Painting Toward Architecture

Text by Henry-Russell Hitchcock

Designed by Bradbury Thompson

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By Henry-Russell Hitchcock

Foreword by Alfred H. Barr, jr.

Critic and historian of modern architecture, Henry-Russell Hitchcock discusses in this new book the relationship of modern abstract art to architecture. It is his twofold purpose to demonstrate how the abstract painting of the twentieth century has influenced modern architecture, and to present contemporary abstract painting and sculpture of potential value to contemporary architects.

Mr. Hitchcock shows how abstractionism after 1911 had an important general influence on the revolutionary architectural movement of the 1920's, and explains in what way the early designs of Le Corbusier, Gropius, Oud, and Mies van der Rohe were related to the new currents in painting and sculpture which grew out of the cubism of Picasso and Braque.

Architecture has always been essentially an abstract art, while, on the other hand, abstract painting is a phenomenon of the twentieth century. It has strongly affected modern archi-

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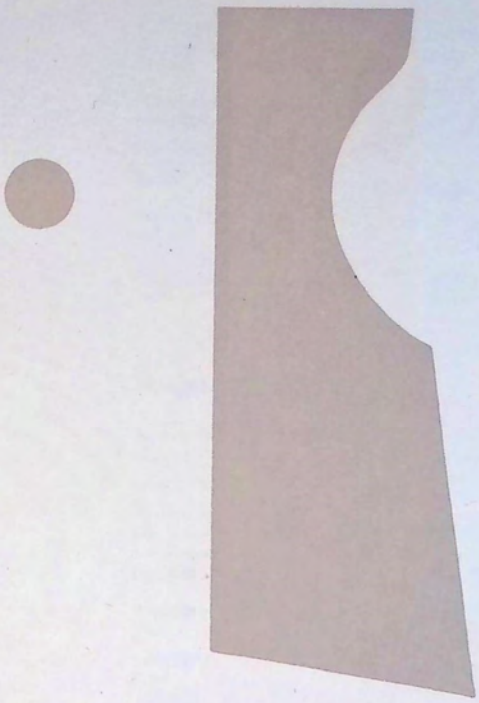

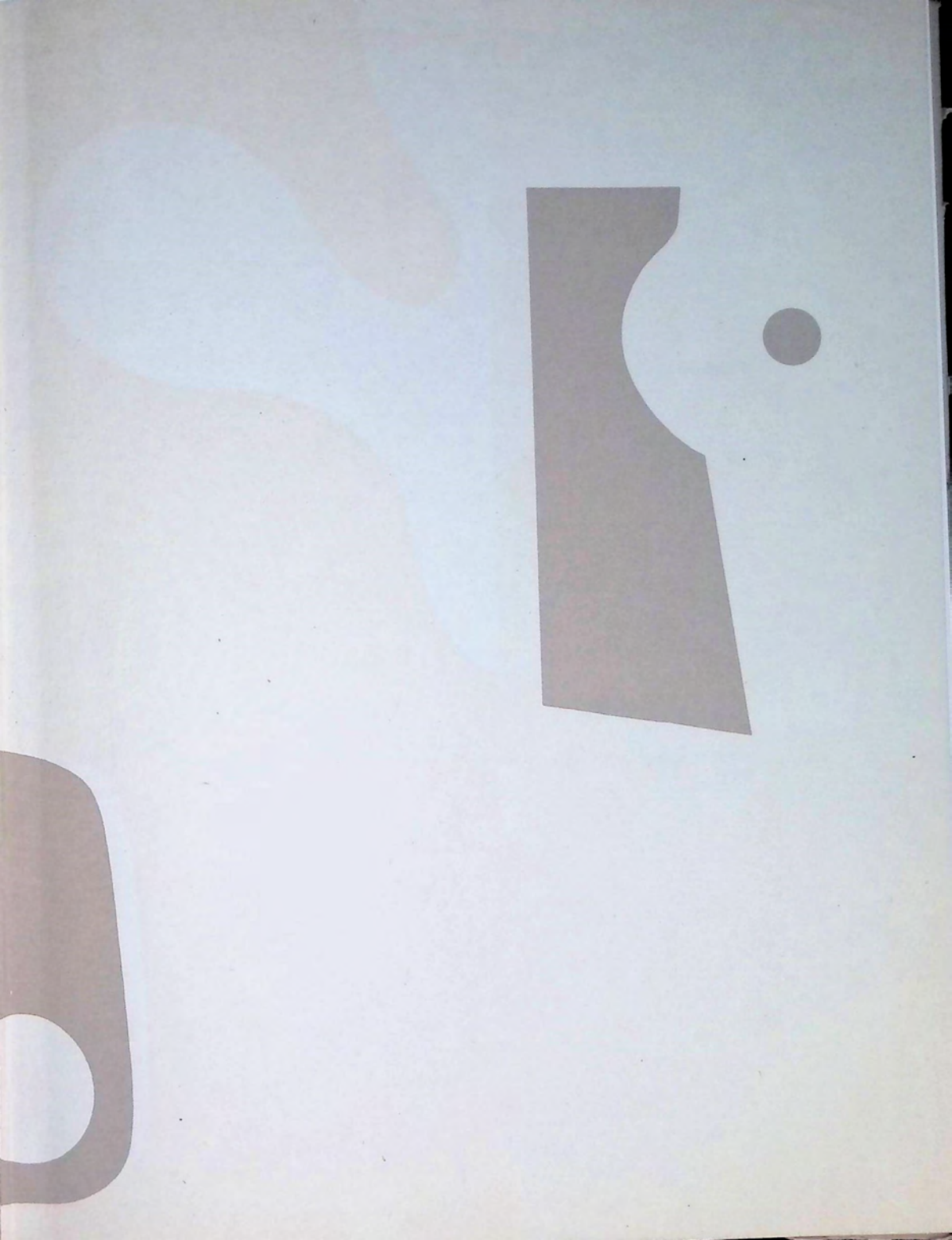

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Emily Hall Tremaine

Art Director, The Miller Company

The Miller Company Collection of Abstract Art
has been assembled to illustrate with original examples:

Abstract painting of the 20th century
which has influenced the development of modern architecture.

Contemporary abstract painting
and sculpture of potential value to contemporary architects.

Lighting, to the modern architect, is no longer an accessory but a major structural element designed into a building from the first. The interest of The Miller Company, as manufacturers of lighting equipment, in the design problems of modern architecture has led them to bring together and circulate nationally these works of art; some of which are of historical importance for the part they have already played, and all of which we hope may prove suggestive to contemporary architectural designers.

Burton G. Tremaine, jr.
President

Le Corbusier

(Charles-Edouard Jeanneret)
1887-
Still-Life
1925

The Miller Company Collection of Abstract Art

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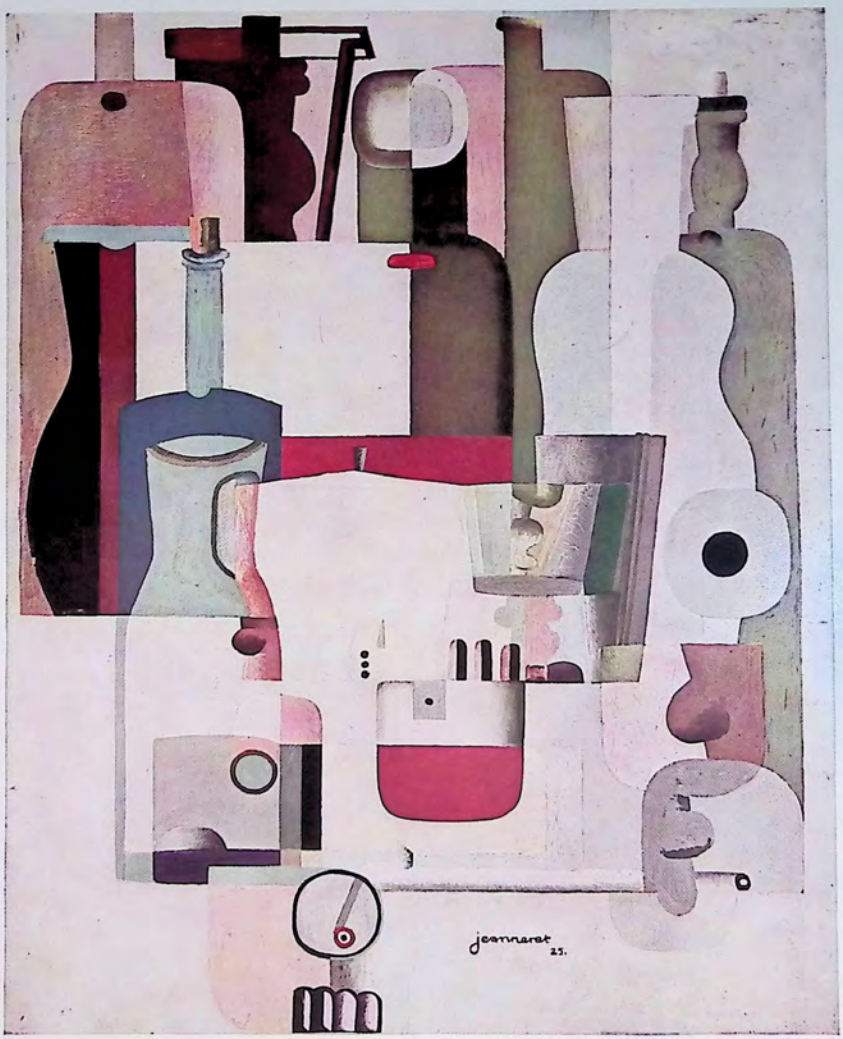
New York

Duell, Sloan and Pearce

1948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Foreword

By Alfred H. Barr, jr.

The architect's life is a hard one. Besides facing the basic economic insecurity of his profession he has to know so much, to be so many things–engineer, sociologist, psychologist, economist, business man, politician and courtier, with an invisible four-leaf clover in his buttonhole. Also, though in this century he has sometimes excused himself from the role, he is an artist – or should be. It is to the architect as artist that this book is addressed. In it he will find works of art by artists who share with him some of his insecurity but who do not have to trouble with the dozen other factors, technical and social, which complicate his activity.

Not only are painters and sculptors far freer than architects in their art but those of the kind whose work is so learnedly and handsomely presented in this volume have reached a degree of freedom and single-minded integrity unmatched in earlier periods. It is obvious that in their search for purity of form they have deprived their art of certain traditional values; yet it is their passionate and concentrated investigation of form which has made painting and sculpture valuable to architects as never before in the history of art.

In the past, architectural forms, in composition as well as detail, have sprung from a great variety of sources. A complex program generated the plan of the Roman bath and the medieval monastery. Simpler functions shaped the apse and the bastion. The dome on pendentives grew out of a long process of technical trial and error. Vestigial symbols of religion or magic survived in the Ionic capital. Competitive structural virtuosity helped raise both the Empire State Building and the vertiginous vaults of Beau-

vais, abetted of course by 20th century real estate values on the one hand and on the other by 13th century municipal rivalry and some concern with the glory of God. Even sentiment for the past has been an obvious if somewhat superficial inspiration of architectural form, particularly in the 16th and 19th centuries. But it is only in the 20th century that painting, and to some extent, sculpture have influenced architecture.

How this came about Henry-Russell Hitchcock has described in authoritative detail on the following pages. But it may be remarked in this foreword that architecture lay open to suggestion from painting because of a sequence of unhappy circumstances: architects had depended for so long upon a revival of past styles that they had been reduced too often to a kind of feeble academic mimicry; then, about 1920, in a revulsion against all styles and even the idea of style itself, the revolutionary architects, the dialectical functionalists, abandoned architecture as an art, pretending to derive their forms only from technical and utilitarian requirements. No wonder the functionalists, having argued themselves into an artistic nihilism, were more or less unconsciously seduced from their technolatry by artists – painters and sculptors – who had passed through the discipline of cubism and were studying the esthetics of free, asymmetric equilibria by means of inter-penetrating rectangles (*de Stijl*) or the esthetics of volume without mass, of engineering, and of industrial textures and surfaces (the constructivists).

The direct influence of painting upon modern architecture must however not be exaggerated. It was shortlived so far as composition and plan were concerned and not always salutary. Moreover "modernistic" cubist ornament of the 1920's was if anything worse than Gothic and Greek architectural cosmetics of the same decade. (Fortunately, in the 1940's, the anti-cubist abstract art of Arp and Miro is not being adapted so much for ornament as it is for the "free form" details of show cases, lighting fixtures, hung ceilings and garden designs.)

By 1930 the International Style had assimilated the lessons both of functionalism and abstract art. Spreading throughout the world, the new style has been modified by

national and local needs and traditions and, in this country, by an interchange of influences with Frank Lloyd Wright.

Today the painting and sculpture in the Miller Collection may help to illustrate the development of modern style and thereby interest the history-minded. But their main importance to the architects of the mid-20th century should be as a source of pleasure and stimulation and thereby of education for the eye. In the heyday of Beaux Arts academism architects used to hang on their walls sketches of picturesque Breton farmhouses, Tuscan villas and Gothic portals. But the chief architects of our time surround themselves with abstract paintings and sculpture. Le Corbusier prefers Léger and his own canvases, Gropius collects Kandinsky and Feininger, Harrison and Aalto like Léger and Calder, Mies van der Rohe owns a remarkable group of Klees. Even that respected enemy of painting, Frank Lloyd Wright, acknowledges the virtues, even the influence, of the abstract design in Japanese prints.

Of course it is to be hoped that both the Miller Collection and this book, though intended primarily for the designer and architect, will interest the more general public too. The present popularity of abstract art in America suggests that the Collection may even serve as a bridge between the architect and his client. For the esthetics of architectural design, which generally employs rectilinear forms, should be more accessible to the layman who is familiar with the art of Mondrian, Sheeler or Pereira.

Manufacturers of business machines, medical supplies and encyclopedias, not to speak of soft drinks and artificial pearls, have all used miscellaneous collections of modern art to dignify and to advertise their products. The Miller Company differs from them; for these enlightened manufacturers of lighting installations have assembled and herewith published works of art which have a special relevance to the problems not only of their own designers but also to those of the architects who choose, and the builders who use, their products. The intelligence and courage of the Miller Company is to be admired; may its enthusiasm prove contagious!

Painting Toward Architecture

By Henry-Russell Hitchcock

Architecture has always been essentially an abstract art, deriving part of its ornament only from the imitation of natural objects. Such larger architectural forms as are presumably imitative – Egyptian pyramids or Grecian columns, for example – are so far geometrically abstracted that their relationship to nature is at most very remote. Abstract painting on the other hand – painting, that is, which organizes its patterns out of forms which are nearly or completely non-imitative – is a new creation of the 20th century, however much its methods may be paralleled in some of the less naturalistic ornament of the past. For Western European culture grants to independent painting or sculpture an autonomous significance. The abstract ornament of the past is an embellishment *of* something rather than an independent artistic entity and does not have this significance.

The intense concentration of interest on pure design in modern abstract art is, of course, unacceptable to many who are genuinely appreciative of the abstract decorative work of earlier periods. Abstract art, moreover, and particularly such abstract art as is devoid of any suggestion of natural forms, is by no means the only major current in 20th century painting and sculpture. But in relation to the architecture of the last quarter-century which is usually considered specifically modern, modern painting which is absolutely or relatively abstract has a peculiar importance.

The rather obvious analogy between copying natural forms and re-using architectural motifs – both generally characteristic of the Western European tradition since the Renaissance – may not be exact. The rejection of the one on the part of modern painters and sculptors and of the other on the part of modern architects, however, has certainly seemed to the public (as to the artists themselves) very closely related. Both represent a refusal to imitate and an emphasis on art as positive creation.

Painting and Architecture in the Mid-19th Century

In the mid-19th century, the disciplines of natural imitation in painting and sculpture and of stylistic imitation in architecture were generally taken for granted. Yet both traditions were then reaching what was at once a climax and an impasse. "Realism" in painting and "revivalism" in architecture, by which is meant a particularly docile attitude toward natural appearances on the painter's part and toward earlier styles on

the part of the architect, are perhaps as characteristic of the 15th century as of the 19th century. Neither the scientific researches of Renaissance artists in perspective and anatomy nor the archeological researches of Renaissance architects among Roman monuments, however, inhibited original artistic development; they rather operated to break down the frozen traditions of the late Middle Ages. In justice to the realist painters of the 19th century and to its archeologist-architects, we must recognize that their studies likewise helped to dissolve the outworn traditions of the 17th and 18th centuries. Indeed, some early pictures by impressionists painted in the 1860s and the best contemporary buildings of a few revivalist architects – usually those whose archeological studies were subtle rather than systematic – displayed a freshness and originality comparable to that of Italian work of the 15th century.

Repercussions of Scientific Developments

The whole of Europe for several hundred years was able to develop fruitfully the new artistic traditions initiated in Renaissance Italy; but the possibilities inherent in the artistic innovations of the mid-19th century were exhausted within less than fifty years. This was true both in architecture and in painting, and for the same basic reason. New technical developments, mothered not by the arts but by science, were deflating the achievements of both artist-picturemakers and artist-builders. Photography, born of optics and chemistry, had solved the problem of realistic representation in black-and-white well before the painters came to define their most extreme goals of realism. And engineering, that is, mechanics applied to structure, was developing modern building materials and utilizing them in brand-new combinations while archaeologist-architects were still unable to analyze correctly the Roman and mediaeval structural feats they sought to emulate.

Yet a sense of cultural inferiority often led scientific technicians to imitate the superficial characteristics of supposedly "artistic" products. Thus the soft-focus manner was used in photography to approximate the contemporary style of landscape painting; while in railroad stations, bridges and other engineering structures, metal members were frequently cast in classical or mediaeval forms appropriate only to stone or wood. On the other hand, good painters took hints in the way of "candid" composition from photographers; and most architects began to utilize, even if rather grudgingly and apologetically, the new materials and structural innovations of the engineers. The major achievements of engineering were limited in practice to a few fields of building, however, and photographers were still restricted to black-and-white and to two dimensions. Nineteenth century technicians were not ready to take over all the provinces of architecture, painting and sculpture, even had they consciously desired to do so.

Emergence of New Concepts of Art

The theoretical dilemma of architects and painters was early evident to many thinkers. By the 1880's there were various attempts to redefine both the special ends and the legitimate means of the arts, if they were not to be wholly superseded by scientific technics. Certain basic assumptions began to be made about the arts which were later to provide the aesthetic premises both of abstract painting and of modern architecture. It is not easy to state these assumptions, but a quotation from Maurice Denis, a French symbolist painter of the generation preceding the development of abstract art, may help to indicate the central position: "Before being a representation of anything whatsoever, a picture is a flat surface covered with colors—colors arranged in a certain order and thus arranged to give pleasure to the eye." This statement stresses the idea that a painting is a material object intended to be apprehended in terms of the abstract organization of its surface elements. Curiously enough, if "tones" be substituted for "colors," such an attitude is as appropriate to photography, considered as an art, as it is to painting. A somewhat parallel attitude to the elements of structure is likewise applicable to works of engineering considered as works of art.

Actually there are at least two different assumptions involved in such attitudes. One assumption (which may perhaps be thought of as primarily rational or intellectual) is that the artistic value of a picture or a building resides not in the intrinsic interest of its individual elements but in their physical relationship to one another. Another major assumption is that mere lines of stress or areas of plain color, appealing directly to the eye, can be at least as powerfully expressive (and hence as moving to the observer) as more complicated forms whose representational connotations are apparent and familiar. Thus certain 19th century metal bridges designed by engineers undoubtedly express lift and tensile strength more clearly in their bare structural elements than do more traditional bridges in which architects utilized masonry forms to suggest such qualities at second hand. In painting it is evident that patterns of broken lines and angry color may be more expressive of strife and more emotionally stirring than frozen representations of real combat.

To be fully effective, of course, such assumptions must be at least tacitly accepted both by artists and by their public. For the arts certainly involve—it is a much older assumption—the problem of communication. A theoretical difficulty in evaluating artistically works of engineering, as well as the art of children, is that the makers were presumably not conscious of a specifically aesthetic intention. At least their intentions are not of the same order as those of an architect or an adult painter or sculptor. The observer, if he wishes, reads into such work his own aesthetic significance. This signi-

ficance, however, is not necessarily without validity. Have not observers long found aesthetic meanings in such phenomena and products of nature as sunsets and flowers, even though nature can certainly not be conscious of operating aesthetically?

Until well into the 20th century the assumptions I have mentioned modified but did not revolutionize the character of the arts. Theories of this general order served, however, to widen the range of artistic appreciation beyond the familiar areas previously considered admirable. An enthusiastic acceptance of archaic and primitive art and a new non-technical interest in the achievements of engineering were the first results of this development of Western European taste at the end of the 19th century.

Around 1905 European painters began to emulate the newly–and sometimes rather naïvely–admired achievements of Negro and other primitive sculptors. About the same time architects began to utilize considerably more frankly than before various novel elements of engineering construction. In both cases the gesture of rejection of mid-19th century standards of art was perhaps as much negative as positive. But by such gestures the ground began to be cleared for more creative developments both in painting and in architecture. Neo-primitive painting and sculpture as well as "engineering-architecture" have both continued to have their critical supporters and practical exemplars; but they now appear in retrospect to represent a transitional stage in the history of 20th century art and architecture.

The next stage, beginning shortly before the first European War and culminating in the 1920s, was the crucial one. A generation later, some of the artistic doctrines of that formative time are likely to strike us as mechanically rigid and narrowly inhuman. The extreme assumption that artistic values reside *only* in the organization of shapes, lines, colors, materials, spaces, and masses and their immediate expressive force, now seems psychologically implausible. It vastly oversimplifies the observer by reducing him to a behavioristic entity devoid of complex psychic memories. Yet it was just at the moment when such assumptions were most enthusiastically supported by advanced critics, some twenty-five years ago, that abstract painting reached its climax and played a major role in crystallizing the visual character of modern architecture.

Critique of Functionalism

Modern architecture, like any architecture of the past, serves functional needs through material structure. To those who are true "functionalists" in theory* – that is, those

*
"Functionalism" is sometimes employed as a descriptive term for all characteristic modern architecture, more or less equivalent to Mr. Barr's "International Style." This is a very loose use of a convenient critical term which is better restricted as here to a more precise meaning.

who are content to restrict themselves to an engineering-architecture – this may seem a sufficient program. But any architecture also exists as a visual grouping of material elements. Toward such groupings various conscious attitudes are possible. The strictly functional attitude would be that visual effect is of no consequence; if the observer is to find interest or meaning in architecture, he must be sufficiently informed to read in each building its complex purposes and to estimate how efficiently they are being served. This is of course identical with the intelligent attitude toward various other elaborate technical products, such as engines and machine tools. The possibility of judging or "appreciating" buildings in functionalist terms is restricted, if not solely to those who are using them, at least to such others as have the incentive, the time and the special training to study their purposes in detail. In actual practice very few are ever in a position to apply such a critique to any building; and members of the general public could never be, except perhaps in the case of their own homes. Even our working places are too complex for us to understand as a whole.

The demolition of physically obsolete structures as soon as "newer models" can be designed must also be assumed as a corollary of functional architectural theory. Functions are continually changing and the means of providing for them are also being so recurrently improved that no building, except perhaps a tomb, can really remain functionally satisfactory for long. Such continual replacement might perhaps be ideally efficient, but it is certainly not practical under any economy of which we know. Architecture inevitably exists through time, not merely as the momentary structural solution of a closed functional equation.

It is the forms, the shapes and the patterns of architecture which everyone first apprehends and which also have survival value. A particular architect may have given no importance at all to the visual, as distinguished from the practical, organization of the material elements of a building. Yet most observers will accept or reject the resulting structure (if they consider it seriously at all) largely on the basis of their apprehension of its visual organization. And this will be increasingly true as the building ages. Architectural, as distinguished from strictly functional, values are at best a gamble; but in them and in related values of craftsmanship lies the only hope that cultural obsolescence can be indefinitely put off.* The great monuments of ancient

*
Craftsmanship might be defined as that surplus of technical excellence over the immediate needs of the moment which the good workman provides just because he is a good workman. It derives from his respect for his materials and his tools and is supported by the special satisfaction that comes from utilizing them effectively. Laymen may or may not be able to recognize it in any product. Full appreciation of any technic from prose-writing to welding requires some understanding of the particular craftsman's problems and possibilities. Engineers of course recognize it in the engines and machines they admire, although they may not use the word.

architecture – particularly, of course, when they lie in ruins – have been technically obsolete for centuries and even tens of centuries, but culturally they are less obsolete than a great part of current architectural production.

Precursors of Modern Architecture

Familiarity of form in architecture provides the greatest assurance of initial acceptance, at least of a passive nature, by contemporary observers. This is particularly true if the familiarity of form can be identified by some verbal label carrying a favorable emotional response, as most of the names of earlier architectural styles still do with the general public. But if familiarity at first produces mild acquiescence, it is also likely to grow rapidly tedious. The familiar indeed tends always to inhibit strong responses of any sort; only the novel really attracts attention, favorable or unfavorable. The architects of the 19th century sought to maintain a balance between the familiar and the novel by frequently changing or recombining their visual references to earlier architectural forms.

This discontinuous process of superficial modification proved quite incapable of producing a positive modern style, that is, a consistent new visual pattern for architecture. Yet it is often forgotten that many architects and critics of the 19th century rejected the thesis of revivalism and continually demanded the creation of a new style. There was never even temporary agreement as to how this should be done, however, and so each attempt was soon cancelled out by the next. The architects of the 20th century, on the other hand, although they reject with more or less violence many of the connotations of the word "style," have unquestionably brought a new architecture into being. In accomplishing this they have owed a great debt to abstract art. The mid-19th century architects who sought most intelligently to achieve a new style in architecture could not carry the rejection of familiar forms very far. Their clients refused to accept direct expression of structure, new or old, as "architecture" at all; they also lost interest rapidly in various programmes of mere innovation in decoration. Unfortunately neither the academic nor the realistic painting of the time suggested new aesthetic possibilities inherent in the planes, volumes, masses and lines that are the basic visual elements of architecture.

At the end of the century most of the "modernists" in architecture were putting their faith in naturalistic curvilinear ornament as a novel embellishment of new types of structure and believed that with it they were achieving at last a new art form. As Louis Sullivan's writings indicate, advanced architects of this generation continued to hold, quite as much as their public, that ornament was essential to architecture. But neither the emulation of plant forms in architectural decoration, nor the later use of

simple geometry as a basis for ornament after 1900, provided a catalyst potent enough to fuse the new structural elements of building into a positive and recognizable architectural style. Even the later work of Sullivan and the Europeans of the Art Nouveau and the *Jugendstil* seems to conclude 19th century developments rather than to lead on toward the new architecture which was to be most characteristic of the new century. For the innovations of the modernists of the '90s did not become acceptably familiar; instead the once novel ornament merely grew boring with repetition and went out of fashion, just as the comparably "modern" ornament of the Rococo age had done after the middle of the 18th century.

Other young architects of the time were reformers rather than revolutionaries. Still working largely with traditional materials, they sought by a craftsmanlike directness to evoke rather than to imitate earlier styles. In Central Europe and Scandinavia formal elements which had been "abstracted," as it were, from several unrelated styles were fused into a sort of common denominator of architectural tradition. Voysey and others in England abjured traditional ornament more or less completely and utilized the new naturalistic decoration with diffidence. So strikingly proto-modern in superficial appearance is certain work of theirs, sometimes done as much as fifty years ago, that the vehement rejection of the later modern architecture by these older men has always been surprising.

But to the men of that generation there could be no architecture without at least an underlying basis of traditional form. It is therefore difficult to claim, as some historians and critics do, that there has been a coherent continuity in the development of advanced architecture through the last two generations. What we know today as modern architecture, despite all it owes to immediate precursors, really began only after the new century was well under way. Indeed, in England and America, the first quarter of the twentieth century was on the whole rather a period of reaction in architectural design.

Frank Lloyd Wright and Oriental Art

In this age of reaction, there is one exception and that a most important one – the architectural career of Frank Lloyd Wright, a continuous and coherent development from the '90s to the present. The European abstract painting which was to influence modern architecture so fundamentally dates from the second decade of this century. Wright, however, who actually participated in Sullivan's innovations of the early '90s, had already by 1900 begun to evolve a new architecture of his own. In the abstract elements of two-dimensional Oriental art he found an inspiration that provided the necessary catalyst. Japanese prints had been admired by European architects as well

as by painters since the 1860s. Already in that decade Japanese decorative elements were being used by Nesfield in England in architectural ornament. But throughout the later 19th century the influence of non-European art had remained in architecture literally superficial. For it merely extended the range of the eclectic repertory from which revivalists, reformers and innovators alike drew suggestions for surface decoration.

It remained for Wright to apprehend in the Japanese print – and not as has sometimes been supposed in Japanese buildings – wholly new abstract possibilities for architecture. He saw that the simple geometric elements, so carefully disposed in the Oriental woodcuts, created a compositional interest independent of the subject matter of the prints. By this time this was indeed recognized by many European and American artists and critics. But Wright also realized that this sort of abstract or pattern interest was capable of analogous exploitation in architecture. Had he merely imitated or emulated Japanese architecture, his work would have been no different essentially from that of various other architects of his generation who were developing personal manners of design – rather than basically new concepts of architectural form – by using simplified and stylized elements drawn from this or that European or non-European architecture of the past.* But in emphasizing the vertical planes of his walls and the hovering planes of his roofs, and still more by clearly suggesting the actual interpenetration of exterior and interior space, Wright found a way to utilize plastically the elements of American domestic building without reference to any earlier architecture, European or Oriental. (See p. 21) His vigorous and positive new sense of abstract design was directly related to very open planning and associated with a frank expression of local materials and structural methods. He consciously sought to achieve organized compositions directly from functional elements. But he also succeeded in making these compositions as coherent and consistent as the geometrical patterns he admired in Japanese prints, but with the added interest of real existence in three dimensions.

* The interesting Orientalizing work of Green and Green in California is an important case in point.

Kunisada

Japanese Actors

1805


尾上松緑
市川團十郎

From the River Forest Clubhouse of 1898 through the famous series of "Prairie" houses of 1900-1910 his mastery increased. In this period the materials and methods of construction he employed usually remained quite traditional despite his unconventional handling of them. Yet when he began to employ the newer materials his firmly established architectural principles proved more than adaptable; they seemed indeed to have been especially formulated for the structural methods which the use of metal and concrete had made possible. Considering his early familiarity with skyscraper construction in Sullivan's office, this was perhaps natural; but it goes far to explain why the younger European architects, more mechanistically minded than he, were so stirred by his work when they first came to know of it.

Wright also at this time introduced two-dimensional geometrical patterns in his leaded glass windows and in other decorative accessories subordinate to the scale of his abstract architectural compositions as a whole. It is these decorative details, or rather his continued use of this sort of ornament, that brings Wright's work closest to that of the advanced European architects of the opening of the century such as Wagner and Mackintosh. Later, in 1913, at the very moment when abstract art was reaching its first climax in Europe, he designed large abstract murals and also abstract sculpture as decorative accessories for his Midway Gardens in Chicago.

But it was in his development of the principles of abstract design, not in ornament but at full architectural scale, that Wright was the greatest innovator of his generation. Moreover, his was a basic and not merely a superficial influence on the younger European architects, just at the time they were also becoming aware of the new abstract developments in painting. When they studied his work in the German publications which appeared in 1910 and 1911, it was the major conceptual innovations and not the detail which most impressed them. Wright thus paved the way for that close alliance between abstract painters and modern architects which was to come after the first European War. Yet it must be emphasized that he himself owed nothing to modern European abstract art; his own conceptions of architecture had matured well before it first came into existence. Moreover, he deprecates in the work of other modern architects just those tendencies of the last twenty-five years which are most clearly dependent on European abstract painting and sculpture.

Beginnings of Cubism

The particular steps which led up to the French cubism of 1910 (and other parallel artistic movements in Italy, Germany and Russia) need not concern us here.* Since the mid-'80s advanced painters had been revolting against the passive realism and

* For the best account see Barr, Alfred H., jr., *Cubism and Abstract Art*, New York, 1936, pp. 11-128.

Hickox House, Kankakee, Illinois

1900

Frank Lloyd Wright

the formlessness of impressionist painting. A sense of architectonic values, relatively neglected in European painting since the 17th century, had been consciously revived. Various disciplines of plastic organization, somewhat comparable to the basic structural disciplines of architecture, were widely recognized to control most painting in the earlier European traditions, and for that matter in the exotic traditions as well. These disciplines were studied and emulated, sometimes perhaps parodied.

Natural resemblance was not discarded, but the shapes and colours of objects were distorted, that is, consciously transformed, in order that they might serve the painter's creative ends. This is true of all the advanced painting of the first decade of the new century. Even in early cubism, distortion rather than abstraction seems a better word for the painters' way of treating natural forms. For abstraction implies simplification; and in the first stage of cubism the analytical breaking up of natural objects produced very elaborate and complex images, even if they are usually not readily recognizable. At this stage, indeed, cubism seemed to have less to offer architects than the broader and more spacial painting of Cézanne and Seurat at the end of the 19th century. For at first the characteristic plastic patterns consisted of a multiplicity of broken and intersecting planes delicately rendered in near-monochrome, and these are more suggestive of the chiselled or molded surfaces of sculpture than of the planes and spaces of architecture.

Architectonic Phase of Cubism

The second stage of cubism, beginning about 1912, which is called synthetic, – and even more the extremely theoretical work of other groups working in Paris and elsewhere at the same time – at once simplified and increased the scale of the elements of which modern paintings were composed. Thus the compositions became more architectonic again. Whether these elements were "abstracted" from the forms of natural objects, as they were by the cubists Picasso, Braque and Gris (see pp. 57, 59 and 61), and also by Mondrian in his early paintings (see p. 79), or whether they were completely non-representational, as in the case of certain other French, Russian and American artists, the most advanced work of the years just before the first European War came very close indeed to research in pure design.

The strong straight lines, frankly drawn on the picture plane, the areas of flat color approximating simple geometrical shapes – sometimes consisting of colored materials stuck on the picture surface rather than of pigment applied with a brush – whether or not they could also be read as the elements of an abstracted landscape, figure or still-life composition, were perhaps not absolutely new in the history of painting. But both the careful study of relations that went into their arrangement and the visual

significance that was read into the results were of an order that transcended two-dimensions and dealt in a non-perspective way with problems of depth and projection. Soon the cubist painters and others were experimenting with "constructions," that is, abstract sculpture, in which the lines and planes of their paintings were materialized in three dimensions. It was obvious that abstract painting, already so architectonic, could likewise provide a basis for large-scale architectural composition, such as Wright had found earlier in the abstract patterns of Japanese prints.

Indeed, when European architects began to study the works of Wright in the important books which first brought them to European attention in 1910 and 1911 they could hardly avoid being struck by the extent to which the abstract aesthetic of his architecture paralleled that of the very newest developments in European painting and sculpture. But the actual exploitation of the new ideas of the painters in architecture, as well as any real emulation of the work of Wright, hardly began before the end of the first World War.

Abstract Experimentation During the First World War

During the years of the War from 1914 to 1918, and for several years thereafter, building production largely ceased, even in neutral countries. But young architects, particularly those who had barely begun practice before the War, seem to have been unusually active intellectually. The most important architectural innovations of the previous twenty or thirty years could now be correlated and, as it were, digested. The industrial work of Behrens in Germany and of Perret in France, boldly utilizing metal or ferro-concrete without disguise; the doctrinaire "stripped" style of Adolph Loos, who considered ornament synonymous with crime; and the more creative abstract architectural effects of Wright; as well as the building achievements of engineers, particularly American engineers: all this was admired, studied and even crudely imitated in projects that rarely ever came to execution.

This slow assimilation of already established innovations was accompanied by much critical reading and discussion of aesthetic and anti-aesthetic theories. Many young architects also developed close personal associations with painters and sculptors of their own generation, often coming to accept rather completely their increasingly rigid abstract doctrines as a new gospel for all the arts. At the fringes of advanced experimentation architecture, painting and sculpture came very close – doubtless too close – together in those years. Indeed, in a certain theoretical sense, the three arts really merged in the constructions and stage sets of the Russian constructivists. Some of their works of abstract sculpture were really models for buildings intended to be executed at monumental scale; and their sets were built up of large abstract ele-

ments arranged in the real space of an empty stage with no backdrop and no illusion of representation whatsoever, so that they constituted a sort of temporary architecture.

At this time many architects began to try their own hands at abstract painting and sculpture also. Indeed as a result of this experience modern architects have since come to consider some such exercises a desirable part of the artistic preparation for their profession. While other more traditional artistic studies have been sacrificed to the needs of an increasingly complex technical training, modern architectural education generally includes exercises in abstract design today.

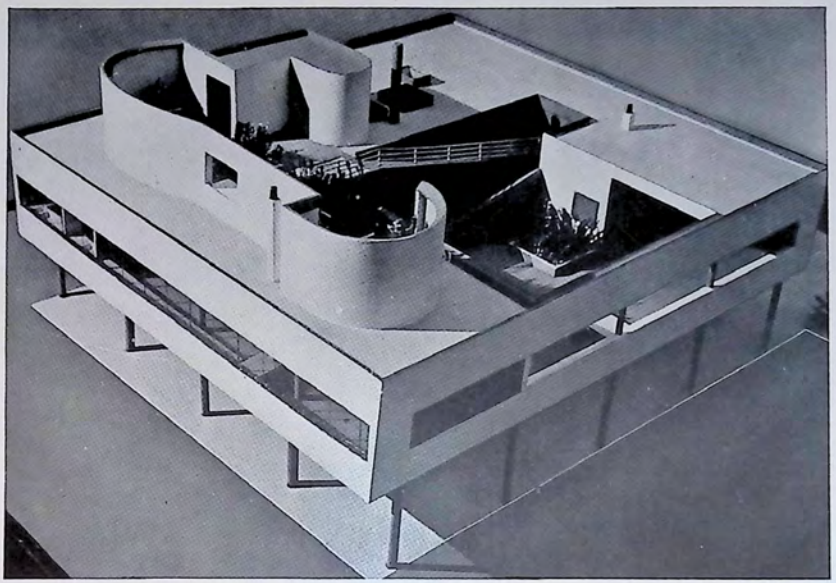
Tangency of Abstract Art and Architecture in the 1920s

When, a few years after the War, building activity revived, the period of purely theoretical exploration of abstract possibilities in architecture came to an end. The positive results of close contact with abstract painting and sculpture were soon evident, however, in the work of the new post-war generation of architects. The most striking examples of the direct impingement of the ideals of abstract art on architecture in various European countries belong to the mid-'20s. The links between the arts at this time were many, particularly as the Dutch abstract painters and the Russian constructivists and suprematists, little appreciated or even proscribed in their own countries, moved about post-war Europe and were generally welcomed as colleagues and allies by the younger architects wherever they went.

Since it was in France, in Holland, and in Germany that the new architecture first crystallized, particularly in the work of four men: Le Corbusier in France, Oud in Holland, and Gropius and Mies van der Rohe in Germany, the most important links are with the post-cubist development in France, with the Dutch *de Stijl* artists, and with the various abstract painters whom Gropius brought together at the Bauhaus in Germany. There seems to have been no such link in America between the modern painters and architects at this time; nor for that matter in England or other European countries as yet.* But the character of the actual contacts was surprisingly diverse and helps to suggest the variety of different connections that may profitably exist between painting and architecture.

Even in America, where architecture in the '20s remained generally conservative, increasing appreciation of the work of such painters as Sheeler and Marin by architects and laymen undoubtedly helped to prepare the way for an understanding of what was going on abroad. Collectors of modern painting were likely, moreover, to be among the first patrons of the new architecture everywhere.

* The brilliant young Italian futurist architect Sant' Elia died in 1916, leaving only projects as a hint of his potentialities.



Savoye House, Poissy, France

1929

Le Corbusier

Model in Museum of Modern Art, New York

Purism

In France in 1918 the architect Le Corbusier joined the painter Ozenfant in publishing a magazine, *L'Esprit Nouveau,* concerned with all the arts. It was characteristic of the period to form small groups of artists with rigid theoretical programmes. The purists– as Ozenfant and Le Corbusier called themselves – aspired to regain the general public interest in modern painting which they believed the cubists had lost. They therefore built up their pictorial compositions out of everyday objects such as bottles, pitchers and glasses whose forms were familiar to everyone. But they also believed that these objects had reached an anonymous sort of standardized purity in their simple shapes which coincided with purist aspirations for industrial art. They used the most conventionally agreeable pastel coloring in preference to the harsher tonalities of the cubists, and sought an evenness of touch and a smoothness of finish which they considered appropriate to a machine age. (See frontispiece)

Le Corbusier was in these years as active and accomplished a painter as Ozenfant. But what is particularly significant is the way in which his architecture and his painting advanced together in the early '20s. His new architectural forms do not "derive" from those in his paintings; they are more clearly dependent on the ferro-concrete structure he consistently used. But the delicate precision of pattern in his walls and their openings, a quality little associated with ferro-concrete construction previously, is clearly related to the restrained elegance of form in his paintings. In theoretical writing Le Corbusier was stressing the analogies of the new architecture with the characteristic products of the machine. But the manipulation of the crisp outlines of machine-made objects in his pictures had already refined and stylized his concepts of an aesthetic proper for a machine age. After the first crude attempts at incorporating unmodified engineering elements, his houses were visually organized with all the perfection of his purist paintings. (See p. 25) Their proportions, indeed, were worked out through geometrical devices more closely related to the humanistic theories of Renaissance architects than to the empirical formulas of modern engi-

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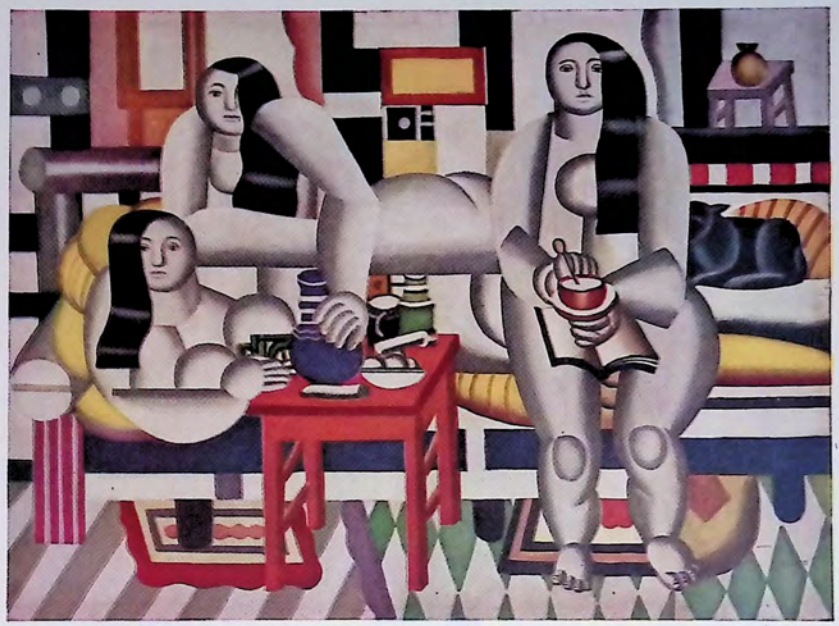
Fernand Léger

1881-

Petit Dejeuner

c. 1921



neers and identical with those he had used from the first in pictorial compositions.

There are closer analogies as well. The smooth, flat, rendered surfaces of his buildings had the immateriality of the colored shapes in post-cubist painting. And soon the darker colors of his pictures of the mid-'20s were introduced in addition to pastel tones in order to contrast certain wall surfaces more boldly with the off-white tone which he considered the natural color of the actual stucco. Even the curves of the objects in the pictures were echoed in his plans in the freely bent shapes used for non-structural screens. (See p. 25) Neither in plan nor elevation were his architectural compositions allowed to ramble; rather they are compactly ordered inside rectangles, as if within the frame of a painting.

Close to the purists in style was the painter Léger. Just before 1920 his painting had reflected the contemporary cult of the machine more clearly than that of any other French painter. In the early '20s, however, he developed a special interest in humanizing mechanical shapes. Human figures, as well as other quite recognizable though simplified natural forms, began to reappear in his paintings. (See page 27) The limbs of his figures were stylized into cylinders that still suggested the parts of some mechanism, and these forms were set against flat patterned backgrounds that sometimes closely approximated the rectangular arrangements of the *de Stijl* painters; but the organization of the forms was more complex and the colors were subtly varied in a very French way.

Léger's painting served as a particularly effective catalyst in making mechanical elements artistically useful to architects, because the range of his subject matter was not limited to such forms. Moreover the scale of his compositions of the mid-20s, sometimes very similar to purist work in their extreme simplicity, is perhaps more truly architectural than that of any of the other painters of the period. Particularly these pictures suggest murals such as he has always wished to paint and which are now at long last being commissioned.*

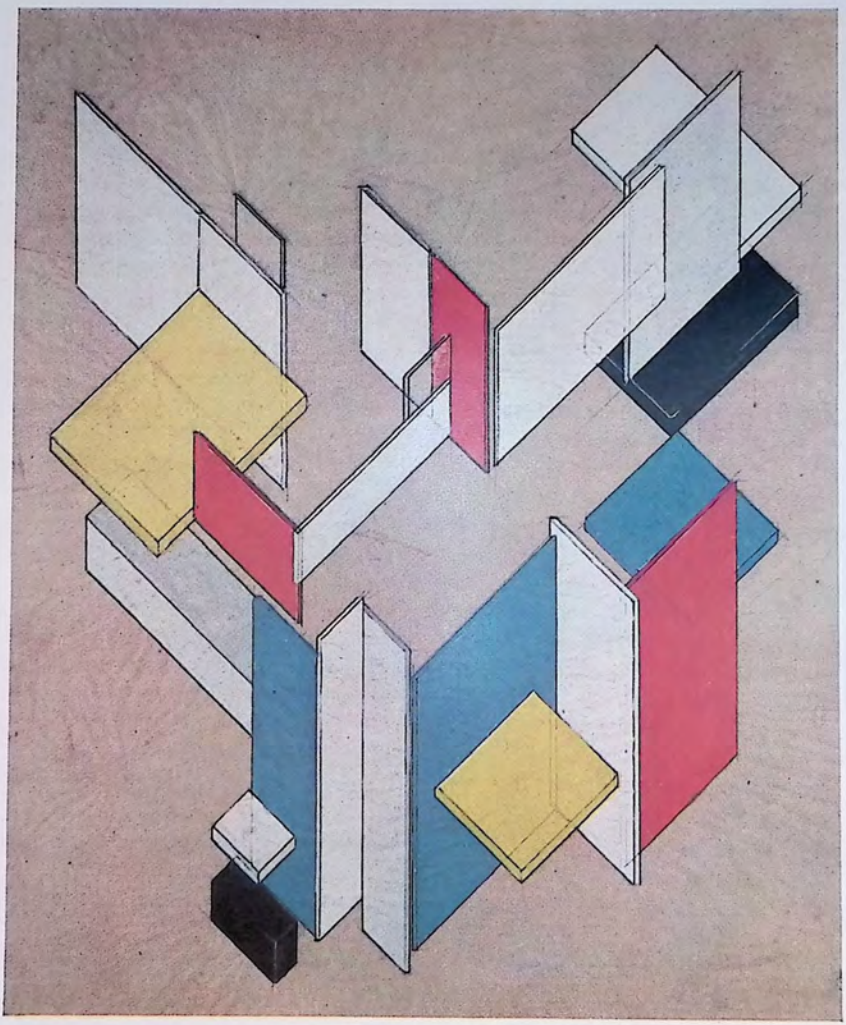
* A mosaic on the façade of the church at Assy (Hte. Savoie) is now completed.

Theo van Doesburg

1883-1931

Space-Time Construction No. 3

1923



After the mid-'20s Léger's style grew looser and more fluent, emphasizing in the selection of pictorial elements simple natural forms rather than mechanistic shapes. Under the influence of Léger, Le Corbusier turned away from doctrinaire purism in his painting of the later '20s. Although he was still painting very actively, the intimate relationship between his pictures and his buildings is no longer so evident. By the late '20s the character of his "new architecture" had really crystallized. As he became more active professionally, and hence better able to realize his aspirations in three dimensions, he sought to complement the forms of his architecture in his paintings. Elements of anthropomorphic form and of connotational human emotion – elements for which modern architecture hardly offers direct expression – became increasingly prominent in his pictorial work.

But his activity as a painter, which has continued down to the present, indicates the important role he believes free plastic experimentation should play in the architect's aesthetic experience. Certain late projects suggest that his architecture is being influenced once more by the restriction of his productive energies to painting during the years of the last war while building was impossible.

Dutch Abstract Art

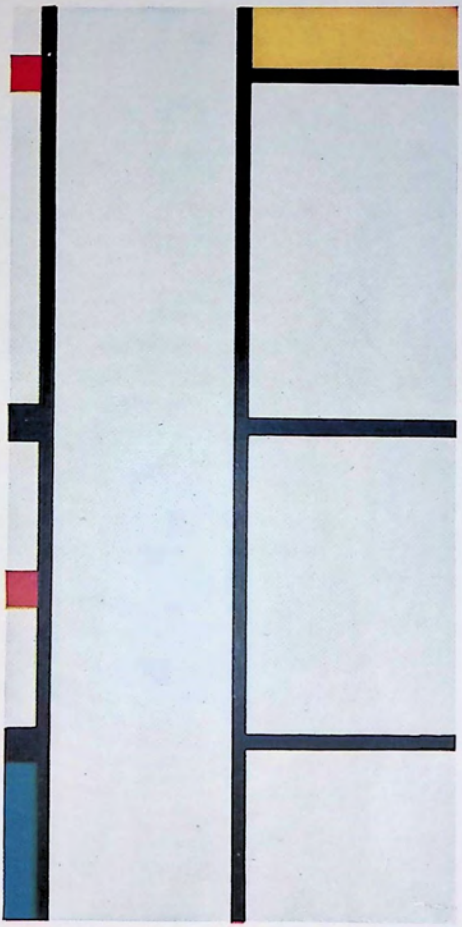
In the earlier post-war years around 1920, the Dutch artist Van Doesburg and the sculptor Vantongerloo, if not perhaps Mondrian, were working more consciously and directly toward architecture than anyone in Paris except Le Corbusier himself. Vantongerloo's curious sculptures of interlocking rectangular forms look at first sight like a cross between Chinese puzzles and precariously balanced piles of brick. Thirty years later, however, they continue to suggest possibilities of architectural composition in mass and volume more complex than any architect has yet aspired to build. Indeed the influential work of the Dutch architect, Dudok, whose early buildings were quite suggestive of Vantongerloo's sculpture, has improved in quality since its plastic complexity became less willful.

Piet Mondrian

1872-1944

Composition

1935-42



The tiled floors and stained glass windows which Van Doesburg designed for the heavy and rather barren houses the architect Oud was building in Holland during and just after the War were still essentially decorative accessories. The abstract principles of their design were very little assimilated in Oud's architecture of these years. But Van Doesburg's isometric color constructions of the early '20s, on which the architect Van Eesteren sometimes collaborated, may be read by the observer either as autonomous abstract pictures or as extremely bold projects for a hypothetical architecture of colored planes intersecting in space. (See p. 29) Van Eesteren developed into the chief Dutch city-planner, responsible for the vast extensions of the city of Amsterdam before the last war; but in these early years his association with the aesthetic theorists was very close. It was Rietveld, however, in a house built in Utrecht in 1924, who translated the compositions of Van Doesburg most directly into architecture.

In 1925 Oud, no longer content merely to employ his painter friends as decorative collaborators, made a Mondrian-like composition of the whole façade of the small Cafe de Unie in Rotterdam. Here the sash bars of the windows played the same part as the rigid black lines in Mondrian's painting (see p. 31), while the flat surface plane was divided into a few rectangular areas smoothly painted in white and the primary colors.

Rietveld's house and Oud's cafe represent extreme cases of the direct influence of abstract painting on architecture. Indeed they are today doubtless more interesting historically than architecturally plausible. But after 1925 the Dutch architects, like Le Corbusier, sought and found the architectural equivalent of abstract painting. Their debt to neo-plasticism, the particularly rigid Dutch form of abstract art, remains nevertheless especially clear. Moreover, both Van Doesburg and Mondrian continued down to their deaths to be very conscious of the special significance of their own two-dimensional art as research in pure design. They were convinced of its presumptive value to architects as well as to all sorts of other designers.

If there has been more evidence in America of their influence in advertising layout than in architecture, it is because their principles of design can be adapted in such work more directly than in architecture. Mondrian however, like a theoretical physicist, really pursued his aesthetic research for its own sake. The application to architecture of the implications of the latest and richest work he did in America just before his death remains still a potentiality.* (See p. 81)

*

Curiously enough, Oud about ten years ago began to turn away from the characteristic simple forms of modern architecture toward something that recalls the *Jugendstil* of the opening of the 20th century. The departure of the abstract artists from Holland has perhaps been unfortunate for modern Dutch architecture, even if other countries have evidently profited from their presence.

Cafe de Unie, Rotterdam, Holland

1925

J. J. P. Oud

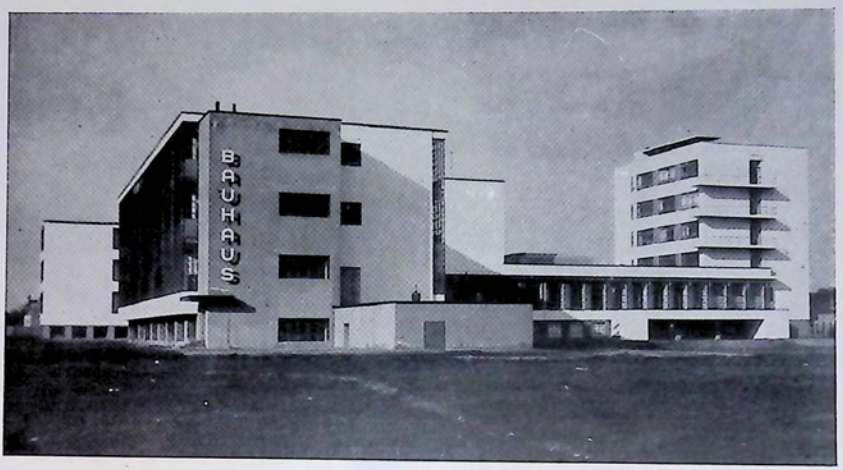
The Dutch abstract artists were, in the '20s, very influential in Germany as well as in Holland. Indeed their work, and to a less extent that of the Russian suprematists and constructivists, seems to have been the particular catalyst which crystallized what has sometimes been miscalled the "Bauhaus Style." This crystallization of a new architecture in Germany occurred at just the same time in the mid-'20s that Le Corbusier and Oud were bringing their new architecture to its first maturity.

In various house projects by Mies van der Rohe in the early '20s the influence of Van Doesburg is evident in the pattern of the floor plans. And even in his latest work, now proceeding in Chicago, the arrangement of the extremely simple elements of his façades often seems to approach very closely the rigid discipline of Mondrian. He abjures the accent of strongly colored areas, however, and prefers an almost classic symmetry and regularity to occult balance, so that his explicit denial that this influence continues in his work can be accepted. It is to the very dissimilar abstract art of Paul Klee that Mies remains especially devoted. (See p. 37) The subtlety and the mystery of the different possible relationships between modern architecture and abstract painting can hardly be better illustrated than by this fact. Around Mies as he develops his architectural designs in a spirit of Platonic purity and extreme mathematical simplification, hang a score of Klee's paintings, whose influence on these designs it is all but impossible even to glimpse; while the now entirely historical influence of Van Doesburg and Mondrian still seems evident to the observer of his buildings at Illinois Institute.

Bauhaus Painting

In the early days of the Bauhaus, before modern architecture had really crystallized in Germany, the three painters whom Gropius added to his staff around 1923 were none of them geometrical abstractionists. The American Feininger worked in an extremely refined version of cubism, abstracting the forms of landscape, of ships, and above all of mediaeval architecture, into delicate linear patterns lightly touched with translucent color. (See p. 71) Only graphically, in the exquisite precision of the linear style, do his almost expressionist studies of mediaeval cities have anything relevant to say to architects. Such work seems, indeed, to lead *out of* rather than *toward* architecture – as of course do all the many modern paintings by other artists who represent buildings in a semi-abstract way. It is rather his seascapes and his night scenes, with their sharp-edged planes of colored light organized in precise asymmetrical balance, that explain the particular interest the Bauhaus architects take in his work.

The Russian Kandinsky was historically probably the first painter – in 1910 – ever to produce a wholly abstract picture. His art is extremely emotive and musical rather



Bauhaus, Dessau, Germany

1925

Walter Gropius

than architectonic in character, at the poles from the clear crisp geometry of the Dutch abstract artists or the elegant Latin organization of straight lines and restrained curves of the purists. Yet even his rather chaotic and turbulent early work seems to have been influential on Gropius and other German architects during the brief reign of expressionism in architecture during the very first years of the Bauhaus. In the '20s his shapes grew more geometrical and the organization of his pictures became more structural without losing that quality of free extemporization which was his particular contribution to abstract art. In this later work one may feel that the direction of the influence was rather from architecture to painting. Yet the continued interest of architects in his art indicates that his painting has real relevance to modern architecture. (See p. 77)

The most distinguished artist directly associated with the founders of the new architecture in Europe, however, was the third Bauhaus painter, Paul Klee. The range of his art is very wide indeed, including at one extreme compositions of solid-colored squares and rectangles or patterns of straight lines almost as rigid as the exercises of the Dutch, and at the other extreme the most nervous and fragile of semi-representational doodles combined with fluid effects of color that often appear to be the accidental result of natural patining. (See p. 73) While the art of the French, Dutch and Russian geometrical painters is above all rational and consciously organized, so that its approach toward architecture is almost embarrassingly explicit, Klee's art has been intuitional, even whimsical, with little obvious relationship to architects' problems of design.

The graphic wit, the psychic content proposed by his very literary titles, the extremely delicate scale of much of his work, never suggest – any more than do the paintings of Picasso – that Klee desired a mechanistic synthesis of the arts. For the theoretical activities of many abstract artists and modern architects, and even more of their critical friends and associates, were often focused in the '20s and even later toward the establishment of such a synthesis. They were consciously seeking a 20th

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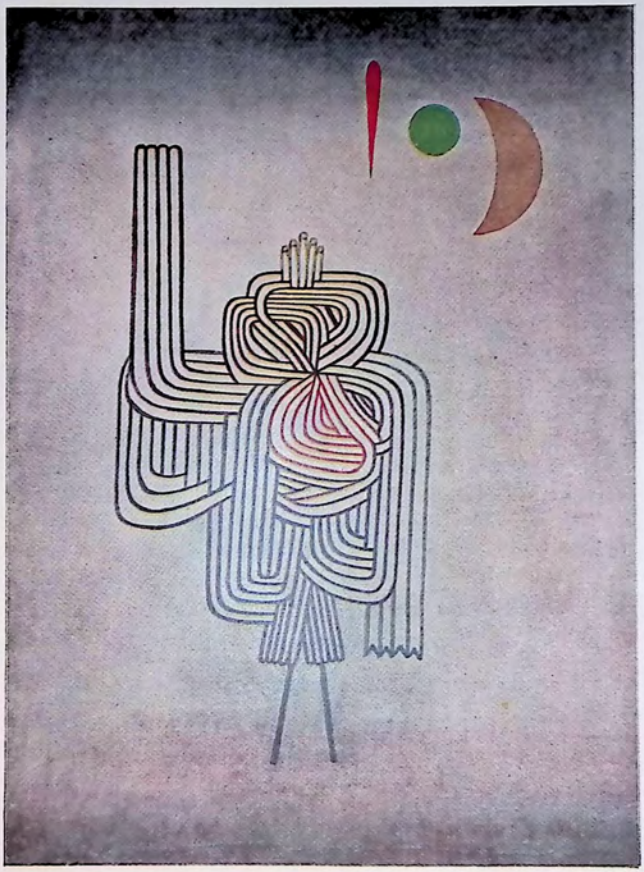
Paul Klee

1879-1940

Departure of the Ghost

1931



century style that should embrace all the visual arts in one single aesthetic frame of reference. Against such a solemn and over-simplified program every painting of Klee is a protest. The subtle ambiguities, the exquisitely hand-made quality, and the individual divergence of each picture from the others he was producing at the same time, are opposed to the very concept of such an established style. His art provided an antidote, at the very heart of German modern architecture, to the doctrinaire and almost behaviorist assumption that all artistic means could be precisely analyzed and their effects confidently predicted – that art, in other words, might become a mere branch of applied science. Gropius' intense dislike of the concept of a controlling style in modern architecture is doubtless related to his appreciation of the art and the theories of Klee.

Also at the Bauhaus, however, and balancing these more important painters, there were other men who worked along lines similar to those of the Russians and the Dutch. It is too extreme to say that autonomous painting was to Moholy-Nagy or to Albers an art which society no longer needs. But their pictures and prints often appear to be merely examples of controlled research: exercises, almost, in pure design. (See p. 75) The significance of the work of these artists lies more in the application of the plastic discoveries they were making to the practical arts than in the exercises themselves, considered as independent works of art. Industrial design, photography, advertising, and installation techniques, as well as – indeed more than – architecture, have profited from such experimentation.

As has been said, this experimental attitude has had important educational consequences. Where modern architectural schools assume any responsibility at all for aesthetic as distinguished from strictly technical training, it is along such lines that their instruction has been developed. In the writings of Gropius, based on the experience of the Bauhaus, the theoretical relationship between painting and architecture has been much more clearly stated than in the writings of Le Corbusier. The tradition of the Bauhaus, now very influential in this country, tends toward a systematic

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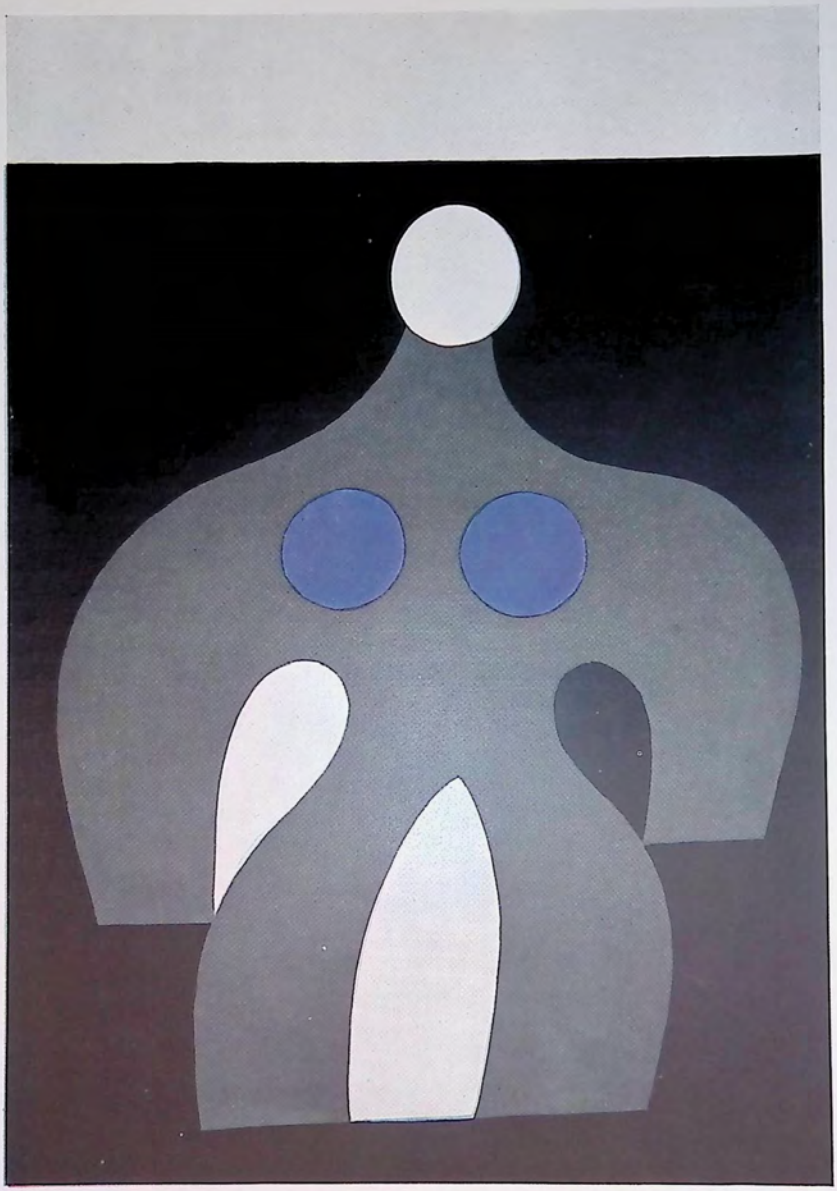
Jean Arp

1888-

Figure

1920



approach to the study of design in all fields. The attitude of Le Corbusier and of those who accept his leadership, on the other hand, presumes that the study of modern painting leads in a somewhat intangible way to the formation of a relevant modern taste in all the arts. Paradoxically, however, it is Le Corbusier, rather than Gropius or Mies, who believes architects may profitably utilize formal mathematical systems of proportion.

Abstract Surrealism

In the painting of Léger, of Ozenfant, and of Le Corbusier himself, extreme geometrical austerity was already beginning to be tempered by a return toward variety and complexity of shapes and colors in the very years around 1925 when painting and architecture were closest together in Paris. In the mid-'20s, however, the theories of a new and primarily literary movement, surrealism, sharply rejected the rationalistic assumptions on which most abstract art, except that of Kandinsky and Klee, was based. One branch of surrealism, and that destined to be the more famous, was soon bringing back the full elaboration of earlier representational techniques in the Freudian guise of "dream-painting." Such painting has no more to say to modern architects in directly graphic terms than most 19th century art. Yet it gave a serious jolt to all those who saw an immanent artistic synthesis of the 20th century in purely mechanical and behavioristic terms.

More important for architects was what is called "abstract surrealism." In the work of Arp and Miro, free curves that suggest, but do not directly represent, the shapes of natural organisms (see pp. 89 and 103) take the place of the simpler geometric curves and the straight lines of the French purists and the Dutch and German abstract artists. Appreciation of the vitality of such work undoubtedly played a not unimportant part in loosening the mechanical rigidity of modern architecture in the '30s. The connection is certainly not as direct as that which existed between painting and architecture in the early '20s; yet the free, non-mechanical curves, particularly in

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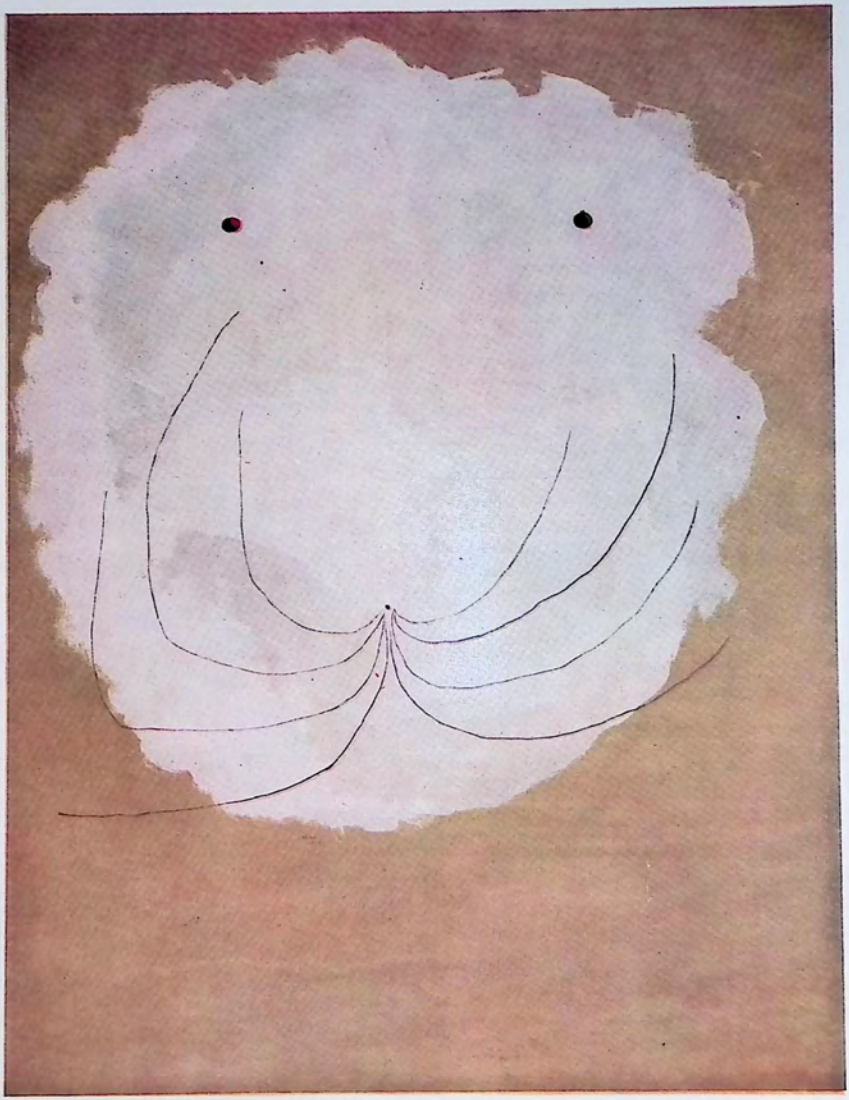
Joan Miro

1893-

Cat's Whiskers

1927



plan, characteristic of the work of the Finnish Aalto and of the Brazilian school of modern architects, are certainly related to this sort of abstract art. The gardens designed by the painter Burle-Marx, so effectively associated with most of the best new Brazilian buildings, are of course less "psychological" than the reliefs of Arp and the paintings of Miro. (See p. 53) They seem, however, to be as direct a translation of non-mechanical abstract painting into gardening terms as the English parks of the 18th century were of the classical landscape painting of Poussin and Claude.

In shops, restaurants and interiors generally, the free forms of Arp and Miro are now widely used in America to lighten the severity of modern architecture. (Some indeed may think they have of late been abused.) But the art of these men has also a deeper theoretical relevance which modern architects have increasingly apprehended.

Just as the abstract painting of the early '20s excluded nature, so early modern architecture seemed to stress man's independence of her. Nature of course soon took her revenge. While the pictures of the time, framed and glazed, still present their visions of an autonomous Platonic universe of pure mathematical forms, the stucco surfaces of the modern buildings of the '20s, designed in abstract planes of white or unmodulated color, soon lost the mathematical precision on which their intended visual effects were dependent as they became cracked and discolored. The use of natural materials in some of Arp's reliefs, and in Miro's paintings the characteristic mottling of the backgrounds as well as the exploitation of apparently fortuitous stainings, has helped to suggest to modern architects a different approach to surfacing materials.* (See pp. 89 and 103)

Wright, whose mind was formed in the 19th century, had always realized that buildings must take their place in the landscape and be subject to the natural action of time and weather. He knew therefore that architectural materials, having their own organic life in the world of nature, ought not to be treated merely as abstract fields of color. That organic life must be understood and respected by the architect if his work is to grow in grace as it matures. Only thus may modern architecture hope to acquire with time the equivalent of a patina and not become shabby, seeming to cry for replacement as soon as its original surface perfection is lost.

Painters of another sort offer the slogan, "Save the surface and you save all." But surfaces of Mondrian-like character cannot, in architecture, really be saved visually

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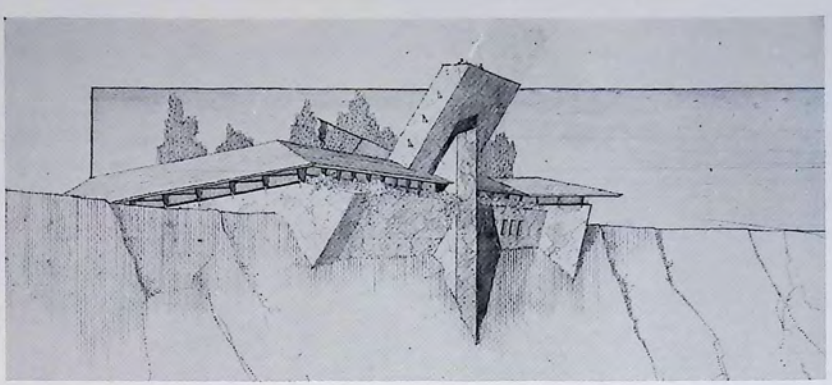
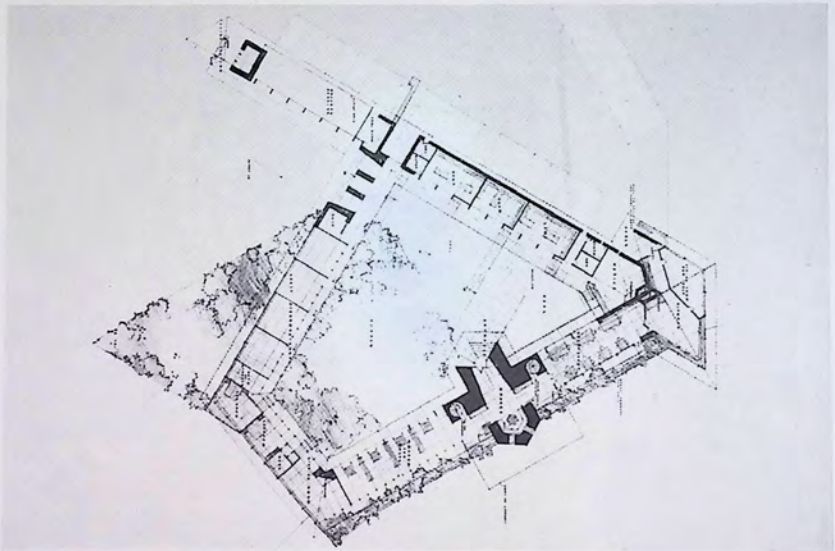
Of course Russian abstract artists had been much interested in textures and surfaces as a development out of the use of various materials in cubist *collages*. At the Bauhaus a theoretical interest in the texture of materials was highly developed, but it seems not to have had much influence on the early practice of the Bauhaus architects. The theory came from the Russians; but the subtle exploration of textures in various student exercises seemed to show more the influence of Klee, whose work provides a never-ending variety of tactile qualities.





Project for Resort, Meteor Crater, Arizona

1948

Frank Lloyd Wright

no matter how often they are repainted. For repeated coats of paint blur edges and roughen surfaces. Even paint must therefore be considered as a material and not merely as an abstract layer of color.

The reversion to the use of variously textured materials in architecture, materials such as might be expected to weather without loss of visual surface integrity, was doubtless influenced by the abstract studies of texture which modern photographers were making. The growing tendency to re-examine the architecture of the past with an eye for its specifically material qualities, without any intention of copying its stylistic forms or even of emulating its large-scale abstract effects, also helped modern architects to coördinate the characteristic qualities of hand and of machine craftsmanship in the handling of surfaces and in other ways as well. Indeed it began to be realized that machined precision of finish, beloved of the industrial designer of the "streamline" school, was not usually an overall characteristic of soundly engineered products, but only of certain aspects of them. It is the result of using particular tools and processes which naturally produce such a finish, and these tools and processes are only a part of the repertory of modern industrial engineering. Thus a more sophisticated sort of functionalism has already drastically revised the idealized machine aesthetic of the earlier theorists.

Contemporary Science and Abstract Art

A change in the average man's picture of the physical world as ultimate reality has undoubtedly subtly undermined some of the theoretical assumptions of the earlier stages of abstract art. In the '20s the physicist's atom could still be crudely represented as a sort of abstract construction of solid balls arranged in a definable space; by the '30s the atom was hardly imaginable in any plastic terms whatsoever. Such analogies with the theories of science are perhaps irrelevant to the arts; but there had actually been in the '20s a mystique somewhat parallel to the neo-Pythagorean theory of the Renaissance that proportions in art should echo the harmony of the spheres. Cosmological defense of the propriety of abstract art is hardly up-to-date any longer. Very evidently the arts belong to the layman's world of common sense rather than to the physicist's present dream-world of field forces. The glowing stains in a mottled neutral field in Matta's early paintings or the apparently fortuitous – though in fact physically controlled – flutter of Calder's shapes in space (see p. 113) are at least less unlike what must be currently presumed to be ultimate reality than the clear geometries of the suprematists and neo-plasticists.

The pursuit of an impossible identity of character in the various arts had, in the early '20s, encouraged architects to be excessively dependent on certain painters as

aesthetic mentors. The later modulations of abstract painting, and a more subtle appreciation of even the early work of less doctrinaire abstract painters such as Picasso, helped after 1925 to suggest steps by which modern architecture might grow in freedom and richness. This later influence of abstract art on architecture has been indirect and corrective rather than direct and formative. But it is not the less significant for being the less overt.

Architectural Potentialities in Later Abstract Art

Down into the 1930s the influence of abstract painting on architecture is now a matter of history. The moment of closest tangency lies a quarter of a century ago, but the orbits of development have not yet diverged very far. Modern architecture, as we know it, was in the '20s but a peripheral and experimental aspect of the totality of actual building. Today, in most countries of the world, it represents rather the main stream of current production. Then abstract or near-abstract currents seemed about to sweep aside all other sorts of advanced painting and sculpture. Today various non-abstract schools apparently have an equal if not a greater vitality. Moreover most of the leading artists of the '20s have been moving away from the rigid geometrical patterns and restricted color schemes of what may be considered the classic moment of early abstract art. Yet it is still abstract art, considered in a broad sense, which speaks the visual language most intelligible to architects. Or more accurately, it is the abstract aspects of various kinds of modern painting which belong to the world of the architect as a visual artist. Whether or not particular architects find renewed stimulation from these aspects of modern painting, the appreciation of them has undoubtedly played and continues to play a major part in preparing the public to accept the visual forms as well as the practical purposes of modern architecture.

Architectural education has widely adopted abstract pictorial and plastic exercises as a method of aesthetic training in much the same way that figure drawing in more humanistic periods was used as a means of visual discipline for the architectural student. In the general education of the layman such exercises are also coming to play a part in aesthetic training; while architecture as such and the related industrial arts are still usually neglected. But this in itself is not enough. It is too readily assumed that students can absorb the values of a particular discipline by working *at* it in an intermittent and casual fashion, without continued contact with important original works. There is more in the actual work of the great abstract artists than can be apprehended merely by carrying out simple exercises superficially in their manner. Architects also may find renewed interest, even in the already familiar work of the men of the '20s, as they study them at first hand.

The work of various English and American abstract artists who have come to maturity in the '30s and '40s may or may not rank ultimately in quality with that of the older men. But in this work ideas relevant to modern architecture are certainly present. These ideas are less profoundly novel than those of a quarter of a century ago and therefore less likely to be revolutionary in their effect on architecture. Yet since they represent a further creative modulation of the abstract tradition, they should have some power to stimulate a continuing modulation of modern architecture. Other types of painting, types that are not abstract, may well influence individual architects also, and there are obviously many powerful influences from outside the realm of the visual arts which will continue to play major roles in shaping the development of modern architecture. But abstract art should continue to have for architects something of the fascination of fugal studies for musicians, since it operates in the very core of their aesthetic domain.

The original moment of tangency between abstract art and modern architecture which took place in Europe in the '20s was not paralleled at the time in America. But American abstract art may well have something to offer American architects today. Both the work of the older painters who were the first to be influenced by cubism (see pp. 63, 65 and 67) and that of the younger artists who have appeared in the last decade (see pp. 49, 83 and 101) has an indigenous flavor rather different from that of the European work which influenced Le Corbusier, Oud, Mies van der Rohe and Gropius in their formative periods. Moreover the later work of several of the European painters who came to this country before the war has been definitely influenced by their American environment. The pictures Léger and Mondrian painted in this country (see pp. 51 and 81) for example, and the sculpture of Lipchitz, (see p. 107) as well as the pictures and sculpture by Americans which their later work has inspired, (see p. 105) offer new ideas not even implicit perhaps in what they were doing in the '20s.

Evidence of a very considerably increased activity in abstract painting and sculpture in America in the last few years is cynically interpreted by certain critics as a

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Stuart Davis

1894-

For Internal Use Only

1945

Stuart Davis

mere catching up with a phase of art already passing in Europe; and doubtless much of the new American abstract art is derivative and lacking in vitality. But there are many painters and some sculptors whose vision is notably original. (See pp. 101 and 113) Their interest in materials and in technical experimentation is peculiarly American. It is also closely related to the modern architect's problem of continuously finding adequate visual expression for new structural possibilities.

Abstract art cannot assist the architect directly in his structural problems – it has never done so – nor does it influence his social role, except indirectly by helping to condition favorably the layman's response to new functional and structural solutions. But just as the architect needs familiarity with scientists' laboratory research and with the thinking and writing economists and sociologists are doing in libraries, so he can profit also by an awareness of what is going on in the studios of artists.

The layman is conscious only intermittently of the visual qualities of architecture and often more affected by verbal labels than by a direct appreciation of architectural forms. He can therefore perhaps most easily come to understand the aesthetic values of modern architecture by apprehending comparable values in works of painting and sculpture. For the intelligent study of buildings in photographs, or for the far more important critical analysis of them in plans, elevations and sections, the necessary special training is generally lacking. The abstract art of the last thirty years reveals much that is relevant concerning the genesis of the forms of modern architecture to any interested observer. Currently, some knowledge of the activities of American abstract artists may prepare the way for further developments in architecture.

In the mid-twentieth century architecture is so borne down by economic stringencies, so defeated thus far by post-war conditions in its aspirations to solve innumerable social problems, that the immensity of its opportunities often seems but an ironic mirage. The sense of still unexplored aesthetic realms that abstract art has already given – and can presumably continue to give – is needed both by architects and by

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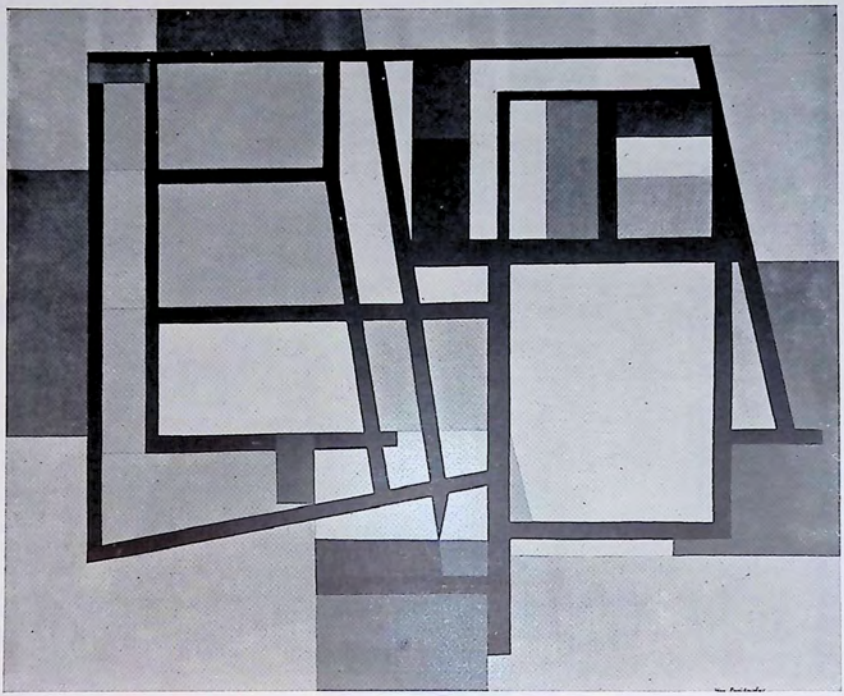
Ilya Bolotowsky

1907-

Perpendiculars and Diagonals

1945



laymen. Doubtless there will not be again so close an intellectual collaboration, so total an overlap of artistic purpose, between painters and architects as there was after the first European War. But the plastic imagination of the painters, unhampered by the architects' practical difficulties, is still ready to suggest untapped visual potentialities for the architecture of the twentieth century.

Quite a different matter from receiving basic suggestions in design from painting and sculpture, but still relatively unexplored, are the possibilities of practical collaboration of modern architects with painters and sculptors.*

Mural Painting and Architectural Sculpture

In the past, painting has very often collaborated with architecture in a subordinate role. Although such two-dimensional arts have for us a powerful intrinsic interest of their own, the glass painters of the Middle Ages and the fresco painters of the Renaissance served contemporary architects in actual fact by completing and enriching their buildings. Despite the early leaded glass and abstract murals of Wright and the somewhat later tiled floors and stained glass windows of the neo-plasticists, abstract art of the more rigidly geometrical sort has not been much utilized by leading modern architects for accessory decoration. Moreover, the later paintings of Le Corbusier, many of them murals, and the murals of Miro and Léger are notably less geometrical and generally also less abstract than the painting of the '20s which had the greatest early influence upon the development of modern architecture.

If architects are to utilize the work of painters and sculptors in their buildings, painting or sculpture that is partially representational, or at least very free in form and color, seems to complement most effectively the geometrical and spacial character of the architecture itself. The painted tiles by Portinari conspicuously introduced by

* See my article, "Painting, Sculpture and Modern Architecture" in *The Architects' Yearbook*; 2, London, 1948, pp. 12-23.

Fernand Léger

1881-

Les Plongeurs Circulaires

1942

the Brazilian architect Niemeyer in several of his finest works – a revival of an old Portuguese tradition – and the sculptured "Prometheus" by Lipchitz suspended against the curving exterior wall of the Ministry of Education in Rio de Janeiro suggest two different ways in which modern buildings, already plastically complete at their own architectural scale, may effectively utilize the work of sympathetic painters and sculptors at a different and more human scale. Léger's church façade mosaic at Assy* and Miro's mural in the Terrace-Plaza hotel in Cincinnati** are even later examples.

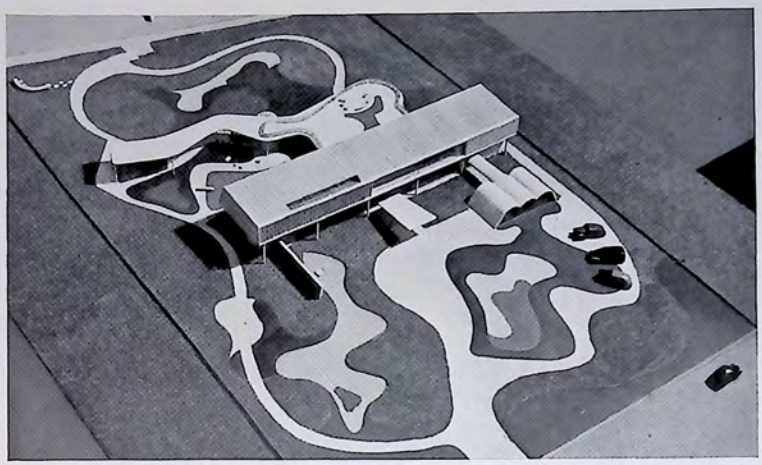
The early carved and molded sculpture of the cubists was on the whole unsuitable for use with modern architecture. Its solid and heavy masses were appropriate to the character of masonry buildings, but they contrasted sharply with the light and tenuous structure and with the characteristically thin wall planes of the new building methods. The three-dimensional work of some of the Dutch and Russian abstract artists, on the other hand, actually represented small-scale experimentation in the real plastic elements of architecture. It was generally not different enough in its aesthetic interest to be very effective as a complement to architecture. Lipchitz' work in Brazil, Rivera's and Noguchi's reliefs in the liner *Argentina*, and Calder's mobile in the Terrace-Plaza, suggest that the later experiments of modern sculptors with voids, with linear elements in space, and with motion, can provide more satisfactory adjuncts to modern buildings. The transparent or fluttering planes and the materialized lines of force in this new work are peculiarly consonant with new building methods and sympathetic to the basic plastic expression of modern architecture. (See pp. 113, 115 and 116)

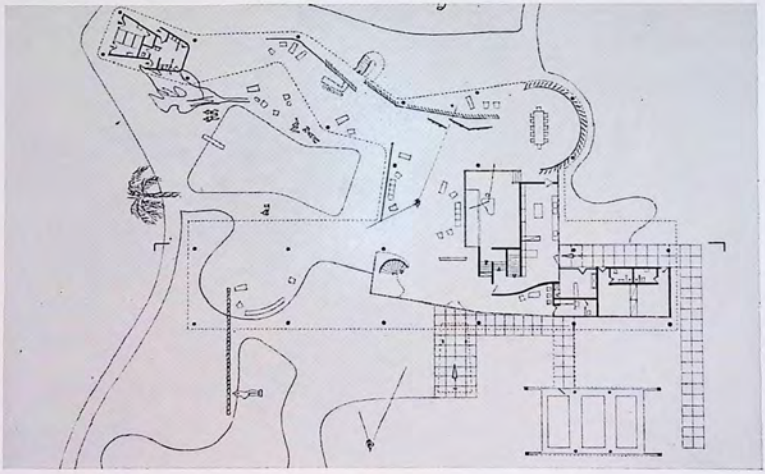
Perhaps it is the borderline fields between sculpture and painting, in which American abstract artists have of late been particularly active and inventive, that offer the most rewarding possibilities for collaboration between architects and artists. Such new techniques as the many-planed paintings on glass of Pereira (see p. 101), or the solid modeled forms seen inside transparent plastics of Amino, actually seem to demand realization at large scale in association with architecture to reveal their full potentialities.

The tawdry modernistic decoration that confused and delayed the general public acceptance of a sound modern architecture in the late '20s and early '30s should remind us, however, that there is always danger of vulgarization in the decorative use of the characteristic elements of modern painting and sculpture as mere surface embellishments of architecture. Only real collaboration as equals between architects and painters or sculptors can be expected to enhance rather than diminish architectural integrity.

* Architect, Novarina, begun 1938; mosaic completed 1947.

** Architects, Skidmore, Owings and Merrill, completed 1948.





Project for House and Garden, Montecito, California

1948

Oscar Niemeyer and Roberto Burle-Marx

Conclusion

In relation to modern architecture, the central meaning and basic value of abstract art, whether painting or sculpture, is that it makes available the results of a kind of plastic research that can hardly be undertaken at full architectural scale. The visual forms of a new architecture, founded on new methods of structure and dedicated to the fullest service of human needs, were early implicit in a certain characteristic directness of structural and functional approach in the work of various precursors before abstract art began. But these forms remained generally invisible (except in the work of Wright), unrealized and merely immanent, until catalytic contact with the experiments of the advanced artists of a quarter century ago brought them to crystallization. Now that these forms are established and accepted, indeed already grown conventional in much contemporary building, abstract art should still be able to stimulate further development. For modern architecture must surely continue to change and grow, not stagnate into an academic repetition of the forms of its first masters.

The processes of cross-fertilization by which creative influences are transmitted in the arts remain a mystery despite all that is written about them. Yet the study of important abstract paintings and sculpture of the last thirty years can help, at the very least, to suggest one of the ways modern architecture arrived at its characteristic visual forms. And the continued devotion of many leading architects to the work of the artists who first stirred them a generation ago seems to indicate the vitality of abstract art as a major influence on modern architecture is not yet exhausted.

Plates

Cubism, the first consciously abstract group movement in modern painting, lies behind all later developments. Indeed in popular usage all forms of abstract art, and often the characteristic visual effects of modern architecture as well, are likely to be called "cubistic." This is technically inaccurate, since cubism precisely means a particular sort of painting initiated about 1910 in Paris and is properly restricted to the work of a few painters and their direct imitators; but it has at least as much justification as many other historical terms in common use.

Picasso's "Lady with Fan" illustrates both of the two successive phases of cubism recognized by specialists as "analytic" and "synthetic." The underlying painting on this canvas, dating from 1911, breaks up the forms of the human figure into a series of planes set at angles and rendered in delicate touches of near monochrome. This phase of cubism was more sculptural than architectonic in character. Over this painting Picasso in 1918 laid a vigorous pattern of black lines and flat blue areas in the larger-scaled and clarified manner of the later stage of his cubist development. It was from this later synthetic stage of cubism, beginning about 1913, that the abstract artists took off who were most closely associated with the crystallization of the forms of a new architecture in the early 1920s. Such artists were working in France, in Holland, in Russia, in Italy, and in Germany before and after the first World War.

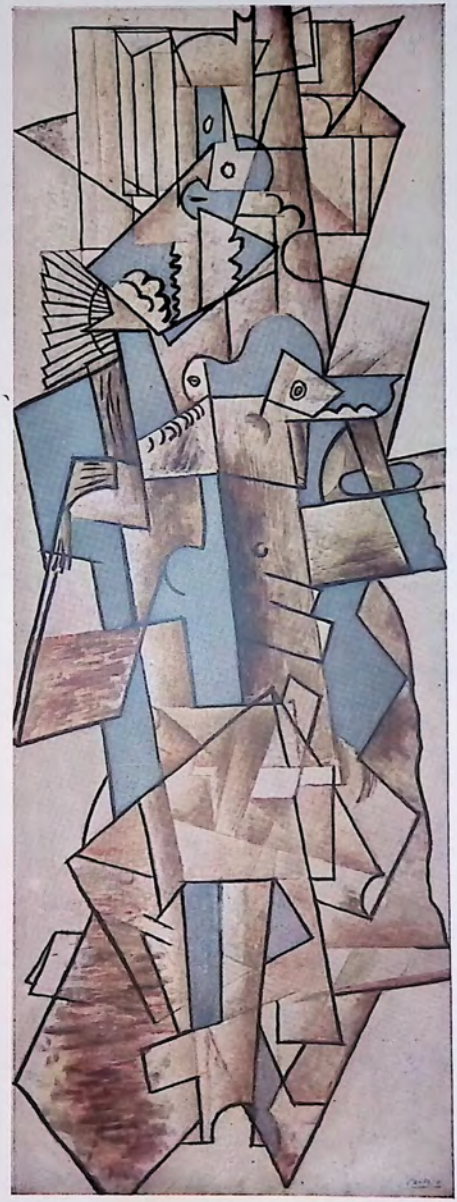
Although Braque and perhaps Gris had collaborated with him in the development of cubism, it was Picasso who was considered in the '20s the primary abstract painter. Despite the many phases his art has gone through in the last thirty years, he is by the general public probably still so considered today. His art of any period continues to have an immense power to stimulate those who work in other artistic fields, even fields as remote from painting as literature or music. Yet much closer links with modern architecture are to be found in the work of the artists who broke away from cubism to develop even more abstract types of painting and sculpture a generation ago.

Pablo Picasso

1881-

Lady with Fan

1911 and 1918



Juan Gris, with Picasso and Braque, was one of the early masters of cubism, or to put it in Gris' own words, "flat, colored architecture." By this he meant that a picture must be consciously arranged so that the parts are subordinated to the rhythm and unity of the whole. According to his theories it made no difference how distorted individual objects might be in shape, in color or in perspective so long as the totality of the shapes, colors and angles in the picture produced an harmonious whole. He wrote, "My aim is to create new objects which cannot be compared with any objects in reality."

In "Still-Life with Pears," he has taken certain characteristics of real objects—the top and sides of a glass, the texture of a wooden table, the silhouette of a bowl of pears—and made them stand for those objects in a composition of rhythmic lines and colors. Always conscious that he was painting on a flat canvas, Gris made no attempt to create an illusion of depth. Instead he built his elements up one above another in an architectonic manner, so that each area was in rhythmic accord with every area that it touched. The incorporation of several simultaneous views of one object—of the glass here for instance—illustrates the cubist theory that while the eye perceives only one view of an object at a time, the artist should be free to describe the object more completely by painting it from the top, from the sides, or even in section, modeled or in silhouette, all in the same composition.

The significance of early cubism to architects of the '20s lay in the breakdown of the old traditions of pictorial illusion and the new and free study of plastic composition without regard to the limitations of plausible representation. As Gris freely evolved original forms to augment the rhythm of his carefully organized still-lifes, so the new architects sought architectural forms based on abstract conceptions of design rather than on familiar elements derived from earlier styles. M. C. R.

Juan Gris

1887-1927

Still-Life with Pears

1913

Unlike Picasso, Braque has remained essentially faithful throughout a long career to the cubist conventions of formal organization. He has retreated somewhat from the rigid geometry of his work of thirty years ago, but has always developed the implications of the first stages of abstract art in a continuous and coherent fashion. Beside the kaleidoscopic career of Picasso, who has shifted abruptly from manner to manner every few years, the path of the more stolid Braque may appear unadventurous. But this consistency, this patient willingness to build on foundations already laid, is in itself a lesson to modern architects. For they have sometimes been tempted to revise all their aesthetic axioms with the appearance of each new material or according to the demands of each new functional problem.

With Braque cubism has been not a formula to be repeated but a road to be explored—now opening out when one aspect, such as color or pigment texture, is enriched; now narrowed down as organization of line and shape are refined, even perfected, as in the "Black Rose." His subject matter is generally restricted to still-life, as with that superbly French artist of the 18th century, Chardin. In the continual combinations and recombinations of a few predetermined elements, his handling of subject matter recalls the problem of the architect in designing one house after another. For the architect is only rarely able to work over a waterfall or in a desert, and is generally restricted in scale and function by the limited purposes and rather standardized needs of small modern families.

Braque's paintings are peculiarly housebroken—as the French express it, *ils meublent,* they take their place among the other furniture. The great assurance of Braque, the ease and lack of stridency in his art, is the result of long preoccupation with the place of paintings within their frames and hanging on walls among other works of art. This assurance offers something which modern architecture, now grown mature, can profitably emulate. The early Braques of the years of the first World War played as great a part as the early Picassos in forming the tastes of the first modern architects. Late Braques are less upsetting than late Picassos in the intensity of their plastic research; but they are pictures for architects as well as for others to live with.

Georges Braque

1881-

Black Rose

1927

Marin was one of the first American artists to adapt cubism as an American mode of expression. "John Marin," Marsden Hartley said, "lifted watercolor painting out of the embroidery class and made of it a major medium." At first an impressionist, Marin returned from Paris in 1911 to develop a personal version of cubism in which lines and planes of solid color build up the structure of the composition like the beams and wall surfaces of a building. The elements in Marin's pictures are so tensely organized that the spectator feels the whole composition would collapse if one of them were removed. The rhythms, together with the multiple facets of his cubist vision and the variety of the colors, give Marin's pictures something of the quality of patterns seen in a kaleidoscope. Jagged lines and small broken areas provide syncopated beats against larger areas of quiet tone.

Later to be best known as an interpreter of American landscape, he was one of the first to respond to New York's dynamism. The confusion of style, size, and purpose in its architecture symbolized for him the complexity of the city's life. The tension between large buildings and small, the tug-of-war between one mass and another, he translated into a compact personal idiom in his watercolors, concentrating in this frail medium the power and magnitude of the subject.

In the 1920s, when "A Street Seeing" was painted, few American architects were ready to appreciate the possible relevance of abstract painting to their problems and Marin had no such influence on architecture as did his European contemporaries. It is of significant interest therefore, now that modern architecture has come of age in America, that the American Institute of Architects this year has awarded to Marin their Fine Arts Medal for "distinguished achievement in the art of painting." M.C.R.

John Marin

1870-

A Street Seeing

1928

Such pictures as these by Sheeler and O'Keeffe on the next two plates are of value in illustrating what is already abstract in familiar American architecture and how such abstract qualities themselves can become the subject matter of modern painting. Although New York skyscrapers and New England farms are at the poles in function and scale, they are here both stripped in a similar way of irrelevant details and particular appearances. The artists have presented them in such a way that their most essential formal aspects become both the pattern and the subject of these pictures.

Sheeler's picture analyzes the volumes of farm buildings both inside and out, describing them almost as precisely as architects' drawings of plan, elevation and section. The rationalism of the simple structure is imaginatively rather than mathematically revealed. Sheeler's interest in basic shapes and volumes and their functional nature is similar to, though not identical with, an architect's. This painting, so devoid of atmosphere, emotion, or detail is actually more architectonic than pictorial.

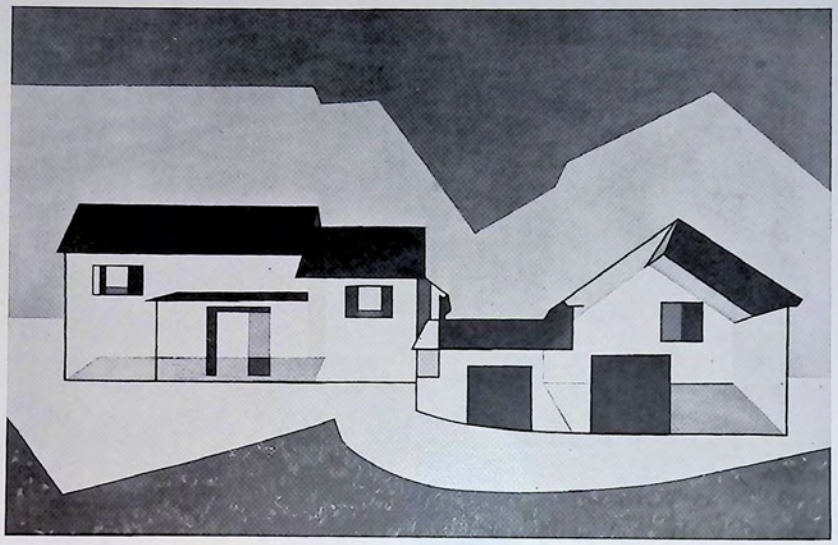
Georgia O'Keeffe's painting makes use of forced perspective to emphasize the towering height of skyscrapers. (See p. 67) Her method of abstraction depends not only on simplification but also on dramatic enlargement. She paints not a whole building but a partial view, cut off from its conventional context, and from an unusual angle of vision. The resulting composition, unlike that in an angle-shot photograph, abstracts the forms and colors which constitute the essentials of her subject. M.C.R.

Charles Sheeler

1883-

On a Theme of Farm Buildings

1947



Georgia O'Keeffe

1887-

New York Night

1926

Stuart Davis has been continuously preoccupied with creative interpretation of the "American scene"; all his pictures, as he says, "including the ones I painted in Paris, are referential to it."

Emotional responses to objects, he believes, are stimulated by the observer's consciousness of essential structure rather than by superficial accidents of appearance. By his own account, Davis' procedure is to search for the basic, logical relationships of volumes in space; these he "abstracts" from the visual scene. Since he thinks of objects as extending out into space in various directions from a central point, he reduces their images to linear patterns, diagramming in two dimensions the directions in which he conceives them to extend.

In his use of color, Davis was much influenced by the flat, unmodeled areas in Léger's paintings of the early '20s. Since certain colors in relation to other colors seem to recede, such areas must be compensated for by others in which the colors appear to come forward. His aim is to maintain an even balance of recession and projection throughout the entire surface of the picture as in "For Internal Use Only." (See p. 47)

Davis' pictures are, as he puts it, "an invented series of planes"– or lines or colors– in logical juxtaposition. Modern architecture might be defined as an invented series of spacial volumes in logical juxtaposition. The particular problem of expressing space relationships in terms of planes, lines and colors on a flat surface belongs to the painter. But research in the logical analysis of space is of theoretical interest to the architect even though his means are necessarily quite different. M.C.R.

Stuart Davis

1894-

Composition (1863)

C. 1930


1863
Paint

Lyonel Feininger, born an American, was the first painter to be called to the staff of the Bauhaus in Germany. His love of music and his continued fascination with the industrial and engineering activity he had seen as a child in New York were expressed in the broken lines and planes of his special form of cubism. But it was above all his personal vision of the world, at once so refined and so romantic, that prepared him to make a contribution to the Bauhaus community very different from that of the European painters. When persecution of modern artists began in Nazi Germany, Feininger returned to this country where he has since remained.

Although he uses the diminishing scale and high horizons of traditional perspective to suggest depth in this picture, the forms themselves consist of angular planes and broken outlines through which space flows like fog around a phantom vessel. The sketchily indicated depth and the unconfined spaces in Feininger's pictures are as active and controlled as his most defined forms. These forms are placed on the picture plane in such a way that the tension between them holds the composition in equilibrium. Although the ship in the foreground here is apparently sailing out of the right-hand side of the picture, yet the strong diagonal line to the left, joining the sea and sky lines above and below, succeeds in holding the composition in a real if precarious balance. The insistence on quiet horizontal lines, the occasional aspiring verticals, and the sudden sharp diagonals cutting across both, express a mood even more poetic than that induced by the frankly romantic subject matter.

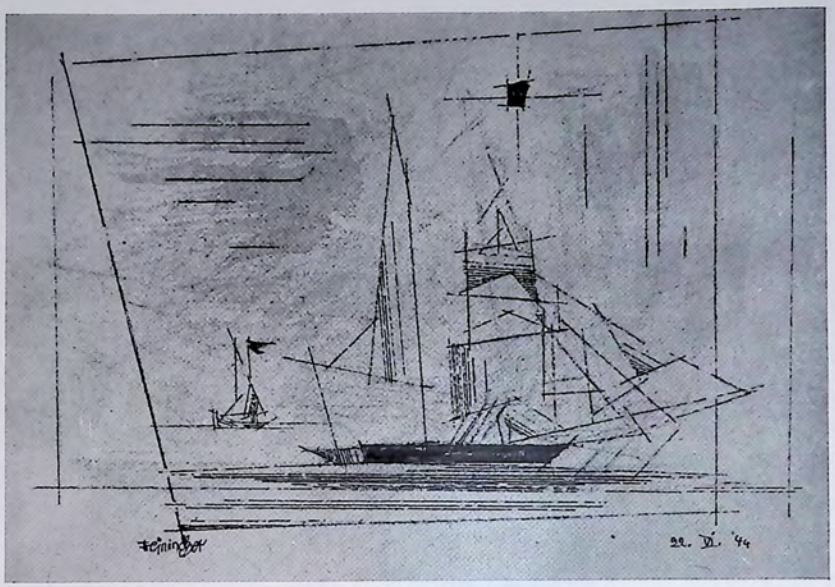
It was his ability to project such poetic moods with the most elementary devices of representation which impressed Feininger's architectural associates at the Bauhaus. For it suggested that the purified elements of the new architecture might likewise have their special poetry if they were handled with comparable refinement. M.C.R.

Lyonel Feininger

1871-

Sailing Ships

1944


22. XI. '44

Among the painters whom Gropius brought together at the Bauhaus and who were his close associates while he was designing and building the Bauhaus school at Dessau and the group of professors' houses there, the Swiss Paul Klee was the greatest. Yet the delicacy and intuitive quality of his art seems very remote from the superficial characteristics of the new architecture, particularly in Germany. His extremely pictorial handling of color is very different from the flat even surfaces of the purists or of the Dutch and Russian abstract painters. His frequently whimsical titles suggest a world of imagination distant from the realm of engineering (see p. 37). The small size, the frequent intricacy of pattern, and the rather automatic, "doodling" quality of his draftsmanship, are almost myopic in relation to the architectonic scale of most other abstract painting. All these characteristics of his art served to set Klee apart, particularly in the early 1920s, from the other artists with whom the new architects were chiefly associated.

Yet this painting by its very title, "Structural II," as also by its indefinable suggestion of the transparent glazed surfaces of modern buildings, indicates an interest in the architects' world. His message to architects, now as then, is a very special one however; for it is spiritual rather than material, an antidote to an excessively mechanistic view of modern architecture.

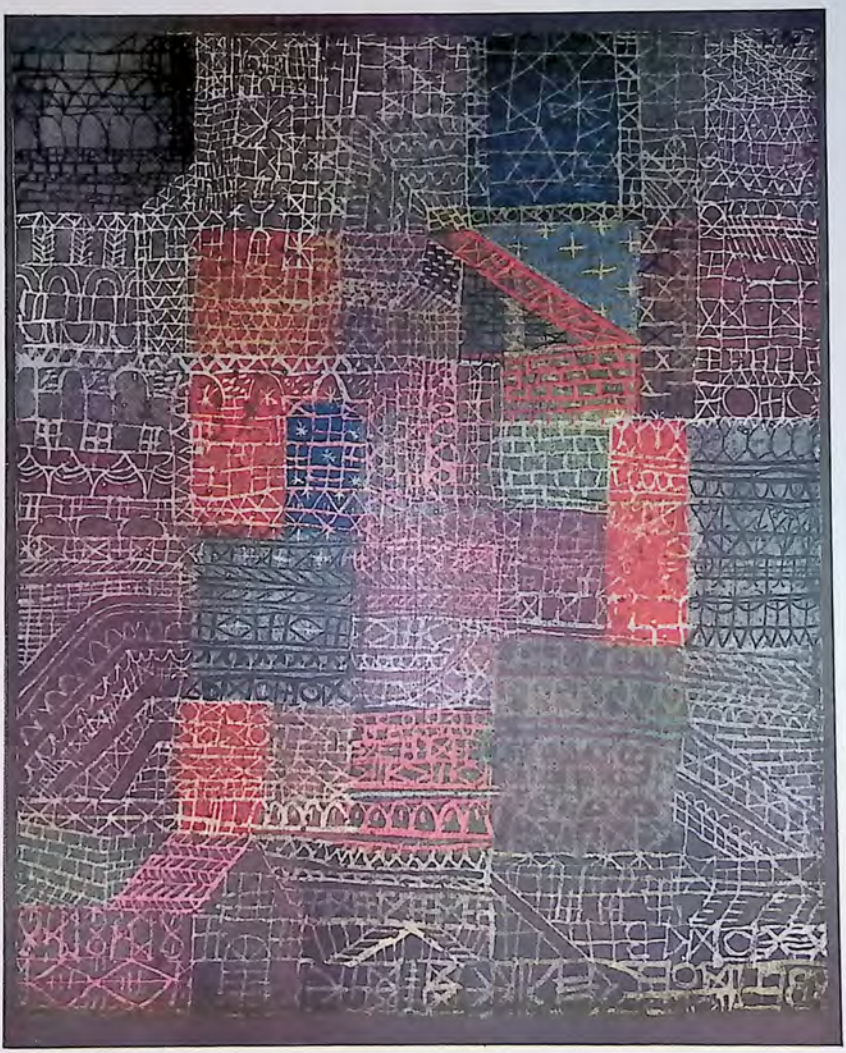
Klee is an eye-sharpener also. The visual training afforded by other early abstract artists seemed to exclude much of the variety of the real world as irrelevant or frivolous. Klee prepares the willing eye to receive from the visual environment, seen as a whole with all its accidents and apparent confusion, both impressions of order and sensations of naïve pleasure. In some ways, he is perhaps as great an artist as Picasso—at least for some architects he has been a sort of Mozart to Picasso's Bach.

Paul Klee

1879-1940

Structural II

1924



Although Moholy-Nagy was a Hungarian by birth, not a Russian, it was Russian suprematism and constructivism which formed his style. Indeed he called himself a constructivist and some of his three-dimensional work is very similar to that of Gabo and other Russians. At the Bauhaus he taught from the first the elementary course in the analysis of texture, form, line and space. According to his conception the Bauhaus was a sort of laboratory for the exploration of all the connections between creative forces and practical equipment for living, whether they were machine-made implements or large-scale architectural constructions.

Architecture he defined as the organization of space in coordination with the demands of human life. He considered space a concrete element—as positive, as possessed of qualities and innate laws, as are forms and textures. In this painting, space is the black surface which is organized by the crossing lines of colored strips. In contrast to the rigid verticals and horizontals of the Mondrians of the 1920s and '30s (see p. 31), these strips seem to tear the space apart with the stress of their diagonal placing; yet the whole composition holds together in a taut and integrated relationship. In a similar manner the related volumes and planes of architecture may be thought to confine and release those "energies" which Moholy felt to exist in three-dimensional space.

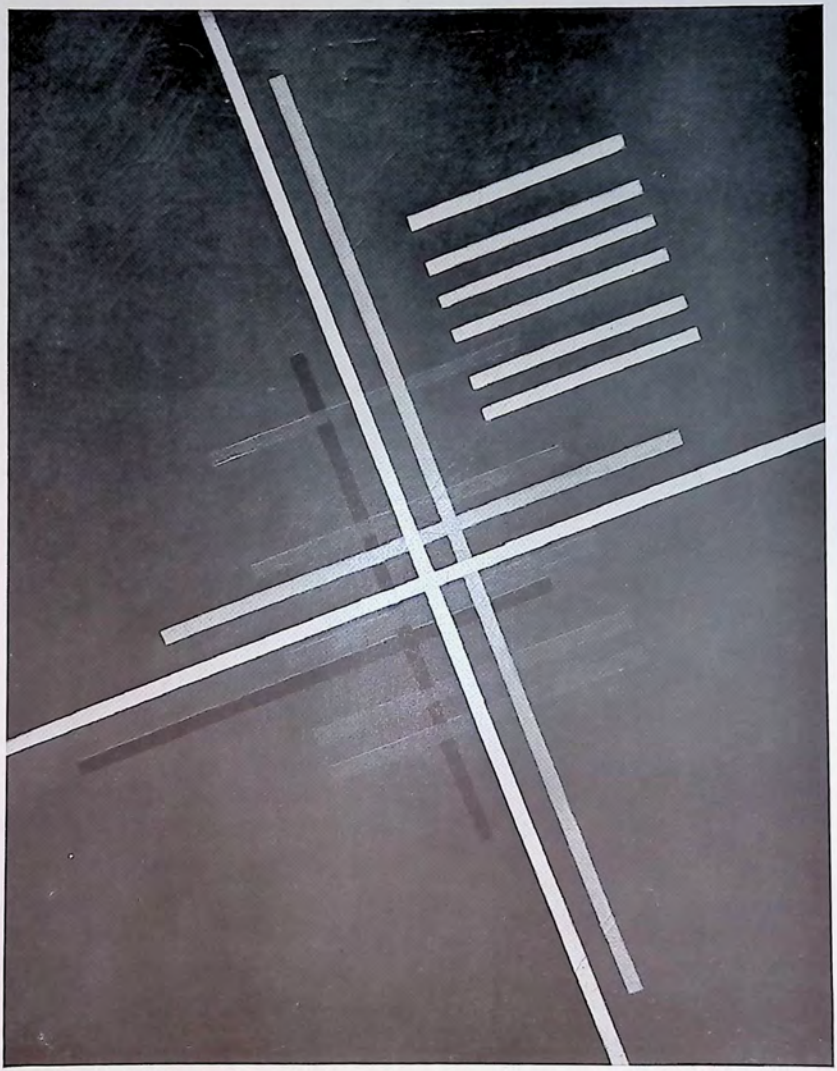
Moholy's researches and his theoretical writing have contributed a great deal to a broader understanding of abstract design. To him, indeed, the important thing about his general ideas was their application in architecture and industrial art. His activity as a painter at the Bauhaus was therefore more closely associated with the general purposes of the school than that of the more autonomous painters there, Klee and Feininger. As head of the Chicago Institute of Design in the decade before his death Moholy continued the Bauhaus tradition in all the arts, including architecture. M.C.R.

Laszlo Moholy-Nagy

1895-1947

Farbgitter No. 1

1922



In 1910 Kandinsky painted the first purely non-representational picture. Happening to see one of his own early paintings turned on its side in a light so dim that the subject was indistinguishable, he suddenly realized that colors, shapes, and lines, free of natural reference, could be organized into pictures which would have a purity and aesthetic power comparable to that of music. He saw that the Renaissance conception of a picture as a small stage, with foreground, middleground and horizon, on which naturalistic objects were related to one another by perspective, linear or aerial, could be abandoned. The surface of his canvas became instead a flat field on which a pattern was to be arranged; lines and forms established the rhythm, generally angular but often abruptly varied with circles, ellipses and free curves. Since the picture surface was to Kandinsky a single, homogeneous area, not an opposition of solid objects and intervening voids, the spaces became as important as the shapes they lie between—they are indeed simply additional shapes. Depth is not suggested by perspective but rather by color relations and by transparency. Certain colors are juxtaposed with others so that they seem to project themselves forward; while in other areas the tones appear to be modified by underlying colors showing through.

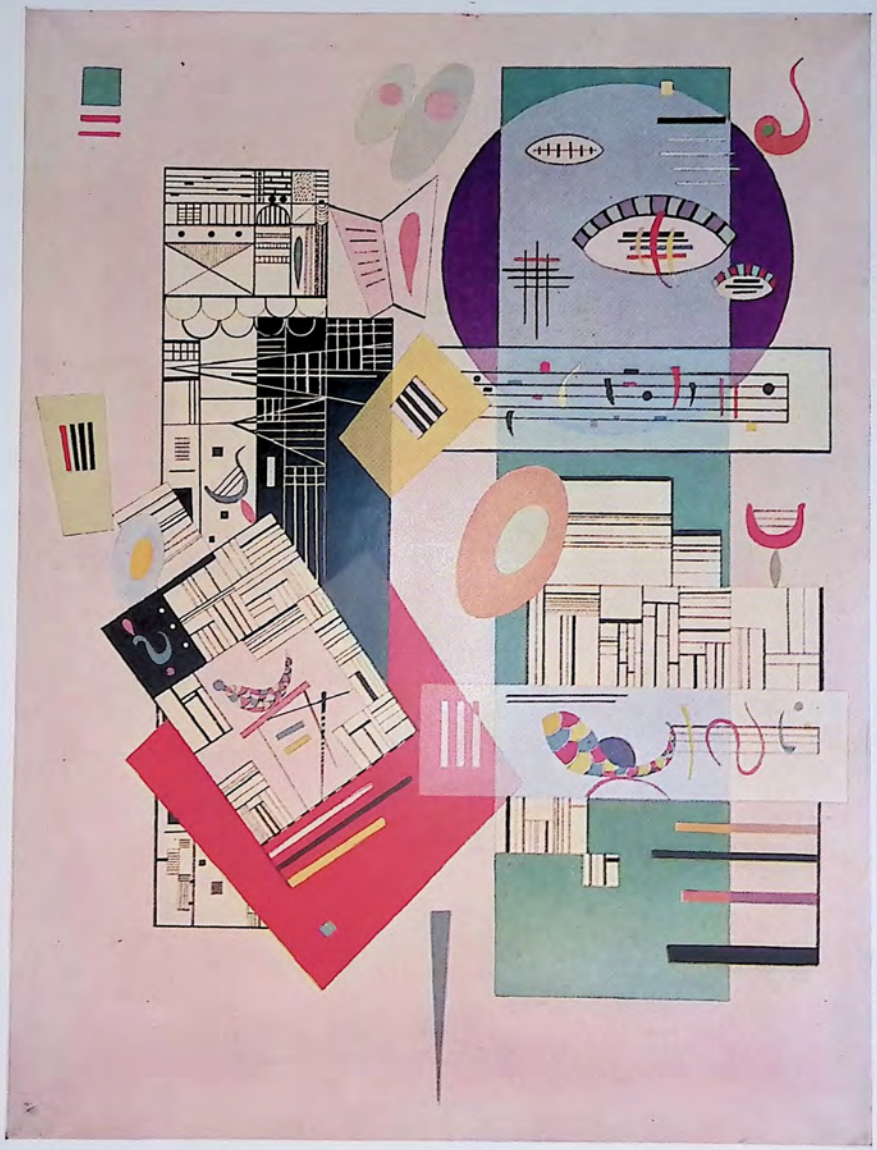
Kandinsky's early work consisted of free, lyrical forms and brilliant colors, closely related to German expressionism. Later he came under the influence of the suprematists and constructivists and was appointed by Gropius to the Bauhaus. The forms in his later paintings, though often rigidly geometrical, are very loosely organized in space, with something of the freedom of musical cadenzas. The patterns of early modern architecture in France and Holland are, if anything, overstudied; the Bauhaus architects seem to owe to Kandinsky a more improvisational approach to architectural composition. M.C.R.

Vassily Kandinsky

1866-1944

Animated Stability

1935



Mondrian's work represents a lifelong search for what he felt lay at the heart of reality. Although influenced early in his career by the cubists, he came to realize that his own search must be carried out in a purer and more austere way. He believed that statements about the nature of reality must be made, not in terms of particular appearances and subjective feelings, but in terms of fundamental truth. In developing this philosophy in his painting he reduced his repertory of form to the intersection of short lines at right angles. This he considered to be the most basic attainable relationship.

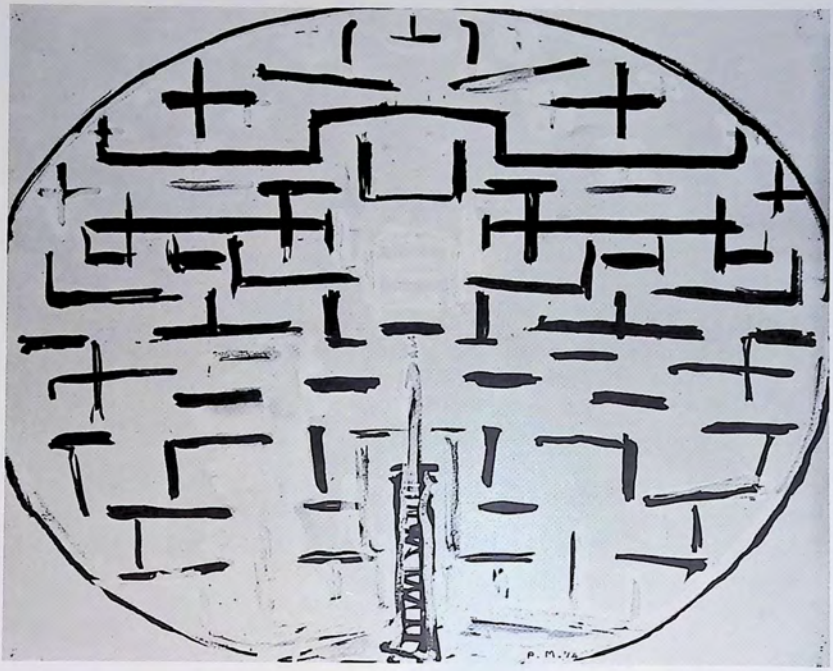
As his style matured in the 1920s the lines were continued across the canvas. (See p. 31) Yet these rigid black lines were subtly contrasted in width so that they were plastic entities in themselves and not mere boundaries of the fields they enclosed. He used only the stable primary colors from which the transitory shades and hues we see in nature are combined. Space, as represented by the areas of white pigment on the canvas, became another kind of form, held in dynamic balance with the areas of color. The precise placing of the boundaries between these spaces and forms, between a red area and a blue, even between white and white, establishes the equilibrium. Mondrian's relationships seem to achieve a new proportionality, based not on mathematical formulas and static balance, but on intuitional judgment and dynamic tension. M.C.R.

Piet Mondrian

1872-1944

Pier and Ocean

1914



Through the 1920s and '30s Mondrian worked with unbelievable patience and precision toward perfecting his methods, often taking years to bring a particular picture to its final state, as in the case of the "Composition" which was begun in 1935 but not completed until 1942, after he had come to America. (See p. 31) But his fascination with New York, with jazz music and the other excitements of urban life soon led him to begin a series of paintings in which the extreme simplicity and characteristic black lines of his earlier work gave way to richer and more complex modulations developed with increasing vivacity of color. The last of these works, left unfinished when he died in 1944, was the "Victory Boogie-Woogie."

Pieces of scotch tape, which it was his practice to move about as he refined and perfected the plastic organization of his pictures, partially cover the painted areas. The tape, of course, approximates only rather crudely the colors of the special oil pigments he used; sometimes he even applied tape as an indication of position without regard to its color. From a reduced color reproduction such as the plate opposite, however, a not wholly inaccurate idea of the presumptive final state of the picture can be obtained, since the overlay of tape is not conspicuous at this scale. In the original the observer is privileged to see the picture as a work in progress, thus obtaining an insight into Mondrian's methods of operation.

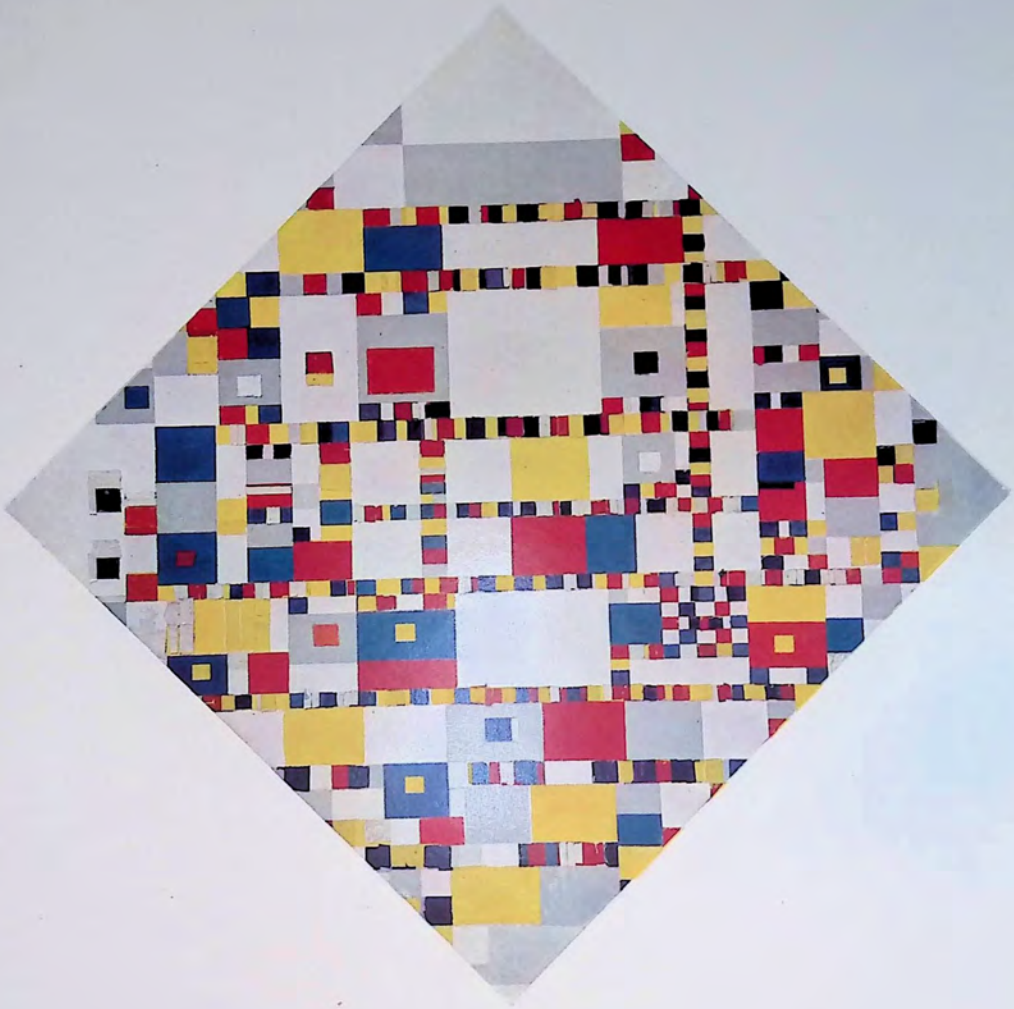
The juxtaposition of this late work with the early "Pier and Ocean" illustrates an unexpected relationship. Richer and more nervous rhythms have returned, contrasting with the serenity of the paintings of the '20s and '30s. (See pp. 31 and 79) M.C.R.

Piet Mondrian

1872-1944

Victory Boogie-Woogie

1943-44



Among American artists, Perle Fine is unusually conscious of the essential aim of complete abstraction in art – to objectify the indefinable laws of form and order without obscuring them in figure subjects, still-lifes or landscapes. This does not mean that she ignores the world of nature. It is rather her intention to dramatize fundamental elements that she apprehends in nature: the tension of related spaces, the rigor of straight lines, and the contrasting grace of fluent curves. The geometry of her paintings is never without emotion. Warmth and sensuousness infuse her most schematic pictures; vitality and drama can be sensed in her severest compositions. Of this picture she has written: "I have employed limited color and means in an effort to create the drama of the play of these forces in space, and then suddenly, the tensions of these forms as they seem to be arrested in their play at a single moment – midnight."

Perle Fine's methods are closely related to some of the problems of design in modern architecture. She seasons the geometry of her architectonic formulas with positive tactile effects, extreme subtlety of color, and delicately organized subdivisions of space. She is limited by her acute sense of the laws of form just as the architect is restricted by the rigid discipline of functional economy.

In this composition the expressive advantage of contrasting the thick and thin lines with the small opaque circles might be compared to the use of thick and thin screens in relation to small solid sections in subdividing the spaces of an architectural interior. For pure abstract art is often most directly related to the architect's handling of plan. However, in creating the real spaces which run through his plans, the architect provides an actual third dimension; while in painting, whether representational or abstract, the third dimension exists only as an illusion of depth. M.C.R.

Perle Fine

1908-

Midnight

1942

Hélion began as a Paris cubist and was at first much influenced by the Dutch abstract painters. He later came to believe that the formulas of the 1920s were too restricted in their shapes and too static in composition – "A square I can not bear," he complained. But he did not adopt the biomorphic shapes of Arp and Miro. (See pp. 39 and 41) In order to induce movement and even action in his abstract paintings, he was content to round square corners, bend rectangles, and replace straight lines with paraboloid curves. The resulting succession of slightly concave and convex surfaces, rhythmically linked by graceful bridges of thickened lines, leads the eye in a carefully determined path through the spaces of the picture. Although the forms themselves do not simulate motion, they are so shaped and connected that they require a continuous shifting of the observer's eye.

This visual motion is agreeably smooth not only because of the suavity of the shapes but also because of the particular colors used on their curving planes. Employing neither the straight primary colors of Mondrian nor the delicate tones of the purists, Helion arrived at combinations which have something of the strength of the former and much of the graciousness of the latter. In addition there is an interaction between the various colors which enhances the movement implied by the pattern. The colored shapes are skilfully related not only to each other but to the space between. This space provides both a background and a continuous "field" in which the shapes are suspended as if by electrical energy. Although the illusion of a third dimension, inherent in the color relations, is never great enough to make "holes" or projections, it produces an in-and-out surface pattern as active as the lateral pattern of the shapes themselves.

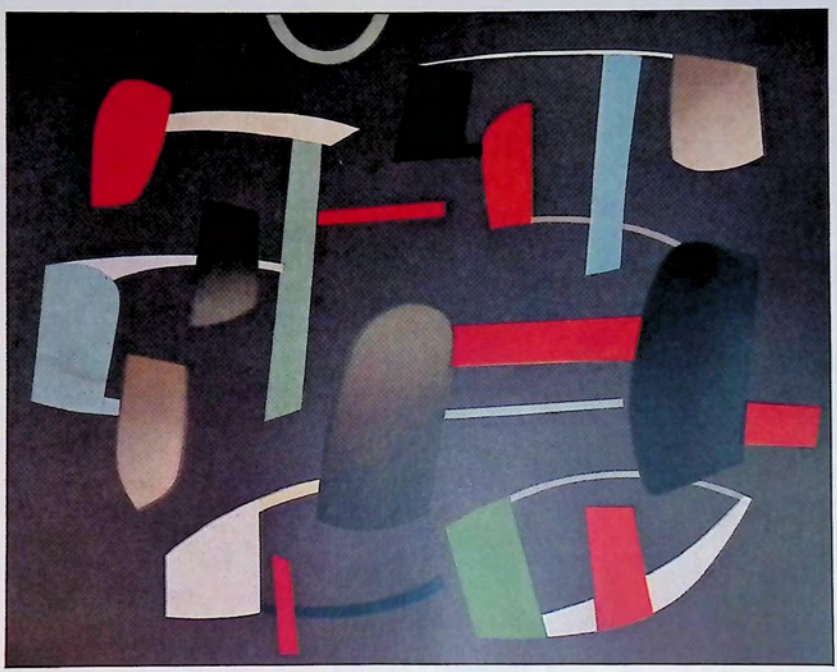
In industrial interiors, the functional use of color by which the extension and projections of machine tools are emphasized or minimized in relation to their surroundings, is a relatively new development. The handling of color in Hélion's paintings might prove suggestive to designers confronted with such problems. M.C.R.

Jean Hélion

1904-

Composition

1934



The Dada movement of the later years of World War I and the early post-war period was essentially destructive, laughing raucously at the visual world of order so optimistically envisaged by most of the abstract movements of the time. Yet Kurt Schwitters in his *Merzbilder* clearly goes on from where the cubists had left off when they returned from *collage* to the use of oil pigment about 1915. "Merz" is an intentionally meaningless word; in Schwitters' practice it implied the use of various kinds of rubbish to build up pictorial compositions. A miraculously subtle scavenger, he utilized all sorts of unlikely fragments – bus tickets, bits of photographs, wine labels, scraps of fabric – to compose remarkably rich and varied abstractions. When they are recognized on close inspection, the original identity of the scavenged elements lends a poetic overtone of fantasy. The exquisite natural taste of Schwitters, like a Charlie Chaplin among his rubbish, was an early protest against the rigidity of what might be called "official" abstract taste, whether in painting or in architecture.

This particular *Merzbild* is unusually architectonic in scale and composition and hence not remote in its architectural suggestion from the painting by Moholy-Nagy. (See p. 75) Yet the little bit of commonplace printed matter, the very nub of the picture, can suggest how the commercial necessity for a sign on a building need not vulgarize the design but may actually complement aesthetically the severest and most rigidly architectural composition.

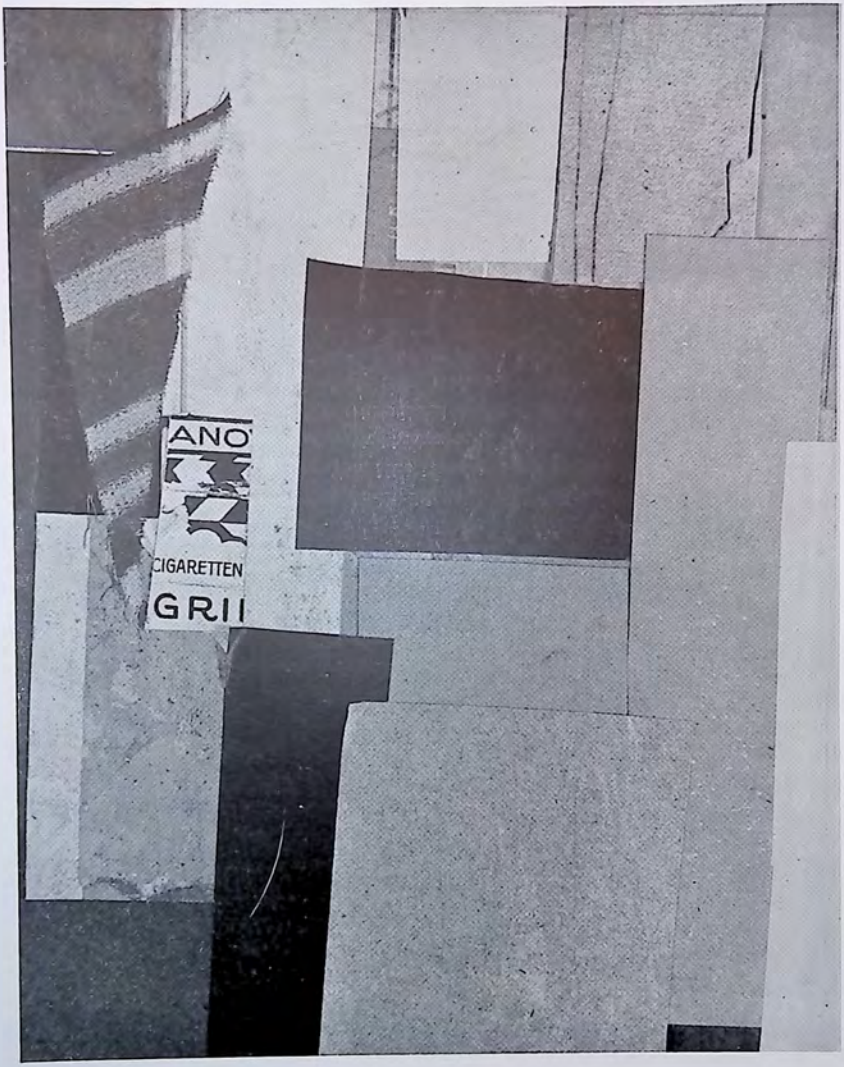
Schwitters' surface qualities obtained by the subtle juxtaposition of real materials are sometimes richer than the most textural passages produced with brush and pigment. Properly handled – that is skilfully related to one another – no materials, old or new, natural or synthetic, are intrinsically unworthy of use in modern architecture: that is perhaps the real message of Schwitters to architects. With the even more imaginative and various work of Klee, the *Merzbilder* protest against that special twentieth century snobbery which considers a supposedly machine-like slickness the only proper surface quality for twentieth century art products.

Kurt Schwitters

1887-1948

Merzbild

c. 1922


ANO
CIGARETTEN
GRII

The mural by Miro in the Terrace-Plaza Hotel in Cincinnati by Skidmore, Owings and Merrill is doubtless the most ambitious attempt yet made in this country to utilize the work of a prominent abstract painter in a building of modern design. The long, curving plane of the painting suspended between the floor and the roof of the penthouse restaurant deserves some name other than the word "mural," which implies a traditional wall. For it is as light and as open as the architecture of the circular shelter it ornaments, suggesting without frivolity an effortless gaiety.

From the first Miro's art has seemed especially suited to architectural uses. Among the many tapestries that have been made from the work of modern artists his designs seem most completely detached from all reference to the woven pictures of the past and yet wholly right for so luxurious a medium. Even this tiny painting, exquisite in its vaporous colors, firm and sure in the floating black lines of its figures, is so scaleless that it might be enlarged effectively to many times its actual size. It is indeed more filled with incident than the large early Miro which is also included in the Miller Company Collection. (See p. 41)

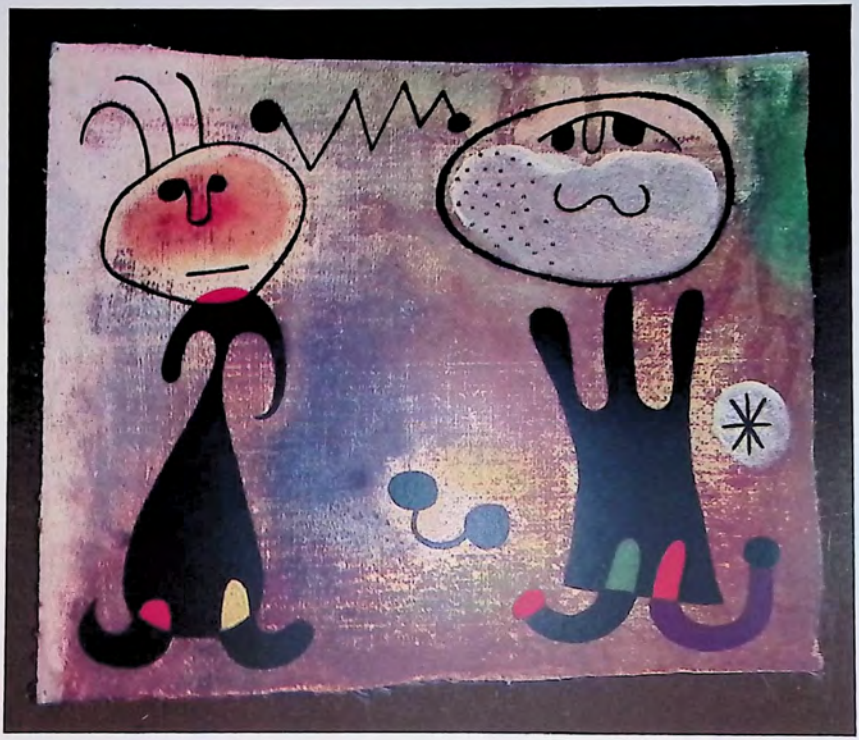
Although the paintings of Miro seem particularly appropriate to modern interiors, it is not this alone which has made them of particular interest to architects. Spontaneity, earthy simplicity and richness of effect, with a minimum of effort and a maximum of boldness, are qualities which many architects have lately come to seek. Less explicitly than the English painters Nicholson and Tunnard, (see pp. 91 and 93) but long before them, Miro introduced into abstract painting suggestions of atmosphere by means of mottled backgrounds. He has also painted on various unconventional materials such as sailcloth and wallboard, leaving them exposed to form the field of his pictures. Similarly many modern architects now prefer to exploit the characteristic qualities of various walling materials rather than to disguise them under paint and other applied finishes.

Joan Miro

1893-

Personnages dans la Nuit

1940



Ben Nicholson's work of a decade and more ago was as rigidly geometrical as Mondrian's. His painting consisted of flat arrangements of colored rectangles; his reliefs of shallow layers of white plaster or some stone-textured material. The only variety was provided by an occasional black-outlined circle or sunken disk. This extremely architectonic work was highly appreciated by his friends among the younger architects of England in the 1930s, just at the time a vigorous new architecture was first appearing there.

In the '40s Nicholson's style has developed into a freer and more poetic vehicle of expression. Instead of being merely the boundaries of rectangles or circles his lines now have a freehand character and are even subtly varied in thickness so that they have something of the lyric quality of early British linear art. The areas of solid color are more lively in hue and seem to float against the atmospheric mottling of the surrounding space. Nicholson's colors were never as restricted as Mondrian's, and the textured materials in some of his reliefs were already less absolute than the smooth white plaster with which he first worked. But in his later work, such as this composition of last year, there is a good deal of the richness and modulation of tone of the English landscape tradition.

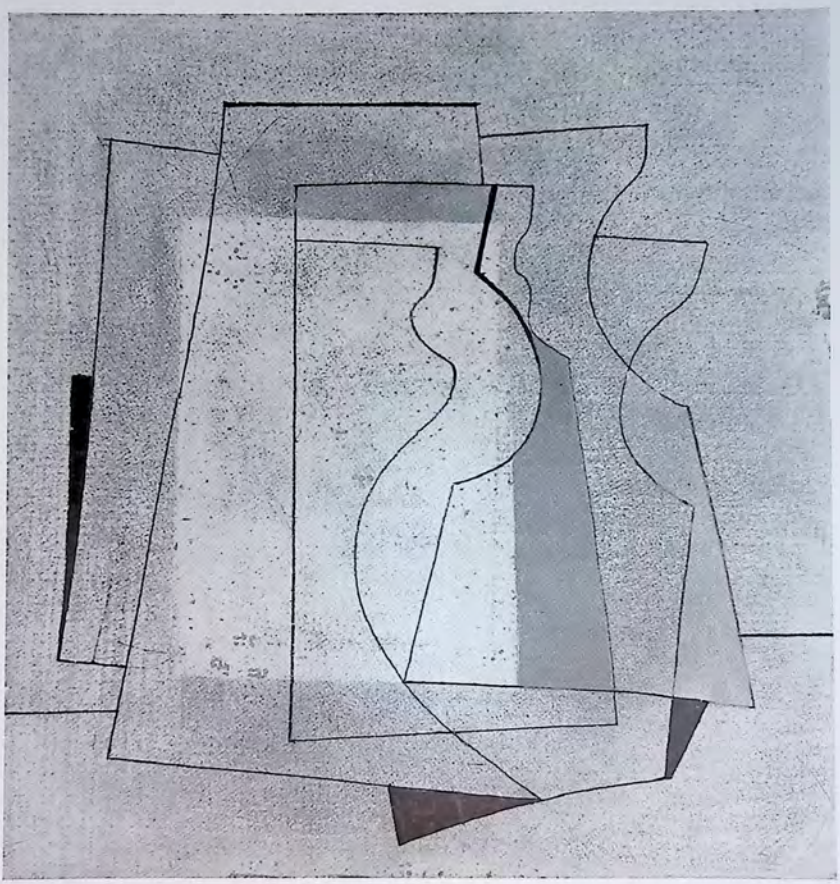
As mechanical rigidity of form in modern architecture has loosened in the last decade, something of the earlier clarity and precision of expression has often been lost. Nicholson's art, so subtle a revision of his earlier absolutism, suggests that a freer handling of outline and a greater variety of color and texture need not lead to clumsiness in the organization of lines and surfaces. The composition illustrated here is extremely modest in size and more restrained in color than most of his late work. Yet Nicholson's mature command of simple elements suggests possibilities of basic refinement in architectural design comparable to the early studies of the purists, but far removed from their Platonic world. For there is a very delicate and intimate poetry in this work of an order modern achitecture has hardly yet achieved.

Ben Nicholson

1894-

Still-Life

1947



Tunnard's abstract paintings are more weather-conscious than Nicholson's. His crisp forms seem immersed in the boisterous Atlantic weather of Cornwall where he lives. The straight lines and subtle curves he uses suggest the new structural shapes developed for airframes during the War which are now beginning to be introduced into architecture. Sharp lines executed in ink or pencil and precisely defined areas of opaque gouache arranged in receding planes contrast with the blotted mottlings of transparent watercolor which give depth and volume to the space of the picture.

The early modern buildings of a quarter century ago, influenced by the absolute character of the abstract painting of the time, seem to have been designed for a timeless vacuum. Yet modern buildings, like all buildings, must actually exist in the world of time and weather. The dominance of the tenuous and precise linear forms in Tunnard's painting over the mottled areas suggests an architectural parallel. With the increasing use of surfacing materials which weather, crispness of outline need not be lost if the relationships between sharp, mechanical detail and broad, textured planes are carefully studied. Nor ought modern buildings to be designed only for the continuous sunshine in which photographers forcibly present them, but rather with sympathy for their appearance in all sorts of weather.

Nicholson's and Tunnard's abstract art is romantic in its peculiarly English interest in controlled line as a vehicle of formal expression and in modulated color as a vehicle of poetic expression. But they are not concerned with nostalgia for the past, like Piper's, nor do they depend for their interest on sentimental overtones more proper to literature than to painting.

These English works, together with the work of such Americans as Tobey, represent the latest developments of the abstract tradition included in the Miller Company Collection. With them the relation of two-dimensional pictorial expression to modern architecture ceases to be one in which specific influences can be documented. But modern architects should find them interesting as models of delicacy and refinement in architectonic expression.

John Tunnard

1900-

Avenue

1944

In this painting of Merida, there is no illusion of depth, no architectonic space. There is only an imaginative space at once as flat as the board on which it is painted and as limitless as infinity. This imaginary world is peopled with strange creatures suspended in an ethereal flux. Merida avoids any sense of heaviness or volume: instead of modeled forms, there are merely contoured outlines; instead of light and shadow, only a diffused glow.

The significance of color and line is built up as in the Miro (see p. 41) by the virtual absence of all else. For from being mere agents for the imitation of visual reality, color and line offer a new reality in themselves. Whether seen merely as rhythmic "doodling" lines and pleasingly blended colors or as evocative elements suggesting a remote and fanciful world, they have an internal life of their own.

Where Léger in the "Petit Dejeuner" (see p. 27) used outline to bound areas of flat color or simplified volume, Merida dissociates line from color and his outlined shapes hang like ghosts unrelated to the floating fields of pigment behind them. The release of line from its conventional role as a boundary allows it to be used in a new way for free expression and dramatic emphasis. A similar dissociation of shape and color was much utilized in wartime as a camouflage technique. Its visual effectiveness has been admired by some, but it has as yet rarely been used with conscious aesthetic intent.

The edges of the color in "Sky Over Texas," except in the red shape in the lower right corner, are not sharp; the mottled effect of the whole results from the gradual blending of each color with its neighbor. This method of using surface pigment might offer an alternative to the large flat surfaces of solid color that have been characteristic of modern buildings. Exteriors thus treated, instead of becoming shabby as they are mottled by time and weather, might be enhanced as they grew older. M.C.R.

Carlos Merida

1893-

Sky over Texas

1943

After studying architecture in Le Corbusier's atelier in Paris, the Chilean Matta joined the surrealist group and turned to painting. To Matta, as he later expressed it, "painting always has one foot in architecture, one foot in the dream."

"The Splitting of the Ergo" belongs to the world of dreams; it might even be considered an architect's nightmare. The rigid geometry, characteristic of the modern architecture of the 1920s, seems to have been bent into curves, even blown into confusion by a whirlwind whose force confounds reason. In contrast to Le Corbusier's *machines à habiter* whose geometric precision was intended to organize rationally the hectic life of modern man, Matta envisages an architecture expressing its most unorganizable aspect, the subconscious. To the rationally architectonic space of earlier abstract painting he opposes a surrealist conception of space—a space interrupted by "walls of damp cloth which can assume odd shapes and complement our psychological fears." Influenced both by the free shapes of Miro and by the nostalgic content of Chirico's early work, Matta goes further than any other contemporary painter toward suggesting a future architecture of the subconscious. Within his vapor-filled space he projects possibilities which are at the poles from the clarity and logic of what is known as the International Style. As in the case of the 19th century painter of dream architecture, John Martin, who influenced the design of various railroad bridges and viaducts, these possibilities might not be as remote from realization as they presently appear. M.C.R.

Matta

Roberto Matta Echaurren

1911-

Splitting of the Ergo

1945-46

Although Tobey is one of the most original of American abstract artists, he came late to abstraction. Like Wright a generation earlier, he found his inspiration in the Orient rather than in Europe. After studying Chinese technical methods in the East, he developed a personal style that is almost calligraphic. As in Chinese calligraphy, the sensitive manipulation of lines, thin and thick, smooth and jagged, rounded and square, became his major vehicle of expression rather than the solid forms common to Western painting.

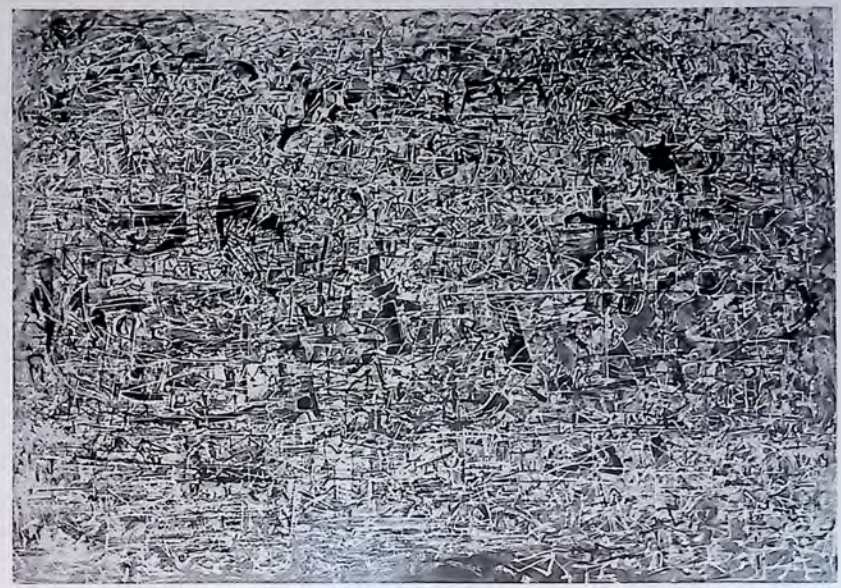
His art is infinitely refined in color and delicate in execution – often merely a transparent web of white lines projected in front of a pattern of subtly harmonized tones. His expressive purpose is essentially mystical and, as with Klee, (see pp. 31 and 73) what he has to say to the architect is not direct; he undertakes no conscious research in pure design like Mondrian or Moholy-Nagy. He seems able to bring together abstract form and spiritual content in a visual experience that is above all sensuously appealing to the eye. However, in avoiding the intellectual rigidities of much purely abstract painting, he has not gone to the other extreme of mere decorative prettiness nor does he overweight his pictures with explicit messages. His implied criticism of the contemporary world, expressed in pictures which are themselves ironically pleasing, is carried the deeper into the observer's consciousness. Similarly, an essentially functional architecture is doubtless more readily acceptable if its lines, colors, and forms are not only obviously appropriate to the conditions of modern life, but also visually gratifying. M.C.R.

Mark Tobey

1890-

Pattern of Conflict

1944



100

Since Irene Rice Pereira's aim is to create pictures which shall be in their methods and their content entirely of this century, she has continued to experiment, like the painters of the 1920s, with materials, with light, and with space. To provide new sensory experiences, she studies the possibilities of various new and old materials. She has grooved them and corrugated them or overlaid them with pigment and binder in heavy impasto in order to produce tactile responses of unexpected intensity. She has also sought to evolve materials which would be resistant to the elements, to ordinary wear, and even to hard usage. Her work with porcelain cement as a pigment medium proof against moisture, acids and corrosion, and with other hardened color agents, may well be of general technical interest.

The manipulation of space and light through the use of glass is of special interest to Pereira. Transparency allows light to become an element of form in a relief composition as important as line, color and space. In "Transfluent Lines" the soft shadows thrown by the lines painted on the glass and the glimpses of illuminated space beyond the frontal plane of the picture are new pictorial elements. The corrugation of the glass planes distorts the actual linear pattern beneath it into new patterns which vary as the observer moves from side to side. Partially obscured glass of various sorts has been much used by architects but rarely in such an imaginative way; indeed it is now more associated with trivial surface ornament than with truly architectonic effects.

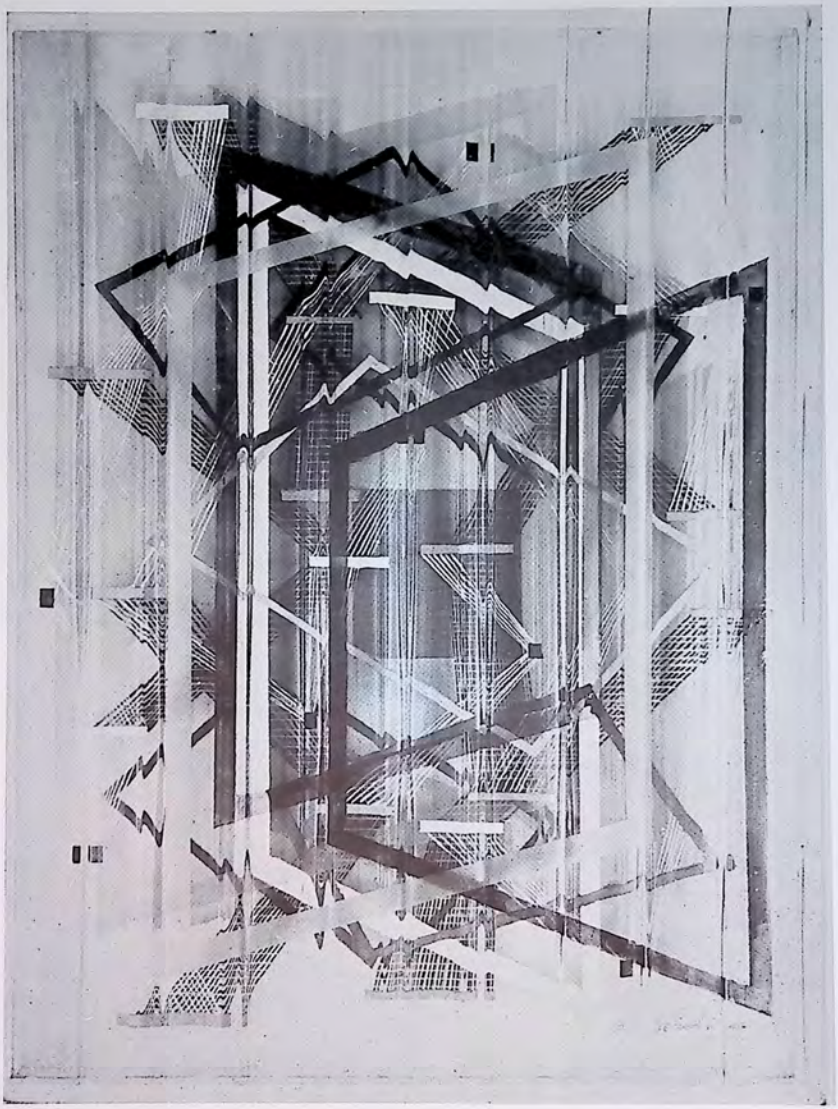
Pereira's handling of space, like Van Doesburg's, is extremely architectural. But the space that moves freely in and out through the glass layers parallel to the rear plane is organized, not by the isometric representation of solid surfaces as in Van Doesburg's constructions (see page 29), but by translucent trapezoids whose outlines seem merely to define suspended planes. Thus an architectural area, which did not require the full separation of a solid wall, might be isolated visually by semi-transparent screens to which planes implied by linear patterns could give an illusion of depth. M.C.R.

Irene Rice Pereira

1907 -

Transfluent Lines

1946



The early Arp (see p. 39) in the Miller Collection illustrates the close linkage between what is called abstract surrealism and earlier abstract art. His figure is almost as mechanistic as those in Léger's contemporary breakfast party. (See p. 27) In the mid-1920s, however, Arp was one of the first artists in Paris to move away from the formalism of most Parisian art of the time toward freer shapes and a psychological rather than a mechanistic approach to simplified forms. Whether or not his forms are recognizable, the curves of their outlines are not mathematical but have rather the fluid continuity of biological shapes. He ranges all the way from two-dimensional media to sculpture in the round. The cardboard figure owes its slight three-dimensional quality to the fact that it is mounted between sheets of glass and cut through in places to reveal the wall behind. His most characteristic works are in two solid planes, differentiated either by color or by the projection of the upper layer; or more subtly as in this relief by contrasting directions in the pattern of the grain of the wood.

The richly lyric curves of his mature work are echoed in the work of architects as far apart as the Finnish Aalto and the Brazilian Niemeyer. (See p. 53) In their work, the free-flowing curve in plan, a melodic counterpoint to the regular rhythms of skeleton construction, has become a powerful vehicle of architectural expression. This may very likely not be due in either case to a direct influence from Arp. Yet in a general way, at least, later abstract art such as Arp's has helped to ease and broaden the expressive possibilities of modern architecture. The more biological and psychological attitude of architects today, paralleling in some ways the psychosomatic approach in medicine, is certainly closer to Arp than to Mondrian. M.C.R.

Jean Arp

1888-

Relief

1934

Reliefs are a form of sculpture in that they have three actual dimensions; they are akin to painting in that they often make use of color more freely than does sculpture in the round and force the spectator to approach them from one angle only. Guy feels that relief sculpture is particularly appropriate for architectural use because it shares the real three-dimensionality of architecture, while its colors, lines and forms can provide a focus of concentrated plastic interest which is hardly obtainable with the larger elements of modern structure. However, if reliefs are to be in close cohesion with a wall, they must not pierce the continuity of the wall by an illusion of depth nor add apparent weight by heavy projections.

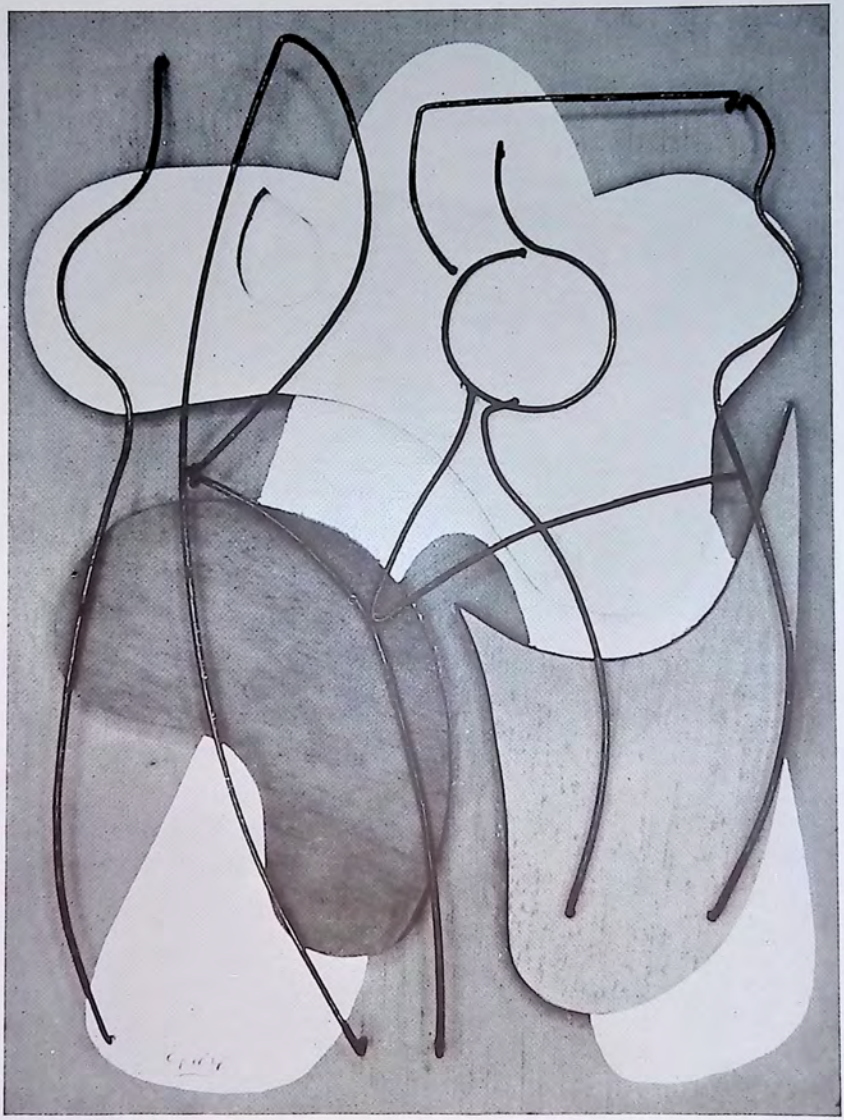
The colors, forms and lines in Guy's work are as strongly contrasted as possible. As in Léger's early painting, color is at fullest intensity. The organic shapes of the raised and painted forms are put in opposition to one another by abrupt overlappings. Lines, as with Merida, are dissociated from color areas and even from the pattern of raised shapes. A network of wires projecting both from the back plane and from the raised plane into a third forward plane throws shadows which create an echoing linear pattern beneath. Guy's purpose in using such contrasts and oppositions is to establish an active tension between his various elements. Thus strong plastic interest of various sorts is concentrated within the relatively small area of the relief. M.C.R.

James Guy

1909-

Three Figures

1944



Most sculpture, even in the 20th century, has been designed as gravitational mass. A piece of sculpture has been a complex of dense solid shapes in some heavy material firmly supported on a base around which the spectator must move in order to apprehend the whole configuration by seeing the various facets in succession. Sculptors have therefore generally restricted themselves to subjects appropriate to the solidity and weight of stone or bronze. This sketch of Pegasus, the winged horse of Greek myth (a study for a large piece designed for the new building of the Yale Art Gallery) illustrates happily how Lipchitz has freed the sculptor from the laws of gravity, making it possible for him, in Lipchitz' own words, "to rise, to soar, even with that heavier-than-air substance which is sculpture."

In the early days of cubism, Lipchitz was one of the first to realize its sculptural implications. His work then was rigid and formal, almost a direct translation of cubist painting into sculpture. But very early he began to introduce openings and rhythmic swinging forms into his figures. Thus even sculpture in bronze could without impropriety cope with such a floating subject as this winged Pegasus. Solid volumes, at first merely pierced, became shot through with voids as sculptural as the masses they penetrated. Space entered into the very heart of the plastic composition.

In addition, Lipchitz expresses movement in a new way. This sketch of Pegasus does not represent a flying horse; it is rather a symbol of the unnatural strength and vitality a flying horse would necessarily have. The rippling shapes, the chunky forms, the rough surfaces imply interior kinetic force. It is as if the bronze itself concentrated energies beyond the ordinary laws of nature. Thus Lipchitz gives a new meaning to mythological subjects which have become stupidly conventionalized in academic art.

The massive forms of traditional sculpture rarely seem appropriate when seen in relation to the fluid spaces and light volumes of modern architecture. Lipchitz' "Prometheus" (which is quite similar to the Pegasus technically) is suspended in front of a curving wall on the Ministry of Education in Rio de Janeiro. It provides one of the most striking examples of the successful employment of sculpture in connection with modern architecture. M.C.R.

Jacques Lipchitz

1891-

Pegasus (Study)

1944

The drawings of Henry Moore are usually for him "a means for generating ideas for sculpture." His dependence on such two-dimensional studies calls attention to a fundamental difference between two kinds of sculpture. Lipchitz characteristically builds up his figures from a shapeless mass of clay by molding and modeling the soft material; he is therefore able to make studies in the round such as the "Pegasus," which is cast in bronze from a clay sketch. (See p. 107) The materials used by a carver like Moore – stone and wood – are not malleable and they take form only when sections of them have been chipped, rubbed or carved away. Thus there is little opportunity for experimentation while working in the final material, and drawings must serve to explore and develop the artist's preliminary conceptions.

Moore's desire to develop further Lipchitz' use of voids in sculpture, as well as his admiration for the highly simplified forms of Brancusi, led him to disregard natural appearances almost completely. Yet his approach is biomorphic or vitalistic rather than absolute and geometrical. In these particular sketches, he has emphasized the larger forms and the interior spaces of the human head rather than the surface features and facial expressions which preoccupy most sculptors. Even in his most abstract work, he claims to sense a "personality" which he tries to bring out of the wood or stone by shaping it and smoothing it in such a way that the natural textures and interior structural consistency become more evident.

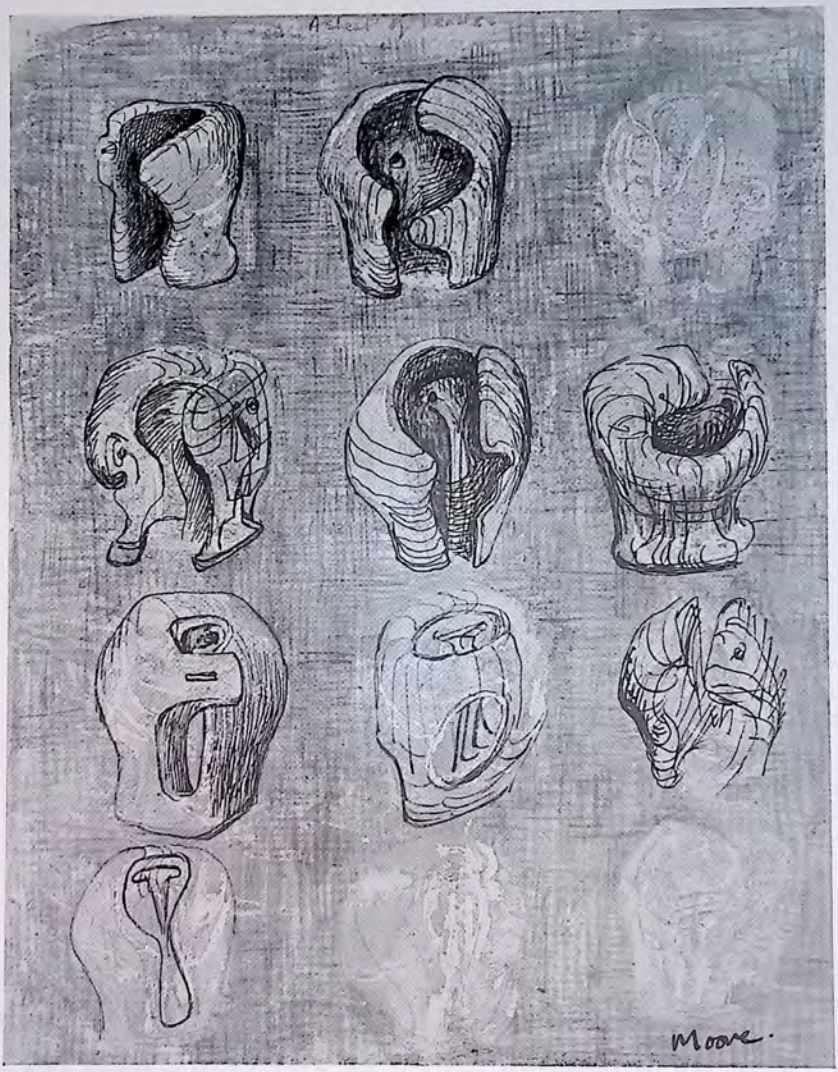
Another relation to nature, as important in Moore's work as his basic anthropomorphism and his devotion to the character of his materials, is what can be called its landscape character. The undulating surfaces, the highlights and deep shadows, the flow of space through the interstices in his work relate it not so much to architecture as to the natural settings in which architecture must take its place. The increasing interest of architects in the flow of space, in free curves suggestive of natural forms and in varied textures is closely paralleled in Moore's sculpture; but his developed plastic forms, like those of Lipchitz, are complementary to modern architecture rather than similar to it. M.C.R.

Henry Moore

1898-

Studies for Sculpture

1942


Moore.

Rivera's sculpture, in contrast to Lipchitz' modeled forms, is shaped out of thin sheets of light metal. The interior spaces, unlike those which Henry Moore hews in his stone sculpture or chips out of his wooden figures, are embraced by the sweeping curves of the metal sheets. The space thus enclosed is in no way confined; the openness of the forms and the movement of their curves allow the space to flow freely both inwards and outwards in much the same way as it flows freely through modern buildings.

"Black, Yellow and Red" has what Léger calls "luxury in simplicity." The clean full curves, leading the eye around the forms in a sort of roller-coaster movement, the smooth flat areas of color, and the sharp contrasts of light and dark – especially evident in the black-and-white photographs – appeal to the eye without any such reference to natural forms as is present in Lipchitz' and Moore's sculpture.

To some extent conventional ideas of composition in architecture and sculpture have depended in the past on the observers' sense of what is physically in balance. A new and general understanding of the tensile strength of light metals, such as aluminum, makes it possible to extend certain parts of a construction of this character out over empty space without disturbing the spectator, as can hardly be done with heavy traditional materials. In architecture, the cantilever makes similar effects structurally possible; and they are now becoming widely acceptable, even to observers who are presumably not clearly aware why they work.

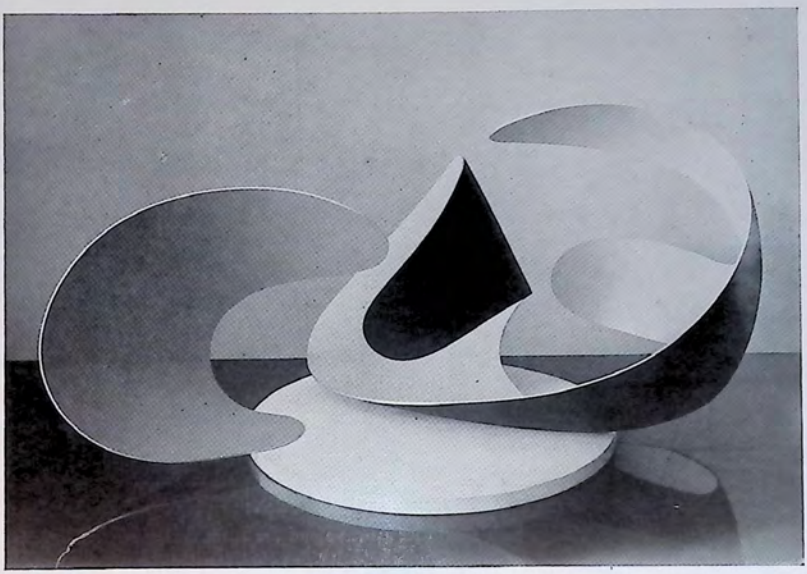
The use of Rivera's sculpture in the redecoration of the liner *Argentina* illustrates how sculpture in unconventional materials may become an organic part of a modern interior the more appropriate because of its physical identity with and structural similarity to some of the new building materials. M.C.R.

José de Rivera

1904-

Black, Yellow and Red

1942



The simulation of movement in art has traditionally been a matter of implication only. A more direct attempt to suggest motion was made by the futurists a generation ago in pictures which were painted equivalents of stroboscopic photographs. The Russian constructivists sometimes made sculptures which included mechanisms to produce regular movement like that of a machine. It was Calder, however, who first conceived of sculpture with natural rhythmic motions appropriate to the free forms, the varied textures, and the involved spacial conceptions of later abstract art.

Excited by the impact of Mondrian's geometric abstractions which he saw in Paris, Calder became obsessed to set them in motion. Where Mondrian had organized contrasting colors and spaces on canvas, he wanted to organize contrasting movements in space. As he had been trained as an engineer, his first constructions were geometric and mechanical; their movements were induced by hand-turned cranks and their scale was small. Influenced by his love of outdoor nature and by his admiration for Arp and Miro, he began to work with larger, freer, and more organic shapes and his later "mobiles" have become so delicately balanced that currents of air serve to set them in motion. The idea of incorporating volumes of space within sculptural compositions is also infinitely elaborated in these swinging forms. The motions of the wires and of the appended forms, as they revolve at varying speeds in their individual orbits, change both the linear patterns and the space enclosures. A continuous variety of sequential relationships is produced as the elements of the mobile cut through new segments of the air. Complex as the line and space patterns may be, suggesting some organic process, the actual movements which create them are relatively simple. This simplicity is echoed in the plain colors and the elementary shapes of the metal plates and connecting links. When solid forms are introduced they are also elementary: croquet balls, hunks of broken glass, fragments of driftwood and the like.

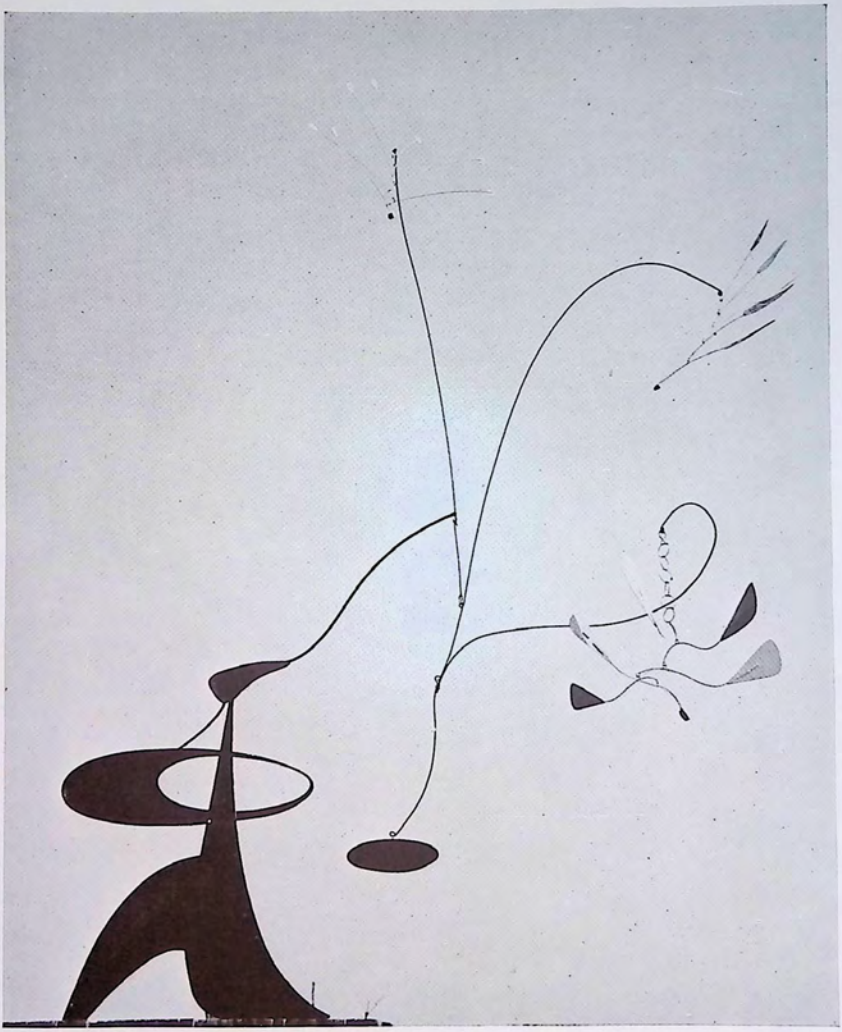
A large Calder mobile provides the chief feature of the lobby of Skidmore, Owings and Merrill's Terrace-Plaza Hotel in Cincinnati. M.C.R.

Alexander Calder

1898-

Bougainvillea

1947



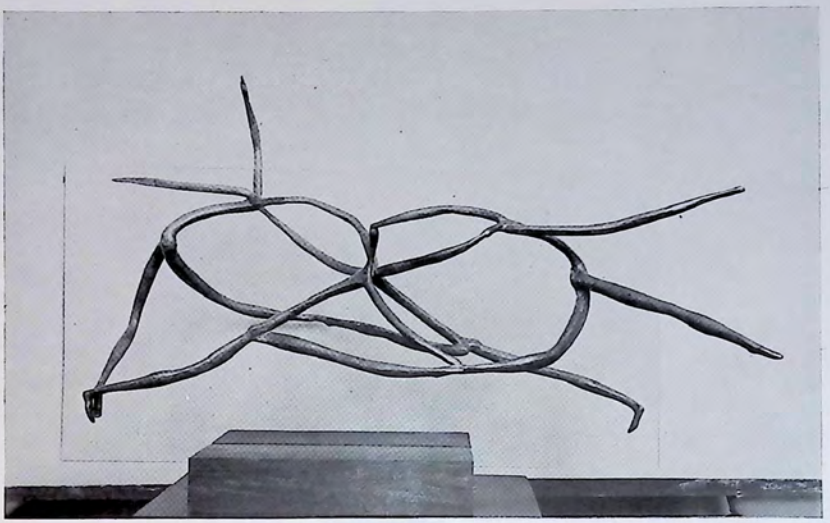
Much of Mary Callery's sculpture seems to have been specifically designed for architectural use. The "Amity," which is enlarged to architectural scale in the finished work, could readily serve as a balustrade. (See p. 116) Such a piece as "Water Ballet" is perhaps not so obviously intended for a particular position on a building. Yet the size and thickness of the glass plate suggest that it might well be installed in a transparent partition or above an entrance door. The rhythms of the tenuous metal forms—so simple, even structural, in themselves that they seem at first sight merely shapes in heavy wire—form a complex three-dimensional pattern in space. But the subtle modelling of the metal members also creates the illusion of figures in motion above and below the surface of water. This is emphasized by the difference in tone between the natural bronze on one side of the glass and the green-patined bronze on the other side. Although cast in a heavy metal, the Callery sculptures seem almost as weightless and as full of motion as Calder's mobiles. Yet they have the strength and stability appropriate to a physical adjunct to a building.

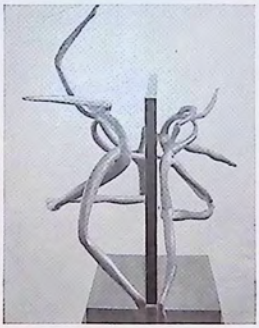
Mary Callery

1903-

Water Ballet

1947





Mary Callery, Amity (study), 1946

Catalogue

The Miller Company Collection

Dimensions are given in inches, height preceding width

Painting

Alberts, Josef
1888 -

Flying Man, 1929 and 1935
Oil on masonite
23½x17¾

Arp, Jean
1888 -

Figure (Three-Navel-Man), 1920
Oil on cardboard
41½x31

Bertoia, Harry
1915 -

Composition, 1944
Monoprint
40¼x29⅜

Bolotowsky, Ilya
1907 -

Perpendiculars and Diagonals, 1945
Oil on canvas
18x22

Braque, Georges
1881 -

Black Rose, 1927
Oil on canvas
20x37

Davis, Stuart
1894 -

Composition (1863), c. 1930
Gouache on paper
20½x28

For Internal Use Only, 1945
Oil on canvas
45x28

Feininger, Lyonel
1871 -

Sailing Ships, 1944
Ink and watercolor
7x10⅜

Fine, Perle
1908 -

Midnight, 1942
Gouache on cardboard
11x9¾

Girl with Hat, 1939
Oil on canvas
24½x20

Schwitters, Kurt
1887 - 1948

Merzbild, c. 1922
Collage
7x5¾

Sheeler, Charles
1883 -

On a Theme of Farm Buildings, 1947
Tempera on board
19x25

Tamayo, Rufino
1899 -

Clowns, 1942
Oil on canvas
19¾x39¼

Tobey, Mark
1890 -

Pattern of Conflict, 1944
Tempera on board
13¼x19

Tunnard, John
1900 -

Avenue, 1944
Watercolor and gouache
14½x21½

Van Doesburg, Theo
1883 - 1931

Space-Time Construction No. 3, 1923
Gouache
18½x15¾

Sculpture

Amino, Leo
1911 -

Spring, 1946
Plastic: Polystyrene
with hydrostone, wire mesh
and pigment
13¼ high

Arp, Jean
1888 -

Relief, 1934
Wood
19½x19½

Calder, Alexander
1898 -

Bougainvillea, 1947
Sheet metal and wire
76 high

Callery, Mary
1903 -

Amity (study), 1946
Bronze
17¾x26

Water Ballet, 1947
Bronze mounted on glass
24x48

Guy, James
1909 -

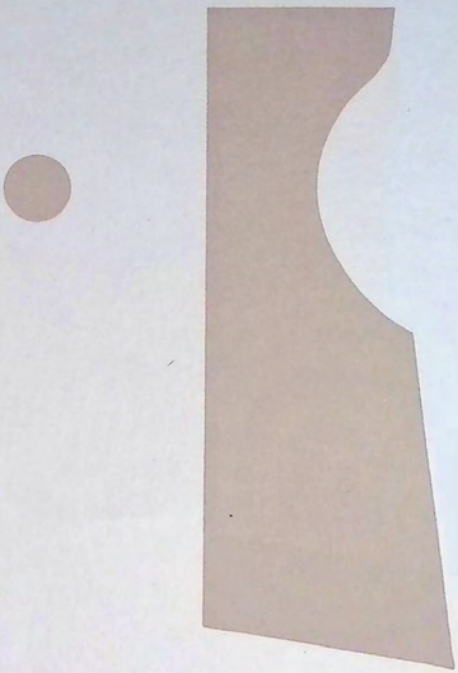
Three Figures, 1944
Painted wood relief with wire
23x17

Lipchitz, Jacques
1891 -

Pegasus (study), 1944
Bronze
6½ high

Rivera, José de
1904 -

Black, Yellow and Red, 1942
Painted aluminum
17x30



Continued from front flap

tects through their special concern with the research in pure design in which modern painters and sculptors have engaged.

The collections of the great architects of today testify to their confirmed interest in abstract art. Gropius, for example, collects Kandinsky and Feininger; Harrison collects Léger and Calder; Aalto collects Calder; Mies van der Rohe, Klee; and Le Corbusier, Léger—along with his own paintings.

Painting Toward Architecture of course is a book for architects, industrial designers, painters, and sculptors: but it is also quite as definitely addressed to laymen, for whom it will be of value, not only for its intrinsic interest, but also as a bridge between architects and clients in matters of modern design.

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Text by Henry-Russell Hitchcock

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Baltimore Museum of Art, News

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