

2. The Development of Architecture in the Twentieth Century: A Brief Guide

What is Modern Architecture?

The main storyline of architecture in the twentieth century is that of the development of Modernism, and various reactions to it. Most of us use the term “modern” to refer to something that is of its time, and perhaps even up-to-the-minute and fashionable. But from the 1920s or so in avant-garde circles, the term “Modern” came to refer to a particular approach by a group of architects who sought to cast off historical precedent and develop something entirely new and different for their own time. The carnage of World War I having convinced them that the ways of old Europe were a failure, Modernist architects saw historical styles—developed in response to earlier conditions—as anachronistic, irrelevant, and potentially decadent. They rejected ornament as frivolous and outdated, seeking instead to create an entirely new aesthetic based on the needs and opportunities of new materials and structural approaches such as reinforced concrete and steel frames.

Structural Innovations

The development of the steel frame, which became a crucial aspect of Modern architecture, had its roots in the iron frames that began to make their appearance in the tall office buildings of Chicago in the 1880s. Until that time, almost all buildings of any size—including all masonry buildings—had depended on their walls to hold them up; the material of the walls both kept the weather out and formed the structure of the buildings. The taller the building was, the thicker the walls had to be at the base to support the vast weight above them (unless architectural devices such as domes and vaults were employed in combination with buttresses, as in ecclesiastical or large public buildings). There is a limit to how tall such a building can practically be before the lower floors begin to disappear in the thickness of the walls; the tallest load-bearing masonry office building ever built was Chicago’s Monadnock building in 1893, at seventeen storeys high and with walls six feet thick at the base. But with the development of the steel frame, the walls were no longer required to bear any weight; instead, the building was held up by the interior frame, while the walls kept the weather out.

Initially, such buildings were clad in brick, stone or terracotta. They continued to appear nearly as massive as their masonry predecessors, partly as a visual reassurance to the public that this radical new type of structure would not collapse. But as time went on, windows became larger and cladding thinner. The non-load-bearing walls came to be known as curtain walls because they hung on their frames. Steel frames also allowed for considerable flexibility of plan, with steel beams and girders allowing for the creation of wide interior spaces. Increasingly, architects began to think about the implications for a new aesthetic.

The Aesthetics of Function

Louis Sullivan, an architect who was highly influential in the development of the Chicago School, and who had a profound effect on Modernist architects, coined the phrase “form ever follows function” in 1896. His idea was that the design of a building should be based on the needs of its function, not on historical ideas or precedent. By the 1930s, “form follows function” had become a rallying cry of Modernist architects who believed that they were approaching design

from a functionalist approach that resulted in buildings perfectly suited for their intended use, without unnecessary detail or extraneous decoration. In 1932, the architect Philip Johnson and the architectural historian and critic Henry-Russell Hitchcock co-curated an exhibition at New York's Museum of Modern Art (MoMA). They identified the new style, which they dubbed "**International Modernism**", with three main characteristics:

- Emphasis on architectural volume over mass. Thin outer walls, often with windows placed flush with or very near the outer surface, could create the impression of a shell stretched taut over the frame—very different from the massive appearance of a load-bearing wall pierced with openings.
- The rejection of symmetry, which had particularly characterized architecture in the classical tradition. Hitchcock and Johnson argued that the Modernists replaced symmetry with a sense of regularity, created by a feeling for rhythm and balance.
- Finally, the Modernists largely rejected applied decoration, with visual gratification instead being created through the use of intrinsically beautiful materials, elegant proportions, and the elements of structure itself.

The MoMA show greatly underplayed the social mission of the pioneering European modernists, many of whom were convinced that they could make a better society through architecture and urban design. They hoped the "light and air" of their mass housing schemes would improve the lives of the working classes living in crowded, down-at-heel tenements. They believed that their new style would make the world a better place.

The 1932 exhibition's three-part definition of the new architecture became a self-fulfilling prophecy as aspiring Modernists took it as a prescription for progressive design. Hitchcock and Johnson had also argued that International Modernism was equally at home in any social, cultural or climatic situation, and buildings in the new style sprang up from New York to Moscow, from Rome to Winnipeg, and, eventually, also from Seoul to Rio de Janeiro.

Three Giants of Modernism

Advances in photography, inexpensive printing and the relative ease and speed of transatlantic travel allowed considerable influence to flow between the two main wellsprings of modernism in the early twentieth century. In turn-of-the-century Chicago, Frank Lloyd Wright had developed the Prairie Style of architecture, associated with low, horizontal silhouettes, deep eaves, open plans and a highly integrated ornamental program based, not on historical forms, but on geometry and nature. Wright's work was published in Europe in 1910 and was highly influential among the architectural avant-garde there. By the 1920s, several startlingly innovative buildings, now recognized as Modernist icons, had been completed in Europe. Although the most radical, like Gerrit Rietveld's Schröder House in Utrecht or Le Corbusier's Villa Savoye at Poissy, were too extreme to have an immediate effect on mainstream architecture, their lessons were noted and eventually absorbed. Standard features of suburban mid-century tract housing, such as open plans and deep overhanging canopies, find their roots in these early Modernist experiments. The three names most often associated with the development of High Modernism are Walter Gropius, Ludwig Mies van der Rohe, and Le Corbusier.



Gerrit Rietveld, Schröder House, Utrecht, 1924

The upper floor has no permanent walls, but sliding panels can partition it in different configurations. Such open planning—familiar now—was a radical departure from tradition. The asymmetrical exterior shows a total avoidance of traditional ornament. This building also demonstrates another common feature of Modernism; placed at the end of an older terrace, it makes no visual reference to its neighbours.

Walter Gropius

Not surprisingly, schools of design act as crucibles for new ideas, just as publications are vectors for their dissemination. The Staatliches Bauhaus, founded in Weimar, Germany in 1919, was one such highly-influential school. When it was forced by the Nazi regime to close down in 1933 its founder, the Berlin-born Walter Gropius (1883-1969), was among the many European avant-garde architects who took their ideas and abilities to schools of architecture in the United States, galvanizing the development of modernism on this continent.

Gropius, who had begun his architectural career in the studio of Peter Behrens—considered to have been the first-ever industrial designer—was among the Europeans struck by the lessons of Frank Lloyd Wright. Together with Adolf Meyer, Gropius designed the facades for the Faguswerk, a shoe last factory in Alfeld-an-der-Leine (1911-13). The building was remarkable for the large expanses of glass that blurred the lines between the interior and exterior, and for its reliance on pure cubic forms with no ornament.

Gropius was director of the Bauhaus from 1919 to 1928. The school was founded on the idea that all the arts and crafts were of equal value and status, and that they should work in harmony to create a total work of art. Unlike some earlier movements (such as the Arts and Crafts Movement) that also preached a unity of art and handwork, the Bauhaus celebrated technology and the possibilities of mass production in creating high-quality, well-designed functional products. Although the teaching of architecture did not become part of the curriculum until the late 1920s, the school had a profound effect on architectural practice. Gropius eventually moved to the



Walter Gropius and Adolf Meyer (facade), Fagus shoe last factory, Alfeld-an-der-Leine, Germany, 1911-13

Prior to the development of the steel frame, it was impossible for windows to wrap around a corner in this way, and the architects have used this device to emphasize and celebrate the structural innovation. Practically, the large amount of glazing provided extensive natural light. The façade is devoid of ornament, with visual interest being provided instead by the balance and rhythm of the materials laid out in bands and grids

United States and brought his ideas to this continent, teaching at Harvard and the Massachusetts Institute of Technology (MIT). Several prominent Winnipeg architects took their training at MIT, bringing the Bauhaus influence directly to Canada via Manitoba.

Early in his career, Gropius had worked side-by-side in the office of Peter Behrens with two others who were to become perhaps the best-known Modernist architects in the world: Ludwig Mies van der Rohe (1886-1969) and Charles-Édouard Jeanneret-Gris, who later chose to be known as Le Corbusier (1887-1965). Although they originally worked from a similar set of ideas, they came eventually to rather different conclusions. Most architects of the mid-century period can be broadly classified as having been generally Miesian or Corbusian in approach. For all of them, though, the driving mechanism of twentieth century building was the development of an architecture based on structure and materials rather than on style and ornament. This rejection of everything historical changed the face of modern cities.



Walter Gropius, Bauhaus, Dessau, 1925-26

The Bauhaus School emphasized the harmonization of the crafts and the fine arts to create a total work of art. It had a profound influence on Modernist architecture, graphic design, furniture and other interior design, typography and industrial design. Here, the lettering has an aesthetic as well as a practical function.

Ludwig Mies van der Rohe

Mies was director of the Bauhaus from 1930 until it closed, at which time he left for the United States and became a highly-influential architect and instructor at Chicago's Illinois Institute of Technology (IIT). He developed a style that was angular and spare, typically using dark glass and metal. His buildings tend to assume one of two forms, both of which display the grid of their structure: a sleek oblong skyscraper, such as New York's Seagram Building, or a low pavilion on a podium, such as Crown Hall, the School of Architecture building at IIT. Mies saw these basic forms, with variations, as solutions for any building type, in any situation. Coining the aphorism "less is more," he did away with ornament and insisted that the structure itself must always determine the aesthetic of a building. He was sometimes criticized for refusing to consider fully the building's requirements, causing practical considerations to take a back seat to his own aesthetic choices.



Mies van der Rohe, Crown Hall, IIT, Chicago, 1950-56

Mies often used rich, polished materials, which, with elegance of proportion, provide visual interest and beauty without ornament. Here, the capabilities of steel frame construction are evident in the fully glazed exterior walls and the large open space on the main floor.



Ludwig Mies van der Rohe with Philip Johnson, Seagram Building, New York, 1958

An icon of International Modernism, the Seagram Building expresses its structure on the outside and has no other ornament. Ironically, fire regulations required the steel framing to be clad in masonry, and Mies expressed his hidden structure by attaching non-load-bearing bronze I-beams to the exterior of the cladding. Emphasizing that the structural frame—not the visible walls—is holding up the building, the entrance level is a glass box smaller than the footprint of the building. Other features common to many International style buildings are the cantilevered canopy over the entrance and the setting of the building in a large plaza.

Le Corbusier

The Swiss-born Le Corbusier came to favour a more expressionist approach, with curves and surprises. Even his earlier buildings that were emblematic of the International Style, such as the Villa Savoye near Paris, added dramatic curving elements to their basic rectilinearity. Le Corbusier believed in the late 1940s that he had designed a one-size-fits-all apartment building—called the Unité d’Habitation—that would work in any situation and any climate; several versions were built in different cities. But he eventually inclined to relate his buildings more directly to their surroundings and needs, and to use forms with emotive force, as he did at the chapel of Notre Dame du Haut in France.

In contrast to Mies’s taut curtain walls and gleaming surfaces, Le Corbusier often employed rough, poured-in-place concrete, deep window reveals and dramatic shapes to create forms that are emotive rather than intellectual. As he did in his buildings for the new Punjabi capital at Chandigarh, India, Le Corbusier’s mature work took into account local conditions of climate and culture, as well as the function of the building.



Le Corbusier, Villa Savoye, Poissy, 1929

Le Corbusier identified five points that he believed were the key features of Modern architecture; all are present in this weekend house near Paris:

- The use of pilotis, or support columns, to elevate the main building above the ground and allow the space under it to be used.
- A flat roof, on which a terrace would reclaim for outdoor use the same space on which the building sat.
- A free plan. The use of a steel frame and the elimination of load-bearing walls allowed the interior to be arranged without regard to structural needs.
- A free façade. The thin curtain wall, with no requirement for bearing a load, could have openings where convenience and beauty demanded them.
- Ribbon, or strip windows, which provided extensive light and ventilation and emphasized the non-load-bearing quality of the wall.

Le Corbusier was also highly influential for his ideas about city planning. As early as 1922, he had developed a design for a *Ville Contemporaine*, which featured enormous skyscrapers standing isolated in green space and connected by a system of raised roads with interlinked airports and train stations. Pedestrian and vehicular traffic were completely separated, and the city would be heavily zoned by use, with the well-to-do people living in houses outside the urban precinct and workers in skyscrapers nearer to the factory zones. Le Corbusier's ideas gave us several themes that were to influence bricks and mortar urban development in Canada, including the placement of buildings in open spaces (such as the paved plazas around office towers or the open—theoretically park-like—precincts around housing projects), the separation of pedestrian from vehicular traffic (such as pedestrian overpasses or dedicated cross-town expressways), near-total dependence on the automobile, and the dedication of inner city areas to offices that would be abandoned at 5:00 each evening by white-collar workers leaving the supposedly grimy city for the leafy suburbs.



Le Corbusier, Nôtre dame du Haut, Ronchamp, France, 1955

This building could hardly differ more from Crown Hall, though it was built at nearly the same time. In place of Mies's strict geometry and smooth, polished surfaces, Le Corbusier used rough concrete, poured in place in expressionist curves and following the contour of the hill on which the building stands. The thick walls, pierced by windows of different shapes and sizes, create a mysterious and emotive interior very appropriate for a pilgrimage church.



**Le Corbusier, Punjabi Legislative Assembly,
Chandigarh, India, 1957**

Nearly Contemporaneous with the Seagram Building and Crown Hall, Le Corbusier's work at Chandigarh, with its weathered concrete surfaces, is very different in approach although he employed the grid form on the sides of this building. Responding to the location, he set the windows deep into the walls, creating "brises-soleils," or sun-breaks, to shade the interior from the hot Indian sun. The dramatic inverted parasol shape is derived from traditional regional building forms.

A Catalogue of Modern Styles

Like most new doctrines, Modernism began among the avant-garde and gradually became mainstream. As the Miesian glass box was widely adopted, some critics began to complain that cities the world over were coming to resemble each other and consequently losing their identities. “God is in the details,” Mies had famously said, and Modernism’s elegant forms, deceptively simple and easy to copy, could quickly result in dull, banal buildings in the hands of less able architects. Among the followers of a Corbusian approach, who were more inclined to react to local conditions, climates and needs, Modernism was becoming more varied in its appearance and regional differences are more evident. People came to realize that it was no accident that different styles had developed in various climates and situations; for comfort and efficiency, the grey and rainy conditions of one city demand a different kind of building than the hot and arid climate of another. In particular, architects working in extreme climates responded to Modernist theory with a range of regional solutions. By the 1950s, many architects were beginning to move away from the spare outlines of high modernism to develop a wider range of forms.

The following pages provide a brief guide to some of the more common developments from the International Modernism that Johnson and Hitchcock had named in 1932. These include:

- Popular Modernism
- Brutalism
- Corporate Modernism
- New Formalism
- Post Modernism

Popular Modernism

The beginnings of Modernism came with a good deal of writing, theorizing and debate about the meaning of Modernist forms and the role architecture could and should play in society. But bit by bit, its forms also entered popular culture and small-scale commercial architecture. For such businesses as coffee shops, diners, motels, bowling alleys and a host of other building types—mostly small commercial or recreational buildings—up-to-date or particularly noticeable architecture can act as an advertisement. In the late 1920s and the 1930s, Art Deco had played this role, and as Modernism entered the mainstream, its forms began to spill over into these commercial building types as well. The 1950s and 60s, particularly, saw the development of a popular type sometimes called “space age” modernism, or named “googie” after a coffee shop of that name in Los Angeles. These buildings used dramatic architecture as a billboard to advertize themselves, and often featured such elements as folded plate or concrete shell barrel vault roofs, amoebic curves and jutting cantilevers, bright colours and striking graphics. Large neon signs were often an added identifying feature, and the signs themselves could be almost architectural in scale.

One of the best examples of Popular Modernism in Manitoba is Perth’s Drycleaners on Main Street in Winnipeg.



Quigley and Clark, Kona Bowling Lanes, Costa Mesa, CA, 1959

The eccentric folded-plate roof line, plate glass windows rising the height of the walls, and eye-catching roof fins combine to draw attention.

Brutalism

The British architects Peter and Alison Smithson coined the term “New Brutalism” in 1954, taking it from Le Corbusier’s term “béton brut,” or raw concrete, which referred to the look of cast-in-place concrete with the marks of the wooden forms visible on its surface. The style was intended as a critique of the refined surfaces, thin skin and increasing uniformity of high Modernism. It was used mostly for public buildings, and remained relatively popular until the mid-1970s. Typical Brutalist buildings feature blocky shapes, often with brises-soleils and deep-set windows. The reinforced concrete walls are load bearing (rarely, one sees other facing materials such as brick or stone), and the overall massive impression of these buildings is very different from that of the Miesian curtain-wall construction that was by then nearly ubiquitous.

A fine Manitoba example of Brutalism is the Manitoba Theatre Centre.



Kallman, McKinnell and Knowles, Boston City Hall, Boston, MA, 1968

Varied exterior forms delineate different functions (such as the council chamber and mayor’s office), while deep-set window openings create a highly textured façade.

Corporate Modernism

By the late 1950s there was a demand for corporate buildings that included eye-catching features and forms that were less cerebral and more individual than those of International Modernism. Architects of early corporate modernist buildings sought to develop forms that would be unique and identifiable with a particular image. These buildings tend to be sleek and polished, often with a lot of reflective glass. Although many follow the basic forms of International Modernism, they are not restricted to oblong shapes and right angles, and often feature large glass atria, sometimes several storeys high. The firm perhaps best known for corporate modern buildings is Skidmore, Owings and Merrill (SOM), architects of the Sears Tower (now known as the Willis Tower). Extended into the speculative market, corporate modern buildings continued to dominate the urban skyline until the end of the twentieth century, with nods to various prevalent styles.

In Manitoba, Skidmore, Owings and Merrill were responsible for the Richardson Building in Winnipeg.



Skidmore, Owings and Merrill, Willis (formerly Sears) Tower, Chicago, 1973

An excellent example of corporate modernism, the Willis Tower is made up of nine oblong tubes of varying heights, each one like an individual International Modernist building but together forming an attention-grabbing silhouette. Combined with its one-time status as the tallest building in the world, this provided name-brand identity for the Sears Corporation, which occupied only a relatively small part of the building.

New Formalism

In contrast to the rough massiveness of Brutalism, some Late Modernists a decade later began adding historical references to their work, in a highly-polished style that has been dubbed New Formalist. These buildings, like International Modernist buildings, are usually light in feeling with many windows, but they include classical or sometimes gothic motifs such as the arcade (rounded or pointed) and cornice. New Formalism appears particularly in small office buildings, banks and civic buildings. It shares International Modernism's restrained elegance, but with a wider variety of forms. New Formalist buildings are often clad in white marble or—more modestly—in white-painted stucco or concrete.



Edward Durell Stone, State University of New York at Albany, NY, 1964

Stone designed an entire university campus in this style that interprets modernism in a classical vocabulary including arcades, vaults and supporting columns.

Post Modernism

Post Modernism appeared on the architectural landscape in the mid-1960s as a rejection of High Modernism's functional, increasingly bland forms and lack of sympathy to site or history. Pioneering post modernist Robert Venturi insisted, in protest against the Miesian aesthetic, that "less is a bore." Although Post Modernism shared bright colours and unusual shapes with Space Age Modernism, it was heavily theorized from the beginning, and was not limited to commercial buildings. For the first time in decades, cutting edge architects were rejecting the proscription on decoration and history, and were using ornamental details for their own sake, without reference to structure. Originally, Post Modern buildings often made ironic "in jokes" about architectural history, exaggerating proportions or using elements out of context. They combined aspects of historical architecture with modernist structure and splashes of colour, and they often made reference to neighbouring buildings or to the history of the site. As time went on, Post Modernism developed a series of identifiable features that could be deployed to create buildings that lacked the creative sense that had driven the earlier designs, much as the Miesian office block had been reduced to a banal and characterless vocabulary in the hands of lesser architects. Square window openings, pastel colours and curved banks of glass all fill the bill. Employed by creative architects, however, the Post-modernist approach could result in witty and attractive buildings that responded well to their surroundings.

Though far more conservative than the example below, the CanWest building in Winnipeg is Post Modern in style.



Michael Graves, Portland Public Service Building, Portland, OR, 1977

The Portland Public Service Building was the first large Post Modern office building. The exaggerated architectural motifs, such as the giant keystone with ribbon windows running through it, are architectural "in-jokes" that put it squarely in the Post Modern camp. The square window openings and pastel colours are also characteristic.