

12

Early Twentieth-Century Architecture

European architecture around 1900 showed the Art Nouveau aesthetic flourishing in a variety of architectural forms and contexts, from the idiosyncratic organicism of Gaudí in Barcelona to Guimard's elegant designs for the Paris Métro and Horta's masterpieces of residential and commercial architecture in Brussels (see chapter 5; figs. 109, 111, 113, 114). While Art Nouveau—"New Art"—rejected the historicist styles of nineteenth-century architecture and embraced modern industrial materials, it remained largely concerned with decorative qualities, whether expressed in the swirling ironwork designed by Horta or in Mackintosh's more restrained, geometric idiom (see fig. 95). At the same time, a very different tendency in avant-garde architecture was gathering momentum. From the late 1890s the Austrian architect Adolf Loos announced his opposition to the use of ornament in architecture, vehemently expressed in his 1908 article "Ornament and Crime." Emphasizing simple cuboid forms, he eschewed decorative features and even the curved lines so beloved by Art Nouveau. In contrast to the ethic of fine traditional craftsmanship and artistic finish that Art Nouveau had inherited from the Arts and Crafts Movement, Loos saw the industrial skills of the machine age as better fitted to serve the modern architecture.

Though they shared some of the same sources, and might be present in works by the same architect, the aims and values of these two architectural tendencies clearly diverged significantly. The tensions between them can be seen particularly clearly in the development of architecture in Austria and Germany during the decades either side of World War I. Some of the boldest experiments in architecture of the early twentieth century, however, originated in America, in the work of Frank Lloyd Wright, the most important American architect of his time. Wright was a pioneer of the international modern movement, and his experiments in architecture as organic space in the form of abstract design antedate those of most of the early twentieth-century avant-garde European architects. His designs were published in Europe in 1910 and 1911, in

two German editions by Ernst Wasmuth, and were studied by every major architect on the continent. His works were known and admired by artists and architects of the Dutch de Stijl group, Robert van 't Hoff, J. J. P. Oud, Theo van Doesburg, Georges Vantongerloo, and Piet Mondrian. Wright's design had common denominators not only with the classical formalism of these artists but also with the shifting planes and ambiguous space relationships of Cubism. On the other hand, Wright's work was influenced by what he saw during a trip to Europe in 1909–10, particularly the buildings designed by leading Viennese architects Joseph Maria Olbrich (see fig. 12.11) and Otto Wagner (see fig. 12.9).

Modernism in Harmony with Nature: Frank Lloyd Wright

Frank Lloyd Wright (1867–1959) studied engineering at the University of Wisconsin, where he read the work of the English critic John Ruskin and was particularly drawn to rational, structural interpretation in the writings of Eugène-Emmanuel Viollet-le-Duc. In 1887 he was employed by the Chicago architectural firm of Adler and Sullivan, with whom he worked until he established his own practice in 1893. There is little doubt that many of the houses built by the Sullivan firm during the years Wright worked there represented his ideas. Wright's basic philosophy of architecture was expressed primarily through the house form. The 1902–6 Larkin Building in Buffalo, New York (see fig. 12.5), was his only large-scale structure prior to Chicago's Midway Gardens (1914) and the Imperial Hotel in Tokyo (see fig. 12.6) (all three, incidentally, have been destroyed).

Early Houses

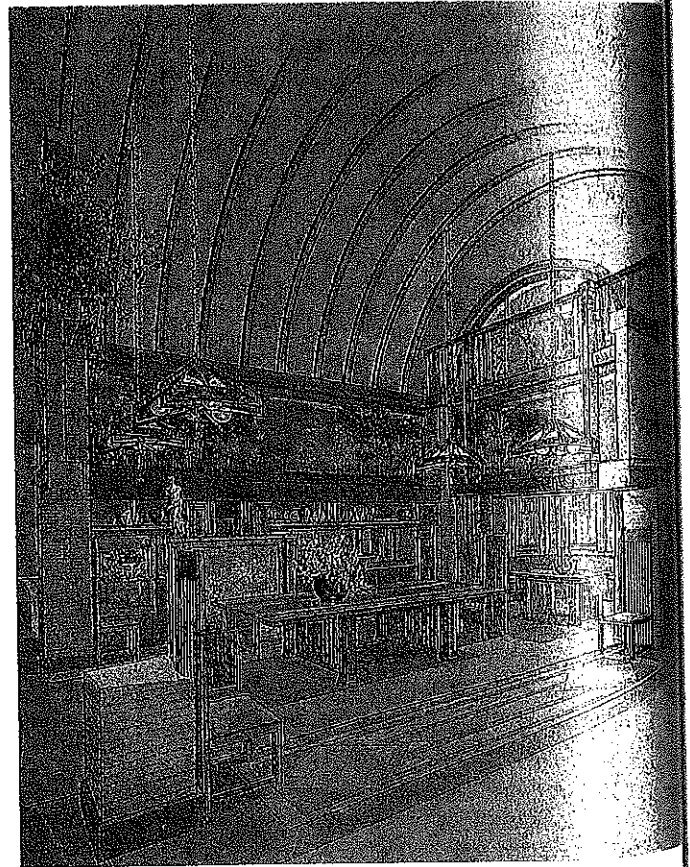
At the age of twenty-two Wright designed his own house in Oak Park, Illinois (1889), a quiet community thirty minutes by train from downtown Chicago. His earliest houses, including his own, reflect influences from the shingle-style houses of H. H. Richardson and McKim, Mead & White



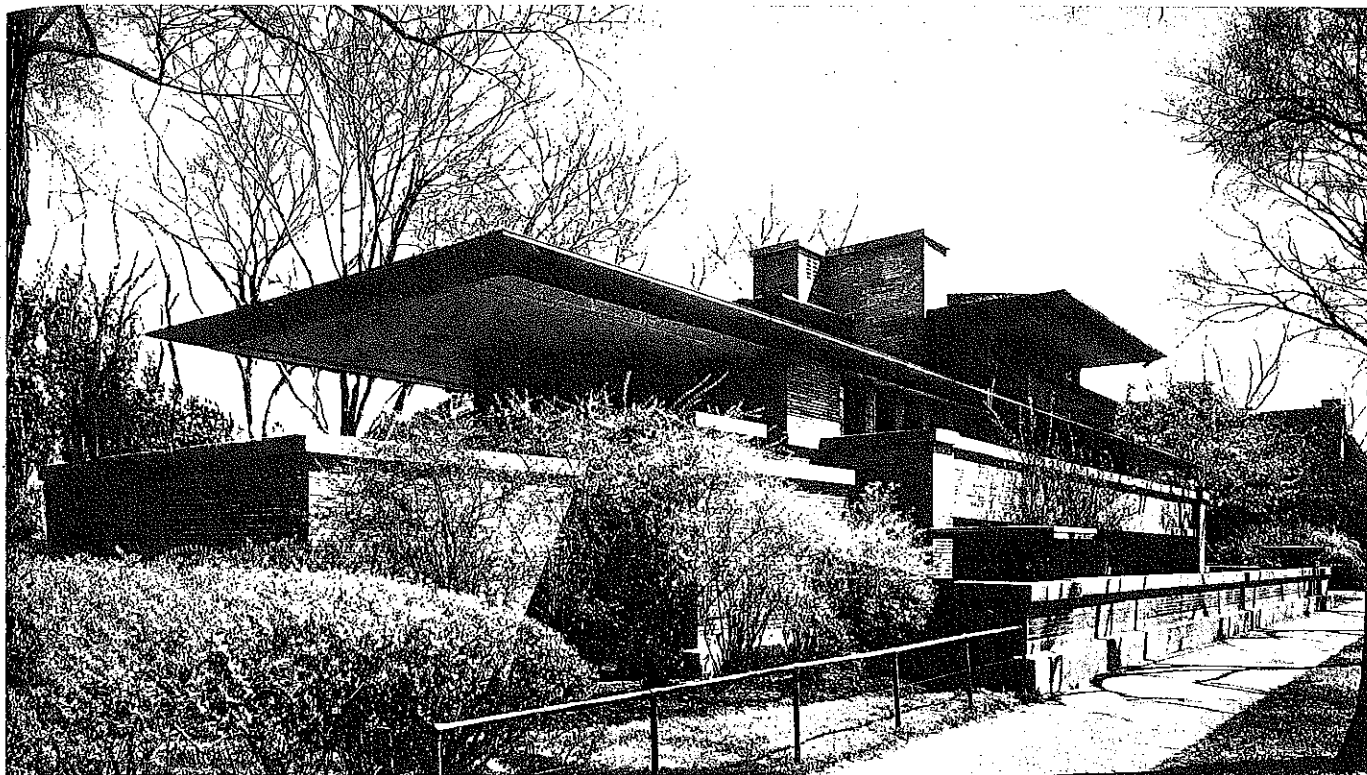
12.1 Frank Lloyd Wright, Ward Willits House, Highland Park, Illinois, 1902–3.

(see fig. 4.7) and developed the open, free-flowing floor plan of the English architects Philip Webb and Richard Norman Shaw. Wright used the characteristically American feature of the veranda, open or screened, wrapping around two sides of the house, to enhance the sense of outside space that penetrated to the main living rooms. The cruciform plan, with space surrounding the central core of fireplace and utility areas (kitchen, landing, etc.), also had an impact on Wright that affected his approach to house design as well as to more monumental design projects.

In the 1902–3 Ward Willits House in Highland Park, Illinois (fig. 12.1), Wright made one of his first individual and mature statements of the principles and ideas that he had been formulating during his apprentice years. The house demonstrates his growing interest in a Japanese aesthetic. He was a serious collector of Japanese prints (about which he wrote a book), and before his trip to Japan in 1905, he probably visited the Japanese pavilions at the 1893 World's Columbian Exhibition in Chicago. In the Willits House, the Japanese influence is seen in the dominant wide, low-gabled roof and the vertical striping on the façade. The sources, however, are less significant than the welding together of all the elements of the plan, interior and exterior, in a single integration of space, mass, and surface. From the compact, central arrangement of fireplace and utility units, the space of the interior flows out in an indefinite expansion carried without transition to the exterior and beyond. The essence of the design in the Willits House, and in the series of houses by Wright and his followers to which the name Prairie Style has been given, is a predominant horizontal accent of rooflines with



12.2 Frank Lloyd Wright, Susan Lawrence Dana House, Springfield, Illinois, 1902–4. Interior perspective, dining room. Pencil and watercolor on paper, 25 × 20 $\frac{1}{8}$ " (63.5 × 51.7 cm). Avery Architectural and Fine Arts Library, Columbia University, New York.



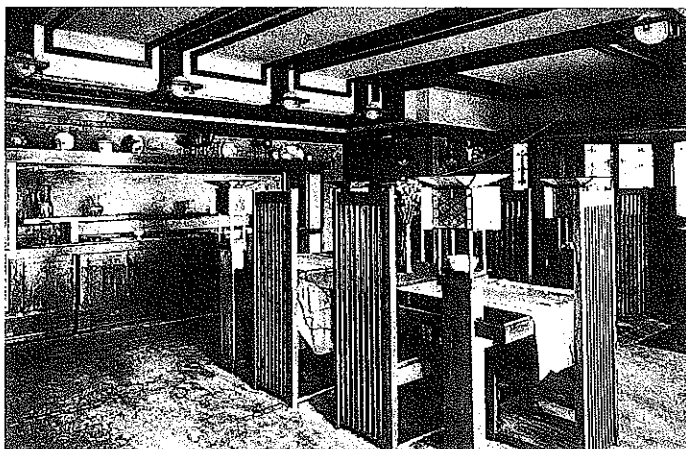
12.3 Frank Lloyd Wright, Robie House, Chicago, 1909.

deep, overhanging eaves echoing the flat prairie landscape of the Midwest. The earth tones of the typical Prairie house were intended to blend harmoniously with the surroundings, while the massive central chimney served both to break the horizontal, low-slung line of the roof and to emphasize the hearth as the spiritual and psychological center of the house.

The interior of the Wright Prairie house (see fig. 12.4) is characterized by low ceilings, frequently pitched at unorthodox angles; a sense of intimacy; and constantly changing vistas of one space flowing into another. The interior plastered walls of the Willits House were trimmed simply in wood, imparting a sense of elegant proportion and geometric precision to the whole. Wright also custom-designed architectural ornaments for his houses, such as light fixtures, leaded glass panels in motifs abstracted from natural forms, and furniture, both built-in and freestanding (fig. 12.2). Though his emphasis on simple design and the honest expression of the nature of materials is dependent in part on Arts and Crafts ideals (see chapter 4), Wright fervently supported the role of mechanized production in architectural design. He regarded the machine as a metaphor of the modern age but did not believe that buildings should resemble machines. Paramount in his house designs was the creation of a suitable habitat, in harmony with nature, for the middle-class nuclear family. Wright understood the way in which his domestic dwellings embodied the collective values and identity of a community. These early residences were designed for Chicago's fast-growing suburbs, where structures could extend

horizontally, as opposed to the city, where Victorian town houses were built on several stories to accommodate narrow urban plots.

The masterpiece of Wright's Prairie Style is the 1909 Robie House in Chicago (figs. 12.3, 12.4). The house is centered around the fireplace and arranged in plan as two sliding horizontal sections on one dominant axis. The horizontal roof cantilevers out on steel beams and is anchored at the center, with the chimneys and top-floor gables set at right angles to the principal axis. Windows are arranged in long, symmetrical rows and are deeply imbedded into the brick masses of the structure. The main, horizontally oriented lines of the house are reiterated and expanded in the terraces and walls that transform interior into exterior space



12.4 Frank Lloyd Wright, Dining Room, Robie House.

and vice versa. The elements of this house, combining the outward-flowing space of the interior and the linear and planar design of exterior roofline and wall areas with a fortresslike mass of chimneys and corner piers, summarize other experiments that Wright had carried on earlier in the Larkin Building (fig. 12.5).

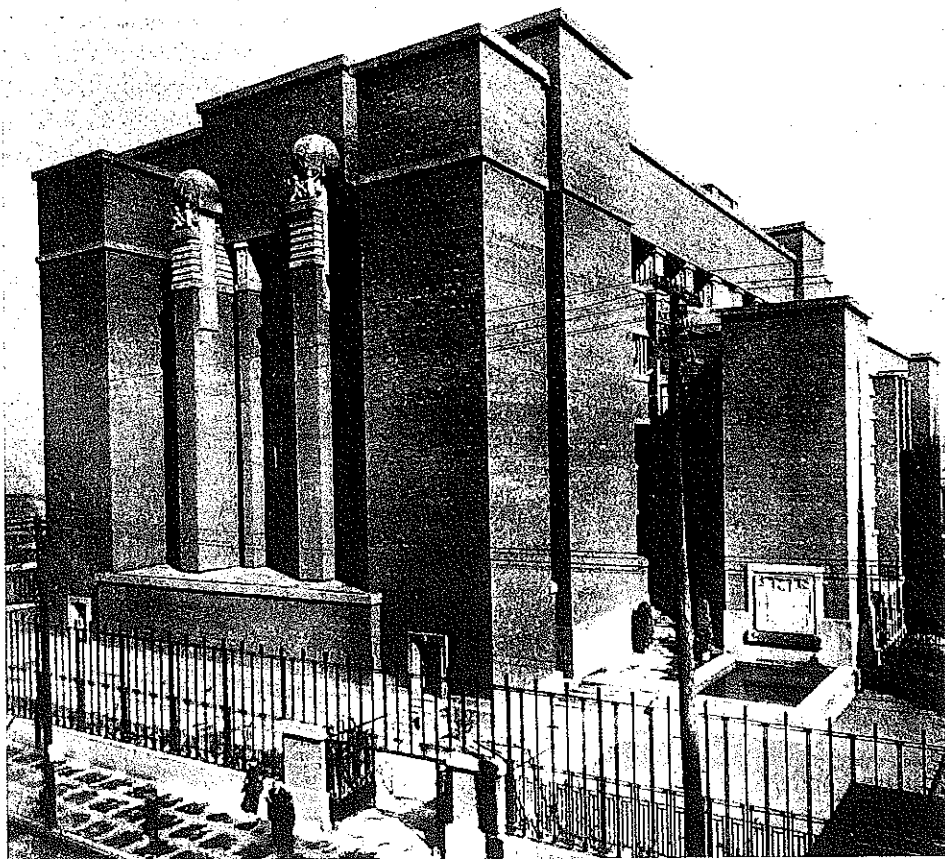
The Larkin Building

The Larkin Building represented radical differences from the Prairie house in that it was organized as rectangular masses in which Wright articulated mass and space into a single, close unity. The Larkin Building was, on the exterior, a rectangular, flat-roofed structure, whose immense corner piers protected and supported the window walls that reflected an open interior well surrounded by balconies. The open plan, filled with prototypes of today's "work stations," was Wright's solution for a commodious, light-filled office environment. The Larkin Building literally embodied the architect's belief in the moral value of labor, for its walls were inscribed with mottos extolling the virtues of honest work. This was an example of the early modern industrial structures that embodied tremendous possibilities for the development of innovative kinds of internal, expressive space in the new tall buildings³⁴ of America (the economics of industrial building, however, soon destroyed these possibilities).

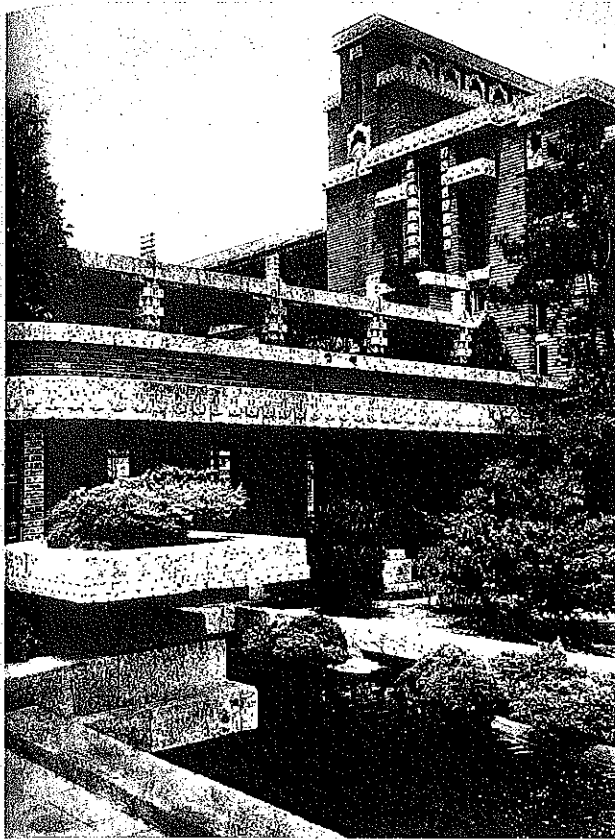
Mid-Career Crisis

In the years after 1910, just when he was becoming a world figure, Wright experienced a period of neglect and even vilification in his own country. Highly publicized personal problems helped to drive him from the successful mid-western practice he had built up in the early years of the century. These included his decision to leave his wife and six children for another woman, Mamah Cheney. In 1914 Cheney was murdered by a servant who also set fire to the home Wright had built for himself in Wisconsin, Taliesin (the name of a mythic Welsh poet meaning "shining brow"), which he subsequently rebuilt. Even more significant than these personal factors were cultural and social changes that, by 1915, had alienated the patronage for experimental architecture in the Midwest and increased the popularity of historical revivalist styles. Large-scale construction of mass housing soon led to vulgarization of these styles.

About 1915, Wright began increasingly to explore the art and architecture of ancient cultures, including the Egyptian, Japanese, and Maya civilizations. The Imperial Hotel in Tokyo (fig. 12.6), a luxury hotel designed for Western visitors, occupied most of his time between 1912 and 1923 and represents his most ornately complicated decorative period, filled with suggestions of Far Eastern and Pre-Columbian influence. In addition, it embodied his



12.5 Frank Lloyd Wright, Larkin Building, Buffalo, New York, 1902-6. Demolished 1950.



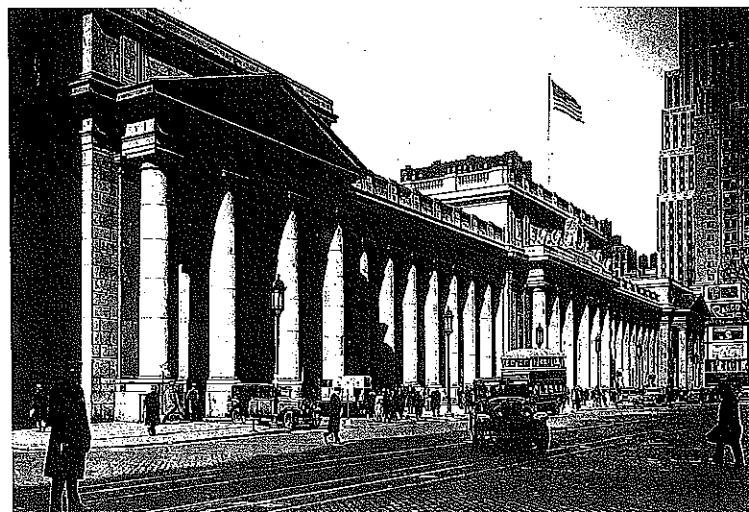
12.6 Frank Lloyd Wright, Imperial Hotel, Tokyo, c. 1912–23. Demolished 1968.

most daring and intricate structural experiments to that date—experiments that enabled the building to survive the wildly destructive Japanese earthquakes of 1923 (only to be destroyed by the wrecking ball in 1968). For twenty years after the Imperial Hotel, Wright’s international reputation continued to grow. Though he frequently had difficulty earning a living, he was indomitable; he wrote, lectured, and taught, secure in the knowledge of his own genius and place in history, and he invented brilliantly whenever he received commissions.

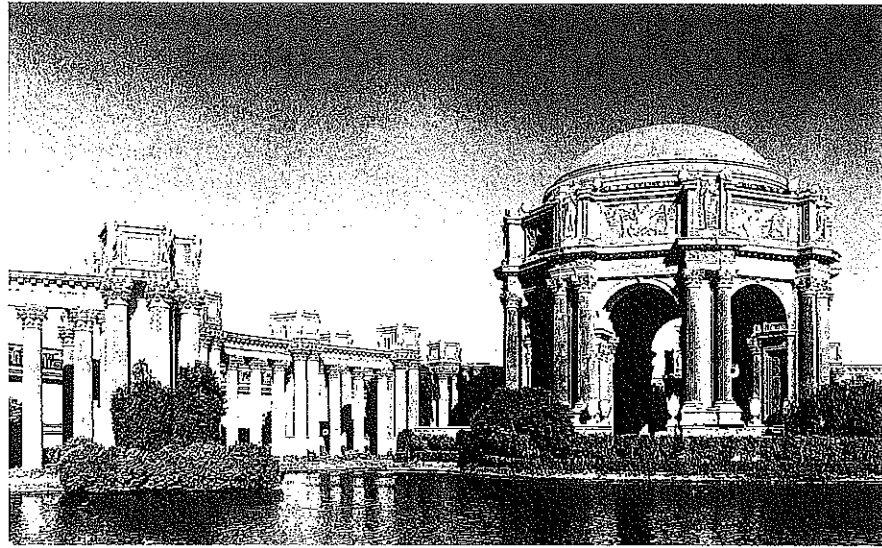
Temples for the Modern City: American Classicism 1900–15

Aside from Wright, a number of his followers, and a few isolated architects of talent, American architecture between 1915 and 1940 was largely in the hands of academicians and builders. Nevertheless, two landmark structures were erected during this period. New York City’s Pennsylvania Station (see fig. 12.7), built between 1906 and 1910 and demolished in 1966, represents one of the most tragic architectural losses of the twentieth century. “Until the first blow fell,” said an editorial in *The New York Times*, “no one was convinced that Penn Station really would be demolished or that New York would permit this monumental act of vandalism.” Penn Station was designed by the Beaux-Arts architectural firm of McKim, Mead & White, who designed classically inspired civic buildings throughout America in the early years of the twentieth century (see figs. 4.7, 4.13). Penn Station was one of the firm’s most ambitious undertakings. The exterior (fig. 12.7), a massive Doric colonnade based on the ancient Roman Baths of Caracalla, presented a grand modern temple that underscored the power of the railroad as a symbol of progress. Inside, a visitor’s first impression upon arrival was the dramatically vaulted spaces in the train concourse, its glass-and-steel construction recalling the crystal palaces of the previous century (see fig. 4.3). In 1966 the city responded to the destruction of Penn Station by establishing the New York City Landmarks Preservation Commission.

At the same time, on the other side of the continent, a remarkable act of preservation was taking place. The Palace of Fine Arts in San Francisco (fig. 12.8), designed by the architect Bernard Maybeck (1862–1957), was originally built in 1915 for the Panama–Pacific International Exposition. Celebrating the opening of the Panama Canal, the San Francisco Exposition was a world’s fair that emulated the famous 1893 World’s Columbian Exposition (see fig. 4.13). It was visited by nineteen million people during ten months in 1915, providing an economic boost to a city



12.7 McKim, Mead & White, Pennsylvania Station, New York, 1906–10. Demolished 1966.



12.8 Bernard Maybeck, Palace of Fine Arts, Panama-Pacific International Exposition, San Francisco, 1915.

that had experienced the devastating earthquake and fire of 1906. Sited along a lagoon, Maybeck's popular ensemble included an open-air rotunda, a curving Corinthian peristyle, and a large gallery that housed the fair's paintings and sculptures. The unconventional Maybeck turned classicism into his own personal idiom, violating canonical rules and covering his structures with richly imaginative classical-style ornament. He sought a mood of melancholy and past grandeur, for he envisioned the Palace as "an old Roman ruin, away from civilization ... overgrown with bushes and trees." It was a mood somehow appropriate for a world in the midst of the carnage of World War I. Though it was the only building not torn down after the fair, the Palace of Fine Arts was never intended as a permanent structure and it soon began to show signs of decay. Between 1962 and 1967 it was completely reconstructed out of concrete. Today it is still used as a city museum.

New Simplicity Versus Art Nouveau: Vienna Before World War I

The capital of the vast, disparate Austro-Hungarian Empire, which was dismembered after World War I, pre-war Vienna was a cosmopolitan city characterized both by entrenched official conservatism and by culturally progressive tendencies that were highly influential in many spheres. In 1899, for example, the Austrian psychotherapist Sigmund Freud published *The Interpretation of Dreams*, which was later to be hugely significant for the international art movements of Dada and Surrealism (see chapters 13 and 15). In 1897, determined to break away from the stifling academicism of official art, a group of artists had formed the Vienna Secession (see chapter 5). Their new exhibition building, designed in 1898 by Joseph Maria Olbrich (1867–1908) combined different strands of Art Nouveau in the geometric lines of its façade

and the intertwined foliage of its openwork gilt-bronze cupola. In early twentieth-century Viennese architecture, therefore, the relationship between Art Nouveau decoration and modernist geometric functionalism is far from one of clear-cut opposition. Both elements can be found in buildings by major Austrian architects of the period, although the polemical writings of Loos in particular helped to define the austere simplicity he favored as the hallmark of avant-garde architecture.

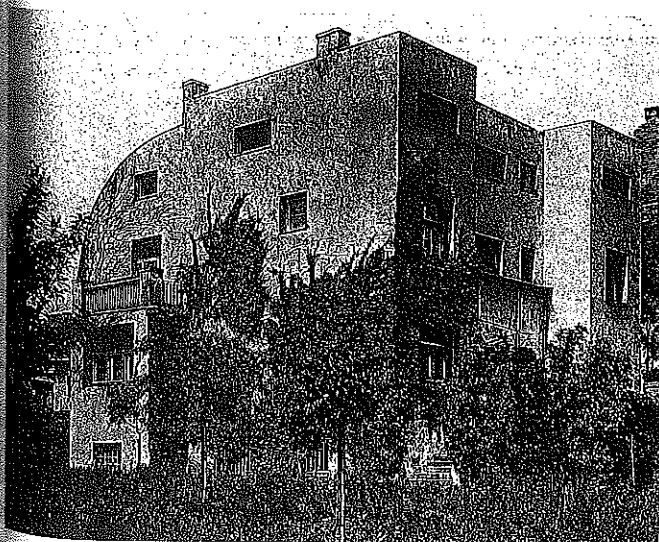
The founder of Viennese modernism, Otto Wagner (1841–1918), was an academic architect during the early part of his life. His stations for the Vienna subway (1896–97) were simple, functional buildings dressed with Baroque details. In his 1894 book on modern architecture, however, Wagner had already demonstrated his ideas about a new architecture that used the latest materials and adapted itself to the requirements of modern life. His motto, "Necessity alone is the ruler of art," anticipated later twentieth-century functionalism. In the hall of his 1905 Vienna Post Office Savings Bank (fig. 12.9) Wagner used unadorned metal and glass to create airy, light-filled, and unobstructed space. While there is some stylistic similarity here to the auditorium that Victor Horta built in his *Maison du Peuple* in Brussels (see chapter 5), Wagner's design shows typically modernist concern for the increased elimination of structural elements and the creation of a single unified and simple space.

Adolf Loos (1870–1933) was active in Vienna from 1896. After studying architecture in Dresden, Loos worked in the United States for three years from 1893 (when he attended the World's Columbian Exposition in Chicago), taking various odd jobs while learning about the new concepts of American architecture, particularly the skyscraper designs of Sullivan and other pioneers of the Chicago School (see chapter 4). After settling in Vienna, Loos followed principles established by Wagner and



12.9 Otto Wagner, Post Office Savings Bank, Vienna, 1905.

Sullivan favoring a pure, functional architecture. His 1910 Steiner House in Vienna (fig. 12.10) anticipated the unadorned cubic forms of the so-termed International Style of architecture that was to develop from the concepts of J. J. P. Oud, Walter Gropius, Ludwig Mies van der Rohe, and Le Corbusier in the twenties and thirties.



12.10 Adolf Loos, Garden view, Steiner House, Vienna, 1910.

Zoning rules allowed for only one story above street level, so Loos employed a barrel-vaulted roof on the front of the house that was so deep it allowed for two more levels facing the garden, which is the view seen here. The garden façade is symmetrical; simple, large-paned windows arranged in horizontal rows are sunk into the planar surfaces of the rectilinear façade. Reinforced concrete was here applied to a private house for almost the first time. Although the architecture and ideas of Loos never gained wide dissemination, the Steiner House is a key monument in the creation of the new style.

Among the Art Nouveau architects attacked by Loos were Olbrich and Josef Hoffmann (see chapter 5) who, with the painter Gustav Klimt, were the founders of the Vienna Secession. Hoffmann's masterpiece is the Palais Stoclet, a luxurious house that he built for the Stoclet family in Brussels (see fig. 5.15). This splendid mansion is characterized by severe rectangular planning and façades, and broad, clear, white areas framed in dark, linear strips (under the influence of Charles Rennie Mackintosh). Its lavish interior design, an expression of the Secessionist belief in a total decorative environment, offers a marked contrast to the sobriety of Loos's Steiner House.

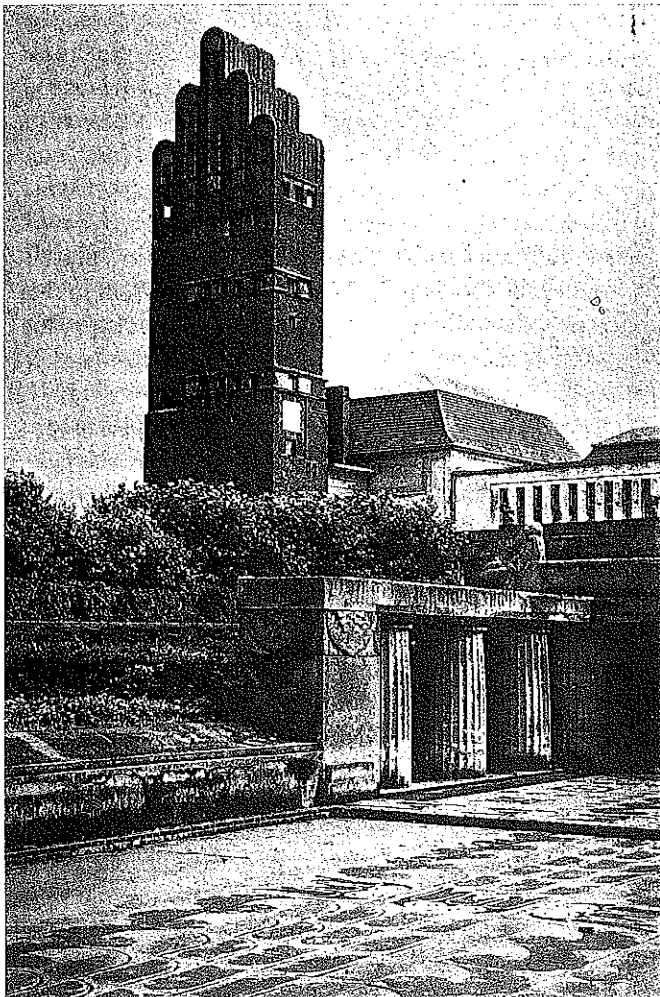
Hoffmann is perhaps more important for his part in establishing the Wiener Werkstätte (Vienna Workshops)

than for his achievement as a practicing architect. The workshops, which originated in 1903, continued the craft traditions of William Morris and the English Arts and Crafts movement, with the contradictory new feature that the machine was now accepted as a basic tool of the designer. For thirty years the workshops exercised a notable influence, teaching fine design in handicrafts and industrial objects.

Tradition and Innovation: The German Contribution to Modern Architecture

In Germany before 1930, largely as a result of enlightened governmental and industrial patronage, architectural experimentation, instead of depending only on brilliant individuals, was coordinated and directed toward the creation of a “school” of modern architecture. In this process, the contributions of certain patrons such as Archduke Ernst Ludwig of Hesse and the AEG (German General Electrical Company) were of the greatest importance.

Relations between Austrian and German architecture were extremely close in the early years of the twentieth



12.11 Joseph Maria Olbrich, Hochzeitsturm (Wedding Tower), Darmstadt, Germany, 1907.

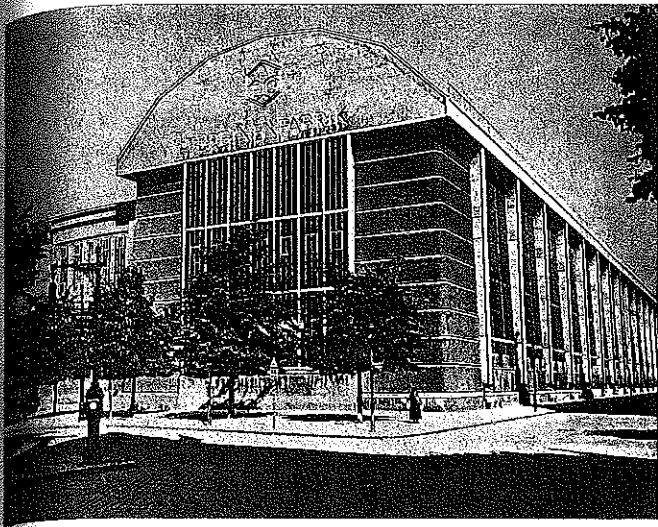
century. When the Archduke of Hesse wished to effect a revival of the arts by founding an artists' colony at Darmstadt in Germany, he employed Olbrich to design most of the buildings, including the 1907 Hochzeitsturm (Wedding Tower) (fig. 12.11). The Wedding Tower, which still dominates Darmstadt, was so named because it commemorated the archduke's second marriage; it was intended less as a functional structure than as a monument and a focal point for the entire project. Although it was inspired by the American concept of the skyscraper, its visual impact owes much to the towers of German medieval churches. Its distinctive five-fingered gable symbolizes an outstretched hand. The manner in which rows of windows below the gable are grouped within a common frame and wrapped around a corner of the building was an innovation of particular significance for later skyscraper design.

At about the same time that Hoffmann set up the Wiener Werkstätte a German cabinetmaker, Karl Schmidt, had started to employ architects and artists to design furniture for his shop in Dresden. Out of this grew the Deutsche Werkstätte (German Workshops), which similarly applied the principles of Morris to the larger field of industrial design. From these and other experiments, the Deutscher Werkbund (German Work or Craft Alliance) emerged in 1907. This was the immediate predecessor of the Bauhaus, one of the most influential schools in the development of modern architecture and industrial design.

Behrens and Industrial Design

More than any other German architect of the early twentieth century, **Peter Behrens** (1868–1940) forged a link between tradition and experiment. He began his career as a painter, producing Art Nouveau graphics, and then moved from an interest in crafts to the central problems of industrial design for machine production. Behrens turned to architecture as a result of his experience in the artists' collaborative at Darmstadt, where he designed his own house—the only one in the colony not designed by Olbrich. In 1903 Behrens was appointed director of the Düsseldorf School of Art, and in 1907 the AEG company, one of the world's largest manufacturers of generators, motors, and lightbulbs, hired him as architect and coordinator of design of everything from products to publications. This unusual appointment by a large industrial organization of an artist and architect to supervise and improve the quality of all its products was a landmark in the history of architecture and design.

One of Behrens' first buildings for AEG, a landmark of modern architecture, is the Turbine Factory in Berlin completed in 1909 (fig. 12.12). Although the building is given a somewhat traditional appearance of monumentality by the huge corner masonry piers and the overpowering visual mass of the roof (despite its actual structural lightness), it is essentially a glass-and-steel structure. Despite the use of certain traditional forms, this building is immensely



12.12 Peter Behrens, AEG Turbine Factory, Berlin, 1908–9.

important in its bold structural engineering, in its frank statement of construction, and in the social implications of a factory built to provide the maximum of air, space, and light. It is functional for both the processes of manufacture and the working conditions of the employees—concerns rarely considered in earlier factories.

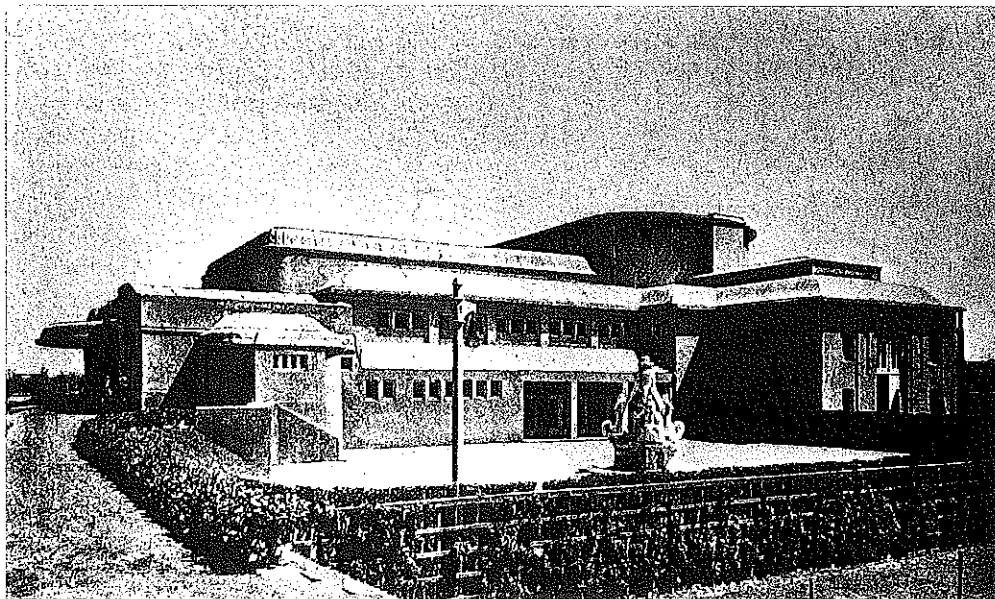
The hiring of Behrens by AEG and similar appointments by other industrial corporations mark the emergence of some sense of social responsibility on the part of large-scale industry. The established practice had been one of short-sighted and often brutal exploitation of natural and human resources. Certain enlightened industrialists began to realize that well-designed working spaces and products were not necessarily more expensive to produce than badly designed ones and had numerous economic and political

advantages. In the rapidly expanding industrial scene and the changing political landscape of early twentieth-century Europe, the public image presented by industry was assuming increasing importance. It was becoming evident that industry had a powerful role to play in public affairs and even in promoting a national image. Such ideas may have influenced Behrens's transformation of his functional glass-and-steel Turbine Factory into a virtual monument to the achievements of modern German industry. Behrens is important not only as an architect but as a teacher of a generation that included Gropius, Le Corbusier, and Mies van der Rohe—all of whom worked with him early in their careers.

Expressionism in Architecture

Between 1910 and 1925 the spirit of Expressionism manifested itself in German architecture, as in painting and sculpture (see chapter 8). Although this did not result initially in many important buildings, and although Expressionism in architecture was terminated by the rise of Nazism, it did establish the base for a movement that was later realized in the fifties and sixties, after the austerity and pristine elegance of the International Style had begun to pall.

Forerunners of Expressionism in architecture include Gaudi's creations in Barcelona and the 1913–14 Werkbund Theater in Cologne (fig. 12.13) by the Belgian architect Van de Velde (see below), who worked in Germany from 1899 to 1914. The building's strongly sculptural exterior, for which Van de Velde used the molded forms of the façades to define the volume of the interior, has been seen as the definitive break with the essentially linear emphasis of Art Nouveau architecture. Van de Velde's other achievements in Germany include the educational program that

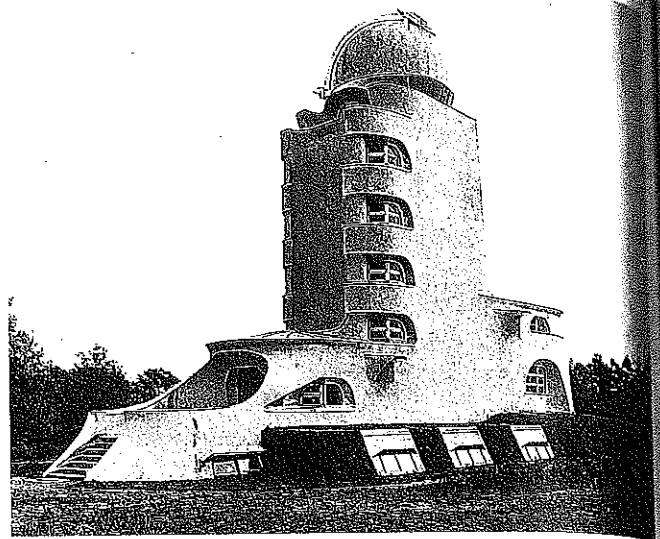


12.13 Henry Clemens van de Velde, Werkbund Theater, Cologne, 1913–14. Demolished 1920.

he developed at the Weimar School, which he founded in 1906 under the patronage of the Duke of Saxe-Weimar. This program put its emphasis on creativity, free experiment, and escape from dependence on past traditions.

One of the most startling examples of Expressionist architecture is the 1919 Grosses Schauspielhaus (Great Theater) in Berlin (fig. 12.14), created by **Hans Poelzig** (1869–1936) for the theatrical impresario Max Reinhardt. This was actually a conversion of an old building, originally an enormous covered market that, after 1874, served as the Circus Schumann. Using stalactite forms over the entire ceiling and most of the walls, and filtering light through them, Poelzig created a vast cave-like arena of mystery and fantasy appropriate to Reinhardt's spectacular productions.

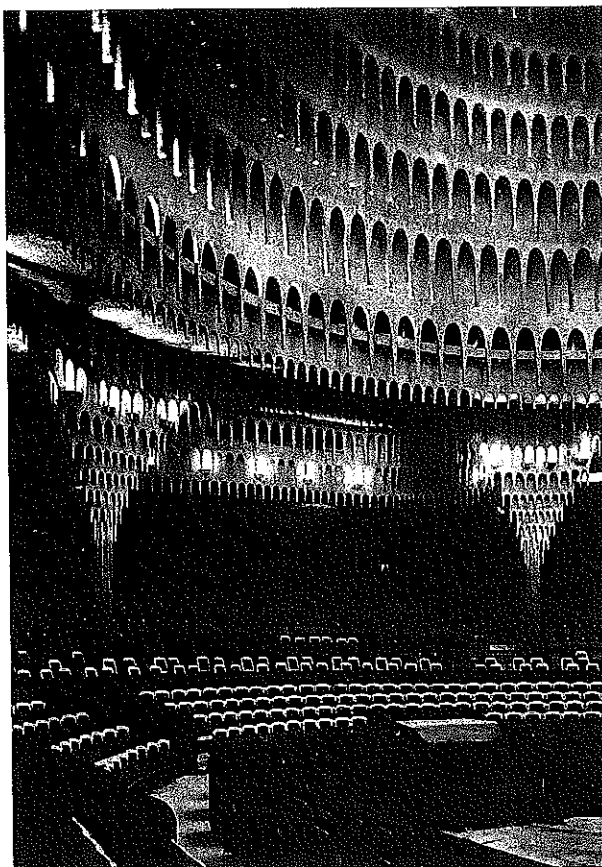
Of the architects who emerged from German Expressionism, perhaps the most significant was **Erich Mendelsohn** (1887–1953). Mendelsohn began practice in 1912, but his work was interrupted by World War I. Following the war, one of his first important buildings was the Einstein Tower in Potsdam (fig. 12.15). One of the principal works of Expressionist architecture, the Einstein Tower was built to study spectroanalytic phenomena, especially Einstein's theory of relativity. Instruments in the cupola reflected light vertically through the tower onto a mirror in the underground laboratory. On the exterior, Mendelsohn emphasized qualities of continuity and flow



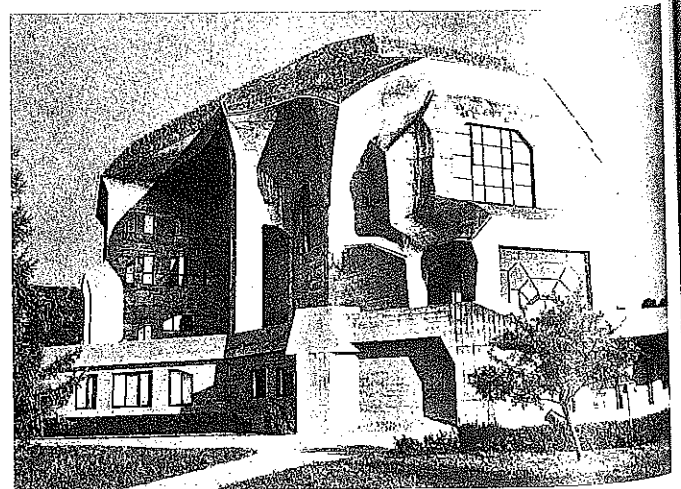
12.15 Erich Mendelsohn, Einstein Tower, Potsdam, 1920–21.

appropriate to the material of concrete (although the Einstein Tower was actually built of brick and covered with cement to look like cast concrete). The windows flow around the rounded corners, while the exterior stairs flow up and into the cavern of the entrance. The entire structure, designed as a monument as well as a functioning laboratory, has an essentially organic quality, prophetic of the later works of Le Corbusier and Eero Saarinen.

Many other architects, particularly in Germany and Holland, were affected by the spirit of Expressionism during the twenties. The educator, philosopher, and occultist **Rudolf Steiner** (1861–1925), although not trained as an architect, produced remarkable examples of utopian architecture in his Goetheanum I and II (fig. 12.16), the latter of which became a tremendous sculptural monument of concrete that looked back to Gaudí and forward to post-World War II *architecture brut*.



12.14 Hans Poelzig, Grosses Schauspielhaus (Great Theater), Berlin, 1919. Dismantled 1938.



12.16 Rudolf Steiner, Goetheanum II, Dornach, Switzerland, 1925–28.

Toward the International Style: The Netherlands and Belgium

Berlage and Van de Velde

Although he considered himself a traditionalist, the Dutch architect **Hendrik Petrus Berlage** (1856–1934) was passionately devoted to stripping off the ornamental accessories of academic architecture and expressing honest structure and function. He characteristically used brick as a building material, the brick that, in the absence of stone and other materials, has created the architectural face of the Low Countries. His best-known building, the Amsterdam Stock Exchange (fig. 12.17) (now home to the Beurs van Berlage Foundation and the Dutch Philharmonic Orchestra), is principally of brick, accented with details of light stone. The brick is presented, inside and out, without disguise or embellishment, as is the steel framework that supports the glass ceiling. The general effect, with the massive corner tower and the low arcades of the interior, is obviously inspired by Romanesque architecture, in some degree seen through the eyes of the American architect H. H. Richardson, whose work he knew and admired (see fig. 4.10).

In his writings, Berlage insisted on the primacy of interior space. The walls defining the spaces had to express both the nature of their materials, and their strength and bearing function, undisguised by ornament. Above all, through the use of systematic proportions, Berlage sought a total effect of unity analogous to that created by the Greeks of the fifth century B.C.E., whose temples and civic buildings were constructed with the careful application of proportional relationships between all parts of a building. He conceived of an interrelationship of architecture, painting, and sculpture, but with architecture in the dominant role.

Berlage's approach to architecture was also affected by Frank Lloyd Wright, whose work he discovered first through publications and then at first hand on a trip to the United States in 1911. He was enthusiastic about Wright and particularly about the Larkin Building (see fig. 12.5), with its analogies to his own Amsterdam Stock Exchange. What appealed to Berlage and his followers about Wright was his rational approach—his efforts to control and utilize the machine and to explore new materials and techniques in the creation of a new society.



12.17 Hendrik Petrus Berlage, Stock Exchange, Amsterdam, 1898–1903.

Nearly every turn-of-the-century art or design movement, from Impressionism to Arts and Crafts, nourished the fertile career of the Belgian Henry Clemens van de Velde (see also chapter 5). Van de Velde was a painter, craftsman, industrial designer, architect, and critic who had an extensive influence on German architecture and design. He was a socialist who wanted to make his designs available to the working classes through mass production. Trained as a painter, first in Antwerp and then in Paris, he was in touch with the Impressionists and was interested in Symbolist poetry. Back in Antwerp, painting in a manner influenced by Seurat, he exhibited with Les XX, the avant-garde Brussels group (see chapter 3). Through them he discovered Gauguin, Morris, and the English Arts and Crafts movement. As a result, he enthusiastically took up the graphic arts, particularly poster and book design (see fig. 5.4), and then, in 1894, turned to the design of furniture. All the time, he was writing energetically, preaching the elimination of traditional ornament, the assertion of the nature of materials, and the development of new, rational principles in architecture and design.

After fifteen years in Germany (see above), the outbreak of World War I forced Van de Velde to leave his post in Weimar. He recommended the young architect Walter Gropius as his successor for the directorship of the Weimar School. It was not until after the war, in 1919, however, that Gropius assumed his duties and consolidated the separate schools of fine and applied arts. Under the new name of Das Staatliche Bauhaus, this was to become the most influential school in the history of architecture and design (see chapter 16). Van de Velde finally returned to Brussels in 1925. The later houses and other buildings on which he worked, notably the Kröller-Müller Museum (1936–38) at Otterlo in the Netherlands, are characterized by austerity and refinement of details and proportions—evidence, perhaps, of the reciprocal influence of younger experimental architects who had emerged from his original educational systems.

De Stijl

One of the most important legacies of the de Stijl movement (see chapter 11) was its enormous impact on the development of modern architecture. De Stijl (The Style) was named for the group's magazine, founded in 1917 and edited by Theo van Doesburg until his death in 1932. During World War I, neutral Holland was one of the very few countries in Europe where building could continue, with the consequence that the transition from prewar to postwar architectural experiment can clearly be followed. Many of the ideas and theories fermenting everywhere in Europe before 1914 came to their first realization in the Netherlands at this time. Consequently, the Dutch solutions were studied by artists and architects everywhere when the war ended. The formative influences on de Stijl architects were Hendrik Petrus Berlage (see fig. 12.17) and Frank Lloyd Wright (see figs. 12.1, 12.6).

J. J. P. Oud, Robert van 't Hoff, and Gerrit Rietveld, three of the principal architects of de Stijl, were also acquainted with the early modernists in Germany and Austria—Behrens, Loos, Hoffmann, and Olbrich—but their association with Mondrian and Van Doesburg had considerable influence on the forms that their architecture would take. Another important influence is to be found in the writings of M. H. J. Schoenmaekers, which also provided a philosophical base for Mondrian's painting and theorizing before 1917. Schoenmaekers propounded a mystical cosmology based on the rectangle. Inspired by Theosophy, his *Elements of Expressive Mathematics* (1916) sought to uncover the hidden relationships between natural forms. From such ideas arose an architecture of flat roofs, with plain walls arranged according to definite systems that create a functional and harmonious interior space. This was the beginning of the International Style, which was to dominate monumental building during the middle years of the twentieth century, especially in the forms of the skyscraper. However, Dutch architecture was traditionally domestic in scale, and de Stijl architects remained within this tradition. Only later would their ideas be translated into structures on a monumental scale in the United States.

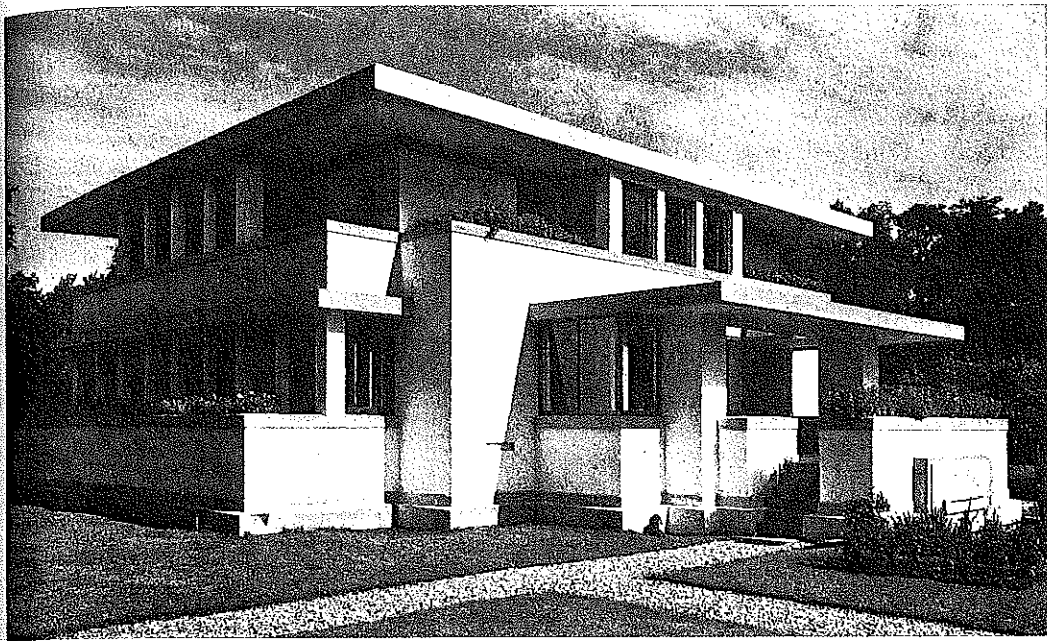
In their aesthetic, the architects and artists of de Stijl were much concerned with the place of the machine and its function in the creation of a new art and a new architecture. They shared this concern with the Italian Futurists, with whom Van Doesburg corresponded (Severini was a regular corresponding member of de Stijl), but they departed from the emotional exaltation of the machine in favor of enlisting its power to create a new collective order. From this approach arose their importance for subsequent experimental architecture. Van Doesburg called architecture the "synthesis of all the arts" and said that it would "spring from human function" rather than from historical building types that had been developed in a time when the patterns of domestic life had little in common with modern lifestyles.

The actual buildings created by these architects before 1921 were not numerous. A house built by Robert van 't Hoff (1852–1911) in Utrecht in 1916 (fig. 12.18) antedated the formation of de Stijl and was almost entirely based on his first-hand observations of Wright's work in Chicago, as may be seen in the cantilevered cornices, the grouping of windows, the massing of corners, as well as the severe rectangularity of the whole. The unrealized project that J. J. P. Oud (1890–1963) prepared for seaside housing on the Strand Boulevard at Scheveningen, the Netherlands, in 1917 displays the future International Style strategy for housing in a flat-roofed, terraced row of repeated individual rectangular units. A 1919 project by Oud for a small factory was a combination of cubic masses alternating effectively with vertical chimney pylons and horizontal windows in the Wright manner. Instead of the typical early Wright pitched roof, however, de Stijl

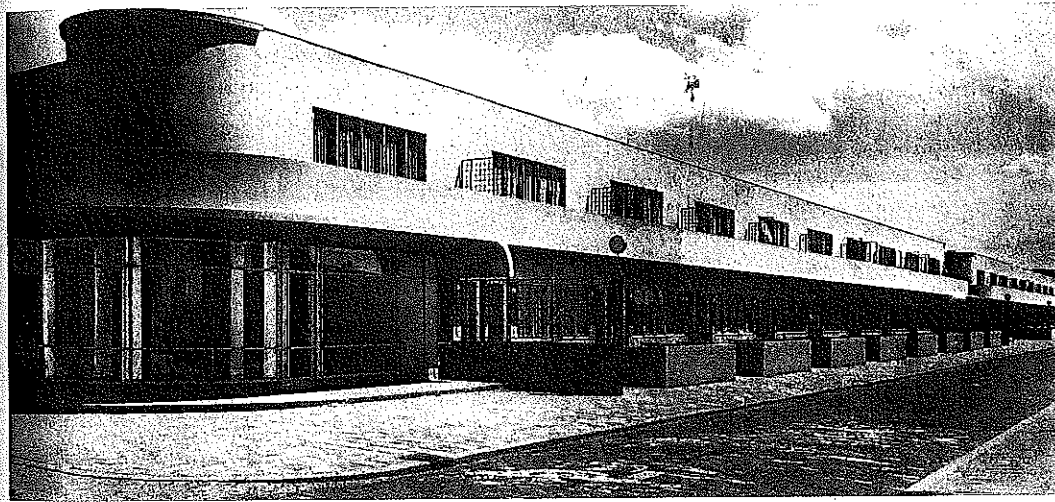
zeld, also and -but had ture und also ting ided l by 16) atu- flat sys- rior tyle, the the was ects leas the

Stijl d its tec- ists, was hey e in der. tent tec- uld ical hen with

ore van 18) rely ork ces, well zed side the tyle of by sses and of Stijl



12.18 Robert van 't Hoff, Huis ter Heide, Utrecht, the Netherlands, 1916.



12.19 J. J. P. Oud, Workers' Housing Estate, Hook of Holland, 1924-27.

architects, almost from the beginning, opted for a flat roof, thus demonstrating a relationship to de Stijl painters. In the best known and in many ways most influential of his early buildings, the 1924-27 housing project for workers at Hook of Holland (fig. 12.19), Oud employed wrap-around, curved corners on his façades and solidly expressed brickwork in a manner that suggested a direct line of influence from Berlage, despite the rectangularity and openness of the fenestration and the flat roofs. The workers' houses had an importance beyond their stylistic influence as an early example of enlightened planning for well-designed, low-cost housing. In the façade design of the Café de Unie in Rotterdam (fig. 12.20), Oud almost literally translated a 1920s Mondrian painting into architectural terms, at the same time illustrating the possibilities of de Stijl for industrial, poster, and typographic design. The café was destroyed in the bombing of Rotterdam in 1940. Oud lived until 1963 and, in his later, monumental buildings, was once more absorbed into the International Style of which he was a somewhat reluctant pioneer.

12.20 J. J. P. Oud, Café de Unie, Rotterdam, 1925. Destroyed 1940.

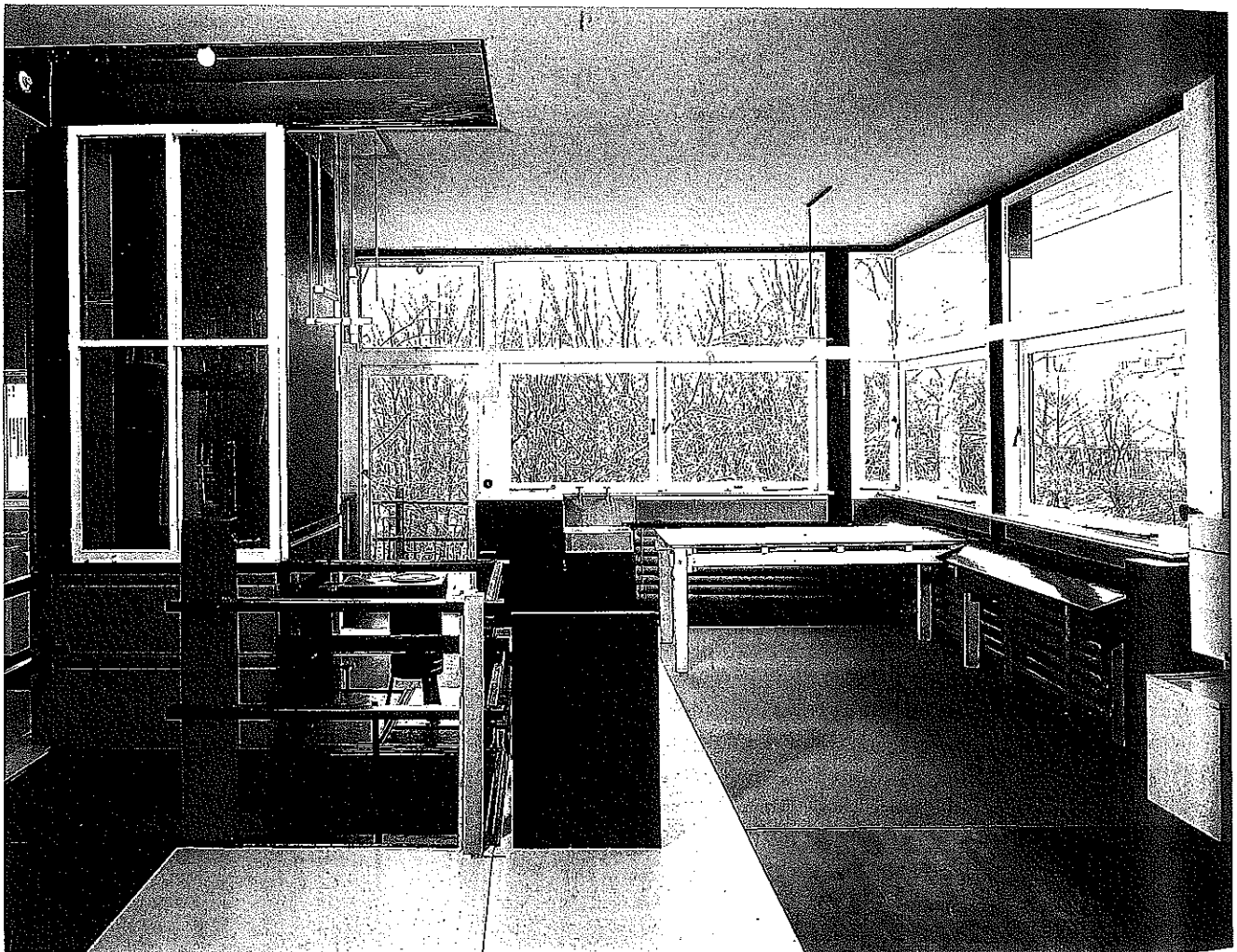


Van 't Hoff was a more adventurous spirit, at least in his theories. He was the first member of de Stijl to discover the Italian architect Sant'Elia, about whose unfulfilled projects (see fig. 12.27) he wrote in *de Stijl*. The other two leading architects associated with de Stijl (aside from Van Doesburg himself, who not only was active as an architectural designer and a color consultant but also wrote architectural criticism under various names) were **Gerrit Rietveld** (1888–1964) and Cornelis van Eesteren. Both rose to prominence after the end of World War I, so that their achievements belong to the period of the international spread of de Stijl.

Rietveld's 1924–25 Schröder House is the most complete statement of de Stijl in architecture (fig. 12.21). The house was a commission from Mrs. Truus Schröder-Schräder, who collaborated closely with Rietveld on its design. Mrs. Schröder lived in the house for sixty years and, toward the end of her life, initiated the Rietveld Schröder House Foundation, which oversaw a complete renovation of the structure between 1974 and 1987. For the house, Rietveld used detached interlocking planes of rectangular slabs, joined by unadorned piping, to break up the structure, giving the whole the appearance of a Constructivist

sculpture. The large corner and row windows give ample interior light; cantilevered roofs shelter the interior from the sun; and, according to Mrs. Schröder's requirements, sliding partitions created open-plan spaces for maximum flexibility of movement. The rooms are light, airy, and cool, thus planned to create a close relationship between the interior spaces and exterior nature.

Trained as a cabinetmaker, Rietveld also designed furniture, which assumed a role much like functional sculpture within de Stijl interiors. His 1923 *Red and Blue Chair* (fig. 12.22) is among the most succinct statements of de Stijl design. Rietveld first constructed the chair in plain wood in 1917, and painted it in 1923. The seat is blue, the back is red, and the sections of the frame are black with yellow ends. The simple, skeleton-like frame clearly discloses its structure, which, like all of Rietveld's furniture, eschews any sense of the luxurious or highly crafted object, for it was intended for mass production (which never took place). The tilted planes of the seat and back, which have parallels in the linear structures of some of Van Doesburg's paintings (see figs. 11.35, 11.36), convey less a sense of classical balance than of dynamic equilibrium. "The construction," the artist wrote, "is attuned to the parts to



12.21 Gerrit Rietveld, Living and dining area, Schröder House, with furniture by Rietveld.

e ample
or from
ements,
ximum
ry, and
etween

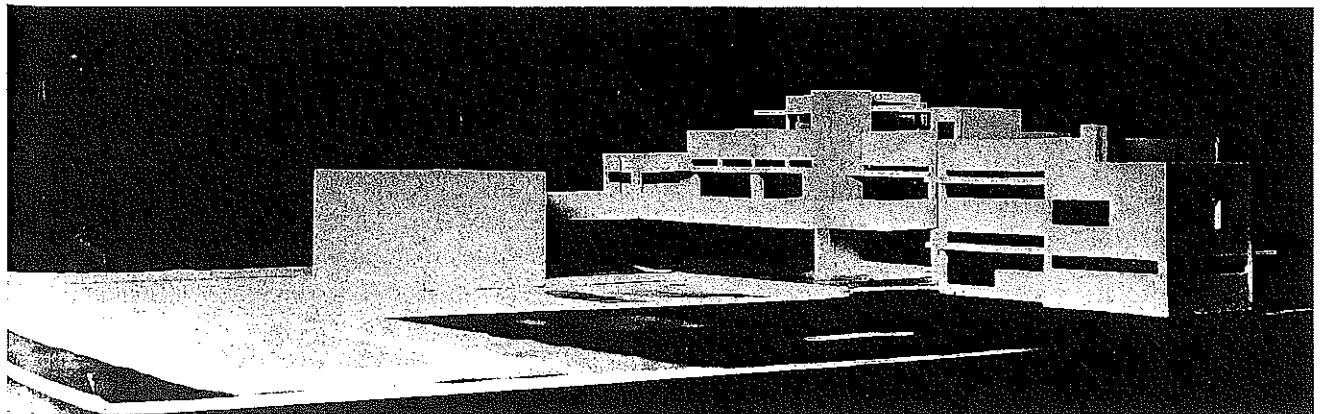
d furni-
ulpture
air (fig.
de Stijl
wood in
back is
yellow
oses its
eschews
t, for it
er took
ch have
sburg's
ense of
he con-
arts to



12.22 Gerrit Rietveld, *Red and Blue Chair*, 1917. Painted wood, height 34½" (87.6 cm). The Museum of Modern Art, New York.

insure that no part dominates or is subordinate to the others. In this way the whole stands freely and clearly in space, and the form stands out from the material." Fundamental to de Stijl philosophy was this sense of the integral relationship between the whole and its constituent parts. Until his death in 1964, Rietveld remained one of the masters of Dutch architecture, receiving many major commissions, of which the last was the Van Gogh Museum in Amsterdam, begun in 1967.

Cornelis van Besteren (1897–1988) collaborated with Van Doesburg on a number of architectural designs during the twenties, including a project for a house that was one of the most monumental efforts in de Stijl domestic architecture attempted to that date. In contrast with Rietveld's approach, the palatial edifice of the projected Rosenberg House (fig. 12.23) emphasized the pristine rectangular masses of the building, coordinated as a series of wings spreading out from a central core, defined by the strong



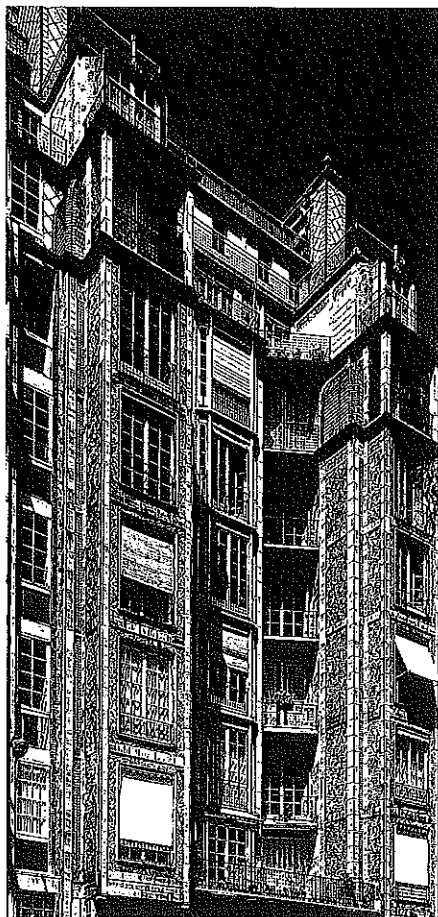
12.23 Cornelis van Eesteren and Theo van Doesburg, Project for Rosenberg House, 1923.

vertical accent of the chimney pier in the mode of Wright. In the central mass they opened up the interior space with cantilevered terraces that anticipated Wright's 1936 house in Bear Run, Pennsylvania.

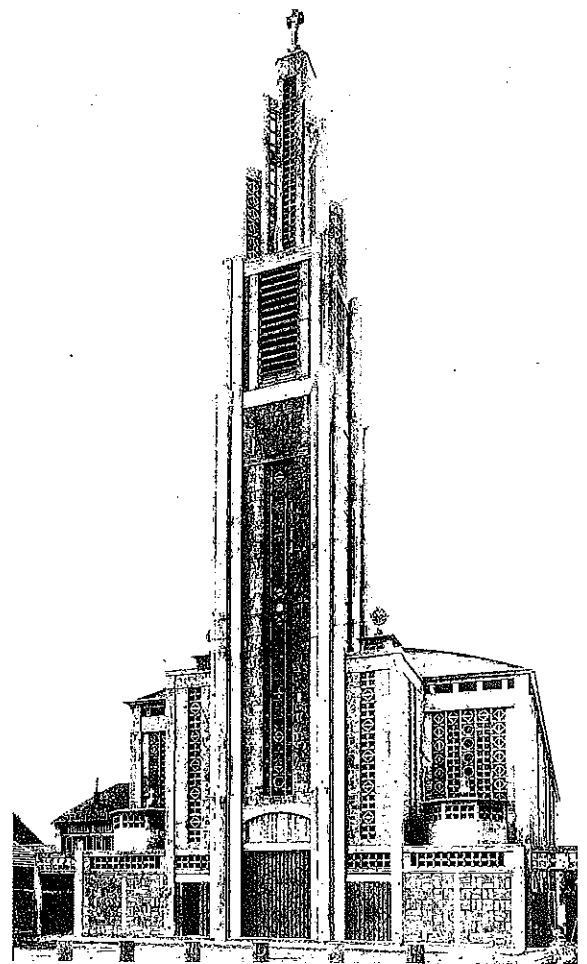
New Materials, New Visions: France and Italy

French architecture during the period 1900–14 was dominated by the Beaux-Arts tradition, except for the work of two architects of high ability, Auguste Perret and Tony Garnier. Both were pioneers in the use of reinforced concrete. In his 1902–3 apartment building (fig. 12.24) **Auguste Perret** (1874–1954) covered a thin reinforced-concrete skeleton with glazed terracotta tiles decorated in an Art Nouveau foliate pattern. The structure is clearly revealed and allows for large window openings on the façade. The architect increased daylight illumination by folding the façade around a front wall and then arranging the principal rooms so that all had outside windows. The strength and lightness of the material also substantially increased openness and spatial flow.

Perret's masterpiece in ferroconcrete building is probably his Church of Notre Dame at Le Raincy, near Paris, built in 1922–23 (fig. 12.25). Here he used the simple



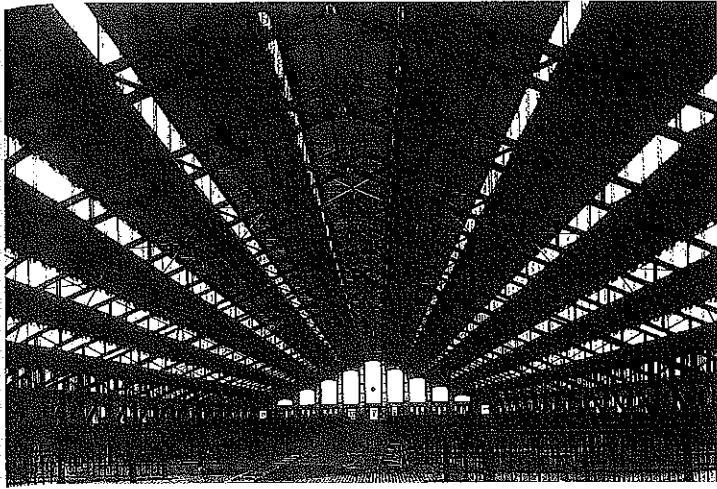
12.24 Auguste Perret, Apartment house, 25 Rue Franklin, Paris, 1902–3.



12.25 Auguste Perret, Church of Notre Dame, Le Raincy, France, 1922–23.

form of the Early Christian basilica—a long rectangle with only a slightly curving apse, a broad, low-arched nave, and side aisles just indicated by comparably low transverse arches. Construction in reinforced concrete permitted the complete elimination of structural walls. The roof rests entirely on widely spaced slender columns, and the walls are simply constructed of stained glass (designed by the painter Maurice Denis) arranged on a pierced screen of precast-concrete elements. The church at Le Raincy remains a landmark of modern architecture, not only in the effective use of ferroconcrete but also in the beauty and refinement of its design.

While working in Rome around 1900, **Tony Garnier** (1869–1948) developed a radically new approach to urban planning that overturned the traditional academic approach based on symmetry and monumentality. In Garnier's model town, residential areas, industrial sites, transport infrastructure, and civic facilities are all rationally interrelated. From 1905, his designs as municipal architect for his native city of Lyon explored the architectural possibilities of steel and reinforced concrete. His 1913 hall for the city's cattle market and abattoirs (fig. 12.26) achieved a steel span of 262 feet (80 m).

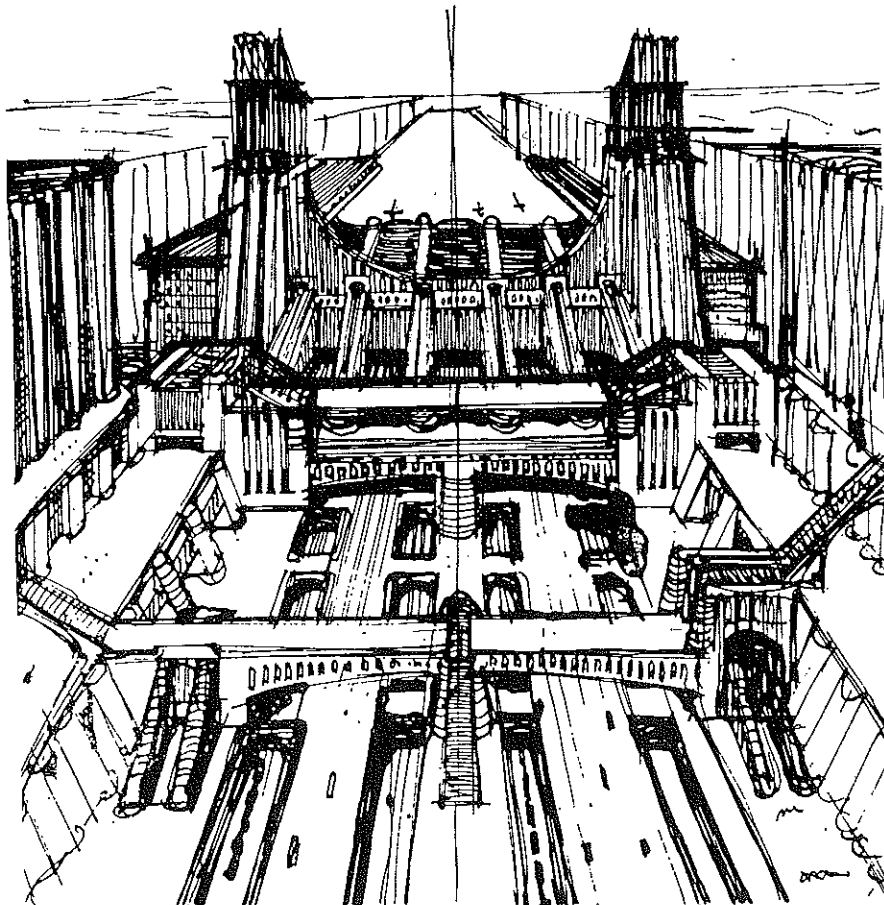


12.26 Tony Garnier, Lyons Market Hall, France, 1913.

In Italy, at the First Free Futurist Exhibition, held in Rome in 1914, the founders of Futurism (see chapter 11) were joined by a number of younger artists, including Giorgio Morandi, Mario Sironi, and Enrico Prampolini. The most interesting new recruit was the young architect Antonio Sant'Elia (1888–1916). Sant'Elia's *Manifesto of Futurist Architecture* was no doubt written with the ever-present assistance of Marinetti, who later published Sant'Elia's text again with his own modifications. In his text and drawings, Sant'Elia conceived of cities built of

the newest materials, in terms of the needs of modern men and women, and as expressions of the dynamism of the modern spirit. His visionary ideas remained on the drawing board, for his renderings were not plans for potentially functioning buildings. They were rather more like dynamic architectural sculpture. His drawings for the Città Nuova (New City) (fig. 12.27) gave visual form to his ideas about a modern metropolis built with the technology of the future. His city contained imaginary factories and power stations on multi-level highways and towers of fantastic proportions. Though his buildings never materialized, Sant'Elia's belief in an authentic architecture based on industrial mechanization had much in common with his German and Dutch contemporaries.

Like so many artist of promise, Sant'Elia died in World War I. The war interrupted many experiments in architecture, as well as in painting and sculpture, begun in the first years of the twentieth century. During the war years a new generation of architects emerged—Gropius and Mies van der Rohe in Germany; Le Corbusier in France; Oud and Rietveld in Holland; Eliel Saarinen and Alvar Aalto in Finland. Together with Frank Lloyd Wright in the United States, these architects built on the foundations of the pioneers discussed in this chapter to create one of the great architectural revolutions of history.



12.27 Antonio Sant'Elia, Train and plane station for project for Città Nuova, 1914. Probably black ink on paper. Musei Civici, Como.

le with
re, and
rverse
ed the
f rests
e walls
by the
een of
Raincy
in the
ty and

arnier
urban
idemic
ty. In
l sites,
ionally
chitect
possibi-
tall for
hieved

