

**Jürgen Tietz**

**THE STORY OF  
MODERN  
ARCHITECTURE  
OF THE 20th CENTURY**

*h.f.*ullmann

## THE ROOTS IN THE 18TH AND 19TH CENTURIES

### The world around us

Our everyday life is conditioned to a significant degree by the architecture that surrounds us each day – at home, in the workplace, out shopping. Even during our leisure time, at the pool or in the football stadium or at the museum, architecture creates the necessary architectural environment for our activity. Without architecture, human society would be impossible.

Our cities present a colorful, multilayered world. Buildings from many centuries mingle with contemporary architecture to form a living organism. Towering next to Gothic cathedrals are high-rise buildings made of steel and glass, or with reflecting granite façades. Exciting museum buildings, almost like sculptures large enough to walk in, coexist with soberly functional factories or dreary administration buildings.

Architecture at the end of the 20th century is as multifaceted as life itself. We experience cities as bewildering assemblages of a variety of functions, to which architecture, in all its widely differing manifestations, lends the necessary framework.

### New worlds ...

The swift development of architectural technique and form in this century has roots that

go as far back as the 18th century. The Enlightenment, which enhanced the significance and the social status of every citizen, was accompanied by a fundamental change in political culture. Centuries-old monarchies gave way to democratic constitutions whose stock of ideas spread outwards in ever-increasing circles. It was these thoughts that were enshrined in a comprehensive and enduring form in the American Declaration of Independence (1776), and found direct political expression in the French Revolution (1789).

Following the start given by the 18th century, it was almost inevitable that the 19th should be an era of revolutionary changes affecting every area of life. The industrial revolution, which spread from England to the whole of Europe and North America, created a new type of worker: the wage-laborer or proletarian, who earned a hard living in the ever more numerous factories. A symbol of the increasing mechanization of the world was the steam engine, invented by Watt in 1785, whose proliferation into newly built machine shops and iron foundries engendered an appropriate type of building.

A second, no less meaningful symbol of the new age was the railway. In 1830, Crown Street Station was built in Liverpool, the first station intended for passengers, who could now travel comfortably by rail between

Stocktaking  
and impulses

## Architecture at the turn of the century

1890–1910

**1833:** First law against child labor in England.

**1837:** Victoria crowned queen of England.

**1842:** China cedes Hong Kong to England, and opens its ports to west European forces.

**1848:** Karl Marx publishes his *Communist Manifesto*

**1861:** Abraham Lincoln becomes US president and abolishes slavery.

**1869:** The Suez Canal is opened, shortening the sea route to India.

**1871:** Founding of the German Empire after the end of the Franco-Prussian war.

**1876:** Alexander Graham Bell patents his "membrane speaking telephone." International Centennial Exhibition held in Philadelphia.

**1886:** The Statue of Liberty erected in New York, a present from the French Republic commemorating the anniversary of the Declaration of Independence.

**1889:** Paris hosts an international exhibition, the Exposition Universelle. Completion of the Eiffel Tower.

**1895:** Wilhelm Conrad Röntgen discovers X-rays. Sigmund Freud lays the foundations of psychoanalysis. First film shows given by Max Skladanowsky in Berlin and the Lumière brothers in Paris.

**1899:** First peace conference held in The Hague to discuss the peaceful settlement of international conflicts; passing of the Convention relating to the Laws and Customs of Warfare on Land. The United Fruit Company sets up the first monopoly trade in bananas in Central America.

**1900:** Exposition Universelle and Olympic Games held in Paris.

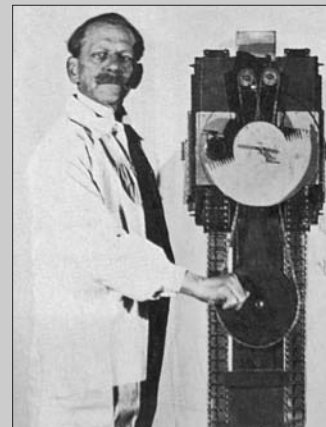
**1900-01:** Boxer rising in China, put down by an expeditionary force of the European powers.

**1901:** Theodore Roosevelt becomes US president. Thomas Mann's novel *Buddenbrooks* published. Picasso's "Blue Period" begins, with scenes from Parisian life, and the lives of

circus people. Pavlov begins his experiments in animal psychology.

**1903:** Margarete Steiff presents the first toy teddy bear at the Leipzig Fair.

**1904:** First performance of Puccini's *Madame Butterfly*. Death of Anton Chekhov.



**Max Skladanowsky with his bioscope (projecting equipment) in 1895**

**1905:** Erich Heckel, Ernst Ludwig, and Karl Schmidt-Rottluff found the Expressionist art movement "Die Brücke."

**1906:** San Francisco destroyed by earthquake and fire.

**1907:** Maria Montessori opens her first "Children's House." Sun Yat-sen announces his program for a Chinese democratic republic with social legislation.

**1908:** Matisse coins the word "Cubism" for a painting by Georges Braque.

**1909:** First permanent wave in London. Ford specializes in the mass production of the Model T: around 19,000 are sold in this year alone.

**1910:** Japan annexes Korea. The 13th Dalai Lama, fleeing from the Chinese, takes temporary refuge in India. Robert Delaunay completes his painting *The Eiffel Tower*. Feininger begins to make his mark with his characteristic Cubist/Expressionist style.

## PETER BEHRENS

When Peter Behrens built a house for himself in 1901 in the Mathildenhöhe artists' colony in Darmstadt, it created a sensation. A native of Hamburg, he was already a respected figure in Germany, having made his name as an exponent of the Jugendstil both as a painter and a craftsman. But in architecture he was a newcomer.

Perhaps it was through this versatility and openness to the various art forms that Behrens was destined to become one of the most influential all-round artists in Germany in the first half of the 20th century. Today he is best known as an architect, but he was also a book designer, a designer of typefaces, and craftsman, so that he has to be seen as one of the earliest "designers."

A milestone in Behrens's career, as well as in the history of German art, was his connection with Emil Rathenau's AEG (General Electricity Company), which was the biggest industrial concern in Germany around 1910. In 1907, industrialist and designer began a partnership that was at that time unique. Through his work for AEG, designing their products according to artistic criteria, Behrens provided a model for that cooperation between art, craft, and industrial production that was one of the goals of the *Deutscher Werkbund*, founded in the same year. He thus became one of the grandfathers of "industrial design" and "corporate identity." But it was not only his industrial products for AEG that brought him public notice. There was also his turbine factory (1909), designed for the company in Berlin, which even today, and despite its



**Behrens as industrial designer: the AEG-Sparbogenlampe was devised specifically for interiors with limited hanging space**

monumental feel, remains one of the icons of modern architecture with its pared-down language of form. These were to become even more reduced in his AEG assembly shop (1912) in the Voltastrasse, the façade of which, with its clear lines and its total absence of decoration, gives it an almost revolutionary character, comparable with the early major works of Gropius and Kahn.

The outstanding feature of Behrens's buildings, apart from their functionality, is their imposing monumentality, for example in the turbine factory or in AEG's small motors factory of 1910. This quality is achieved through the buildings' sternly cubic volumes, but also through their *classical* formal language, mainly employing the *Doric* order.



**The dawn of a light-flooded era: the AEG Turbine Factory in Berlin, built in 1909**

building so interpenetrate each other that the flat roofs of the lower parts of the block serve as terraces for the dwellings above.

The Nazis, who were attracted by the neo-Classical side of

This monumental Doric style, through which Behrens became the leader of European *neo-Classicism*, is not simply to be found in prestige buildings like the German embassy in St. Petersburg (1911–12). He makes an even greater use of it in private houses, like the sparely beautiful Villa Wiegand in Berlin-Dahlem, with its

Behrens, also tried to get him to build for them. Just before his death he was going to build the new AEG headquarters on the north-south axis planned by Albert Speer for Berlin. But the project went no further than the models (1937–39), and it foundered with the Third Reich.



**The AEG company emblem evolved from an elaborate historcist style to a Jugendstil version and then to Behrens's functional form. Behrens also created a typeface for AEG.**

unique pillared hall. Apart from his enthusiasm for the industrial production of artistically valid objects, this pared-down neo-Classicism was the main theme he handed on to his younger colleagues in his Berlin architectural practice. Many were to number among the most important architects of the succeeding generation: Le Corbusier, Ludwig Mies van der Rohe, and Walter Gropius among others.

It was one of Peter Behrens's attributes as an architect that he was very much in tune with the spirit of the times and was able to render the demands and desires of those who commissioned him in architectural forms appropriate to the times. His openness to new styles and forms of artistic expression is shown in the brick building for the headquarters of the Hoechst dyeworks company, the high, cathedral-like entrance hall which displays all the colors of the rainbow. Behrens, a neo-Classicalist before the war, here joins the *Expressionist* movement, with a building inspired by the *Amsterdam School*.

Behrens was a part of the next evolution of architecture too, from Expressionism to *Neues Bauen*. It was not a surprising move: the most important representatives of Modernism in architecture had been his pupils and colleagues. As a founder-member and leading representative of the *Deutscher Werkbund*, he had contributed to the Stuttgart building complex, the *Weissenhofsiedlung* (see page 39), a stepped apartment block. Behrens had a masterly grasp of how to put the contemporary forms of *Neues Bauen* to personal use. The cubic volumes of the

**An Expressionist brick building: the entrance hall of the head office of the Hoechst dyeworks. (1920–24)**





## THE BAUHAUS

Even today the Bauhaus is synonymous with the radical modernization of art. There was no area of life that Bauhaus art was not out to reform or redesign. Far from being confined to fine art and architecture, its principles extended to dance, theater, photography, and design. Even toys (the *sailing boat*) were designed in its workshops. In having such a comprehensive brief, the Bauhaus resembled its predecessors, the English *Arts and Crafts movement* and the *Deutscher Werkbund*. Even today many of its products feature among the classics of design in their uncompromising modernity, such as Marcel Breuer's tubular steel chair or the Bauhaus table lamp.

In March 1919, when Walter Gropius took over the leadership of the Weimar Art School founded by Henry van de Velde, and united it with the former Art and Craft School to form the "staatlicher Bauhaus Weimar," his aim was to create a new unity between art and craft. The purpose itself points to the sociopolitical meaning acquired by the Bauhaus in postwar Germany. Gropius wanted to join all the creative forces into a unified "house of building", in which building not only implied architecture but a lot

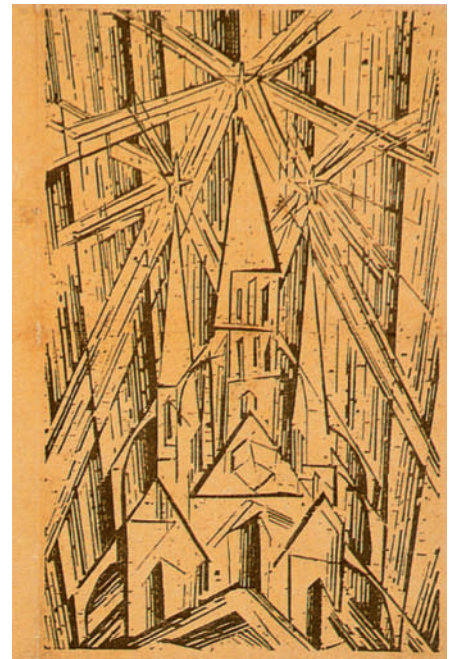
took over the introductory course from Itten. Dressed in a workman's boiler suit, he left no doubt that modern artistic production must be carried out from a technical point of view suited to the time. How broad the artistic spectrum of the Bauhaus remained, even under the influence of Moholy-Nagy, can be seen from the activity there of such diverse artistic personalities as the painters Oskar Schlemmer, Wassily Kandinsky, and Paul Klee.

While the Bauhaus was becoming the leading cultural force in the German – indeed the European – avant-garde, it was also coming under increasing political pressure. The progressive art school, which wore its political commitment on its sleeve, was a thorn in the flesh of the conservative forces that were once again gathering strength. In 1925 the Weimar Bauhaus had to close. A new beginning was undertaken in Dessau.

In Walter Gropius's Bauhaus building, the art school at last had an architectonic frame to match its inner concept. The architecture clearly expressed the various functions of individual parts of the building. So the workshop area was dominated by an uninterrupted wall of glass, providing the optimal amount of light. The façade of the students' living quarters on the other hand was characterized by an individual balcony for each room. It went without saying that Gropius's new building should have a flat roof, which in the 1920s was synonymous with modern architecture.

In 1928 Walter Gropius resigned as director of the Bauhaus. His successor was a Swiss, Hannes Meyer, who, like Gropius, was an architect. Under Meyer the social orientation of the Bauhaus became even more pronounced than under Gropius. Constructivism with an aesthetic bias was replaced by a style of artistic production that proclaimed itself to be strictly scientific. The components of this were an increasing standardization in the production of art-objects, and a growing collectivization of the production process that took the place of individual craftsmanship. The conscious politicization of the Bauhaus mobilized the right-wing press, which led in turn to the dismissal of Hannes Meyer by the mayor of Dessau.

It then became the task of Meyer's successor, the established architect Ludwig Mies van der Rohe, appointed in 1930, to steer the school into quieter waters. Political agitation had never been Mies's style, but even his move to concentrate on craft training could not prevent the Dessau Bauhaus from being closed down at the instigation of the Nazis. Mies's subsequent attempt to re-establish the Bauhaus in Berlin also failed.



*Demonstrating the Expressionist roots of the Bauhaus: Lyonel Feininger's woodcut for the title page of the 1919 Bauhaus manifesto Cathedral*



*A classic of Bauhaus design: Marianne Brandt's teapot with internal strainer (1924)*

more besides. Gropius was entirely in tune with his time when following the catastrophe of the war and the collapse of the old order to erect a new society, he aimed to use his art to build a new mankind.

In order to achieve these elevated, socially utopian aims, all the masters at the Bauhaus followed a preordained sequence of courses with their students. A preliminary course introduced the students to working with the most various materials: wood, metal, textiles, glass, coloring materials, clay, and stone. The preliminary course was run by Johannes Itten in the early years in Weimar. It was largely due to Itten that the Bauhaus had at first a strongly Expressionist direction, and was formally modeled on the organization of the medieval guilds.

In mid-1921 Theo van Doesburg, the first and leading thinker of the Dutch De Stijl movement, came to Weimar. Under his influence the Bauhaus underwent a radical change to a technical, constructionist concept of art, which conditioned the second stage of its development. Marcel Breuer was stimulated by the red and blue chair created by the De Stijl artist Gerrit Thomas Rietveld to develop his tubular steel chairs.

But of all the masters at the Bauhaus, the new trend in art education is most clearly associated with the Hungarian László Moholy-Nagy, who

*Architecture that corresponds to content: the Bauhaus building erected by Walter Gropius at its new site in Dessau in 1926*



# TOWN PLANNING IN THE 20TH CENTURY

1850–1930

For centuries the town had functioned so well as an almost unchanging, easily comprehensible, coordinated fabric of relationships that its laws had become invisible. Then with the industrial revolution of the 19th century it turned almost overnight into a Moloch. The flight from the land brought an urban explosion. The problems arising from this could not be removed by technology or architecture alone. So a new discipline was born: town planning, which looked at the city as a whole for the first time. The planners found their first models in the place where the people who had caused all these urban problems had come from: the country. There they designed new towns as antitheses to the old ones.

## The urban crisis at the end of the 19th century

During the 19th century the balance between town and country, which had until that time generally been fairly harmonious, suffered a dramatic change. The town became the theater of the industrial revolution. Its new economic structure produced an enormous growth in population. The country became depopulated; the cities exploded. In Great Britain, which spear-headed the change, there were fewer than 9 million inhabitants in 1800, 80 percent of them living in the country. Some 100 years later there were 36 million, 72 percent of them clustered in the big cities. In Germany over the same period the number of inhabitants shot up from 24.5 to 65 million. When the German state came into being in 1871, two-thirds lived outside the main centers of population, but scarcely half a century later this had dropped to 37 percent.

This unprecedented growth led – in cities whose structure dated back to anywhere between medieval times and the 17th century – to indescribable problems. The technological infrastructure could not keep pace with the change, the narrow streets could not contain the massively increasing pressure of traffic. New transport systems such as the railway could only be placed at the edges

of towns because of the enormous amount of space they took up. Unregulated economic forces created a jungle of different usages, with factories wedged into living areas. These became so overcrowded due to the constant influx of people, that the most elementary necessities of life were no longer guaranteed. In the English city of Bristol, for instance, 46 percent of families had only one room between them. People who had to live in houses that backed onto lightless, airless yards were becoming ill. Infectious diseases spread through the tenements. Child mortality was high. There were no compensatory open spaces, parks, or squares. The housing question became a question of power. Economic freedom led to a widening gulf in city life between rich and poor, causing people to challenge the existing model of the city, and ultimately, the political order itself. The pressure of circumstances led in about 1900 to a new discipline – town planning.

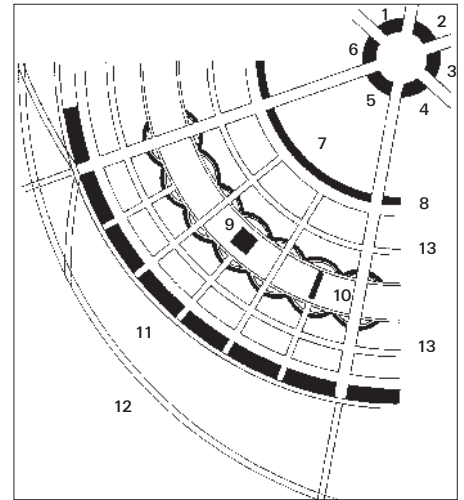
## Town planning

Town planning is a young discipline that looks back over a long tradition. The term was not used until the late 19th and early 20th century. But as long ago as the first urban groupings of distant antiquity, people began thinking about the most advantageous organization and structure for these

residential and economic centers, taking into account strategic and climatic factors. While many towns were springing up “naturally,” the first planned towns were coming into being, most according to a geometrical chessboard-like schema (Milet, Priene). Certain functions, as for instance that of the marketplace (the Greek agora), were allotted a specific position in the Greek city of antiquity. At the same time, standardized dwellings were erected according to a unified design.

The notion of the ideal city built according to a geometrical plan occurs over and over again in architectural theory over the centuries. It was in the era of the baroque that plans for an ideal city were transformed into buildings (Freudenstadt 1599, Mannheim 1607), in cities shaped by the ruling concept of society.

In Europe in the 19th century the flight from the land and the overall growth of the population led to



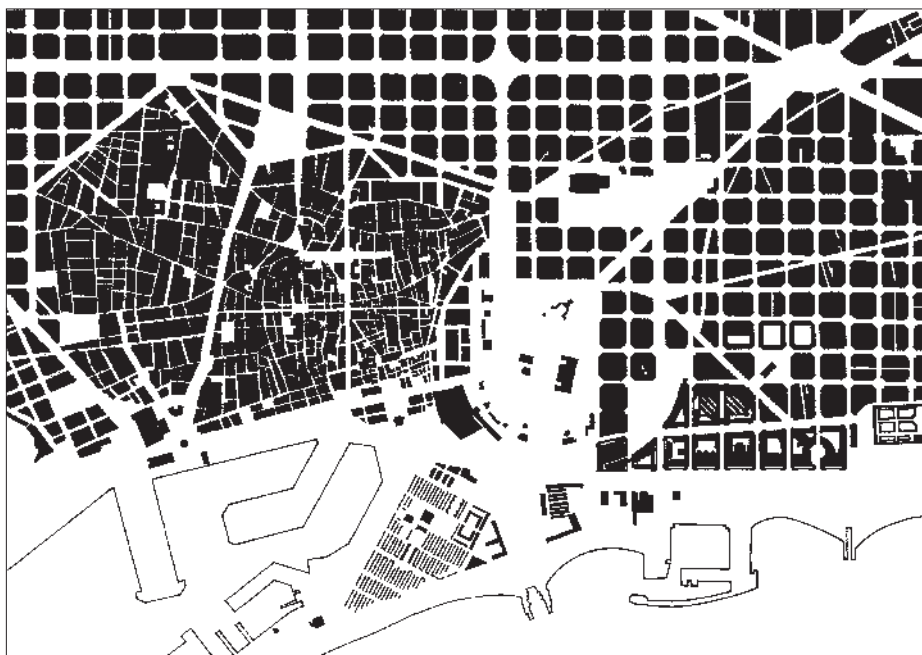
## Ideal plan for an English Garden City, 1902

- 1 Hospital, 2 Library, 3 Theater, 4 Concert hall,
- 5 Town Hall, 6 Museum, 7 Central park, 8 Crystal Palace, 9 School, 10 Church, 11 Allotments,
- 12 Large farms 13 Residential area

ever greater urban concentrations, which made a serious reconsideration of the structure of the city essential on social and public health grounds. The initial steps in that direction look rather modest, in that they sought to enlarge and improve the organization of what already existed.

The first move was the “Commissioners’ Plan” proposed for New York in 1811. It increased six-fold the area to be covered by the commercial settlements which had until then been concentrated at the southernmost point of Manhattan, and laid a regular grid over the whole island. From east to west ran 155 narrow Streets, all exactly 3 miles (5 kilometers) long, and from north to south ran 12 wider Avenues, all exactly 12 miles (20 kilometers) long. As befitted the ideal of an egalitarian society each of the 2,082 blocks measured 650 by 2,600 feet (200 by 800 meters) and each plot was 25 by 100 feet (7.5 by 30 meters). Only in 1853 was it decided to leave Central Park as a public space, only in 1916 was the

*Inner-city Barcelona today: bottom, the sea; left, the confused network of streets in the old city; right and above, the grid of blocks created by Cerdà’s extension of the city in 1859. It has grown outwards a great deal since then.*





# TOWN PLANNING IN THE 20TH CENTURY

1930–2000

The 20th century marked the transition from town architecture to town planning. The transition occurred as a result of the industrial revolution which took the traditional city beyond its limits, and gave birth to a new ideal: the modern city. The attempt to realize this ideal came to grief in the 1980s, leading to nostalgia for the traditional city. But at the end of the 20th century, the changing economic context brought the question of the city and the possibility of exerting an influence through planning, onto the agenda once more.

## The modernist city

Whereas the designs for garden cities and "Usonia" (see pages 40–41) took root in the country, the French architect and socialist Tony Garnier made detailed plans for a model of a modern industrial city. The project, which he presented in 1904 for a "Cit  industrielle," had separate areas demarcated for different functions, such as living, working, relaxation, and transport. The traffic system had separate roads for vehicles and pedestrians, through-roads, and access-roads. Green spaces took up more than half of the city area. Set in the midst of these were loose groupings of simple free-standing apartment blocks, built of reinforced concrete using industrial techniques, and affording plenty of air and light.

Garnier did the conceptual preparatory work for the Modernist town-planners. Both his architectural details and planning ideas became their basic principles. But it was the ambitious abstract projects of Le Corbusier which first gave these ideas ideological force and promoted their final breakthrough. In 1922 he worked out his plan for the "Ville contemporaine." Whereas Garnier's town was small, with buildings a maximum of three stories high, Le Corbusier wanted to provide homes for up to three million inhabitants massed into residential areas with buildings up to 60 stories high. His "Plan voisin" three years later placed his designs in a real location for the first time. He suggested replacing a part of the historic old city of Paris with 18 skyscrapers 650 feet (200 meters) high. The theoretical foundation of this signed manifesto was worked out by the fourth Congr s Internationaux d'Architecture Moderne (CIAM) and published in 1943 by Le Corbusier and the French CIAM group.



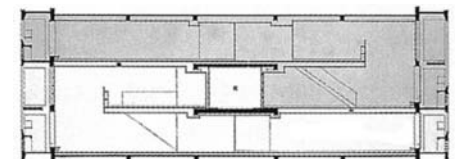
This "Charter of Athens" was the manifesto for the new city. Whereas the traditional city drew a boundary between itself and the country, divided up its activities between public and private zones of influence, differentiated between public streets, squares and parks, and private buildings, and separated town planning from architecture, the modernist city would be a single, open space for living that was organized by a central state planning authority. In place of the mixed-use road system open to all means of transport that was to be found in the traditional city, the modernist city would have a traffic system separated hierarchically according to function. The housing question was inseparable from the crisis in the old cities, and should no longer be left in the hands of private speculators, but instead dealt with by erecting whole areas of mass housing, all built to the same standard, and offering light, air, and sun for all.

The Charter of Athens became the guidebook for all new town planning and building worldwide in the decades that followed. Its emphasis on the new, found particular favor with the states founded after the Second World War. East Berlin's city center was one of many dedicated to the collective idea. Over the ruins on either side of the Frankfurter Allee, Edmund Colleijn, Werner Dutschke, and Josef Kaiser built the first socialist residential complex between 1959 and 1965. But the West built almost as many mass housing schemes of questionable value: right up until the mid-1970s, estates with tens of thousands of separate living units were put up as the old tenement areas were torn down. Centers that had developed over centuries were programmatically rebuilt in the name of making the cities accessible for cars, and motorways were driven through the heart of the old cities.

The chance to build a completely new city occurred only rarely, however. Between the years of 1951 and 1965 Le Corbusier was commissioned by Pandit Nehru to plan the state capital of Chandigarh, which was intended to be the symbol of modern India. Over a space of

around 250 acres (100 hectares) he laid out a grid of through roads. In between these there were residential areas for 150,000 people, with all the 13 different castes of Indian society living separately from each other. The only area shared by all was the line of commercial establishments along the east-west axis, in the middle of which was the civic center. The state government was separated off in its own area to the north of the city.

Similar concepts inspired Brazil to build a new capital city 600 miles (1,000 kilometers) away from Rio de Janeiro on the high plateau of Planatina. The competition to plan the city was won by L cio Costa in 1957. Four years later Oscar Niemeyer had already erected the most important buildings, and Brasilia was inaugurated in 1961. Costa's plan was based on a very simple grid of



**The Unit  d'habitation in Marseille by Le Corbusier (1952), and a cross-section through three floors showing two living units (page 64)**

four- to ten-lane motorways. The east-west axis is 1.4 miles (2.2 kilometers) long and 1150 feet (350 meters) wide, and along it lie all the buildings housing local government, sports, and the armed forces, and hotels and theaters. It culminates in the "Square of the Three Powers" with the 38-story government building, the bowl of the congress chamber, the dome of the senate, the law courts, the foreign ministry, and the cathedral (illustration page 65). At right-angles to this monumental axis runs the 8.7-mile (14-kilometer) long north-south axis, flanked by residential complexes with green areas around them, in which people live in slab-shaped buildings five or six stories high. The banks and the shopping center are located at the intersection of the two highways.

Brasilia is an exemplary demonstration of the failure of modern town planning. It was successful only insofar as it solved the housing problem. In all

**The bowl-shaped congress building, and behind it the skyscraper housing the government offices, on the Square of the three Powers in Brasilia by Oscar Niemeyer**

The future becomes  
the present

## High-tech and Post-Modernism

1970–1980

### HIGH-TECH ARCHITECTURE

#### Victory of Technology

On 21 July 1969, Neil Armstrong became the first man to walk on the moon. "That's one small step for a man, one giant leap for mankind," the American astronaut of the Apollo 11 mission told fascinated viewers, watching live as he leapt from the ladder of the space capsule to the surface of the moon.

The conquest of the moon was the culmination of 10 years of continuous competition between the superpowers (the United States and the USSR) for supremacy in space. For a long time – at least since 12 April 1961, when the Soviet cosmonaut Yuri Gagarin became the first man to go into orbit in space – it looked as though the Soviets would be the first to put a man on the moon. But eventually it was the Americans who won, thanks to immense technical and economic resources, overweening ambition, and a fair portion of luck.

Millions of enthralled television viewers on Earth followed the moon landing for hours, in spite of the uncertain black and white pictures, the crackling and rustling sound, and the almost unrecognizably distorted voices of the astronauts.

The moon landing was a triumph of technology, which planned and realized a high-tech fairytale with military precision. Less than six months later, Apollo 12 took off for the next moonshot. The future had begun. Soon the launching pads at Cape Canaveral in Florida

and the Apollo mission control at NASA in Houston, Texas, became familiar sights. Bare scaffolds and ramps, piping and lifts, innumerable video screens, telephones, and headphones gave viewers a direct impression of the equipment necessary to bring to fruition a task of the magnitude of space flight.

#### Architectural promise – speaking architecture

High-tech constructions, for example the launching pads and the mission control center, became a much more frequent everyday sight. The constructions that architects wrote into their designs became ever bolder. In the wake of *Brutalism* as practiced by the Smithsons in England, exposed pipes, wiring, and ventilation ducts became the trademarks of high-tech aesthetics.

The quintessence of 1970s architecture and its love of technology was the Centre National d'Art et de Culture Georges Pompidou in Paris, called the Centre Pompidou for short, the appearance of which alarmed quite a few of those who first saw it, and indeed continues to do so. It was built between 1971 and 1977 in the Place Beaubourg in the heart of the French capital, and gave the impetus to the "grands projets" with which President Mitterrand also sought to immortalize himself in the cityscape, such as the controversial Bastille opera house built by the Canadian Carlos Ott (opened 1989), or the new building for the Bibliothèque Nationale François Mitterrand (National library) by Dominique Perrault (opened 1996). The Centre Pompidou

**1969:** Georges Pompidou becomes president of France.

**1970:** Intensification of the "Troubles" – the conflict between Protestants and Catholics in Northern Ireland. Care for the environment is the issue of the day.

**1971:** Death of the jazz musician and trumpeter Louis Armstrong.

**1972:** Murderous attack by Arab terrorists on the Israeli Olympic team in Munich. Signing of the SALT I Agreement for the limitation of strategic weapons between the USA and the Soviet Union. Re-election of President Nixon.

**1973:** The Watergate affair clouds Nixon's electoral victory. Military coup in Chile brings about the fall of President Salvador Allende and the installing of a military regime under General Augusto Pinochet.

Worldwide petroleum crisis. The Arab states use oil for the first time as a political weapon. The first volume of Aleksandr Solzhenitsyn's description of the Soviet prison camps (*The Gulag Archipelago*) is published, and he is deprived of his Soviet citizenship the following year. Death of the painter Pablo Picasso.

**1974:** The German Federal Chancellor, Willy Brandt, resigns as a result of the Guillaume Chancellery espionage affair.

**1975:** End of the war in Vietnam which had begun in 1963. Death of General Franco in Madrid, followed by the building of a parliamentary democracy. Nobel Prize for economics awarded to Milton Friedman. Microsoft Corporation founded by Bill Gates. First showing of the US film *One Flew Over the Cuckoo's Nest*, with Jack Nicholson.



Scene from the film *Star Wars* by George Lucas, with Carrie Fisher as Princess Leia and the robot R2-D2

**1976:** Death of Mao Zedong. Jimmy Carter becomes president of the United States. A chemical accident in the Italian town of Seveso pollutes the environment with dioxin,

causing a severe reaction to chlorine. The 13-year-old violinist Anne-Sophie Mutter begins her career. Disco music from the films of John Travolta becomes popular.

**1977:** Abduction of the head of the German employers' association H.-M. Schleyer in Cologne by terrorists of the Red Army Faction. First showing of the American science-fiction film *Star Wars*: by George Lucas.

**1978:** Cardinal Karol Wojtyła of Crakow becomes Pope John Paul II.

**1979:** Nobel Peace Prize awarded to the Catholic nun Mother Teresa. After the flight of the Shah, the Ayatollah Khomeini returns to Iran from 15 years in exile to lead the Islamic revolution.

**1980:** Iraqi invasion of Iranian territory begins first Gulf War.



## SIR JAMES STIRLING

"Master of styles," was the heading that the *Deutsche Bauzeitschrift* gave to its obituary of the British architect James Stirling (1926–92). But he was much more than the creator of the useless *columns* and split *pediments* which tend to be dismissed today as jokes. As the leading protagonist of Post-Modernism, he prepared the ground for the paradigm-change in 20th-century architecture. His buildings are polemics against an ossified Modernism. The theories which he developed with Kevin Lynch and Charles Moore when he was Professor at Yale University led to a reconsideration of values that had been neglected by Modernism: the relationship to history and the



Sir James Stirling, circa 1980

surroundings of a building, as well as the power of architecture to make an emotional statement.

The re-evaluation began with quotations from the icons of architectural history. Between 1959 and 1963, long before the term Post-Modernism was coined, Stirling and James Gowan designed the Institute of Engineering at Leicester University. The overall shape of the tower-like part of the building, with its cantilevered lecture theater, seems a downright copy of the picture, much reproduced at that time, of the Rusakov workers' club designed by the Russian Constructivist Konstantin Melnikov in Moscow in 1928 (illustration page 35). The pillars with a capital in the shape of a truncated cone that turned up for the first time in the Olivetti building in Milton Keynes, England, in 1971, and which became the trademark of the firm which Sir James Stirling and Michael Wilford founded the same year, can be read as a greatly simplified quotation from the mushroom-shaped pillars created by Frank Lloyd Wright in 1939 for the Johnson Wax Company headquarters in Racine, Wisconsin (illustration page 16).

Stirling's Staatsgalerie in Stuttgart (1977–84) is an assemblage of historical quotations. The polychrome masonry echoes the medieval church



buildings of Pisa, and the sequence of rooms corresponds to a *neo-Baroque* suite. Stirling assembles a *Deconstructivist* covered entrance, *Gothic* pointed arches, vaguely antique pillared walks, and Bauhaus details around the ruin-like reference to Schinkel's rotunda in the Altes Museum in Berlin, making a varied and colorful collage. In his plan for the Berlin Wissenschaftszentrum (Scientific Center) Sir James also assembled together a whole repertoire of archetypes from architectural history: a cruciform basilica, a Greek stoa, a medieval campanile, and an antique theater.

Distinct from many of the modish hangers-on of Post-Modernism, Stirling never used other styles for their own sake. The exteriors of the Wissenschaftszentrum, so full of architectural "significance," are completely filled with identical utilitarian offices. The basilica of the Wissenschaftszentrum actually houses nothing but toilets and the caretaker's lodging. The real message of the pale blue and pink striped building is pure polemic against the paradigm of Modernism: the unity of form and function.

In his 1985 extension to the Tate Gallery in London, Stirling criticized another ideal of modernism: the showing of the construction. The façade displays a grid of masonry and plastered surfaces, which has nothing to do with the *reinforced concrete construction* inside. Whereas the galleries inside concentrate on displaying the works of J. M. W. Turner in natural light, the outside tries to fit in with the buildings around, a not unreasonable idea always neglected by self-obsessed Modernists. At the same time, the strong colors and spectacular entrance of the Clore Wing attract an attention from the public which would never have been achieved by the pictures alone. This entertainment value is an ideal which Modernism always rejected.

Stirling was fond of relating a key experience of his, which was that when he was a student he visited Palladio's Villa Rotonda. The plaster was falling off the pillars. Something that was pretending to be marble turned out to be "only" brick. But did that alter the architectonic quality of the building?

This latter was what Stirling always cared about most, as can be seen from his last building, the Braun factory in Melsungen, completed in 1992, for which the Stirling and Wilford partnership also engaged the services of the young Berlin architects Walter Nägele and Renzo Vallebuona. The mighty building is in fact made up of a large number of highly independent volumes which fit precisely into the winding

**Colorful variety: the Clore Wing of the Tate Gallery in London (left). The curved administration building of the Braun AG works in Melsungen (right) responds to the topography of the surrounding hills.**

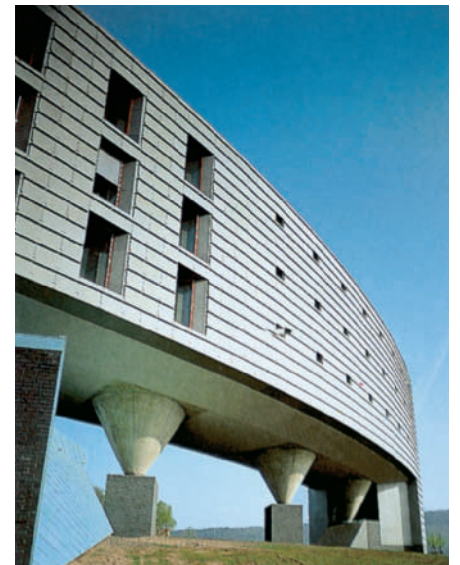
valley of the PfiEFFewiesen. The complex displays not only the way the plastics manufactured there are made, but also the manner in which the building itself is constructed. For example, the concrete wall of the covered car park which extends along the back of the site, is draped with a mesh of formwork, in such a way that even in its completed state the fluid character of the raw material remains recognizable.

To be sure there are quotations from architectural history in Melsungen, but they are never there for themselves, but to create architectural



**As if constructed for the performance of Greek theater: the rotunda in the interior court of the Neue Württembergische Staatsgalerie (New Württemberg National Gallery) in Stuttgart is the summit of Stirling's connotation-rich collage architecture.**

qualities. The production shed may be reminiscent of Peter Behrens's epoch-making AEG-Maschinenfabrik in Berlin, but one's impressions are dominated by the wonderful view offered by the curved construction opening on to the landscape. The upturned truncated cones which support the administrative building are certainly a reminder of Le Corbusier, but above all they point to the off-center distribution of forces. You could list innumerable precedents for the colorful slanting window jambs, but their main effect is to give the light which reaches the desks of the office workers an inspirational fluidity. Have more spatial qualities ever been wrested out of a building task normally treated as workaday?





## Architecture in the 21st century

### The first decade

## A NEW MILLENNIUM

For a lot of people, the beginning of the new millennium was an incisive event, a moment that raised expectations and hopes. But this special date was also marked by fears and anxieties: What would the new age bring?

Accompanied by a worldwide countdown, the third millennium after the birth of Christ began. Notwithstanding the millennium-hype, the development of the world seemed predetermined, thanks to the modern communication technology – above all, the Internet – that increasingly diminishes the contrast between the cultures. The Canadian media scientist Marshall McLuhan had said way back in the 1960s that the world would become a “global village”. The sceptics pointed to the drawbacks of these developments. After all, the bloody war in former Yugoslavia in the 1990s showed what dramatic consequences these unsolved ethnic and religious conflicts could have.

Then came 11 September 2001. In an attack on the Twin Towers of the World Trade Center (WTC), constructed in 1973 by Minuro Yamasaki, terrorists killed over 2,000 people. Millions of spectators all over the world watched the attack on one of the symbols of the Western world on their TV screens. Even today, the shock sits deep because the attack exposed the vulnerability of the free world drastically. The terrorists did not hit just any building; they hit both the 1361-foot

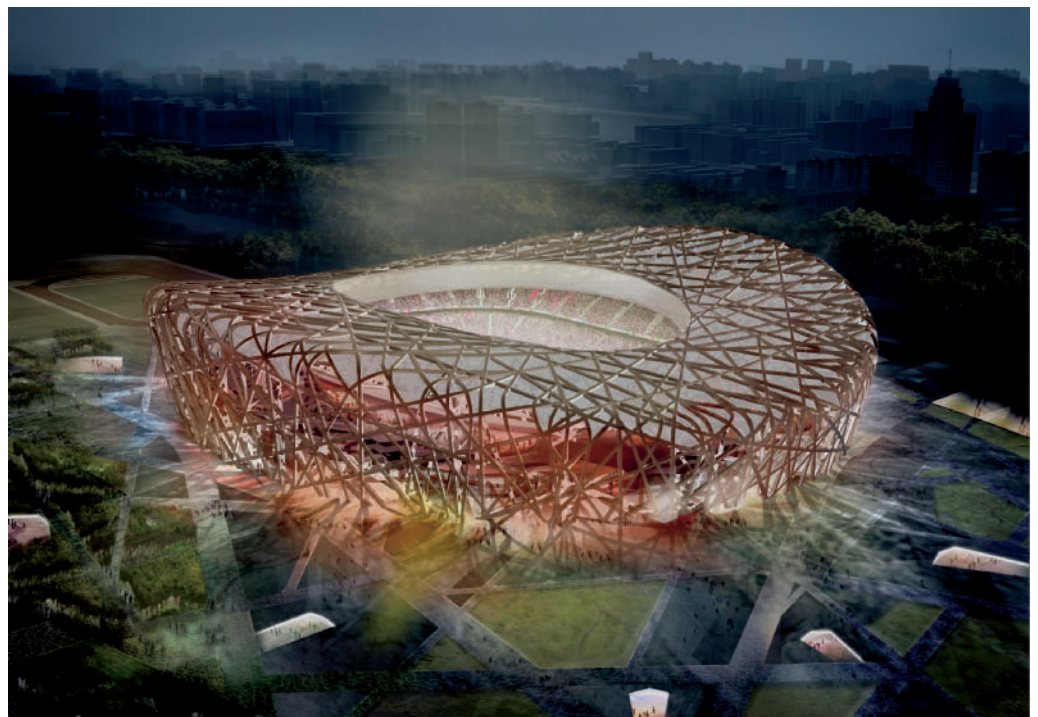
(415-meters) high towers of WTC, the monument which defined the skyline of New York. Besides its actual function as an office building, WTC was an icon that had a second existence as a two-dimensional symbol of architecture known worldwide. It adorned countless postcards and posters, and also formed the background for many movies from the Hollywood “dream factory”.

## CONSTRUCTED ICONS

The term icon comes from the Greek word for picture. According to the tradition of the eastern church, it still signifies precious cult pictures, on which the figures of the Holy are represented against a gold-plated background. In architecture, the constructed icons are not the invention of modernity; with the Tower of Babel, whose story is narrated in the Old Testament, they have existed since the beginning of all constructions. The number of these architecture icons has increased since the end of the 1990s. An inspiration for this was the Guggenheim Museum, which was constructed by Frank O. Gehry in 1997 in the North Spanish city of Bilbao. Its silver shimmering components, which seem to have been inspired by Cubism, give the house its distinctive appearance. Since the sensational success of the museum, the “Bilbao effect” is observed worldwide. Whether glassy cool or concrete gray,

### Herzog & de Meuron, *National Stadium*, Peking, 2003–2007

The stadium for the Olympic Games 2008, designed by Basel star architects Herzog & de Meuron, appears like a gigantic bird nest. For the expressive interwoven construction of the stadium façade, Herzog & de Meuron used approximately 40,000 tons of heavy prefabricated steel elements. The powerful steel beams overlap in all directions. The inside of the 230-foot (70-meters) high sports complex in turn consists of a sophisticated concrete construction that has a seating capacity of up to 91,000 spectators. After the Alliance Arena in Munich with its colorfully illuminated plastic cover, Herzog & de Meuron have come up with their third sports stadium, a building with an expressive picture effect. This has helped them to reinforce their position as one of the most innovative architecture offices worldwide.



## GLOSSARY OF TERMS

The words in *italics* in the main text are explained in this glossary. Those italicized here are further elucidated elsewhere in the glossary or in the names index.

**abstraction** Tendency in modern art starting about 1850 to simplify forms when representing a naturalistic model in a work of art, especially in painting. The culmination of this tendency is in painting without a subject – abstract painting – as for example in the period around 1910 with the works of *Piet Mondrian* or *Kasimir Malevich*.

**academic** The nature of the education, conforming to traditional values, formerly offered by art schools. Is generally used pejoratively to refer to conservative art in contrast to innovative movements such as *Impressionism*, *Expressionism* and the *Secession*.

**Amsterdam School** Influential Dutch *Expressionist* architectural movement, whose chief representatives, *Johann Melchior van der Mey*, *Michel de Klerk*, and *Pieter Kramer*, constructed strongly expressive buildings in brick.

**antiquity** Generic term describing the two high periods of early European culture: Greek antiquity (at its apogee in the 5th and 4th centuries BC) and Roman antiquity (1st and 2nd centuries AD).

**arcade** A range of *arches* carried on piers or *columns*, either free-standing or attached to a wall.

**arch** Any upwardly curved element which forms a link between two vertical elements. Extremely varied types of arches have existed since the time of Ancient Rome. The use of different types of arch characterizes specific epochs of architectural history (semicircular arch: *Romanesque*, *Renaissance*; pointed arch: *Gothic*). Flattened arches are also frequently to be found; these consist of a segment of a semicircular arch. The functional purpose of an arch is to distribute a down force (e.g., the weight of a vaulted roof) into several supports.

**architectural engineering** Building of a kind which since the days of *Antiquity* could only be carried out with special technical knowledge. In the 19th century this was represented

mainly by stations, bridges, and also buildings entirely of *iron*, such as the Eiffel Tower. The 20th century has seen architectural engineering carried to new heights, especially in sports stadia. (See *Pier Luigi Nervi* and *Frei Otto*).

**architecture parlante** French term meaning “speaking architecture,” describing buildings where the form gives an indication as to their use, as for instance in the case of *Fritz Höger’s* Chile House, which was built for a shipping company.

**Art Déco** A style in art in the 20s and 30s, whose name derives from the “Exposition internationale des arts décoratifs et industriels modernes” (Paris, 1925). One of its distinguishing marks is rounded corners.

**Art Nouveau** Generic term for a movement which had many variants: “Art Nouveau” in France, “Modern Style” in England, “Jugendstil” in Germany, “Stile liberty” in Italy, “Modernismo” in Spain. With its flat-looking *ornamentation* displaying a wealth of vegetal curves, it was the complete opposite to *academic* art.

**Arts and Crafts Movement** Influential movement in the area of applied art, originating in England in the middle of the 19th century under the leadership of *William Morris*, *Philip Webb* and *John Ruskin*. They were in favor of a return to the craft tradition of the Middle Ages and were against industrial mass production.

**attic** (specialist sense) An erection above the cornice, hiding the beginning of the roof. Often used to give emphasis to a centrally projecting volume.

**axis (line of sight)** A straight line from the eye to the object of sight. Buildings and gardens are generally laid out *symmetrically* on either side of a line of sight, which enhances their effect. Window axes are imaginary lines running from back to front or from side to side of a building.

**baroque** (Portuguese “barocco” – small stone, unevenly shaped pearl) This idea, derived from the

art of the jeweler, was used in a derogatory sense (meaning bizarre or bulbous) by the classicists about the previous era. The terms cover art and culture of the 17th and 18th centuries in Europe. It was very different in the various countries. Generally starting from the formal canon of *antiquity*, the baroque developed colorful and opulent decorations, sometimes made of *stucco*, which created a particularly magnificent impression. It was disliked by the classicists of the 18th and early 19th centuries on the grounds that it was overladen. It was brought to life again from about 1860 in the *neo-Baroque*.

**base** Bottom section of a building or sculpture (see *pedestal*).

**belvedere** (Italian: beautiful view) Originally the description of, among other things, a pavilion (usually in a garden), which can be used to admire a view.

**border** *Ornamental* decorative panel at the edge of a fabric. Also used in connection with walls.

**brick** See also *clinker*. Block made of clay in various colors (usually red or yellow) baked till it is hard. Bricks that have been submitted to a great heat are called *clinker*, and were much used in expressionist architecture.

**Brücke, Die** A group of artists from Dresden, founded in 1905 and including among others Karl Schmidt Rottluff, Erich Heckel, Otto Müller, Max Pechstein and Ludwig Kirchner. Their strongly expressive and highly colorful works, influenced by *Gothic* models and primitive art, founded the German *Expressionist* movement in painting.

**Brutalism** Idea introduced by *Le Corbusier* originally relating to the use of unfinished, bare concrete, and taken up by the *Smithsons* and others in Great Britain. Brutalism stands for architecture that is truthful about its materials, and where nothing is covered up, so that functional relationships are directly visible.

**capital** The top of a column, a form deriving from the architecture of *Antiquity*. It differs in shape according to which *order* it belongs to (Doric, Ionic, Corinthian or Composite).

**cast iron art** An art form found in the decorative arts and architecture, especially in 19th century Prussia (*Schinkel*, Memorial on the Kreuzberg, Berlin 1818–21) which was attributed a high degree of national importance.

**cement** Waterproof building material made of a mixture of burnt lime and clay. An important ingredient of *concrete*.

**ceramic tiles** Tiles made of fired clay, for the most part glazed and colored (see *faience*).

**Charter of Athens** see *CIAM*

**School of Chicago** A group of American architects such as *William Le Baron Jenney* and *Louis Sullivan*, who took part in the rebuilding of Chicago in the late 19th century and built skyscrapers that became signposts for the new.

**CIAM** (Congrès Internationaux d’Architecture Moderne). International forum of the avant-garde for modernist architects founded in 1927 under the leadership of *Le Corbusier* and Siegfried Gidion. The congresses, which were highly ideological and formalistic, took a different theme each time. So, the outcome of CIAM II, in 1929, led by Ernst May, was a report titled “The minimal-living unit.” In 1930 in Brussels there followed “Rational building methods,” when Gropius was one of the speakers. CIAM IV (1933) was devoted to the functional city. From this emerged the “Charter of Athens,” which bore the stamp of *Le Corbusier’s* concepts. The Charter of Athens presupposes the division of the modern city into zones corresponding to their main functions: living, work, leisure and transport. Against a background of increasing criticism of the International Style and the advent of *Brutalism*, the 10th and last CIAM took place in Otterlo in 1959.

**classicism** Return of the classical formal repertoire of the architecture of *Antiquity* in Europe and North America in the late 18th and early 19th centuries (see *Schinkel*).

**climatization** A technical system for optimizing the balance of incoming and outgoing air in buildings. Especially important in museums, whose treasures require a constant climate, as

well as buildings holding a lot of people, as for instance public halls and skyscrapers.

**clinker** Brick that has been baked at a very high temperature, so that the pores sinter, that is to say acquire a glassy waterproof surface.

**concrete** A resistant, relatively light and cheap substance, made of sand, gravel, and *cement*, which sets hard as stone, and can be cast in a desired shape using *formwork*. It was brought to perfection in France in 1879 by Hennebique in the form of reinforced concrete. This system enhances the load-bearing properties of concrete by the addition of an iron or steel skeleton, so that enormous roof areas can be spanned. The adaptability of concrete to a variety of usages has made it one of the most important building materials of the 20th century (see *Perret*, *Le Corbusier*).

**colonnade** Hall or walk with pillars. A roofed area with rows of pillars and *entablature*.

**column** Cylindrical support characterized by its swelling form (entasis). A column has a base, clearly differentiated from the structure underneath, and a *capital* which tops the column, and connects it to the *entablature*.

**conservation** Efforts, beginning in the 19th century, to preserve works of art from previous epochs (preservation), or to repair them (restoration).

**Constructivism** A theory of art held by *Tatlin* and *El Lissitzky* in the early days of the Soviet Union, according to which architecture must be reduced to its necessary functional (see *function*) elements, so that it is dominated by pure construction.

**cornice** A horizontal molded projection which crowns a building.

**Cubism** (Latin: "cubus" – cube) A style adopted by *Picasso*, *Braque* and *Delaunay* from 1907 onwards, whereby natural forms are reduced to their geometric basic construction. The corresponding movement in architecture was that of the Prague Cubists.

**curtain wall** A non load-bearing *façade* or wall of glass, granite or

plastic hung in front of a load-bearing construction.

**Deconstructivism** This movement became known through the exhibition "Deconstructivist Architecture" organized by Philip Johnson and Mark Wigley in 1988 at the Museum of Modern Art. Deconstructivist buildings differ from Modernist or Post-Modern buildings through their intersecting, splintered, and sharply inclined forms. They express a general sense of destabilization which has been widespread in the West (and not just in the West) in the 1980s and 90s. The viewer's first sensation on seeing many of these buildings is astonishment, aroused by their apparent technical impossibility, their astonishing use of materials and their unusual formal language. The chief representatives of Deconstructivism, which has now become an international movement are *Gehry*, *Libeskind*, *Hadid*, the COOP Himmelblau, Peter Eisenman, and Bernard Tschumi.

**De Stijl** A group of artists formed in Holland in 1917 under the influence of *Piet Mondrian*, and which included, among others, *Theo Doesburg*, *Gerrit Thomas Rietveld*, and *Jacobus Johannes Pieter Oud*. Their aim was to produce applied arts and architecture in an *abstract* language of forms freed from the decoration of traditional architecture.

**Deutscher Werkbund** An association, founded in 1907, of craftsmen, industrialists, and architects to promote the production of art on a national scale, and extend its economic relevance and industrialization.

**Diocletian window** Also known as Thermal window. A semi-circular window, subdivided by two vertical supports. First appears in Ancient Rome.

**dome** A type of roof having the shape of part of a sphere, which has been in use since Ancient Rome. Has frequently appeared in the West since the *Renaissance* in palaces and sacral buildings, but it is also found in quite ordinary buildings in Islamic architecture.

**Doric** One of the three most important *orders of columns* of

Ancient Greece, which has a squat shaft with no base and broad *flutes*, and is crowned by a spreading *capital* and a frieze with triglyphs (surface in the *entablature* decorated with grooves).

**dry stone walls** Traditional walls where the stones are piled on top of each other and not bound together with any agent such as mortar.

**eclecticism** A mixture of several historical *styles* in a building. It predominates in *Historicism* but is also to be found in *Post-Modernism*.

**entablature** That part of an order which is above the column, including the architrave, the *frieze*, and the *cornice*.

**epoch** Historical period in which a particular *style* and its characteristic *ornamentation* develop.

**Expressionism** Art movement in the early 20th century, chiefly in western and eastern Europe, covering painting (*Die Brücke*, the *Fauves*) and architecture (the *Amsterdam School*). The distinguishing features of Expressionism in architecture are forms with a lot of movement and color and frequently with detailed ornamentation. *Brick* and *clinker* are the building materials most frequently used.

**façade** (Latin: "facies" – the external form) The "face" of a house, usually the front wall or the side that is most intended to be seen. The appearance and articulation of a *façade* often reveal the characteristics of an *epoch* or of a particular *style*.

**Fauves** (French: the wild men) A group of artists headed by Henri Matisse, roughly contemporaneous with the Dresden *Brücke* Artists, who created an art characterized by vivid movement and studies from nature.

**faience** Brightly colored pottery deriving its name from the Italian city of Faenza, which was the center of its production in the *Renaissance*.

**flat roof** See *roof*.

**flattened arch** See *arch*.

**fluting** Vertical grooves on the shaft of a *column*.

**formwork** Temporary, generally prefabricated hollow structure into which liquid *concrete* is

poured. After the concrete has hardened, the formwork is then removed. Bare concrete often shows the traces of the formwork, sometimes this includes the marks of the grain when it was made of wooden planks.

**frieze** An area, normally just under the roof or ceiling which has been used since *Antiquity* for decoration, either in an *abstract* or figurative way.

**function, functionalism** Basic to the design of ground plans and *façades* in modern architecture from *Sullivan* ("form follows function") right up till *Post-Modernism*. This concept, which implies that the function of a building should dominate its design, making it as economic as possible, was chiefly to be found in industrial building, but also occurred in residential building, where it implied doing away with elements considered to be superfluous, such as decoration, and with rooms that were mainly for show. It was chiefly through the Bauhaus that functionalism became the dominant principle in the organization of architecture in the 20th century. More recent movements such as *Post-Modernism* and *Deconstructivism* are characterized by their critical attitude to a one-sided emphasis on the functional in architecture.

**Futurism** Modern art movement in pre-First World War Italy, inspired by enthusiasm for the future. (In architecture see, for example, the designs of *Sant'Elias*).

**gable** A triangular surface in the *roof* between two sloping elements. In major building works such as castles, there are often remarkable sculptures in the gables. Split gables (or pediments) are to be found especially in *Renaissance*, *baroque* and *Post-Modern* buildings. These do not join at the top but have an interrupted form, giving a dramatic note to the culmination of the building.

**glass architecture** Glass has entered architecture more and more since *John Paxton's* Crystal Palace. *Bruno Taut's* glass pavilion at the *Werkbund* exhibition in Cologne united



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