16
Modern Architecture Between the Wars

After World War I, communication among architects was reestablished so rapidly and stylistic diffusion was so widespread that it became difficult to speak of national styles. Rather, centers of experimentation arose where architects and artists from many backgrounds now gathered. After 1919 most of the new ideas fermenting in the arts during the war began to converge on Berlin, which became one of the world capitals for art and architecture. These ideas included German Expressionism, Russian Suprematism and Constructivism, Dutch de Stijl, and international Dadaism. Contact was reestablished between German artists, French Cubists, and Italian Futurists. One of the most remarkable cultural phenomena in Europe in the twenties was the Bauhaus, the school established in Weimar in 1919 by the architect **Walter Gropius** (1883–1969), which was in close contact with Berlin. The other major, related development was the formation of what came to be known as the International Style of architecture, which came to prominence in the thirties. A common theme in architecture of this period was the attempt to put modernism to the service of social reform and the search for a universal language of design that would transcend the increasingly polarized political landscape in thirties Europe.

The Building as Entity: The Bauhaus

In the disastrous wake of World War I, the Staatliches Bauhaus was formed in Weimar, Germany, from the two schools of arts and crafts established there in 1906 under the direction of the Belgian artist and architect Henry van de Velde (see chapter 12). As was the case with the English Arts and Crafts and the Deutscher Werkbund traditions, which had informed Van de Velde's program of teaching in workshops rather than studios, Gropius was convinced of the need for the creations of architect, artist, and craftsman to form a unified whole. The program of Gropius was innovative, not in its insistence that the architect, the painter, and the sculptor should work with the craftsperson, but in specifying that they should be craftspeople first of all. The concepts of learning by doing, of developing an aesthetic on the basis of sound craft skills, and of breaking down barriers between "fine art" and craft were fundamental to the Bauhaus philosophy.

Despite Gropius's belief in architecture as the supreme art form, the Bauhaus originally provided no course in architecture, for Gropius felt that students should be skilled in the basic crafts before graduating to the design of buildings. The core of Bauhaus teaching was a division of courses into workshops, which taught those craft skills, and a mandatory foundation course designed to encourage the students' creative powers and liberate them from past experiences and prejudices. This course, initially developed by the Swiss painter Johannes Itten, introduced the student to materials and techniques through elementary but fundamental practical tasks. Under the influence of Itten, the foundation course also included the investigation of Eastern philosophies and mystical religions. Eventually, Gropius opposed Itten's mystical bent, insisting that craft be reconciled with industrial production for the modern machine age. As he wrote in 1923, the year he persuaded Itten to resign, "The Bauhaus believes the machine to be our modern medium of design and seeks to come to terms with it." This shift toward a machine aesthetic was no doubt due in part to the influence of Constructivism and the presence in Weimar by 1921 of the de Stijl artist Theo van Doesburg (see chapter 11).

The first proclamation of the Bauhaus declared:

> Architects, painters, and sculptors must recognize anew the composite character of a building as an entity. ... Art is not a 'profession.' There is no essential difference between the artist and the craftsman. The artist is an exalted craftsman. ... Together let us conceive and create the new building of the future, which will embrace architecture and sculpture and painting in one unity and which will rise one day toward heaven from the hands of a million workers like the crystal symbol of a new faith.

This initial statement reflected a nostalgia for the medieval guild systems and collective community spirit that lay behind the building of the great Gothic cathedrals, as well as the socialist idealism that was current in Germany in the early days of the Weimar Republic, and throughout much of postwar Europe. Suspicion of this political attitude caused antagonism toward the school among the more conservative elements in the city of Weimar, an antagonism that in 1925 drove the Bauhaus to its new home in Dessau.

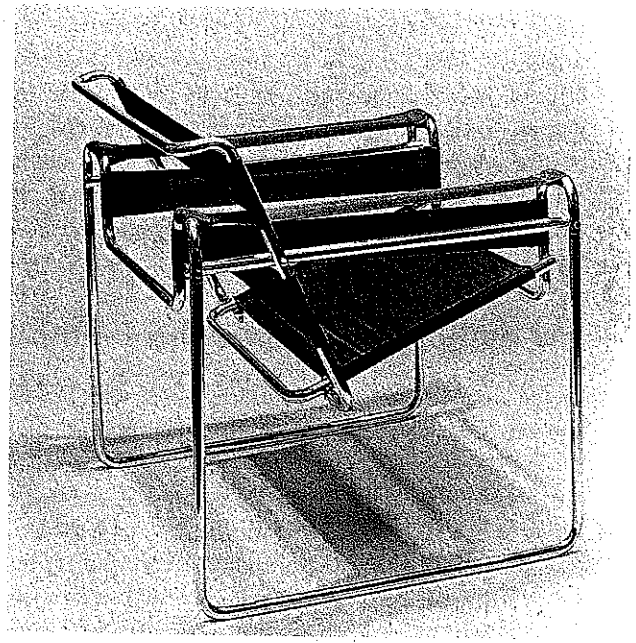
Over the years the Bauhaus attracted one of the most remarkable art faculties in history. Vasily Kandinsky, Paul Klee, Lyonel Feininger, Georg Muche, and Oskar Schlemmer were among those who taught painting, graphic arts, and stage design. Pottery was taught by Gerhard Marcks, who was also a sculptor and graphic artist. When Johannes Itten left in 1923, the foundation course was headed by László Moholy-Nagy, a Hungarian painter, photographer, theater and graphic designer, whose writings and teaching made him, after Gropius, the most influential figure in developing and spreading the Bauhaus idea. (Work produced by many of these painters, photographers, and sculptors during their tenure at the Bauhaus and after is discussed in chapter 17.) In addition to the star-studded faculty, the Bauhaus frequently attracted distinguished foreign visitors, such as, in 1927, the Russian Suprematist painter Kazimir Malevich (see figs. 11.18, 11.19). When the Bauhaus moved to Dessau, several former students joined the faculty—the architects and designers Marcel Breuer and Herbert Bayer, and the painter and designer Josef Albers (see fig. 17.9), who reorganized the foundation course. Of the artist-teachers, Kandinsky, Klee, and Feininger were to become recognized as major twentieth-century painters. Moholy-Nagy, through his books *The New Vision* and *Vision in Motion* and his directorship of the New Bauhaus, founded in Chicago in 1937 (now the Institute of Design of the Illinois Institute of Technology), greatly influenced the teaching of design in the United States. Josef Albers would become one of the most important art teachers in the United States, first at the remarkable school of experimental education, Black Mountain College in North Carolina, and subsequently at Yale University. Marcel Breuer, principally active at the Bauhaus as a furniture designer, ultimately joined Gropius in 1937 on the faculty of Harvard University and practiced architecture with him. After Breuer left this partnership in 1941, his reputation steadily grew to a position of world renown (see figs. 23.20, 23.35).

The Bauhaus curriculum was initially divided into two broad areas: problems of craft and problems of form. Each course had a "form" teacher and a "craft" teacher. This division was necessary because, during the first four years, it was not possible to assemble a faculty who were collectively capable of integrating the theory and practice of painting, sculpture, architecture, design, and crafts—although Klee taught textile design and Marcks pottery. With the move to Dessau, however, and the addition of Bauhaus-trained staff members, the various parts of the program were integrated.

In Dessau the accent on craft declined, while the emphasis on architecture and industrial design substantially increased. The architecture students were expected to complete their training in engineering schools. Gropius said:

> We want to create a clear, organic architecture, whose inner logic will be radiant and naked, unencumbered by lying façades and trickeries; we want an architecture adapted to our world of machines, radios, and fast motor cars, an architecture whose function is clearly recognizable in the relation of its form. ... [W]ith the increasing strength of the new materials—steel, concrete, glass—and with the new audacity of engineering, the ponderousness of the old methods of building is giving way to a new lightness and airiness.

The greatest practical achievements at the Bauhaus were probably in interior, product, and graphic design. For example, Marcel Breuer created many furniture designs at the Bauhaus that have become classics, including the first tubular-steel chair (fig. **16.1**). He said that, unlike heavily upholstered furniture, his simple, machinemade chairs were "airy, penetrable," and easy to move. Though initially women were to be given equal status at the Bauhaus, Gropius grew alarmed at the number of women applicants and restricted them primarily to weaving, a skill deemed suitable for female students. Gunta Stölz and Anni Albers were major innovators in the area of textile design at the school's weaving workshop. In ceramic and metal design, a new vocabulary of simple, functional shapes was



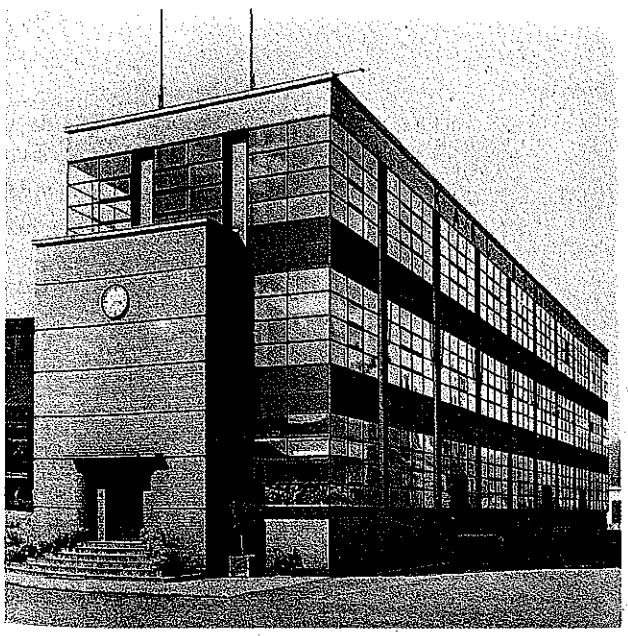
16.1 Marcel Breuer, Armchair, Model B3, Dessau, Germany. Late 1927 or early 1928. Chrome-plated tubular steel with canvas slings, 28⅛ × 30¼ × 27¾" (71.4 × 76.8 × 70.5 cm). The Museum of Modern Art, New York.

established. The courses in display and typographic design under Bayer, Moholy-Nagy, Tschichold, and others revolutionized the field of type. Bauhaus designs have passed so completely into the visual language of the modern age that it is now difficult to appreciate how revolutionary they were on first appearance. Certain designs, such as Breuer's tubular chair and his basic table and cabinet designs, Gropius's designs for standard unit furniture, and designs by other faculty members and students for stools, stacking chairs, dinnerware, lighting fixtures, textiles, and typography so appealed to popular tastes that they are still manufactured today.

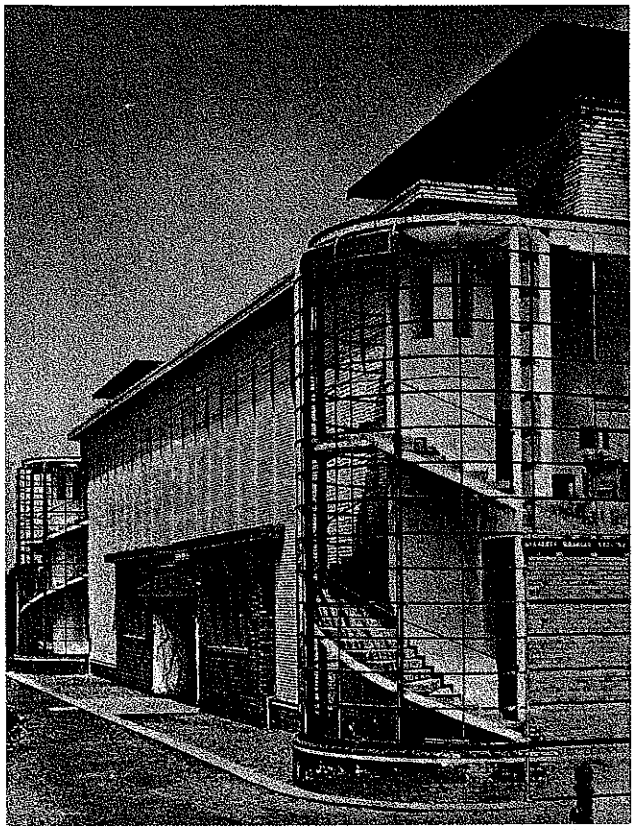
Gropius resigned in 1928 to work full-time in his architectural practice. He was succeeded by Hannes Meyer, a Marxist who placed less emphasis on aesthetics and creativity than on rational, functional, and socially responsible design. Meyer was forced to leave the Bauhaus in 1930, and Mies van der Rohe (Gropius's first choice in 1928) assumed the directorship. Mies's work as an architect is discussed below. Inevitably, activities at the Bauhaus aroused the suspicions of the Nazis, who finally brought about its closure in 1933.

Audacious Lightness: The Architecture of Gropius

After spending two years in the office of Peter Behrens (see chapter 12), Gropius established his own practice in Berlin. In 1911 he joined forces with his partner **Adolph Meyer** (1881–1929) to build a factory for the Fagus Shoe Company at Alfeld-an-der-Leine (fig. **16.2**). The Fagus building represents a sensational innovation in its utilization of complete glass sheathing, even at the corners. In effect, Gropius here had invented the curtain wall that would play such a visible role in the form of subsequent large-scale twentieth-century architecture.



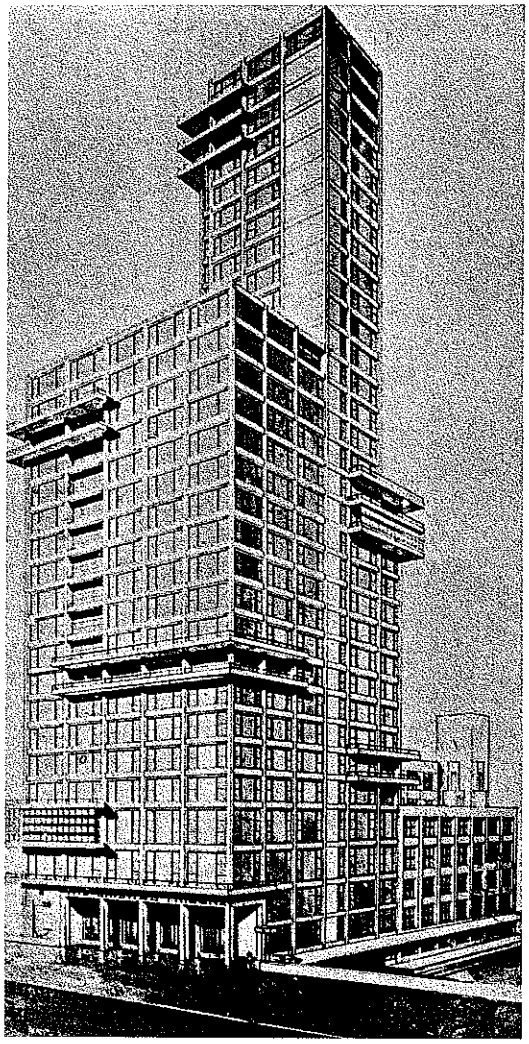
16.2 Walter Gropius and Adolph Meyer, Fagus Shoe Factory, Alfeld-an-der-Leine, Germany, 1911–25.



16.3 Walter Gropius and Adolph Meyer, Model Factory at the Werkbund Exhibition, Cologne, 1914.

Gropius and Meyer were commissioned to build a model factory and office building in Cologne for the 1914 Werkbund Exhibition of arts and crafts and industrial objects (fig. **16.3**). Gropius felt that factories should possess the monumentality of ancient Egyptian temples. For one façade of their "modern machine factory," the architects combined massive brickwork with a long, horizontal expanse of open glass sheathing, the latter most effectively used to encase the exterior spiral staircases at the corners (clearly seen in the view reproduced here). The pavilions at either end have flat overhanging roofs derived from Frank Lloyd Wright (see fig. 12.3), whose work was known in Europe after 1910, and the entire building reveals the elegant and disciplined design that became a prototype for many subsequent modern buildings.

During his years as director of the Bauhaus, Gropius continued his own architectural practice in collaboration with Meyer. One of their unfulfilled projects was the design for the Chicago Tribune Tower in 1922 (fig. **16.4**). The highly publicized competition for the design of this tower, with over two hundred and fifty entries from architects worldwide, provides a cross-section of the eclectic architectural tendencies of the day, ranging from strictly historicist examples based on Renaissance towers to the modern styles emerging in Europe. The traditionalists won the battle with the neo-Gothic tower designed by the American

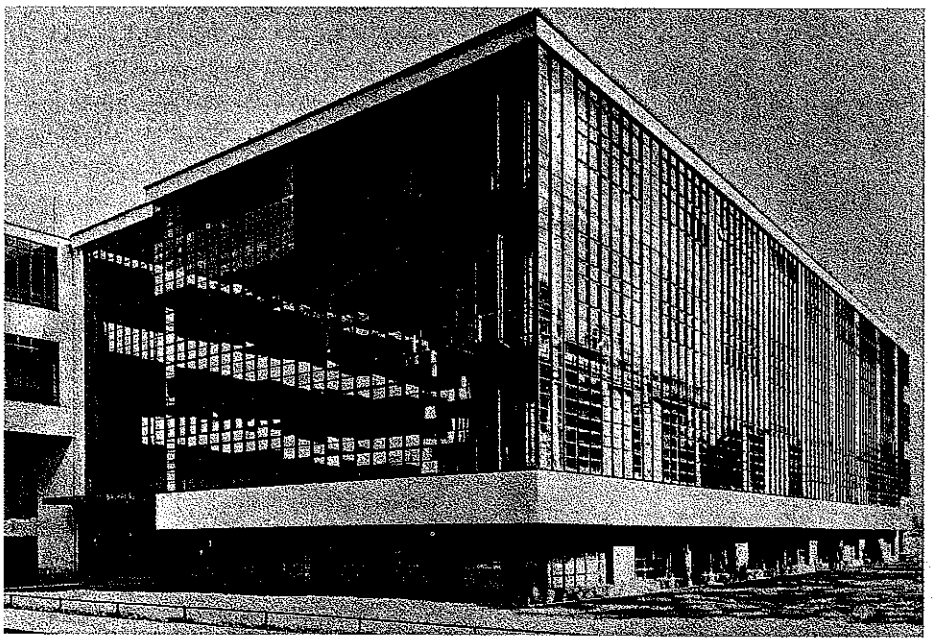


16.4 Walter Gropius and Adolph Meyer, Design for the Chicago Tribune Tower, 1922.

architect Raymond Hood (probably in collaboration with John Mead Howells). The design of Gropius and Meyer, with the spare rectangularity of its forms, its emphasis on skeletal structure, and its wide tripartite windows, was based on the original skyscraper designs of Sullivan and the Chicago School (see figs. 4.11, 4.12) and also looked forward to the skyscrapers of the mid-twentieth century.

When the Bauhaus moved to Dessau in 1925, Gropius closed his Weimar office, ending his partnership with Meyer. His most important architectural achievement at the Bauhaus was the design for the new buildings at Dessau (fig. **16.5**). These buildings, finished in 1926, incorporated a complex of classrooms, studios, workshops, library, and living quarters for faculty and students. The workshops consisted of a glass box rising four stories and presenting the curtain wall, the glass sheath or skin, freely suspended from the structural steel elements. The form of the workshop wing suggests the uninterrupted spaces of its interior. On the other hand, in the dormitory wing, the balconies and smaller window units contrasting with clear expanses of wall surface imply the broken-up interiors of individual apartments.

The asymmetrical plan of the Bauhaus is roughly cruciform, with administrative offices concentrated in the broad, uninterrupted ferroconcrete span of the bridge linking workshops with the classrooms and library. In every way, the architect sought the most efficient organization of interior space. At the same time he was sensitive to the abstract organization of the rectangular exterior—the relation of windows to walls, concrete to glass, verticals to horizontals, lights to darks. The Bauhaus combined functional organization and structure with a geometric, de Stijl-inspired design. Not only were the Bauhaus buildings



16.5 Walter Gropius, Workshop Wing, Bauhaus, Dessau, Germany, 1925–26.

revolutionary in their versatility and in the application of abstract principles of design on the basis of the interaction of verticals and horizontals, but they also embodied a new concept of architectural space. The flat roof of the Bauhaus and the long, uninterrupted planes of white walls and continuous window voids create a lightness that opens up the space of the structure. The interior was furnished with designs by Bauhaus students and faculty, including Breuer's tubular-steel furniture. The building was seriously damaged in World War II and underwent limited renovation in the sixties. It was finally restored to its original appearance in the seventies. Since the reunification of Germany in 1990, this landmark building has become the focus of new studies and a site for historical exhibitions related to the Bauhaus.

Between 1928, when he left the Bauhaus, and 1934, when he was forced by the Nazis' rise to power to leave Germany—first for England and then, in 1937, for the United States—much of Gropius' building was in low- or middle-cost housing. In his pioneering European works, Gropius helped provide the foundation of what would later be dubbed the International Style. (His profound influence on postwar American architecture is discussed in chapter 23.)

"Machines for Living": The International Style

Major forces in the formation of what came to be called the International Style were de Stijl art and architecture in Holland (see chapter 12), the new experiments in German architecture, and, though he never considered himself a participant, the American architect Frank Lloyd Wright. Its first manifestation took place in 1927 at the Deutsche Werkbund Weissenhofsiedlung Exhibition in Stuttgart, organized by Mies van der Rohe. The presentation included display housing designed by, among others, Mies, Gropius, Le Corbusier, and the de Stijl architect J. J. P. Oud (see figs. 12.19, 12.20). The term "International Style" was given prominence by an exhibition of advanced tendencies in architecture held at New York's Museum of Modern Art in 1932. The show was a collaborative effort by museum director Alfred H. Barr, Jr., architectural historian Henry-Russell Hitchcock, and architect Philip Johnson. It attempted to define and codify the characteristics of the style, although the exhibition's strictly formalist approach paid virtually no heed to the underlying ideologies and individual formal vocabularies that gave rise to modern architecture in Europe. The first principle of the new architecture of structural steel and ferroconcrete was elimination of the loadbearing wall. The outside wall became a curtain wall—a skin of glass, metal, or masonry constituting an enclosure rather than a support. Thus, one could speak of an architecture of volume rather than of mass. Window and door openings could be enlarged indefinitely and distributed freely to serve both function—activity, access, or light—and design, exterior or interior. The regular distribution of structural supports led to rectangular regularity of design and away from the balanced axial symmetry of classical architecture.

Other principles involved the general avoidance of applied decoration, a theme earlier given prominence by the polemical writings of Adolf Loos (see chapter 12), and the elimination of strong contrasts of color on both interiors and exteriors. The International Style resulted in new concepts of spatial organization, particularly that of a free flow of interior space, as opposed to the stringing together of static symmetrical boxes that up till then had been necessitated by interior loadbearing walls. Importantly, the International Style lent itself to urban planning and low-cost mass housing—to any form of large-scale building involving inexpensive, standardized units of construction.

The experiments of the pioneers of modern architecture in the use of new materials and in the stripping away of accretions of classical, Gothic, or Renaissance tradition resulted in various common denominators that may be classified as a common style. However, the individual stamp of the pioneers is recognizable even in their most comparable architecture and can hardly be reduced to a single style.

Le Corbusier

Among the generation of architectural pioneers who rose to prominence during the twenties, **Le Corbusier** (1887–1965), the artistic pseudonym of the Swiss Charles-Édouard Jeanneret, was a searching and intense spirit, a passionate but frustrated painter (see chapter 14), a brilliant critic, and an effective propagandist for his own architectural ideas. He studied in the tradition of the Vienna Workshops (Wiener Werkstätte), learned the properties of ferroconcrete with Perret in Paris, and worked for a period with Behrens in Berlin (where he no doubt met Gropius and Mies van der Rohe). He moved to Paris from his native Switzerland in 1916. Although he condemned all forms of historical revivalism, he did not reject tradition, and his architecture evolved through an adherence to the basic principles of classicism. While he never became a painter of the first rank, his interest in and knowledge of Cubism and its offshoots affected his attitude toward architectural space and structure. Le Corbusier's principal exploration throughout much of his career was the reconciliation of human beings with nature and the modern machine. This was addressed largely through the problem of the house, to which he applied his famous phrase, "a machine for living." By exploiting the lightness and strength of ferroconcrete, his aims were to maximize the interpenetration of inner and outer space and create plans of the utmost freedom and flexibility.

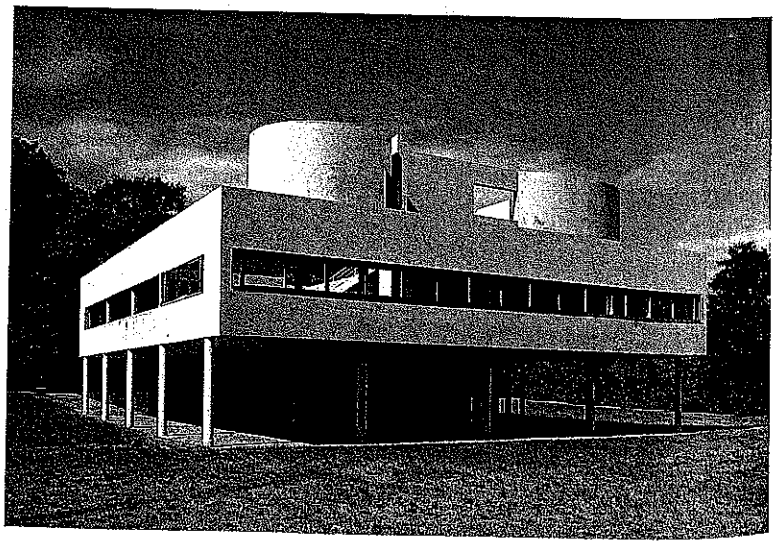
A perspective drawing of 1914–15 states the problem and his solution: it shows the structural skeleton called the Domino house to be mass-produced using inexpensive, standardized materials, with a structure consisting of six slender pillars standing on a broad, flat base and supporting two other floors or areas that may be interpreted as an

upper floor and a flat roof. The stories are connected by a freestanding, minimal staircase and the ground floor is raised on six blocks, suggestive of Le Corbusier's later use of stilts or piers called pilotis. This drawing is important for showing how early Le Corbusier established his philosophy of building. Outer walls, windows, or complete glass sheaths can simply be hung on this frame. Inner partitions can be distributed and shaped in any manner that the architect desires. The entire structure can be repeated indefinitely either vertically or horizontally, with any number of variations. (Le Corbusier did not invent the system of ferroconcrete screen-wall construction; Behrens and Gropius had already constructed buildings involving the principle.) Le Corbusier's *Five Points of a New Architecture*, published in 1926, were (1) the pilotis—supporting narrow pillars to be left free to rise through the open space of the house; (2) the free plan—composing interior space with nonbearing interior walls to create free flow of space and also interpenetration of inner and outer space; (3) the free façade—the wall as a nonsupporting skin or sheath; (4) the horizontal strip window running the breadth of a façade; and (5) the roof garden—the flat roof as an additional living area. These points could provide an elementary outline of the International Style.

The masterpiece among Le Corbusier's early houses was the Villa Savoye at Poissy (fig. **16.6**), thirty miles (forty-eight kilometres) from Paris. Along with Mies's German Pavilion (see fig. 16.9), the Villa Savoye is generally regarded as a paradigm of the International Style. The three-bedroom house, beautifully sited in an open field, is almost a square in plan, with the upper living area supported on delicate piers or pilotis. The enclosed ground level has a curved-glass end wall containing garage and service functions, set under the hovering second story. The Savoye family, arriving from Paris, would drive right under the house—the curve of the ground floor was determined by the turning radius of a car. Although today's suburban homes are loosely designed around the automobile, in 1929 this design concept was based on the notion of the car as the ultimate machine and the idea that the approach up to and through the house carried ceremonial significance.

In the main living area on the second level, the architect brilliantly demonstrated his aim of integrating inside and outside space. The rooms open on a terrace, which is protected by half-walls or windbreaks above horizontal openings that continue the long, horizontal line of the strip windows. The horizontal elements are tied together in sections by a central ramp that moves through each level and in- and out-of-doors. The complex of volumes and planes in the Villa Savoye relates to Le Corbusier's own Purist painting (see fig. 14.34). One historian has written of this building, "The visitor wandering through the interiors might glimpse cylindrical forms through layers of semi-reflecting glass and sense how Cubist ambiguities enlivened the play of surfaces: it was like entering the fantasy world behind the picture plane of a Purist still life."

Le Corbusier, like Wright, had few major commissions during the twenties, but he continually advanced his ideas and his reputation through his writings and through his urban planning projects, which were less practical but more visionary than Garnier's earlier plans for the modern industrial city (see chapter 12). These large-scale housing projects, a response to the growing urban populations and housing shortages of postwar France, were never actually built. In 1922 Le Corbusier drew up a plan for a contemporary city (the "Ville Contemporaine") of three million inhabitants, involving rows of gleaming glass skyscrapers placed on stilts to allow for pedestrian passage. They were connected by vast highways and set in the midst of parks. In his 1925 "Plan Voisin" for Paris, Le Corbusier envisioned an enormous urban-renewal project that would have replaced the historic buildings north of the Seine with a complex of high-rise buildings. Like the Ville Contemporaine, this radiant modern city was the architect's drastic antidote to the traffic-congested streets of modern Paris and the soot-filled slums of the nineteenth-century city. It was based on the utopian notion common among the modern pioneers that, armed with the right city planning and the appropriate faith in technology, architecture could revolutionize patterns of living and improve the lives of modern city dwellers on a physical, economic, and even spiritual level. In the face of today's massive and eclectic urban centers, Le Corbusier's faith that a uniform strategy for urban planning would create cities where "the air is clean and pure" and "there is hardly any noise" seems naively idealistic. Nevertheless, his urban schemes were prophetic in the way they anticipated elements of today's cityscapes.



16.6 Le Corbusier, Villa Savoye, Poissy, France, 1928–30.

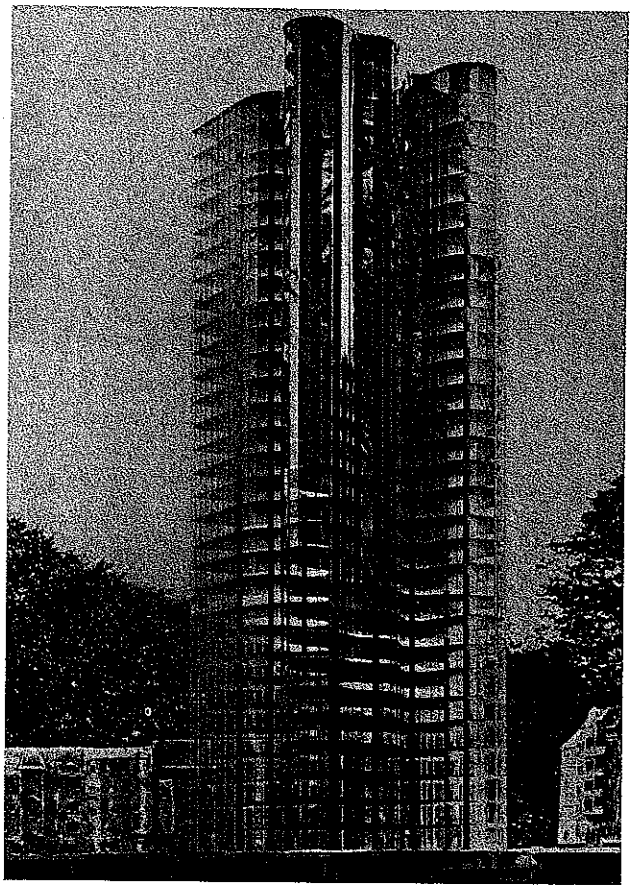
Le Corbusier's writings have also been tremendously influential in modern world architecture. His trenchant book *Vers une architecture* (*Towards a New Architecture*) (1923) was immediately translated into English and other languages and has since become a standard treatise. In it he extolled the beauty of the ocean liner, the airplane, the automobile, the turbine engine, bridge construction, and dock machinery—all products of the engineer, whose designs had to reflect function and could not be embellished with nonessential decoration. Le Corbusier dramatized the problems of modern architecture through incisive comparisons and biting criticisms and, in effect, spread the word to a new generation.

Mies van der Rohe

The spare, refined architecture of **Ludwig Mies van der Rohe** (1886–1969), built on his edict that "Less is more," is synonymous with the modern movement and the International Style. He has arguably had a greater impact on the skylines of American cities than any other architect. His contribution lies in the ultimate refinement of the basic forms of the International Style, resulting in some of its most famous examples. Some of the major influences on Mies were: his father, a master mason from whom he initially gained his respect for craft skills; Peter Behrens (see chapter 12), in whose atelier he worked for three years; and Frank Lloyd Wright. From Wright, Mies gained his appreciation for the open, flowing plan and for the predominant horizontality of his earlier buildings. He was affected not only by Behrens's famous turbine factory (see fig. 12.12), but also by Gropius's 1911 Fagus Factory (see fig. 16.2), with its complete statement of the glass curtain wall. Gropius had worked in Behrens's office between 1907 and 1910, and the association between Gropius and Mies that began there, despite a certain rivalry, continued. Mies's style remained almost conventionally Neoclassical until after World War I. Then, in the midst of the financial and political turmoil of postwar Germany, he plunged into the varied and hectic experimentation that characterized the Berlin School.

In 1921 and 1922 Mies completed two designs for skyscrapers, which, although never built, established the basis of his reputation. The first was triangular in plan, the second a free-form plan of undulating curves (fig. **16.7**). In these he proposed the boldest use yet envisaged of a reflective, all-glass sheathing suspended on a central core. As Mies wrote:

> Only in the course of their construction do skyscrapers show their bold, structural character, and then the impression made by their soaring skeletal frames is overwhelming. On the other hand, when the façades are later covered with masonry, this impression is destroyed and the constructive character denied. ... The structural principle of these buildings becomes clear when one uses glass to cover nonloadbearing walls. The use of glass forces us to new ways.

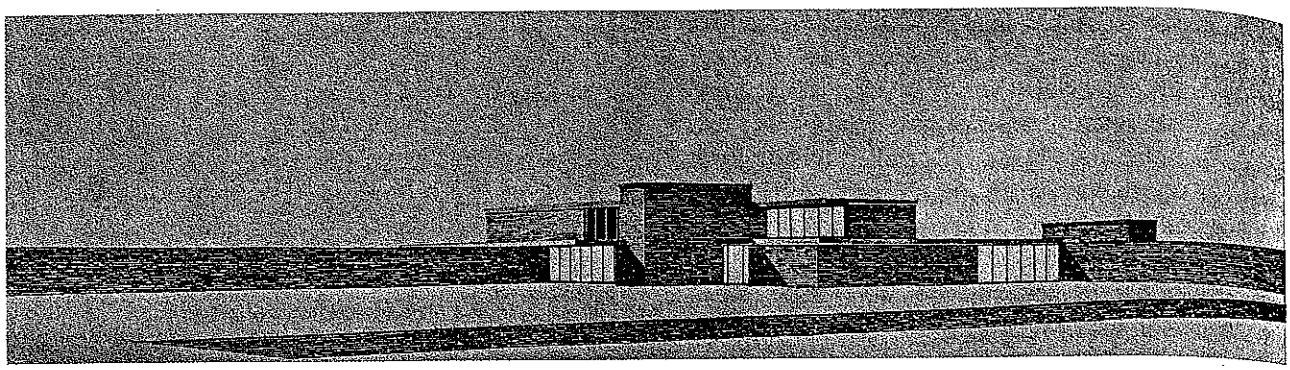


16.7 Ludwig Mies van der Rohe, Model for a glass skyscraper, 1922.

No comparably daring design for a skyscraper was to be envisaged for thirty or forty years. Because there was no real indication of either the structural system or the disposition of interior space, these projects still belonged in the realm of visionary architecture, but they were prophetic projections of the skyscraper.

Mies's other unrealized projects of the early twenties included two designs for country houses, both in 1923, the first in brick (fig. **16.8**) and the second in concrete. The brick country house design so extended the open plan made famous by Frank Lloyd Wright that the freestanding walls no longer enclose rooms but instead create spaces that flow into one another. Mies fully integrated the interior and exterior spaces. The plan of this house, drawn with the utmost economy and elegance, and the abstract organization of planar slabs in the elevation exemplify Mies's debt to the principles of de Stijl (it has often been compared to the composition of a 1918 painting by Mies's friend Theo van Doesburg).

One of the last works executed by Mies in Europe was the German Pavilion for the Barcelona International Exposition in 1929 (fig. **16.9**). Mies was in charge of Germany's entire contribution to the exposition. The Barcelona Pavilion, destroyed at the end of the exposition, has become one of the classics of his career and is perhaps the preeminent example of the International Style. Here

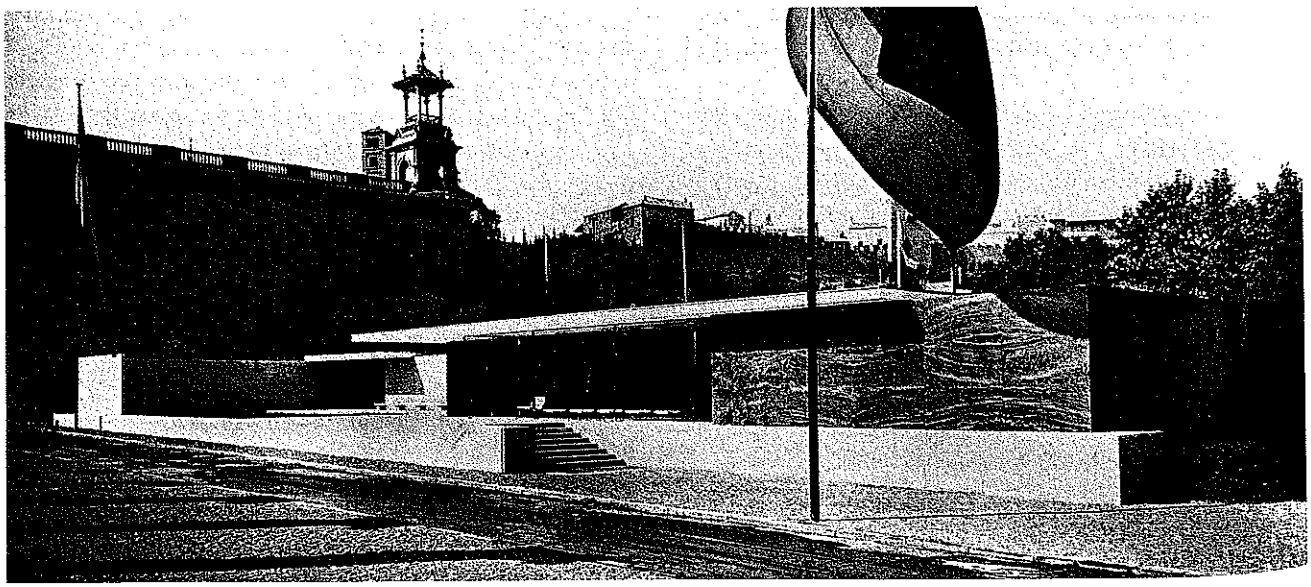


16.8 Ludwig Mies van der Rohe, Elevation for brick country house, 1923.

was the most complete statement to date of all the qualities of refinement, simplification, and elegance of scale and proportion that Mies, above all others, brought to modern architecture. In this building he contrasted the richness of highly polished marble wall slabs with the chrome-sheathed slender columns supporting the broad, overhanging flat roof. Thus, the walls are designed to define space rather than support the structure. In a realization of the open plan that he had designed for the brick country house, the marble and glass interior walls stood free, serving simply to define space. But in contrast to the earlier work, the architect put limits on the space of pavilion and court by enclosing them in end walls. This definition of free-flowing interior space within a total rectangle was to become a signature style for Mies in his later career. The pavilion was furnished with chairs (known as the Barcelona chair), stools, and glass tables also designed by Mies. In the Barcelona Pavilion, he demonstrated that the International Style had come to a maturity that permitted comparison with the great styles of the past. In 1986, to celebrate the centenary of the architect's birth, the pavilion was completely reconstructed in Barcelona according to the original plans.

Mies became director of the Bauhaus in 1930 but had little opportunity to advance its program. After moving from Dessau to Berlin in that year, the school suffered increasing pressure from the Nazis until it was finally closed in 1933. In 1937, with less and less opportunity to practice, Mies left for the United States, where in the last decades of his life he was able to fulfill, in a number of great projects, the promise apparent in the relatively few buildings he actually built in Europe (see chapter 23).

At its best, the uncompromising rationalism of Mies's architecture could produce compelling examples of pristine, streamlined form. In lesser hands, as is apparent in skylines across the United States, his minimalist forms could become impersonal glass and steel monuments to consumer capitalism or drab apartment dwellings. In the words of architecture critic Ada Louise Huxtable, "Mies's reductive theories, carried to their conceptual extreme, contained the stuff of both sublimity and failure, to which even he was not immune." By the early seventies, the



16.9 Ludwig Mies van der Rohe, German Pavilion, International Exposition, Barcelona, Spain, 1929. Reconstructed 1986.

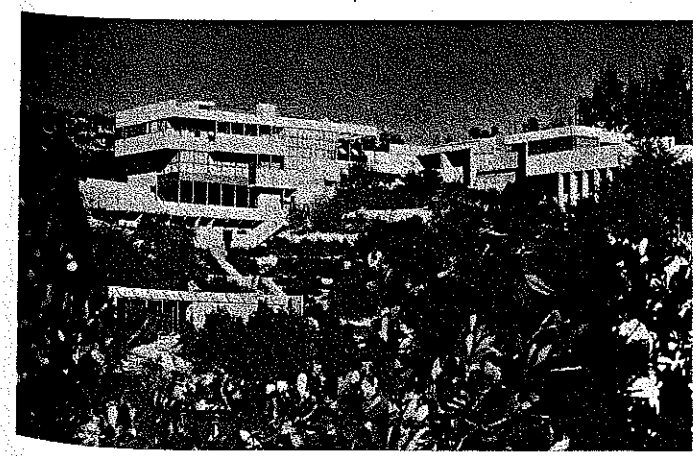
modern movement, and particularly the International Style as represented above all by Mies and Le Corbusier, would encounter a protracted backlash, opening the door to the era of Postmodernism (see chapter 25).

A Return to Innovation: Developments in American Architecture

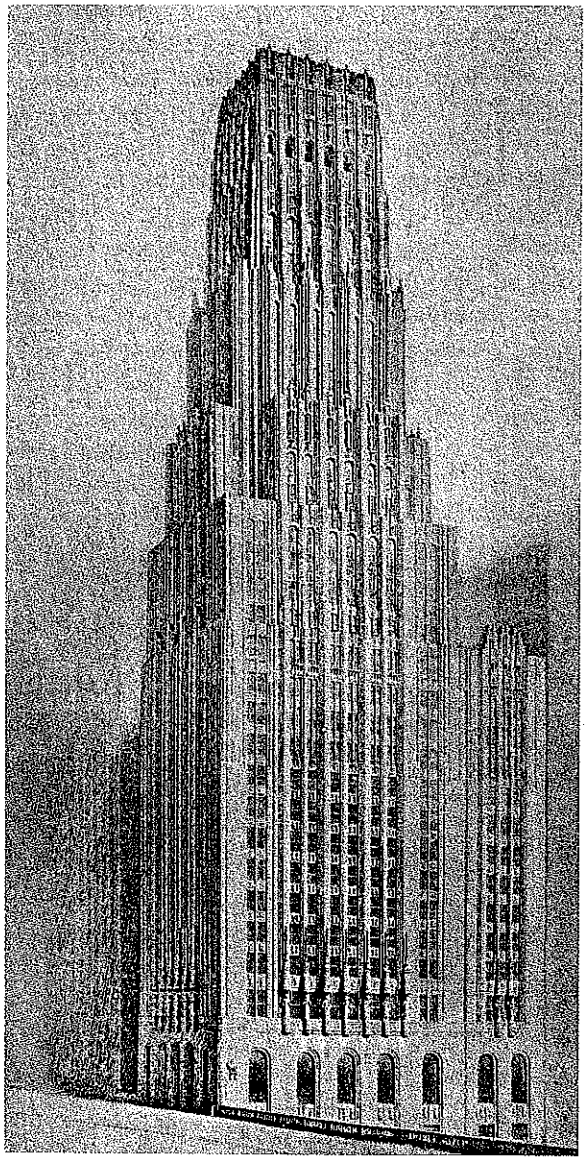
In the thirties a number of events and individuals pointed the way to a new modern era in American design. Following the 1932 exhibition at The Museum of Modern Art in New York that gave the International Style its name, exhibitions of the Chicago School (1935), Le Corbusier (1935), and the Bauhaus (1938) all took place. Also in the thirties, a number of new skyscrapers were built that broke the eclecticism of the skyscraper form and reintroduced aspects of the Chicago School or innovations of the Bauhaus and the International Style. The first European architects to come to America in the twenties, William Lescaze, **Richard Neutra** (1892–1970), and Rudolf Schindler, however, devoted much of their careers to house architecture. The Austrians Schindler and Neutra worked for Wright and were partners for a time. They each built a house in California for Dr. Philip Lovell, combining aspects of Wright's house design with that of the International Style. The Neutra house (fig. **16.10**)—placed spectacularly on a mountainside—was built of steel girders on a foundation of reinforced concrete. Through its open terraced construction, Neutra took every advantage of the amenities of landscape and climate and (along with Schindler) created a distinct style of southern California architecture.

Skyscraper Design

During the first half of the twentieth century, most experiments in modern architecture were carried out on individual houses. This is understandable, since the cost of building a skyscraper or an industrial complex is so exorbitant that it took a half-century before a greater number of patrons dared to gamble on modern buildings. The Chicago Tribune Tower competition for which Gropius entered his Sullivan-inspired design (see fig. 4.12) also drew the attention of the leading Finnish architect of the period, **Eliel Saarinen** (1873–1950) (fig. **16.11**). His submission for the tower (which won second prize) is nearly as rooted in the Middle Ages as the winning design by Raymond Hood, though it incorporates a greater degree of abstraction in the detailing. At a moment when American builders were turning away from outright revival styles but were not yet prepared to accept radical solutions, Saarinen's qualified modernism had great appeal and influence. Indeed, in his next major building, Hood was himself influenced by Saarinen's Chicago Tribune proposal. Saarinen moved permanently to the United States in 1923. His late works, dating after 1937, were done in collaboration with his son Eero, who became a leading architect in America by mid-century (see fig. 23.43).



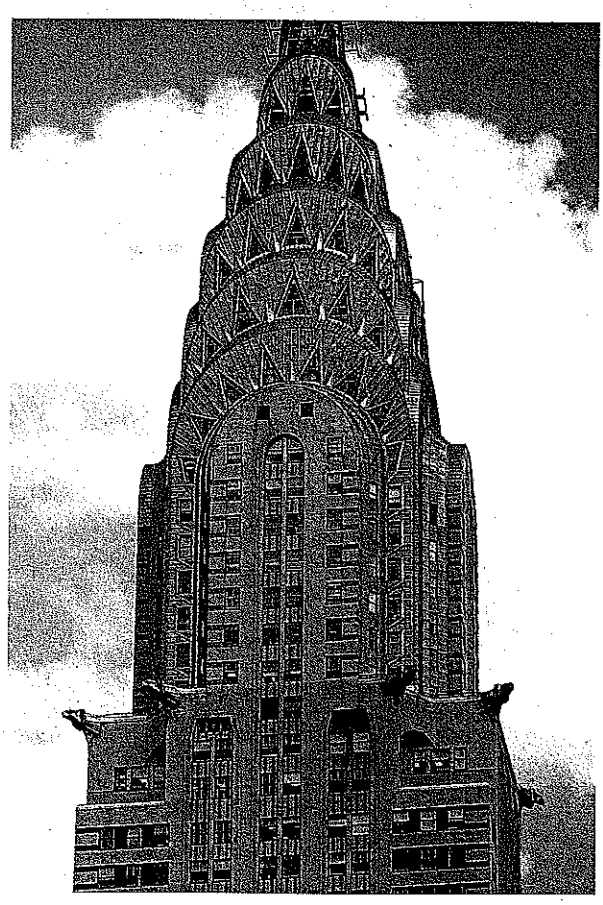
16.10 Richard Neutra, Dr. Lovell's "Health" House, Los Angeles, 1927.



16.11 Eliel Saarinen, Design for the Chicago Tribune Tower, 1922.

One of the most elegant silhouettes of the New York skyline is the Chrysler Building (fig. **16.12**), designed in 1928 by the Beaux-Arts-trained architect **William Van Alen** (1882–1954). The 1046-foot (319 m) building was completed by the end of 1930 and until the spring of 1931, when the Empire State Building reached an altitude of 1250 feet (381 m), lay claim to the title of World's Tallest Building. The structure is a masterpiece of the Art Deco style of modern design that during the twenties had replaced the extravagant curvilinearity of Art Nouveau with more geometrical forms and strong patterns in bold colors. It gradually tapers to a pinnacle made of stainless steel, which is mounted on a stepped, scalloped base. From the sixty-first floor, giant steel gargoyles resembling great American eagles look out over Manhattan. Inside, the building's lobby and elevators are lavish with marble detailing. On the verge of the Depression, the Chrysler Building paid tribute to American commercialism on a grand scale.

The most comprehensive complex of skyscrapers from this period is Rockefeller Center in New York, begun in 1931 and finished in 1939 (fig. **16.13**). The center was proposed by the oil industry magnate John D. Rockefeller, Jr., to house the Metropolitan Opera Company within a large commercial complex. The architect who principally oversaw the Rockefeller Center project in its first stage was **Raymond Hood** (1881–1934). The original plan, completed in 1932, occupied three city blocks and consisted of fourteen buildings, theaters, and open public spaces, with the tall, slender RCA (now GE) Building in the center. After the war the complex expanded to include twenty-one office buildings. Although the original buildings have elements of Gothic Revival detail, these have been simplified or altogether eliminated in the newer buildings of the fifties and sixties. Rockefeller Center is significant not only for its contribution to harmonious, rational skyscraper design, but even more for its planning concept. It embraces large, open areas for pedestrians between the office buildings, many recreational facilities, an elaborate theater (Radio City Music Hall), radio and television studios, a second theater, shops, restaurants, and a skating rink. Few, if any, office complexes in twentieth-century American architecture improved on the total concept of Rockefeller Center. The architects who worked cooperatively on this huge and complicated commission were Reinhard and Hofmeister, with Corbett, Harrison, Harmon and MacMurray, Hood and Fouilhoux. A number of artists were approached (including Matisse and Picasso, though nothing came of it) to decorate the buildings with paintings and large sculpture reliefs. The Mexican painter Diego Rivera (see figs. 18.54, 18.55) was commissioned to paint a mural for the lobby of the RCA Building, but when Rockefeller discovered that the communist artist's depiction of *Man at the Crossroads* included a portrait of Lenin, the mural was covered up and, ultimately, destroyed.



16.12 William Van Alen, Chrysler Building, New York, 1928–30.

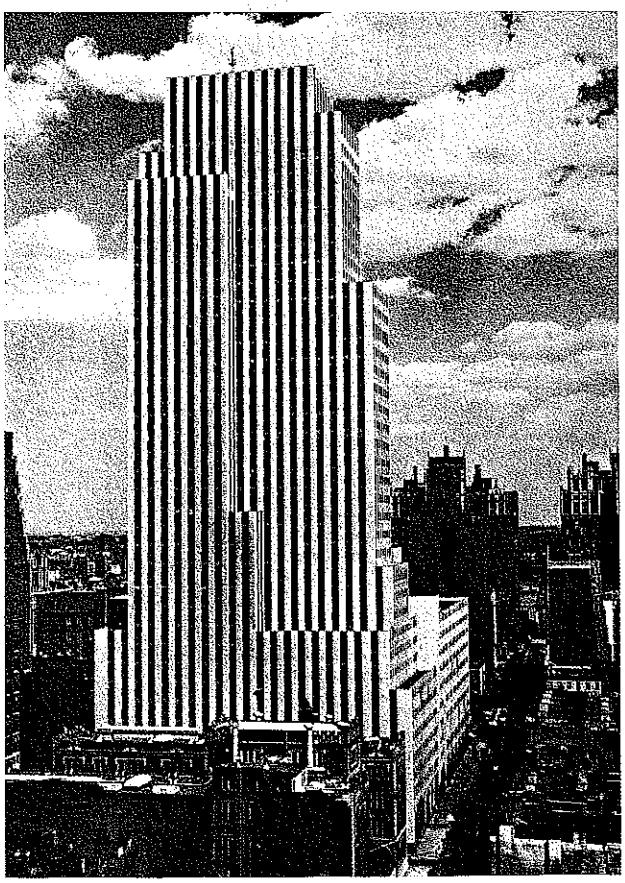
With so many important commissions for commercial office buildings, Hood contributed significantly to the evolution of the skyscraper between 1920 and the early thirties. After his winning entry in 1922 for the Chicago Tribune Tower, Hood designed, with **John Mead Howells** (1868–1959), the 1929–31 Daily News Building (fig. **16.14**) and, with J. André Fouilhoux, the McGraw-Hill Building in New York. In both, the revivalist accretions of previous skyscrapers were stripped off, though neither is entirely free of external decoration. An interesting point about these two buildings is that the architects, realizing the peculiar design problem of the skyscraper—a tall building consisting of horizontal stories—designed the Daily News Building with an accent on the vertical and the McGraw-Hill Building with an accent on the horizontal.

Along with the Philadelphia Savings Fund Society (PSFS) Building by Howe and Lescaze (see fig. 16.15), Hood's buildings were the only skyscrapers included in the 1932 International Style exhibition at The Museum of Modern Art. They are arguably the logical conclusion of Saarinen's Chicago Tribune Tower proposal (see fig. 16.11), with its stepped-back edifice. This kind of "zigzagurat" structure, a response to building codes that required a certain amount of light and air above city streets, was perhaps the most characteristic design of the New York tall office building for twenty years after 1930.

A more revolutionary interpretation of the skyscraper than any of those discussed is the PSFS Building,

16.13 Reinhard and Hofmeister, Corbett, Harrison, Harmon and MacMurray, Hood and Fouilhoux, Rockefeller Center, New York, 1931–39.

by **George Howe** (1886–1955) and **William Lescaze** (1896–1969) (fig. **16.15**). The PSFS Building is the first fully realized application of the International Style in skyscraper design (and only the second skyscraper in the United States to be fully air-conditioned). Unlike the buildings just discussed, the design of PSFS fully articulated the structure and volume of the building. Hood and Howells's Daily News Building still used heavy masonry sheathing, into which the vertical window strips were deeply recessed. Using a much greater expanse of glass, PSFS ties vertical and horizontal accents together with a light but strong statement of the steel skeleton. The plan of individual floors is a T-shape and embodies a sound understanding of skyscraper planning in its effective segregation of



16.14 Raymond Hood and John Mead Howells, Daily News Building, New York, 1929–31.

16.15 George Howe and William Lescaze, Philadelphia Savings Fund Society Building, Philadelphia, 1929–32.

service from office space. In many ways the PSFS Building is the heir of the Chicago Tribune Tower entry by Gropius and Meyer.

Frank Lloyd Wright During the 1930s

The twenties were difficult for Wright, who turned sixty in 1927. A lack of major commissions resulted in financial hardships, and he spent time lecturing and writing his autobiography. In 1932 he began a fellowship for apprentices at Taliesin, his home in Spring Green, Wisconsin. Despite these numerous setbacks and activities, Wright was entering the most creative phase of his career. He continued to experiment with new architectural forms, including precast concrete blocks, primary in his house designs.

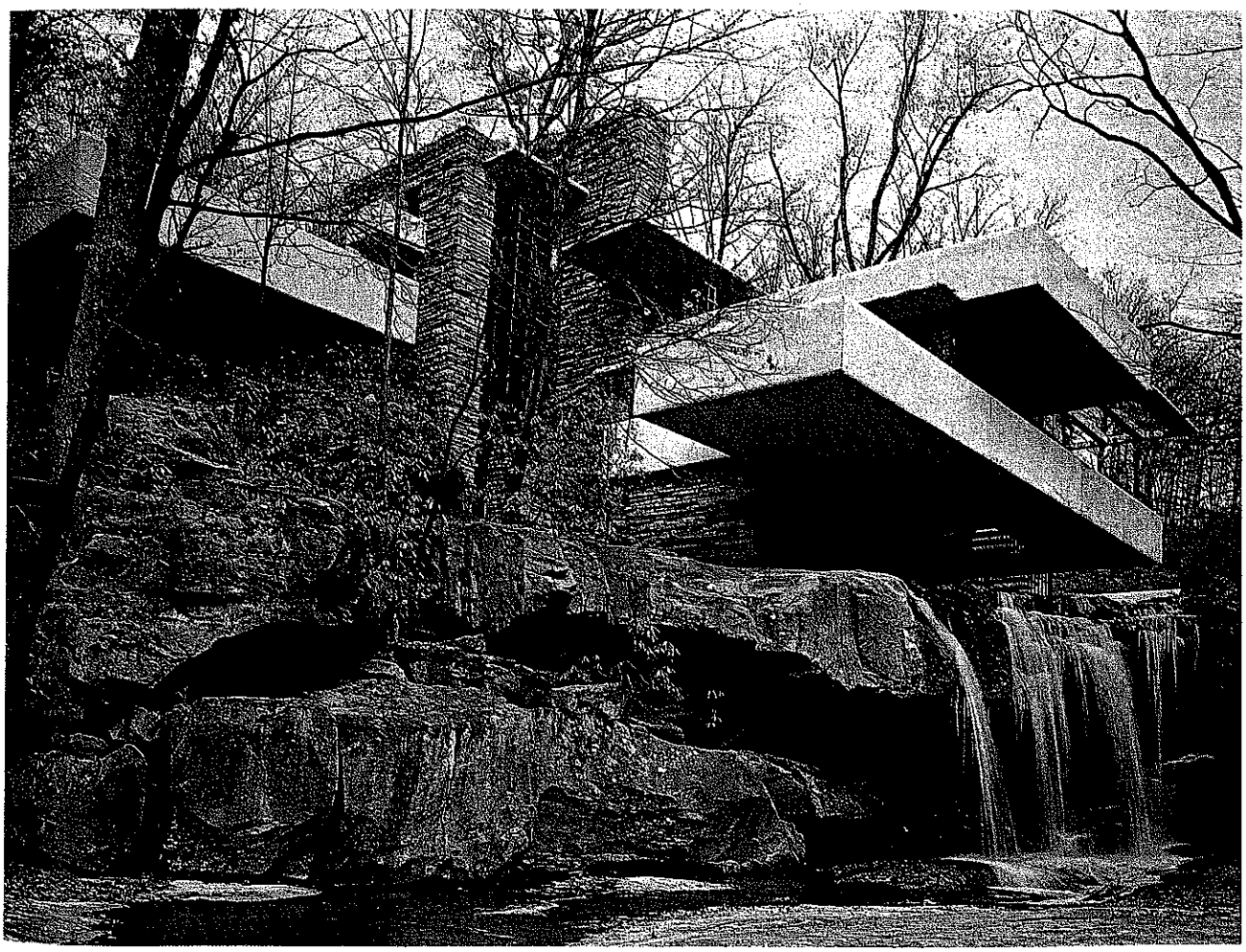
During the thirties, despite the Great Depression, Wright began to secure important commissions and also to make a contribution to the field of low-cost, prefabricated housing with his Usonian houses, as well as to city planning. During the first half of the thirties, when commissions were scarce, he developed his plan for Broadacre City, his ideal concept for an integrated and self-sufficient community of parks, farms, schools, and detached homes made of prefabricated materials to be assembled by each family. Like most such projects, Broadacre City was never realized, but it did enable Wright to clarify his alternatives to current city planning. He felt the modern city destroyed the social fabric, calling it a "parasite of the spirit." While Wright's reformist side motivated him to envision low-cost,

prefabricated designs, many of the custom homes he built were for wealthy customers.

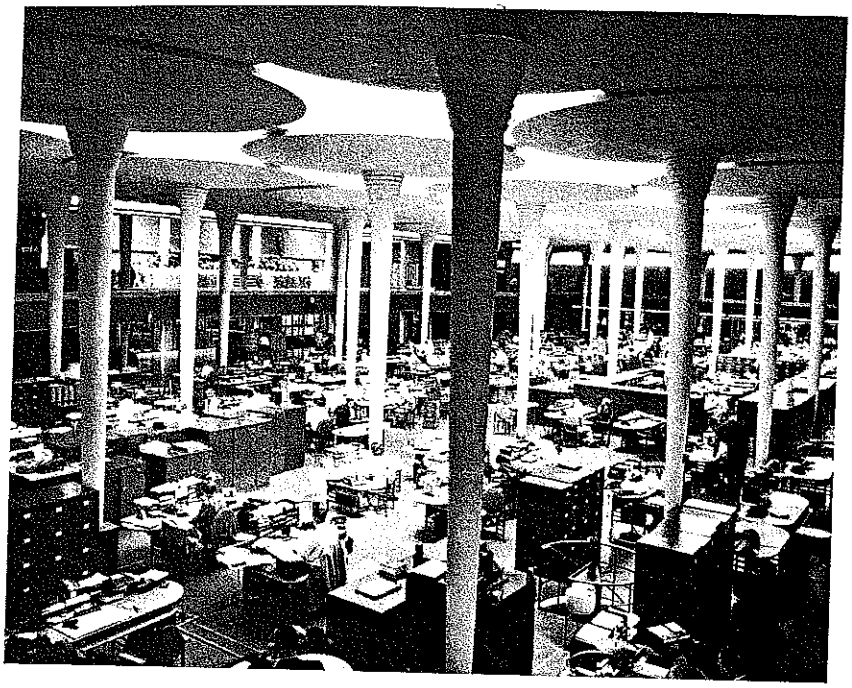
His most important realized structures of the thirties were the Fallingwater, the country house that Wright built for Edgar J. Kaufmann at Bear Run, Pennsylvania (fig. **16.16**), and the Administration Building of the S.C. Johnson and Son Company, Racine, Wisconsin (see fig. 16.17). Fallingwater , sited dramatically on a hillside over a waterfall, is one of Wright's most stunning conceptions. Designed as a vacation home for the family of a wealthy merchant and art patron from Pittsburgh, Fallingwater was voted the best building in the United States in 1991 by members of the American Institute of Architects.

In the use of ferroconcrete for the cantilevered terraces and the sense of planar abstraction, Fallingwater has a superficial affinity to the International Style. It is a basic Wright conception, however, for Wright was scornful of much of the machine-inspired architecture of the European modernists who had shaped the International Style (many of whom had been influenced by him). According to Wright, their modern houses "manage to look as though cut from cardboard with scissors ... glued together in box-like forms—in a childish attempt to make buildings resemble steamships, flying machines or locomotives." Though he embraced the machine and modern materials and technology, Wright designed a house to be, as he said, a "natural feature of the environment." In contrast to many modern architects, Wright often favored the extensive use of wood. There are stylistic affinities between his furniture designs and Arts and Crafts furniture.

At Fallingwater, the adaptation to the landscape exemplifies one of Wright's greatest abilities: to use all the implications of a site, no matter how difficult it might seem. The house was almost literally what Wright called an "extension of the cliff," for it is constructed around several large boulders. The boulders, which act as fulcrums helping to secure the house into the hillside, actually penetrate the walls and were incorporated by Wright as design features inside the house. The central, vertical mass of utilities and chimneys is made of rough, local stone courses (used inside the house as well). It anchors the suspended horizontal forms and contrasts with the smooth, beige-colored concrete of the parapets. The building is particularly effective in its integration of the exterior natural world with the living quarters inside. For example, a glass panel in the living room slides back to access a stairway that leads directly to the stream below the house. With its open plan, low ceilings, and polished flagstone flooring, the interior of Fallingwater



16.16 Frank Lloyd Wright, Edgar K. Kaufmann House (Fallingwater), Bear Run, Pennsylvania, 1934–37.

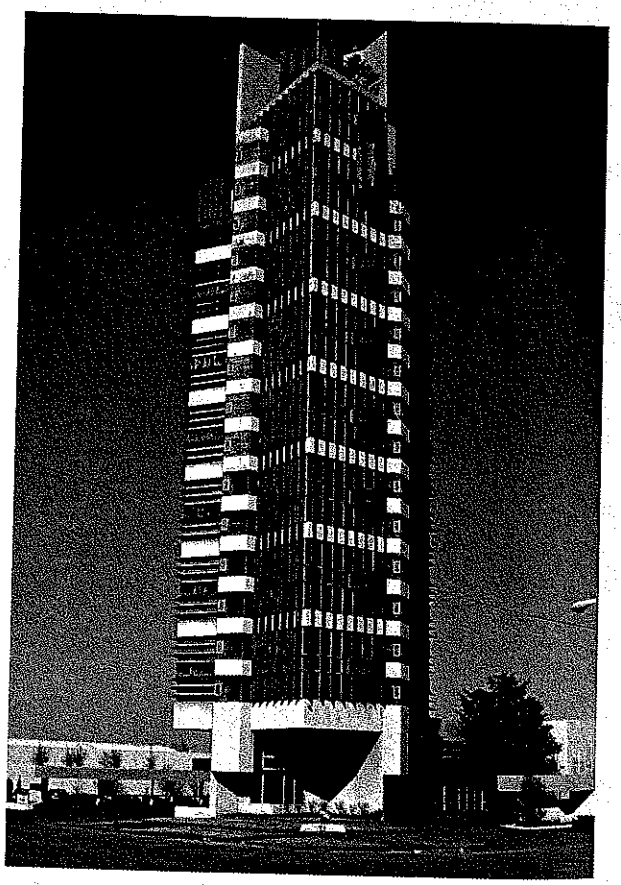


16.17 Frank Lloyd Wright, Interior, Administration Building, S. C. Johnson & Son, Inc., 1936–39.

is like a welcoming cave in the middle of the woods. Wright designed virtually every detail inside the house, including most of the furnishings, both built-in and freestanding. The main structure was completed in 1937, and in 1939 a second house for guests and servants was begun. It is connected to the main house by a covered stairway.

The Johnson Administration Building, begun the same year as Fallingwater, inaugurated a new phase in Wright's style and introduced an original solution to the design of the modern workplace. As in his Larkin Building in Buffalo (see fig. 12.5), Wright's goal in Racine was to seal off the interior from the surrounding industrial environment and provide a work space that was, as he said, "as inspiring a place to work in as any cathedral ever was in which to worship." Light floods the large interior space from skylights and a clerestory through tubes of Pyrex glass (fig. **16.17**). From the floor, the magical effect of this top illumination has often been likened to being underwater. The interior is a forest of slender columns tapering at the base like those at the ancient Palace of Minos in Crete. The columns terminate at the top in broad, shallow "lily-pad" capitals that repeat the circular motif throughout. As was the case at Fallingwater, the building authorities mistrusted Wright's calculations; they doubted that the columns could carry the necessary load. It was no surprise to Wright when structural tests proved they could withstand several times the regulated weight. Encouraged by the now sympathetic patron, Wright was able to design all details including desks and office chairs. In the forties, he was commissioned to add a research tower to the complex. The fourteen-story structure is built of the same kind of glass and brick as the main building, with the addition of elegantly rounded corners. At night, the illuminated building, with its broad bands of translucent glass, also made of Pyrex tubes, takes on an ethereal glow.

Several of Wright's plans for tall buildings, such as his mile-high skyscraper for Chicago, were never realized. But following the research tower for Racine, he began work on the Price Tower in Bartlesville, Oklahoma (fig. **16.18**), which is actually based on his 1929 design for an apartment building in New York, St. Mark's Tower. It was, for its time, a daring concept: a cruciform "airplane propeller" structural unit sheathed in a glass shell and supporting cantilevered floors. Wright's notion of organic architecture was expressed through the central supporting core with its radiating, cantilevered platforms (as opposed to the standard box-frame construction), a structural scheme he likened to that of a tree. The boldly protruding terraces and soaring utility pylons gave the skyscraper the stylistic signature of its author. Wright continued to work until his death in 1959. His most startling and controversial invention, the Solomon R. Guggenheim Museum in New York, (see chapter 23) belongs to the post-World War II era.



16.18 Frank Lloyd Wright, H. C. Price Company Tower, Bartlesville, Oklahoma, 1952–56.