects carried out for the city of Rotterdam in 1918 and 1919 he did not advance as far as in his unexecuted projects. But at Oud-Mathenesse in 1921–22, although he was required to build the whole village in traditional materials and to continue the use of conventional roofs, the new style promised in his projects came into being. The avoidance of picturesqueness, the severe horizontality of the composition, the perfect simplicity and consistency which he achieved in executing a very complex project, all announced the conscious creation of a body of aesthetic disciplines.

Oud-Mathenesse exceeded Gropius’ Alfeld factory in significance if not in impressiveness. Gropius made his innovations primarily in technics, Oud in design. He undoubtedly owed the initial impetus to the Neoplasticists, but his personal manner had freed itself from dependence on painting. The models Van Doesburg made of houses in the early twenties, in collaboration with other Neoplasticists, with their abstract play of volumes and bright colors, had their own direct influence in Germany.

But the man who first made the world aware that a new style was being born was Le Corbusier. As late as 1916, well after his technical and sociological theorizing had begun, his conceptions of design were still strongly marked by the Classical symmetry of his master Perret. His plans, however, were even more open than those of Wright. In his housing projects of the next few years he passed rapidly beyond his master Perret and beyond Behrens and Loos, with whom he had also come in contact. His Citrohan house model of 1921 was the thorough expression of a conception of architecture as radical technically as Gropius’ factory and as novel aesthetically as Oud’s village. The enormous window
area and the terraces made possible by the use of ferroconcrete, together with the asymmetry of the composition, undoubtedly produced a design more thoroughly infused with a new spirit, more completely freed from the conventions of the past than any thus far projected.

The influence of Le Corbusier was the greater, the appearance of a new style the more remarked, because of the vehement propaganda which he contributed to the magazine *L’Esprit Nouveau*, 1920–1925. Since then, moreover, he has written a series of books effectively propagandizing his technical and aesthetic theories. In this way his name has become almost synonymous with the new architecture and it has been praised or condemned very largely in his person. But he was not, as we have seen, the only innovator nor was the style as it came generally into being after 1922 peculiarly his. He crystallized; he dramatized; but he was not alone in creating.

When in 1922 he built at Vaucresson his first house in the new style, he failed to equal the purity of design and the boldness of construction of the *Citrohan* project. But the houses that immediately followed this, one for the painter Ozenfant, and another for his parents outside Vevey, passed further beyond the transitional stage than anything that Oud or Gropius were to build for several more years. Ozenfant’s sort of cubism, called Purism, had perhaps inspired Le Corbusier in his search for sources of formal inspiration for a new architecture. But on the whole Le Corbusier in these early years turned for precedent rather to steamships than to painting. Some of his early houses, such as that for the sculptor Miestchaninoff at Boulogne-sur-Seine, were definitely naval in feeling. But this marine phase was soon over like Oud’s strictly Neoplasticist phase, or the Expressionist period in the work of the young architects of Germany. Various external influences helped to free architecture from the
last remnants of a lingering traditionalism. The new style displayed its force in the rapidity with which it transmuted them beyond recognition.

Mies van der Rohe advanced toward the new style less rapidly at first than Gropius. Before the War he had simplified, clarified, and lightened the domestic style of Behrens to a point that suggests conscious inspiration from Schinkel and Persius. After the War in two projects for skyscrapers entirely of metal and glass he carried technical innovation even further than Gropius, further indeed than anyone has yet gone in practice. These buildings would have been pure volume, glazed cages supported from within, on a scale such as not even Paxton in the nineteenth century would have dreamed possible. However, in their form, with plans based on clustered circles or sharp angles, they were extravagantly Romantic and strongly marked by the contemporary wave of Expressionism in Germany.

It was in Mies' projects of 1922 that his true significance as an aesthetic innovator first appeared. In a design for a country house he broke with the conception of the wall as a continuous plane surrounding the plan and built up his composition of sections of intersecting planes. Thus he achieved, still with the use of supporting walls, a greater openness even than Le Corbusier with his ferroconcrete skeleton construction. Mies' sense of proportions remained as serene as before the War and even more pure. This project and the constructions of Oud and Le Corbusier in this year emphasize that it is just a decade ago that the new style came into existence.

The four leaders of modern architecture are Le Corbusier, Oud, Gropius and Mies van der Rohe. But others as well as they, Rietveld in Holland, Lurçat in France, even Mendelsohn in Germany, for all his lingering dalliance with Expressionism, took parallel steps of nearly equal importance in the years just after
the War. The style did not spring from a single source but came into being generally. The writing of Oud and Gropius, and to a greater degree that of Le Corbusier, with the frequent publication of their projects of these years, carried the principles of the new style abroad. These projects have indeed become more famous than many executed buildings.

From the first there were also critics, who were not architects, to serve as publicists. Everyone who was interested in the creation of a modern architecture had to come to terms with the nascent style. The principles of the style that appeared already plainly by 1922 in the projects and the executed buildings of the leaders, still control today an ever increasing group of architects throughout the world.
In part the principles of the international style were from the first voiced in the manifestoes which were the order of the day. In part they have remained unconscious, so that even now it is far simpler to sense them than to explain them or to state them categorically. Many who appear to follow them, indeed, refuse to admit their validity. Some modern critics and groups of architects both in Europe and in America deny that the aesthetic element in architecture is important, or even that it exists. All aesthetic principles of style are to them meaningless and unreal. This new conception, that building is science and not art, developed as an exaggeration of the idea of functionalism.
In its most generally accepted form the idea of functionalism is sufficiently elastic. It derives its sanctions from both Greek and Gothic architecture, for in the temple as well as in the cathedral the æsthetic expression is based on structure and function. In all the original styles of the past the æsthetic is related to, even dependent on, the technical. The supporters of both the Classical Revival and the Mediæval Revival in the nineteenth century were ready to defend much of their practice by functionalist arguments. The so-called rationalism of architects like Schinkel and Labrouste was a type of functionalism. It is vigorously advocated, moreover, in the archæological criticism of Viollet-le-Duc and the ethical criticism of Pugin and Ruskin. Morris and his disciples brought this sort of functionalist theory down to our own day.

The doctrine of the contemporary anti-æsthetic functionalists is much more stringent. Its basis is economic rather than ethical or archæological. Leading European critics, particularly Siegfried Giedion, claim with some justice that architecture has such immense practical problems to deal with in the modern world that æsthetic questions must take a secondary place in architectural criticism. Architects like Hannes Meyer go further. They claim that interest in proportions or in problems of design for their own sake is still an unfortunate remnant of nineteenth century ideology. For these men it is an absurdity to talk about the modern style in terms of æsthetics at all. If a building provides adequately, completely, and without compromise for its purpose, it is to them a good building, regardless of its appearance. Modern construction receives from them a straightforward expression; they use standardized parts whenever possible and they avoid ornament or unnecessary detail. Any elaboration of design, any unnecessary use of specially made parts, any applied deco-
ration would add to the cost of the building. It is, however, nearly impossible to organize and execute a complicated building without making some choices not wholly determined by technics and economics. One may therefore refuse to admit that intentionally functionalist building is quite without a potential æsthetic element. Consciously or unconsciously the architect must make free choices before his design is completed. In these choices the European functionalists follow, rather than go against, the principles of the general contemporary style. Whether they admit it or not is beside the point.

In America also there are both architects and critics who consider architecture not an art, as it has been in the past, but merely a subordinate technic of industrial civilization. Æsthetic criticism of building appears to them nearly as meaningless as æsthetic criticism of road building. Their attitude has been to some extent a beneficial one in its effect on American building, even from the æsthetic point of view. Most European critics feel rightly that American engineers have always been far more successful with their technics than American architects with their æsthetics.

But to the American functionalists, unfortunately, design is a commodity like ornament. If the client insists, they still try to provide it in addition to the more tangible commodities which they believe rightly should come first. But they find one sort of design little better than another and are usually as ready to provide zigzag trimmings as rhythmical fenestration. For ornament can be added after the work is done and comes into no direct relation with the handling of function and structure. American modernism in design is usually as superficial as the revivalism which preceded it. Most American architects would regret the loss of applied ornament and imitative design. Such
things serve to obscure the essential emptiness of skyscraper composition.

The European functionalists are primarily builders, and architects only unconsciously. This has its advantages even for architecture as an art. Critics should be articulate about problems of design; but architects whose training is more technical than intellectual, can afford to be unconscious of the aesthetic effects they produce. So, it may be assumed, were many of the great builders of the past. Since the works of the European functionalists usually fall within the limits of the international style, they may be claimed among its representatives. (Page 223 f.) Naturally these doctrinaires achieve works of aesthetic distinction less often than some others who practice the art of architecture as assiduously as they pursue the science of building.

The American functionalists claim to be builders first. They are surely seldom architects in the fullest sense of the word. They are ready, as the European functionalists are not, to deface their building with bad architectural design if the client demands it. Nor can they claim for their skyscrapers and apartment houses the broad sociological justification that exists for the workers' housing, the schools and hospitals of Europe. On the whole, American factories, where the client expects no money to be spent on design, are better buildings and at least negatively purer in design than those constructions in which the architect is forced by circumstances to be more than an engineer. Technical developments, moreover, are rapidly forcing almost all commercial and industrial building into the mould of the international style.

It is not necessary to accept the contentions of the functionalists that there is no new style or even to consider their own work still another kind of architecture. While the older generation has
continued faithful to individualism, a set of general æsthetic principles has come into use. While the functionalists continue to deny that the æsthetic element in architecture is important, more and more buildings are produced in which these principles are wisely and effectively followed without sacrifice of functional virtues.
IV

A FIRST PRINCIPLE

Architecture as Volume

Contemporary methods of construction provide a cage or skeleton of supports. This skeleton as it appears before the building is enclosed is familiar to everyone. Whether the supports are of metal or of reinforced concrete, the effect from a distance is of a grille of verticals and horizontals. For protection against the weather it is necessary that this skeleton should be in some way enclosed by walls. In traditional masonry construction the walls were themselves the supports. Now the walls are merely subordinate elements fitted like screens between the supports or carried like a shell outside of them. Thus the building is like a boat or an umbrella with strong internal support and a continuous outside
covering. In the buildings of the past, support and protection were both provided by the same masonry wall. It is true that supporting wall sections are still sometimes used in combination with skeleton construction. (Pages 133 and 217.) Isolated supports, piers of metal or reinforced concrete, are, however, normal and typical.

Plans may be worked out with far greater freedom than in the past. The piers of modern construction are so slight in section that they create no serious obstruction. If in given cases they might interfere, occasional supports may be omitted and their burden carried by cantilevering. Entire façades are frequently cantilevered and the screen walls set some distance outside the supports. (Pages 118 and 172.) Symbolically the indication of modern plans is reduced to points representing support and lines representing separation and protection from the weather. No longer do we find the solid blocks of bearing walls and piers of masonry. The plan can be composed almost entirely in terms of the needs it must provide for, with only minimal concessions to the inescapable needs of sound construction.

The effect of mass, of static solidity, hitherto the prime quality of architecture, has all but disappeared; in its place there is an effect of volume, or more accurately, of plane surfaces bounding a volume. The prime architectural symbol is no longer the dense brick but the open box. Indeed, the great majority of buildings are in reality, as well as in effect, mere planes surrounding a volume. With skeleton construction enveloped only by a protective screen, the architect can hardly avoid achieving this effect of surface of volume unless, in deference to traditional design in terms of mass, he goes out of his way to obtain the contrary effect.

The European functionalists conform unconsciously to this principle of the international style without accepting its validity as an aesthetic discipline. The American functionalists, however,
often load their surfaces, thus obscuring with an effect of solidity and weight the non-supporting character of their wall screens. If they design at all—and except in factories the client usually demands some sort of applied design—they design still in mass. A striking contrast is familiar to everyone as it appears in buildings under construction: the strong light cage of steel, and the heavy solid-appearing walls with which it is gradually covered. The greater simplicity of the newer skyscrapers, the increase in the window area and the growing awareness of the international style are reducing little by little this superficial heaviness. But thus far the more expensive the building, the more surely is there a conflict between its true character as an enclosed steel cage and the apparent mass of its vertical buttressing and its pyramidal composition.

Of course this pyramidal composition is required in high buildings by the zoning laws. Present American zoning laws are at best pseudo-functional. They attempt merely to ameliorate the sociological and technical difficulties inherent in crowding tall buildings together on narrow streets. Proper zoning laws would require the spacing of skyscrapers far enough apart so that they might rise straight to the top without setbacks. Setbacks complicate the structure and provide relatively little terrace space, nor do they adequately protect the light and air of neighboring buildings. The criticism that accepts the present zoning laws as beneficent is mistaken. If that criticism is æsthetic, it rests on the false assumption that skyscrapers are mere enlargements of the masonry towers of the past. If the criticism is functional, it has failed to go to the root of the urban problem. Skyscrapers have their proper place in the modern city, but they must be so widely spaced that they relieve congestion rather than aggravate it.

The McGraw-Hill Building (Page 163) comes nearest to
achieving æsthetically the expression of the enclosed steel cage, but it is still partially distorted into the old silhouette of the massive tower. The setbacks are, of course, required by the zoning law, but they are arranged without subtlety. The unnecessary pyramidal feature which crowns the structure is inexcusably heavy. Yet the architect, Raymond Hood, in the Daily News Building of the previous year, which is in other ways less pure in expression, handled the setbacks so that they did not suggest steps and brought his building to a clear stop without decorative or terminal features. This has also been justly criticised by those functionalists whose ideology is more European. For the water-tanks and elevator machinery which have to find a place on top of a large building are there, hidden within the shell of the main structure.

These various objections, which place both of these buildings as something less than distinguished architecture, are implicit in American conditions. Only the acceptance of a thoroughgoing æsthetic discipline by our architects would make it possible for our skyscrapers to be finer than our factories. For our factories, unless the client has called for embellishment, are like the constructions of the European functionalists. They exist clearly and effectively as the surfaces of volumes, even though the architect has never accepted the æsthetic principle that they should do so.

In the past the great styles became something more than a certain sort of construction, or a certain repertory of ornament. Post and lintel construction was used in Egyptian architecture as well as Greek. Romanesque churches achieved nearly as great a science and elaboration of vaulting as did the later ones of the Gothic age. The Gothic architects emphasized the impression of height and of orderly multiplicity of organically related parts; the Greek architects so adjusted their design as to give their buildings the plastic somatic character of their sculpture. Style is
character, style is expression; but even character must be displayed and expression may be conscious and clear, or muddled and deceptive. The architect who builds in the international style seeks to display the true character of his construction and to express clearly his provision for function. He prefers such an organization of his general composition, such a use of available surface materials, and such a handling of detail as will increase rather than contradict the prime effect of surface of volume.

In giving this effect the flat roofs normal with modern methods of construction have an essential aesthetic significance. Roofs with a single slant, however, have occasionally been used with success. For they are less massive and simpler than the gabled roofs usual on the buildings of the past. Flat roofs are so much more useful that slanting or rounded roofs are only exceptionally justified.

The clarity of the impression of volume is diminished by any sort of complication. Volume is felt as immaterial and weightless, a geometrically bounded space. Subsidiary projecting parts of a building are likely to appear solid. Hence a compact and unified solution of a complex problem will be best aesthetically as well as economically. The massiveness of the architecture of the past was felt as gravitational, with surface and content one. Being heavy, massive architecture demanded the appearance of support such as could be given by a piling up of the parts. This sort of stability, like that of a wood pile, our tenuous cage construction does not give. The sense of internal support is, on the other hand, increased by the avoidance of subsidiary parts and by the achievement as far as possible of the effect of a single volume with continuous surfaces.

Thus as a corollary of the principle of surface of volume there is the further requirement that the surfaces shall be unbroken in effect, like a skin tightly stretched over the supporting skeleton.
The apparent tensions of a masonry wall are directly gravitational, although they are actually modified more or less by the use of lintels and arches. The apparent tensions of screen walls are not thus polarized in a vertical direction, but are felt to exist in all directions, as in a stretched textile. Hence the breaking of the wall surface by placing windows at the inner instead of at the outer edge of the wall is a serious fault of design. (Pages 159 and 232.) For the glass of the windows is now an integral part of the enclosing screen rather than a hole in the wall as it was in masonry construction.

Where the roof is supported on sections of wall rather than on isolated posts, only the non-supporting sections are really screens. Yet the discipline of the general style is better served if the contrast between the supporting wall surfaces and the non-supporting surfaces is not over-emphasized. Such construction with a reinforced concrete roof slab is still more like the normal modern cage construction than like traditional masonry construction. (Page 133.) This is a special case which demands on the part of the designer unusual tact and sense of the style. Such exceptions must always be borne in mind by the critic. Their successful incorporation in the style according to the spirit, if not the letter, of the fundamental disciplines makes the existence of a contemporary style difficult to dispute.

The ordering of the openings in the wall surface is quite as important as the avoidance of apparent reveals in the preservation of the integrity of the wall plane. But questions of order fall more logically in a later section of this discussion. Needless to say, the more consistently a surface is arranged, the more conspicuous will be its character as a surface. Contemporary buildings often have entire walls of transparent glass constituting one enormous window. The frames of the panes in such walls must be light enough to be distinguished from true supports. (Pages 156
and 191.) Otherwise these subordinate divisions will so break up the surface into panels that its continuous character is confused. Even though the independent supporting skeleton is perfectly clearly seen behind, such a panelled treatment appears to have weight if not mass. Such altogether transparent walls are not by any means the easiest for the architect to handle effectively. They no longer appear the extreme toward which the development of the contemporary style inevitably leads. Indeed, as the Crystal Palace of the last century and the steel and glass department stores of 1900 suggest, such maximal fenestration was a preparation for the development of a more general principle of modern design: that of emphasizing the surfaces whether they are opaque or transparent.

Windows constitute a more important element in modern architecture than they have in any architecture since that of the Gothic cathedrals. They are the most conspicuous features of modern exterior design. Their handling is therefore an æsthetic problem of the greatest importance. The very effect of volume that is sought in choosing surfacing materials can easily be diluted or contradicted by bad fenestration.

Window frames unavoidably break the general wall surface and if they are heavy tend to make the window a mere hole in the wall quite as much as do reveals. (Pages 139 and 179.) Light simple frames, preferably of durable non-corroding metal in standardized units, are to be desired as much æsthetically as practically. (Pages 155 and 173.) Non-corroding metals are still rather expensive. Moreover standardized metal frames have not yet come into use everywhere. But the general development in this direction is undeniable and one of happy augury for the contemporary style.

Wooden window frames are becoming a makeshift. Yet many architects have been able to make them appear hardly heavier
than metal ones. Some of the finest examples of fenestration in modern architecture are executed in wood. (Pages 113 and 127.) Of course the elegance which is obtained by light frames and muntins goes for nothing if the windows are badly subdivided and badly placed in the general design.

The spirit of the principle of surface covers many exceptions to its letter. The type of construction represented by Miës van der Rohe’s Barcelona pavilion, (Page 187), as well as that represented in Le Corbusier’s house at Le Pradet, (Page 133), leads to a treatment of surfaces sensibly different from that which has been primarily stressed here. These works, nevertheless, testify that their designers are extending the possibilities of the contemporay style. In each of these buildings the surfaces are emphasized and their continuity made evident although their relation to the supporting construction is less simple than in most buildings.

In the Barcelona pavilion the walls are screens but they do not define a fixed volume. The volume beneath the post-supported slab roof is in a sense bounded by imaginary planes. The walls are independent screens set up within this total volume, having each a separate existence and creating subordinate volumes. The design is unified by the slab roof on its regular supports, not by the usual continuous exterior screen wall.

In the Le Pradet house by Le Corbusier sections of rubble masonry wall provide the main support and isolated piers are used only subordinately. These supporting sections are unbroken by windows and widely separated by wall areas entirely of glass. As in the Barcelona pavilion the enclosing volume is defined by the continuous slab roof. The exterior surfaces are not continuous because they are of two sorts, unbroken masonry walls and intervening glass screens. But the two sorts of surfaces are both treated in a way to emphasize their specific characters. The supporting walls are rough and solid in appearance; the intermediate
screens, light, smooth and transparent. The two sorts are carefully related in proportion. The use of a special type of construction suited to the particular problem of a Riviera country house has led to a special type of design. The expression is related to the general principle of surface of volume but not restricted by it. Thus the prime principles of the great styles of the past were applied in exceptional cases. This special type of design has its place in the general contemporary style as much as astylar buildings in Greek architecture or unvaulted construction in the Gothic.

The principle of surface of volume intelligently understood will always lead to special applications where the construction is not the typical cage or skeleton of supports surrounded by a protecting screen. The apparent exception may not prove the validity of the general principle, but it undoubtedly indicates its elasticity. Rigid rules of design are easily broken once and for all; elastic principles of architecture grow and flourish. Forgetting neither the origins in a certain type of construction nor the possibilities which lie always ahead, architects should find in such principles as that of surface of volume a sure and continuing guidance as the international style develops.
The character of surface of volume is not expressed merely by the general design of a modern building; the actual materials of the surface itself are of the utmost importance. The ubiquitous stucco, which still serves as the hall-mark of the contemporary style, has the aestheti c advantage of forming a continuous even covering. But if the stucco is rough, the sharpness of the design, which facilitates apprehension of the building’s volume, is blunted. (Page 155.) Rough stucco, because of its texture and because it recalls the stucco-covered buildings of the past, is likely to suggest mass. All stucco, rough or smooth, is subject to cracking and streaking; if painted, it is even less likely to pre-
serve its original surface and color. Stucco, like exposed concrete, must be considered inferior to more solid sheathing except where the large scale of the construction makes the flaws that come with time relatively inconspicuous. A material like stucco but elastic and with a wide color range, which could be laid over various bases, would be ideal.

Wooden sheathing is admirable in the special case of modern construction in wood. It is not as durable as stone or brick, yet as we are aware in America, it can well outlast a century if it is kept painted. Smooth matchboarding is desirable because overlapping or stripped joints mar the surface, particularly in small-scale construction. (Page 227.) In interiors and on temporary buildings, plywood panels are excellent since they are large in area and smooth. (Page 119.) They may be painted or left to show the grain. Any enframement suggesting panelling seriously breaks the continuity of surface and should be avoided.

As in the architecture of the past, the finest materials for wall surfacing are stones, granites and marbles. (Pages 135 and 187 f.) Unless they are large in area, however, the separate units are likely to appear like the faces of blocks of masonry, suggesting weight and mass. As in Byzantine architecture it is possible to use plates so that their true character as sheathing is evident. Rich natural materials are expensive and hence more suitable in construction of a monumental or luxurious character than in ordinary buildings. Artificial plaques of various sorts and metal plates exposed or painted have similar advantages and will doubtless be increasingly used. (Pages 113 and 169.) In any sort of plate covering it is important that the plates be so joined that the surface is as little broken as possible. Graining, moreover, should be so disposed as to emphasize the continuity of the whole wall and not, as in the past, to produce symmetrical patterns. It is also important that the surface remain a plane without
convexities and concavities. Otherwise the effect becomes picturesque and the sense of equal tension in all directions is destroyed.

Plate sheathing has the distinct advantage of similarity in texture and scale to the glass panes of the windows. The massiveness of the walls of the past was emphasized by the contrast between the wall surfaces and the windows. The walls appeared the more solid for being visibly penetrated by infrequent holes. Today the general consistency of the design and the sense of continuous surface is emphasized by reducing the contrast between the transparent and the opaque sections of the bounding walls. Windows should be independent in character but not a breach in the general coherence of the surface.

Burned clay products are more frequently used than plate sheathing. Brick is from the practical point of view the most satisfactory inexpensive surfacing material in general use. It may be equally well used for screen walls and for sections of supporting wall where they supplement skeleton construction. Yet from an aesthetic point of view, brick is undoubtedly less satisfactory than other materials, including stucco. Indeed, brick is often covered with stucco even by architects who claim to be uninfluenced by aesthetic considerations. (Page 219.) This concession to the principle of achieving a smooth continuous surface is an important instance of the exaggeration of the functionalists' anti-aesthetic claims.

Brick, when laid conventionally, suggests a solid supporting wall even where that does not exist. Even a screen wall of brick appears to retain something of the mass and the dead weight of the architecture of the past. The use of brick tends to give a picturesqueness which is at variance with the fundamental character of the modern style. Bricks are more or less rough in texture,
often irregular in color, and quite unrelated in scale to the panes of the windows. (Page 217.)

Nevertheless, much can be done to emphasize continuity of surface. If the color of the mortar be near that of the brick, and the bricks relatively even in value and texture, the bonding pattern need not be strikingly evident. The actual material of a wall surface of considerable area is then relatively inconspicuous. (Pages 167 and 183.) On the whole, the cheapest, the most common types of brick and the most straightforward method of laying have fortunately proved best. Since brick is permanent in color and not subject to cracking and streaking, it is in the long run actually superior aesthetically to stucco for large-scale constructions. (Pages 189 and 151.)

A different shape of brick and a different method of laying might be developed which would be more satisfactory aesthetically as well as practically than present types and methods. Increase in size would be only a disadvantage since it would make the individual unit more conspicuous. Indeed, the finest surfaces from the point of view of the contemporary style are those attained in eighteenth century Holland with very small smooth bricks and thin joints.

Ordinary terra cotta blocks or concrete blocks of the cheapest sort are less satisfactory in appearance and more suggestive of traditional masonry than even the commonest brickwork. Concrete slabs even though they may attain the scale of plate sheathing are also too irregular in texture and variable in color to be acceptable except at the economic minimum.

In the range of constructions of medium cost and medium size glazed tile laid with continuous vertical as well as horizontal joints provides a material that vies in aesthetic effectiveness with plate sheathing. (Page 175.) The shape of the units may be such
that all suggestion of the traditional masonry block is lost. The texture is smooth and permanent; the color possibilities are wide. The small scale of the individual tiles is less harmonious with the panes of the windows than are large plaques, but the individual tiles are less independently assertive. An adjustment of the minor rhythm of the individual tiles to the rhythm of the windows and the structural elements is a possible refinement. Tiles properly laid give even more surely than bricks a continuous surface pattern like the texture of a fabric. They also quite avoid the suggestion of a supporting masonry wall. Their pattern is more regular than the graining of natural materials used in sheathing plates. Marble or granite plates are certainly richer; tile, however, fulfills better the rigid letter of the principle of surface.

Glass bricks and translucent glass plates are types of surfacing materials which may occasionally take the place of true windows. (Pages 172 and 193.) In certain buildings various panes of transparent, translucent, and opaque glass have been combined together for entire walls. The effect is rich and harmonious but perhaps too fragile for permanent architecture. Glass bricks provide a means of carrying light through the wall without a window frame. When they are of the same or related scale they combine best aesthetically with other unitary coverings such as brick and tile. (Page 147.)

In the choice of surfacing materials the architect is far from free. Factories will hardly have marble sheathing; yet because they have very large wall areas, the surfacing material itself is less noticeable. Brick appears the best material for large and inexpensive construction, tile in the middle range and plate sheathing for exceptional buildings. In the last the architect has the opportunity to seek to the full the possibilities of richness and individual distinction which the contemporary style affords quite as much as the styles of the past.
The patterns of Gothic fenestration were ordered according to definite conceptions of design derived from structure and leading more and more to arbitrary decoration. Today the patterns of windows, the composition of the parts of contemporary architecture, must also be ordered according to an æsthetic principle if a contemporary style exist. The functionalists claim that they order their designs according to practical considerations alone. Yet even they, because of the economic force of standardization, accept a discipline of design not dissimilar to that found in the work of contemporary architects who grant the importance of æsthetic considerations. Beside the principle of surface of vol-
ume already discussed there is a second controlling principle, evident in the productions of the international style including the work of the European functionalists.

This second principle of contemporary style in architecture has to do with regularity. The supports in skeleton construction are normally and typically spaced at equal distances in order that strains may be equalized. (Pages 117 and 149.) Thus most buildings have an underlying regular rhythm which is clearly seen before the outside surfaces are applied. Moreover, economic considerations favor the use of standardized parts throughout. Good modern architecture expresses in its design this characteristic orderliness of structure and this similarity of parts by an aesthetic ordering which emphasizes the underlying regularity. Bad modern design contradicts this regularity. Regularity is, however, relative and not absolute in architecture.

The varied purposes which most buildings serve cannot be completely regularized. A loft building in a city may be, and often is, regular throughout except for the entrances and the elevators. (Page 162.) The many purposes which each floor serves are so nearly alike that the same plan and elevation may be used throughout. Few buildings, however, are so simple. In most cases, within a structure as regular as possible and using similar parts the architect must provide for many varying functions related in various different ways to one another. In a hotel, for example, although the suites considered as units repeat themselves, the lobbies, dining rooms and kitchens serve the whole building and are on an entirely different scale. Within an individual dwelling house it is obvious that there are relatively fewer interchangeable elements. The functional requirements of the different rooms are even more varied. The bathroom, for example, makes far more elaborate specific demands than the living room, but it is possible to take care of them in much less space.
Thus technically the prime architectural problem of distribution is to adjust the irregular and unequal demands of function to regular construction and the use of standardized parts.

Just as the aesthetic principle of surface of volume has been derived from the fact that architecture no longer has solid supporting walls, the second principle, that of regularity, depends on the regularity typical of the underlying skeleton of modern construction. This second principle is expressed in an ordering of design more consistent than would result merely from the aesthetically unconscious use of regular structure and standardized parts for varying and complicated functions. Thus the expression receives a visible regularity and consistency. This is the symbol of the underlying technics, which in the completed building are known rather than seen. (Pages 149 and 161.)

It must be remembered that the nearer approaches to absolute regularity are also approaches to monotony, as the earlier reference to the loft building will have suggested. The principle of regularity refers to a means of organization, a way of giving definite form to an architectural design, rather than to an end which is sought for itself. As an end, regularity is modified by the equal necessity, understood in all aesthetic organization, of achieving a proper degree of interest. What constitutes a proper degree of interest is hardly to be determined in theory.

Many critics, more familiar with the architecture of the past than with that of the present, claim that the international style seldom if ever achieves a proper degree of interest. They miss the interest arising from the normally irregular construction of much of the architecture of the past. They fail to comprehend the new and possibly more subtle sorts of interest which derive from the principle of surface of volume or which lie in the positive application of the principle of regularity itself. The same critics, preferring the picturesqueness of less rigorous styles, are equally
likely to find an insufficient amount of interest in Greek architecture and in the work of those architects who attempted to revive the Greek style a hundred years ago. It is undoubtedly true that much minor architecture of the Greek Revival was monotonous and it is equally true of much of the building in the contemporary style. Even this monotony, arising from the too rigid application of the principle of regularity may, however, be preferred to the confused vagaries of the intervening period, when the principle of regularity was largely abjured. Within the field of a given style, however, what constitutes a proper degree of interest is in practice sufficiently clear: the Parthenon would not be improved by being as complicated as the Propylæa or the Erechtheum. The great modern architects have known how to achieve interest in their compositions while exercising a truly classic restraint.

In the various styles of the past a principle of axial symmetry controlled design rather than a principle of regularity as that is understood here. The Greek meaning of symmetry, "a due proportion of the several parts," was nearly equivalent to this special meaning of regularity. But Greek symmetry was usually bilateral as well as regular. Axial symmetry has generally been used to achieve the ordering of irregularity, as in Baroque architecture, dominating and relating the confusion of independent features and elaborate detail. Modern standardization gives automatically a high degree of consistency in the parts. Hence modern architects have no need of the discipline of bilateral or axial symmetry to achieve aesthetic order. Asymmetrical schemes of design are actually preferable aesthetically as well as technically. For asymmetry certainly heightens the general interest of the composition. (Pages 175 and 207.) Function in most types of contemporary building is more directly expressed in asymmetrical form.

Sometimes asymmetry will be strong and positive, marked by
emphasis on a real axis well off the center. (Page 151.) In other cases the general effect may suggest symmetry, but there will be no stronger emphasis at the center than at some other point. (Page 141.) But in any case the avoidance of symmetry should not be arbitrary or distorted.

The mark of the bad modern architect is the positive cultivation of asymmetry for decorative reasons. For that can only be done in the majority of cases at the expense of common consistency and common sense. The mark of the good modern architect, on the other hand, is that the regularity of his designs approaches bilateral symmetry. (Page 127.) Occasionally, indeed, he even reaches it. (Pages 200 and 215.) Bilateral or axial symmetry is, however, more usually the mark of the architect newly converted to the contemporary style. Such men tend to retain it as an irrevocable traditional discipline, failing to apprehend the full implication of the new discipline of regularity which has replaced it.

Structure today is usually highly regular for economic reasons which either did not apply to masonry structure or were given less emphasis in the architecture of the past. Most functions are not regular in the sense of being similar to one another. Hence the natural expression of the various functions grouped in one building is not symmetrical. The difficulties inherent in fitting the various functions of the modern dwelling house into an eighteenth century shell, which is both relatively regular and rigidly symmetrical, make this clearly evident. The international style does not attempt to force irregular functions into a symmetrical shell. It does aim to adjust rationally the provision for irregular functions to regular structure and to express this adjustment in a clear and consistent design. Fortunately, economic considerations offer the advantage to regularity over irregularity in the arrangement of the parts and in detail quite as much as in the general structure. (Pages 163 and 183.) The functionalists often
seem to follow here exactly the same principle of regularity as those who are conscious of a formal aesthetic discipline. (Page 219.)

Complete provision for function might seem to demand, for example, that each function receive unique treatment: that every window be of different shape and size, placed without formal geometrical relation to the others. Working on the principle of regularity, the ingenious architect is able to provide for all the varied functions which windows serve by means of windows of the same size, or at least built up of related units. (Page 212.) In placing them he achieves a pattern, adapted to the regularity of the underlying structure, which is both ordered and expressive. Only seldom can this pattern be absolutely regular without interfering with the provision for function. But always it may be relatively regular and composed according to a definite scheme.

Analogous to, but separate from, the hidden structural skeleton, a scheme of proportions integrates and informs a thoroughly designed modern building. A geometrical web of imaginary lines on plan and in elevation composes the diverse parts and harmonizes the various elements into a single whole. (Pages 125 and 133.) Proportions, which according to the theories of the extreme functionalists are but a relic of the nineteenth century, are still the aesthetic touchstone of the best modern design.

It is in the field of proportions and in the applications of the principle of regularity that modern architects differ most from one another. Some strive to arrange all the elements of their design within a single bounding shape, thus emphasizing to the utmost the unity of volume of the given building. (Page 127.) Others prefer a more extended articulation with more emphasis on the organic relation between the parts. (Page 149.) Architects differ greatly also in their handling of those parts of a building where, as in a wind shelter on a roof, the needs of function are
very easily satisfied. Often such features are entirely unconnected with the general structure of the building and have only themselves to support. The principle of regularity does not lead to an exact solution of such a problem in adjusting function to structure, since both are too readily adaptable. For the architect who seeks only to follow the rules, or for the functionalist who has no positive interest in aesthetic creation, it is safest to do that which will be least startling. But for the great architect there is the opportunity for personal lyric expression.

At times, indeed, for the architect who is quite sure of himself and who is instinctively permeated with the spirit of the aesthetic disciplines of the contemporary style, this individual lyricism may go further. It may modify, as a positive force, the restricting discipline of regularity, composing and adjusting the necessities of function and structure without breaking with the spirit of the principle. It is the condition of the existence of a true style, the price of an architecture generally high in level, that aesthetic disciplines should be rigid, but it is the privilege of genius to interpret these disciplines, even here and there to discard them altogether. The functionalists cannot admit such a conception. Their disciplines are not in intention aesthetic and they protest most vehemently against just this sort of lyricism and personal expression. Up to a certain point they are right. Sound buildings of dull design are better than monuments of architecture whose apparent brilliance of design is paid for by inadequate provision for function and by distortion of structure. But if architecture is still to be an art, great architects must be free to go forth upon new paths of design.

It is in relation to regularity that architects are exploring the elasticity of the current disciplines. The critic may not determine in advance how far, or even in what direction, the creative interpretation of the architect may go. He may, however, judge of the
results and distinguish after the fact what liberties have been those of real and what of spurious genius. He can also determine what breaches of the principle of regularity are merely irrational and careless faults. The work of some architects merely fails to achieve common consistency. The work of the best functionalists is never thus slipshod; but it seldom passes beyond the attainment of common consistency. The great architects, who still consciously practice architecture as an art, add a more interesting and usually a more personal expression to the simplification and unity of design, which even the functionalists achieve.

This development of the æsthetic possibilities of the contemporary style is well illustrated in the use of oblique and rounded forms in plan and elevation. (Pages 174 and 199 ff.) Such exceptions to general rectangularity are only occasionally demanded by function and they may introduce complications in the regular skeleton of the structure. They are, of course, a definite breach of rigid regularity. Yet sometimes as in stair wells and water-tanks, function is not best served by rectangular shapes. Curved and oblique interior partitions, moreover, often make possible the more complete adjustment of available space to function, without interfering with the regular spacing of the isolated supports. (Pages 124 and 190.)

Non-rectangular shapes, particularly if they occur infrequently, introduce an æsthetic element of the highest positive interest. To them the architect of courage turns from time to time, realizing that he must employ them chiefly with the sanctions of genius and in definite opposition to the discipline of regularity. They need seldom occur in ordinary building, but in monuments where the architect feels justified in seeking for a strongly personal expression, curves will be among the elements which give most surely extreme positive or negative æsthetic value. Curved and oblique forms seldom find a place in the cheapest solution of
a given problem. But if they can be afforded, they succeed, as they fail, on aesthetic grounds alone.

The functionalists, and those who are too timid to break with rigid regularity, fall rather into the aesthetic danger of repeating the commonplaces of the style. Ranges of equal-sized windows, set in an unbroken pattern, façades where ribbon of glass alternates with ribbon of stucco, broken only by an occasional stair window, are already frequent enough in Europe to have lost the interest of mere novelty. The most determined defender of the international style must admit that the too rigid application of the principle of regularity, the unimaginative repetition of the most obvious schemes of composition, has produced much very dull building. But such work is nevertheless preferable to the building of the careless modern architects who have failed even to apprehend the existence of a principle of regularity. Those who try to follow the new style without understanding it produce work which is not only dull but irritating. They abuse corner windows; they fail to avoid the visibly gabled roof; they pile up blocks as if they were still dealing with the massive architecture of the past. In designing façades they dispose the elements with an obvious and gratuitous asymmetry and they arrange their fenestration according to no discoverable principle of order, aesthetic or technical. For them the new style that they parody is merely the architecture of the half-moderns with the decoration omitted, a makeshift product of apologetic individualism.

The American functionalists are of this order although they are less given to parodying the surface of the new style. Where they do not hide their dullness under cheap cosmetics in deference to the aesthetic desires of the client, they prefer rather to group their windows in vertical bands. This gives a traditional buttress effect quite without relation to modern methods of steel cage construction. The resultant verticality of design is still ad-
mired in America, chiefly because it recalls the aspiring quality of the Gothic towers of the past. Even in buildings with predominantly horizontal window arrangement, groups of buttresses in the center or at the corners of the building are added as a concession to the client. For horizontality, which is the most conspicuous characteristic of the international style as judged in terms of effect, is still unacceptable aesthetically to the average American client.

Yet its logic is unescapable. Storeyed construction naturally produces horizontality. Most functions, moreover, require extended development in the horizontal plane—in plan, that is, rather than in elevation. Rooms are usually broader than they are high, and are most evenly illuminated by windows of the same proportion. Structural and functional horizontality is naturally expressed in façade design by architects who seek to obtain consistency to the principle of regularity. It appears quite as clearly in the work of the European functionalists who apply no aesthetic criteria, for it is the obvious and the most straightforward result of striving to provide for function with the means of modern construction. (Page 219.)

The verticality of the skyscrapers of the American functionalists is obtained by reducing the window area and increasing the weight of the screen wall. It also contradicts the storeyed character of the construction and destroys the human scale of the design. In the early evening, when the lights come on, the solid towerlike quality of the skyscraper disappears. Then, at least, it is seen as one volume divided up into horizontal storeys. Only on rear elevations, or on façades where the architect has been severely restricted by economy, is the underlying horizontality of the American commercial building visible in the daytime.

This artificial impression of solidity, this applied verticality, undoubtedly increases the visual congestion of the modern city.
The continual appeal of vertical lines tires the eyes. Even the most commercial buildings of the nineteenth century provided the reposing horizontal of an approximately even cornice line. The verticality of the skyscraper is meaningless and anarchical. Yet because the skyscraper is an American development and the international style has developed in Europe, some nationalist critics would protect our functionalist architects from the invasion of a horizontal aesthetic. If our builders might be engineers only, protected from all aesthetics, the skyscraper would necessarily be horizontal in design. For its verticality is merely an imitative garment of pseudo-style.

Horizontality is not in itself, however, a principle of the international style. Where function demands a vertical element, that also receives expression. (Pages 159 and 237.) The principle of regularity tends to increase the effect of general horizontality at the expense of the vertical elements which play but a subordinate part in most buildings. It is only the weak and imitative architect who seeks horizontality for its own sake. One of the chief vices of contemporary architecture, which has superseded in Europe the emulation of the verticality of the American skyscraper, is what may be called “fake banding,” a purely decorative scheme of tying windows together in a horizontal row. Exceptionally, where the distance between separate windows is very slight, the space between may be treated as an exposed pier by rounding it or sheathing it with the material of the window frame. (Pages 163 and 207.) But ordinarily what is not window is wall and should receive the same treatment as the rest of the wall of which it is a part. (Pages 161 and 185.)

Only great artists are capable of achieving brilliant effects with the limited means. Architects are no exception. But it is the privilege of great architects to interpret the aesthetic discipline of the style according to the spirit rather than the letter. Anyone
who follows the rules, who accepts the implications of an architecture that is not mass but volume, and who conforms to the principle of regularity can produce buildings which are at least aesthetically sound. (Page 167.) If these principles seem more negative than positive, it is because architecture has suffered chiefly in the last century and a half from the extension of the sanctions of genius to all who have called themselves architects.

It were better that the world build only according to the rigid anti-aesthetic theories of the extreme European functionalists than that nineteenth century debauchery of design should continue. The individualists of the early twentieth century reacted against that debauchery with its extravagance of applied ornament. But their reaction created no fixed standards. They were neither consistent in their aims nor critical enough of the results. The ornament of the half-moderns has failed to stand the test of time even as well as that of the more cultured revivalists. The continuance of this superficially novel decoration which the half-moderns originated most effectually distinguishes the mass of American modern architecture from that of Europe.
A Third Principle

The Avoidance of Applied Decoration

Absence of ornament serves as much as regular horizontality to differentiate superficially the current style from the styles of the past and from the various manners of the last century and a half. Applied ornament may not have been significant or important in the architecture of the past, but it certainly existed. It is easier to defend the claim that the finest buildings built since 1800 were those least ornamented. The failure of revivalism probably lay quite as much in the inability to recreate the conditions of craftsmanship which once made applied ornament æsthetically valid, as in the impossibility of adapting the spirit of old styles to new methods of construction.
It would be ridiculous to state categorically that there will never be successful applied ornament in architecture again. It is nevertheless clear that conditions are today even less propitious for the production of ornament than they were during the last century. Since the middle of the eighteenth century the quality of the execution of ornament has steadily declined. Even the renaissance of craftsmanship sponsored by the Mediævalists failed to turn the tide. On the whole each generation of traditionalists has been worse served in this respect than its predecessor.

Architecture, however, has never been without other elements of decoration. For decoration may be considered to include not only applied ornament, but all the incidental features of design which give interest and variety to the whole. Architectural detail, which is required as much by modern structure as by the structure of the past, provides the decoration of contemporary architecture. Indeed, detail actually required by structure or symbolic of the underlying structure provided most of the decoration of the purer styles of the past.

The fact that there is so little detail today increases the decorative effect of what there is. Its ordering is one of the chief means by which consistency is achieved in the parts of a design. As has already been suggested in discussing window frames, the quality of the detail has very considerable importance in supporting the effect of surface of volume. It is not in contemporary architecture alone that the details of fenestration are thus important. In any simple architecture where the windows are conspicuous these decorative elements are vital to the total effect. It is easy to recall innumerable buildings of the seventeenth and eighteenth centuries of which the scale and harmony of the design has been destroyed by the introduction of large panes of glass and thin muntins at some later date. One of the surest signs
of the real existence of a style of architecture is the creation of a fixed type of window detail.

The development of simple forms of standardized detail suitable to mechanical production is thus an æsthetic as well as an economic desideratum. The absence of contemporary style in inexpensive American house building is as much due to the standardization of modern window frames after eighteenth century models as to any more positive vices of design. The comparative excellence of American factory building is largely that of its metal sashes.

Important as windows have come to be in contemporary design, there are other elements of architectural detail besides. Many of these elements do not, like windows, lend themselves to complete standardization. Of these the capping of walls is of major importance. Those who employ roof projections in normal construction indicate a definite lack of feeling for contemporary style; such relics of the cornice are required only in exceptional cases. Where such projections constitute merely an unnecessary complication of the wall surface their effect is positively bad. (Page 155.) On the other hand, where more of the roof plane is visible than merely the band projecting beyond the wall, as in various types of pavilion construction, there is no such objection. Instead, the roof plane exists, like the ceiling of an interior, as the bounding surface of a volume. (Pages 187 f. and 238.) Such capping as ordinary walls require for protection against the weather is best made as inconspicuous as possible and patently no more than a seal to the wall itself. (Pages 207 and 227.)

The handling of isolated supports like the handling of wall capping is incidental rather than fundamental. The best architects, however, have shown in this a finesse equal to that of the Greek and Gothic builders. Where isolated supports pass up
into a closed construction most architects indicate the coherence of the posts with the skeleton of the construction above and not with its covering surfaces. (Pages 123 and 169.) In ferroconcrete construction rounded forms are aesthetically, and usually technically, superior since they remain visually quite separate from the wall surface. The rounded form in interiors interferes less with vision and circulation than a square or oblong pier. Where fire laws do not require more complete insulation, the actual metal pier is exceedingly light and elegant. (Page 194.) In this way significance and independence can be given again to visible supports. This they had in the great styles of the past and lost only when they came to serve as a sort of applied ornament. In some cases columns may require something corresponding to the capitals of the past. In most types of construction such bracing will disappear in the supported slab. (Page 188.) In any case such subsidiary detail should follow as directly as possible the actual stresses of the construction, avoiding the symmetrical cushion shape of traditional capitals. (Page 107.)

Parapets and railings have an importance in contemporary architecture as great as that of balustrades in the architecture of the seventeenth and eighteenth centuries. In many cases the parapet is properly treated as a continuation of the wall surface, since it encloses the roof terrace just as the wall encloses the interior room space below. (Page 141.) Where open railings are used, it is important that they should be in scale not merely with the terrace they enclose, but with the structure as a whole. Moreover, the relation of the uprights and the horizontals, forming like the muntins of the windows a grille pattern, requires careful handling. A careful adjustment of the open patterned surface to the solid unpatterned surface of the walls is a mark of distinguished design. (Pages 128 and 145.)

The best architects give particular thought to matters of detail.
Although they are incidentals, they require more than incidental attention. Fine details decorate a modern design just as did the functional columns and moldings of Greek and Gothic architecture. If there truly be a contemporary style of architecture, it must control these as well as larger matters. Careless architects leave details to chance, thus marring creditable work. Those who claim that architecture is merely science are usually conscientious enough technologists to handle with competence, if not with brilliance, such matters of detail.

Besides architectural detail, related subordinate works of sculpture and painting have on occasion been successfully used to decorate contemporary buildings without degenerating into mere applied ornament. Mural painting should not break the wall surface unnecessarily. Yet it should remain an independent entity without the addition of borders or panelling to fuse it with the architecture. Baumeister and Ozenfant, among others, have done work of this order. But there is no reason why painting less abstract should not find its place quite as satisfactorily on the walls of contemporary buildings. It is most important that mural painting should be intrinsically excellent; otherwise a plain wall is better. It need not be related, except in scale and shape, to the wall on which it is placed. Contemporary architecture cannot expect to dictate the evolution of contemporary painting, but it offers fields more considerable than the framed canvas panel.

Sculpture also ought not to be combined or merged with architecture. It should retain its own character quite separate from that of its background. This was true of the best Greek sculpture and often of that of other periods. It is particularly important today that sculpture should be isolated; for if it is actually applied, its suggestion of solid mass is carried over to the wall surface it decorates. Thus far contemporary architecture has served rather as an admirable background for wholly separate units of
painting and sculpture not designed for their specific location. (Page 188.) But there is an opportunity here for collaboration which may well in the future lead to brilliant results.

Whether from these two different forms of decoration—architectural detail and related works of painting and sculpture—the contemporary style will in time develop an ornament of its own as did the styles of the past, no one can say. The supposedly novel ornament from which architecture is now freeing itself has put us on our guard against innovations which are merely decorative. The force of all self-conscious theory tends to deny the necessity for ornament as such. Some critics would even explain all the ornament on the fine architecture of the past as but an extension of free sculpture or as a continuance of inherited detail which originally had structural meaning.

Lettering is the nearest approach to arbitrary ornament used by the architects of the international style. It has, of course, a real functional purpose in advertising and in indicating the use of different parts of a large building. Clear unseriffed letter forms are most legible at a good scale and conform most harmoniously to the geometrical character of contemporary design. Letters set forward from the wall surface or in silhouette above a roof decorate a building without breaking up the wall surfaces. (Pages 119 and 215.)

In the choice of letter forms, in the spacing of letters and words, in the use of color and lighting and handsome materials, and above all in the relation of the scale of the inscription to the scale of the building there are immense possibilities for subtlety. The principle of regularity must be respected. In architectural lettering, as in printing, legibility is a prime consideration. Script forms and fantastic placing may be justified for their effectiveness in advertising, but they are on the whole unarchitectural and best avoided. (Page 173.) Like other sorts of decoration in
contemporary architecture, lettering can easily be abused.

The current style sets a high but not impossible standard for decoration: better none at all unless it be good. The principle is aristocratic rather than puritanical. It aims as much at making monstrosities impossible, at which the nineteenth century so signal ly failed, as at assuring masterpieces, at which the nineteenth century had no very extraordinary success.

Also in the use of color the general rule is restraint. In the earliest days of the contemporary style white stucco was ubiquitous. Little thought was given to color at a time when architects were preoccupied with more essential matters. Then followed a period when the use of color began to receive considerable attention. In Holland and Germany small areas of bright elementary colors were used; in France, large areas of more neutral color. The two practices were in large part due to the influence of two different schools of abstract painting, as represented on the one hand by Mondriaan and on the other by Ozenfant. In both cases colors were artificially applied and the majority of wall surfaces remained white. (Page 123.)

At present applied color is used less. The color of natural surfacing materials and the natural metal color of detail is definitely preferred. (Page 137.) Where the metal is painted, a dark neutral tone minimizes the apparent weight of the window frame (Pages 171 and 175.) In surfaces of stucco, white or off-white, even where it is obtained with paint, is felt to constitute the natural color. The earlier use of bright color had value in attracting attention to the new style, but it could not long remain pleasing. It ceased to startle and began to bore; its mechanical sharpness and freshness became rapidly tawdry. If architecture is not to resemble billboards, color should be both technically and psychologically permanent.

Patently artificial color, moreover, makes too sharp a contrast
with natural surroundings. Light and neutral tones not unduly conflicting with those of nature are more satisfactory (Page 139.) In cities, however, small areas of brilliant color may be effectively contrasted with large areas of more or neutral color. (Page 175.)

In the use of different colors on different walls much ingenuity has been expended. Structure, function and regularity provide little excuse in principle for this use of color. It is perhaps better avoided, although it has occasionally been the means of eminent success. It emphasizes strongly the effect of surface, but it breaks up the unity of volume. This way of painting interior walls to aid reflection and light distribution has been particularly abused. The use of natural materials and of such contrasts between different walls as structure and function easily provide is more satisfactory. There is no better decoration for a room than a wall of book-filled shelves. (Page 195.)

Trees and vines are a further decoration for modern architecture. Natural surroundings are at once a contrast and a background emphasizing the artificial values created by architects. Choice of site, and the arrangement of buildings upon the site: these are the prime problems of the international style in relation to natural surroundings. As far as possible the original beauties of the site should be preserved. Mere open spaces are not enough for repose; something of the ease and grace of untouched nature is needed as well.

Terraces may extend the house outside its own boundaries, but beyond the terraces the reign of nature should clearly begin. The elaborate formal garden has no place in connection with the international style. An aesthetic of right angles derived from architecture cannot be generally applied to landscape design without diminishing the reposeful contrast of the natural background. Additional planting needed for protection or shelter, however,
should usually keep to straight lines and avoid the imitation of natural irregularity. Roads and paths should be laid out for efficient communication, not with picturesque curves. The function of grounds for games and of plots for vegetables and flowers usually requires a simple geometric plan.

Furthermore, small gardens in cities, or directly attached to individual houses, may often be treated as part of the architecture. (Pages 135 and 189.) Pergolas and protective walls or hedges transform these gardens into outdoor living rooms. Of such outdoor living rooms, roof terraces are the most conspicuous examples. (Pages 123 and 128.)
Thus far in this discussion architecture has been considered as inclusive of all forms of building. Although there is no sharp break between what is in the fullest sense architecture and what is not, there is a broad differentiation between architecture and building. There exists a range, or hierarchy, of aesthetic significance. The degree to which an edifice represents consciously or unconsciously the result of an aesthetic, as well as of a technical, effort of creation determines its place in the hierarchy. The wider the opportunity for the architect within the limitations of structure and function to make judgments determined by his taste and not merely by economics, the more fully architectural will be the
resultant construction. There is no rigid classification, building, quite devoid of the possibility of aesthetic organization. Yet buildings built at minimal cost with practical considerations dominant throughout may be held to be less fully architectural than those on which the architect has more freedom of choice in the use of materials and the distribution of the parts.

Under whatever conditions buildings are built, they tend to be more architectural as they serve more complicated functions. The more specialized the combination of functions served by a building, the more opportunity there is for the architect to achieve a design controlled by aesthetic as well as practical considerations. The more simple and repetitious the functions of a building and the more it resembles in purpose other buildings, the less likely is the architect to reach a solution of his problems formed by his own taste. American factories admirably illustrate how building is becoming more and more impersonal and scientific. The best European factories illustrate, however, that in the field of industrial construction there are real architectural possibilities. (Pages 117, 167 and 183.) A large house offers relatively more possibilities of architectural development, but even a loft building can be made architecture.

Building quite devoid of architectural character would be aesthetically neutral no matter how good it was merely as a building. Yet at the present time the majority of building is so bad technically, so much worse than neutral aesthetically, that any good building appears to have positive aesthetic value. So bad in every way have been the façades of most American commercial edifices that their rear elevations, which are at best merely sound building, seem by contrast to possess architectural quality. For in contrast to the general low level of building, the European functionalists usually reach the level of architecture, despite their refusal to aim consciously at achieving aesthetic value. Un-
less one is very optimistic, it seems probable that the general level of building will always be low, that bad building will always predominate. Building that is merely good, then, may be expected to continue in effect to be better than neutral aesthetically. On the whole, whether one examine contemporary architecture in terms of the international style or not, the creation of a standard of good building has been an unmixed gain. This has been due as much to the functionalists as to those who still believe in the possibility of architecture as an art. The nineteenth century produced a great deal of bad architecture and very little good building, as the functionalists delight in pointing out.

But we still have architecture: that is, edifices consciously raised above the level of mere building. Architecture is seldom merely neutral aesthetically. It is good architecture or it is bad. When it is bad, the extreme contentions of the functionalists seem justified. But when it is good, such negative contentions appear an essential denial of the important spiritual function which all art serves. Good modern architecture may be as richly and coherently imbued with the style of our day as were the great edifices of the past with that of theirs.

The functionalists, approaching architecture from the materialistic point of view of sociology, go behind the problems that are offered to the architect and refuse their sanction to those which demand a fully architectural solution. In their estimation the modern world has neither the time nor the money required to raise building to the level of architecture. Although they are usually ready to recognize and distinguish the aesthetically good and the aesthetically bad, they deny that such a distinction has significance at a time when the world has such positive need merely of good building. The question passes outside the field of architecture into the field of politics and economics. The arguments of the functionalists are not based on the actual situation in the
contemporary world outside Russia. Whether they ought to or not, many clients can still afford architecture in addition to building.

A millennium of good building is as far away as any other, and it is a worthy aspiration to lay plans for it. In such a millennium, moreover, there should still be a place for architecture. Good architecture demands intelligence and taste more than money. Today architecture and building remain closely related, shading subtly one into the other. Whether or not the contemporary style should produce architecture as well as building, it certainly does so. Indeed many developments in structure and in articulation of function now incorporated in minimal building were first evolved in expensive constructions. All the leading modern architects of the international style have been technical as well as æsthetic innovators. The European functionalists who now disown Le Corbusier, and Oud, and Gropius and Miès van der Rohe first learned the science of building from them. Most American functionalists have much to learn from the leaders of the international style, even if they cannot accept sincerely the æsthetic discipline those leaders have brought into being.

On the other hand, this æsthetic discipline was derived in considerable part from an appreciative study of industrial building. It is in the plain building of the nineteenth century rather than in its elaborate architecture that the principles of the international style were foreshadowed. The most significant work of Gropius and Oud, among the leaders of modern architecture, has been in the field of inexpensive building, which they have raised to the level of real architecture.

The idea of permanence has always been associated with architecture. Many problems of building are best solved temporarily. But temporary constructions are seldom as architectural in character as those built to endure. The international style is so
dependent on new methods of construction that it might seem that its principles could only apply to the most advanced known construction. Functionalists, indeed, often deny that building can be sound unless it is radical in its technics. Arguments of economics and questions of durability are often disregarded or disputed when critics discuss the continued use of wood or masonry.

In many regions wood, for example, is economically the most satisfactory material. For certain types of building its relative impermanence is not a disadvantage. Nor is there anything in wooden construction which makes it unsuitable to the æsthetic or the functional disciplines of the contemporary style. Wooden construction, as much as construction in steel or ferroconcrete, is a cage with a protective sheathing rather than a supporting wall. Thus the principle of architectural expression as surface of volume applies to it. Indeed, wood lends itself particularly well to the production of fine surfaces. Wooden construction is, also, normally regular. The principle of avoidance of ornament holds regardless of materials. (Pages 119 and 225.)

Wood does not permit all the technical audacities of steel and concrete, but within a certain range it is unusually elastic and responsive. In the past wooden construction was often called upon to imitate styles developed in masonry. Yet many half-timber houses with their great ranges of windows are surprisingly modern in conception. Today the skeleton is no longer exposed. The lighter framing used today is better protected by a continuous outside covering such as has always been used in America. (Page 227.)

The steeply slanting roofs of the Middle Ages were already replaced in the nineteenth century by roofs with an inconspicuous slant on many wooden houses. Today the heavy pyramidal effect that tall roofs produce can be successfully avoided. The
weightlessness and the consistency of modern design need no longer be contradicted by so definitely traditional a feature. Skilful architects, both in Europe and America, have even succeeded in using roofs of a single slant which avoid the traditional gable and give no impression of mass. Others have used terrace roofs just as they would on houses of steel and concrete.

Wood is admirable for building in certain special conditions but it is hardly suitable in others where the fire hazard is great, or for monumental architecture. If, however, wooden construction is to be controlled by æsthetic principles, it certainly lends itself to those of the international style.

The same is not so true of solid masonry. The character of masonry is in direct opposition to the character of contemporary methods of construction. Masonry, either of stone or brick, can hardly avoid offering an effect of mass and weight. Nor can it provide for large openings without the use of arches or of steel or ferroconcrete beams. Masonry structure used consistently throughout a building remains traditional both technically and æsthetically. Yet in monumental edifices which have only the most elementary functional requirements and demand the assurance of Egyptian permanence, masonry wall construction might appropriately be used. An exceptional monument of solid granite or marble of the order of the Temple of the Sphinx might be related to the international style by an imitative application of its æsthetic principles. The surface might be continuous, the detail minimal; but the effect of mass could hardly be honestly avoided.
Thus far there has been only incidental mention of the plan in contemporary architecture. Modern methods of skeleton construction have freed planning from conforming to the rigid lines of masonry structure. Isolated supports interfere hardly at all with free space and circulation. Interior partitions, like exterior walls, are mere screens. Thus planning has become absolutely pliant to the needs of function. New study of function, moreover, has broken down most of the conventions of planning inherited from the past, quite as rapidly as structural advance has made radical changes in plan possible.

The functionalists make a particular fetish of planning. They
sometimes claim that they have never studied or composed their exteriors, but have merely allowed them to grow as the unavoidable clothing of the plan. It is true that the full application of the principle of regularity to the plans and the sections induces consistency in the elevations. It does not, however, lead automatically to good proportions in the façades. Architects who aim at achieving the fullest architectural character in their buildings must still study elevations alone quite as much as plans and sections.

The essence of architecture lies in the relation of the various sorts of geometrical projections. The realities of function influence chiefly the plan, but the expression of function must appear in the elevations. Even the functionalists who deny the necessity for aesthetic expression must admit that the essential character of the plan is generally apprehended from the exterior of the building. The contemporary exaggeration of the importance of the plan is primarily an architect’s game. The game was well played at the Ecole des Beaux Arts long before modern architecture came into existence. It led to a very one-sided architecture since most of its interest and beauty could only be appreciated on paper.

The innovations in plan of the international style have led to much that is valuable both from the functional and from the aesthetic point of view. Even the functionalists have profited by the innovations of architects interested in the aesthetics of interior space. Today there are three types of interiors: first, the inside of the volume of the building, consisting of the entire content of the building or of a considerable part of it (Pages 109 and 220); second, interiors which open up into one another without definite circumscribing partitions (Page 190); and finally, the ordinary enclosed room.

The first sort of interior, which is not essentially different from the monumental interiors in the churches and theatres of the
past, is of the scale of exterior architecture. Its walls are usually the interior surface of the same protecting screen which constitutes the exterior surface of the architectural volume. They require, therefore, a similar treatment, although naturally the demands of durability in the materials are much less stringent. In such interiors the supports will often stand isolated, making the character of the construction perfectly clear. These supports require different treatment, so that the lack of connection with the wall screens will be evident. They give scale to the created space. (Pages 109 and 220.) Therefore, they should be sharply defined and elegant in profile. Like the supports which are visible outside they are best if rounded in section.

The second sort of interiors is the particular invention of the international style. (Pages 146 and 194.) In contrast to the completely enclosed rooms of the past they stress the unity and continuity of the whole volume inside a building. The independence of the dividing screens and their variation in size and placing contrast with the regularity of the isolated supports. The flow of function and the relation of one function to another can be clearly expressed. The different screens serving different purposes may well be of different materials provided always their thinness and freedom from structural duty is stressed. While the visible supports give an underlying rhythm, the variety of the screens produce, as it were, a melody which may be restrained or lyric as the architect wishes. (Pages 122 and 186.)

The development of free planning, particularly with the use of curved and oblique screens, has been carried furthest in constructions of definitely architectural character. It gives to modern interiors a new kind of abstract space design unknown in the architecture of the past. But it is one of the elements of modern architecture which is easily abused, both practically and aesthetically.
Enclosed rooms of ordinary size, the third sort of interior, seldom have definite architectural character. They depend for their interest on their proportions and on their contents. (Page 208 f.)

Something has been said of the use of color in interiors, a matter subject far more to passing fashion than is color in exterior architecture. Screen walls should be, if possible, of natural materials in their own colors. If they are of plaster and painted, they should generally be white or neutral. Thin white curtains to moderate the light and heavier curtains of dark plain materials are harmonious and dignified. When drawn they cover the glass of the window wall with a temporary screen of fabric. In small enclosed rooms more use of artificial color is justifiable to give interest and variety; even, perhaps, different colors on different walls. But growing plants and fine pictures are the best means of giving life to interiors. The absence of all other decoration only gives them added emphasis and increases the importance of placing them properly in relation to the general design. The details of interior treatment will undoubtedly vary with the years far more than the general principles of the style.