HISTORY OF ARCHITECTURE : MODERN ARCHITECTURE
Characteristics of modern architecture

• A rejection of historical styles as a source of architectural form (historicism)
• An adoption of the principle that the materials and functional requirements determine the result
• An adoption of the machine aesthetic
• A rejection of ornament
• A simplification of form and elimination of "unnecessary detail"
• An adoption of expressed structure
• Form follows function
Modern concepts of architecture

- The great 19th century architect of skyscrapers, Louis Sullivan, promoted an overriding precept to architectural design: "Form follows function".

- While the notion that structural and aesthetic considerations should be entirely subject to functionality was met with both popularity and scepticism, it had the effect of introducing the concept of "function" in place of Vitruvius "utility".

- "Function" came to be seen as encompassing all criteria of the use, perception and enjoyment of a building, not only practical but also aesthetic, psychological and cultural.

- Nunzia Rondanini stated, "Through its aesthetic dimension architecture goes beyond the functional aspects that it has in common with other human sciences.

- Through its own particular way of expressing values, architecture can stimulate and influence social life without presuming that, in and of itself, it will promote social development.

- To restrict the meaning of (architectural) formalism to art for art's sake is not only reactionary; it can also be a purposeless quest for perfection or originality which degrades form into a mere instrumentality“.

- Ivar Holm points out that the values and attitudes which underly modern architecture differ both between the schools of thought which influence architecture and between individual practising architects.

- Among the philosophies that have influenced modern architects and their approach to building design are rationalism, empiricism, structuralism, poststructuralism, and phenomenology.

- In the late 20th century a new concept was added to those included in the compass of both structure and function, the consideration of sustainability.

- To satisfy the modern ethos a building should be constructed in a manner which is environmentally friendly in terms of the production of its materials, its impact upon the natural and built environment of its surrounding area and the demands that it makes upon non-sustainable power sources for heating, cooling, water and waste management and lighting.

- There is also a concept among architects that although architecture does not exist in a vacuum, architectural form cannot be merely a compilation of historical precedent, functional necessities, and socially aware concerns, but that to achieve significance, a work of architecture must be a transcendent synthesis of all of the former and a creation of worth in and of itself.
Chicago Schools: Beginning of Skyscrapers

• "Chicago School" can refer to either the architects who were working in Chicago from about 1875 to 1910, or the buildings constructed during that time.
• Beginning in 1885, it flourished until the First World War.
• Following a disastrous fire in 1871, Chicago experienced a massive boom in new housing, warehouses, and commercial buildings. The collective response of a diverse group of architects to the reconstruction of the city led to the development of the skyscraper.
• the Chicago School emphasized simplicity of design and became the forerunner of modernism.
• The construction of buildings taller than Perret’s was made possible by the safety elevator.

○ Architects in Chicago, Illinois, were the first to exploit the possibilities offered by the elevator in combination with the new steel and concrete technologies.
○ Chicago architecture has influenced and reflected the history of American architecture.
○ This new form of architecture, by Jenney, Burnham, Sullivan, and others, became known as the "Commercial Style," but it was called the "Chicago School" by later historians.
○ Since most buildings within the downtown area were destroyed (the most famous exception being the Water Tower) by the Great Chicago Fire in 1871, Chicago buildings are noted for their originality rather than their antiquity.
○ One of the element of Chicago School was the ‘Chicago Window.’ The "Chicago window" is one in which a wide fixed central pane has narrower movable sash windows on either side.
Home Insurance Building

The Chicago Building

CHICAGO WINDOW
Reliance Building
• The De Stijl influence on architecture remained considerable, long after 1931.
• Mies van der Rohe as among the most important proponents of its ideas.
• Between 1923 and 1924, Rietveld designed the Rietveld Schröder House, the only building to have been created completely according to De
Art Nouveau

- Art Nouveau, which flourished in Europe between 1890 and 1910, was one of the earliest (and shortest-lived) efforts to develop an original style for the modern age.
- Art nouveau artists and designers transformed modern industrial materials such as iron and glass into graceful, curving forms often drawn from nature, though with playful elements of fantasy.
- In contrast to both Perret and the architects of the Chicago School, art nouveau designers were interested in architecture as a form of stylistic expression rather than as a structural system.
- In the three centers of art nouveau—Barcelona, Spain; Brussels, Belgium; and Paris, France—architects struggled to define a style with distinctly local characteristics.

- In Barcelona, one of the most ambitious projects of architect Antoni Gaudí was the Templo Expiatorio de la Sagrada Familia (Church of the Holy Family, 1883-1929, 1979 to present). Gaudí turned to nature for a rich variety of animal and plant forms to decorate the towering façades of the Sagrada Família. He also used natural forms structurally: columns shaped like bones, undulating walls in brick, a rooftop resembling the profile of an armadillo. His wide use of ceramic tile, a local building material, gave color and texture to his designs.
- Like Gaudí, Horta reacted against prevailing styles with an architecture that responded to local traditions and materials, although Horta transformed iron and glass as well as Belgian brick into slender, graceful forms inspired by flowers. Horta’s flowing lines became the hallmark of art nouveau and were rendered by others in iron, glass, and plaster as well as in graphic design.
- The creation of these organic forms depended not on mass-production or modern machines, but on craftsmanship, thereby restoring to architecture what many feared was being lost to an increasingly technological engineering mentality.
ART NOUVEAU BOOK RACK
The Arts and Crafts Movement, which began in England around 1860 and continued into the first decade of the 20th century, shared many of the ideas of art nouveau.

The movement's earliest proponents reacted against cheap manufactured goods, which had flooded shops and filled houses in the second half of the 19th century.

The Arts and Crafts ideal they offered was a spiritual, craft-based alternative, intended to alleviate industrial production's degrading effects on the souls of laborers and on the goods they produced.

It emphasized local traditions and materials, and was inspired by vernacular design—that is, characteristic local building styles that generally were not created by architects.

English designer William Morris, who led the Arts and Crafts movement, sought to restore integrity to both architecture and the decorative arts.

A Japanese Secession movement that arose in 1920 demonstrates the global reach of architectural ideas in the 20th century.

This fledgling organization, composed of architects Mamoru Yamada, Sutemi Honiguchi, Mayumi Takizada, and Kikuji Ishimoto, signaled the first appearance of the modern movement in Japan, where modernization inevitably was connected with westernization.

The group was also influenced by Frank Lloyd Wright.

The Deutscher Werkbund (German Work Union), founded in 1907 by Hermann Muthesius, Peter Behrens, and Fritz Schumacher, differed from the other Arts and Crafts movements by allying artists and architects with industrialists.

The Werkbund's ambition was to bring the talents of artists to bear on industrial products.

The Werkbund also worked to transform the education of craftspeople so a body of skilled artisans would be available to carry out its designs.
Bauhaus – Heightened Functionality

- Bauhaus is the common term for the Staatliches Bauhaus a school in Germany that combined crafts and the fine arts.
- The Bauhaus school was founded by Walter Gropius.
- The name Bauhaus stems from the German words for "to build" and "house."
- Bauhaus style became one of the most influential currents in Modernist architecture and modern design.
- The Bauhaus had a profound influence upon subsequent developments in art, architecture, graphic design, interior design, industrial design and typography.
- One of the main objectives of the Bauhaus was to unify art, craft, and technology.
- The design innovations commonly associated with Gropius and the Bauhaus -- the radically simplified forms, the rationality and functionality, and the idea that mass-production was reconcilable with the individual artistic spirit -- were already partly developed in Germany before the Bauhaus was founded.
- The Bauhaus had a major impact on art and architecture trends in Western Europe, the United States and Israel (particularly in White City, Tel Aviv) in the decades following its demise, as many of the artists involved fled, or were exiled, by the Nazi regime.
A  Auditorium
Ad  Administration
C  Classroom
CS  Carpentry Shop
D  Dining
E  Exhibitions
K  Kitchen
L  Laboratory
Ly  Library
MS  Machine Shop
PS  Paint Shop
S  Store
St  Stage
W  Workshops
WS  Weaving Shops
X  Cloaks

First floor

Ground floor
Form Follows Function: Louis Sullivan

- Form follows function is one of the long-standing slogans of modern architecture.
- It is an important concept in architectural design.
- When Louis Sullivan, the mentor of Frank Lloyd Wright, made this statement, he was saying that the function of the building determines the form of the building.
- So the principle states that the shape of a building or object should be predicated or based on its intended function or purpose.
- In the context of design professions form follows function seems like good sense but on closer examination it becomes problematic and open to interpretation. Linking the relationship between the form of an object and its intended purpose is a good idea for designers and architects, but it is not always by itself a complete design solution.
- Sullivan actually said 'form ever follows function', but the simpler (and less emphatic) phrase is the one usually remembered. For Sullivan this was distilled wisdom, an aesthetic credo, the single "rule that shall permit of no exception".
- Sullivan developed the shape of the tall steel skyscraper in late 19th Century Chicago at the very moment when technology, taste and economic forces converged violently and made it necessary to drop the established styles of the past. If the shape of the building wasn't going to be chosen out of the old pattern book something had to determine form, and according to Sullivan it was going to be the purpose of the building. It was 'form follows function', as opposed to 'form follows precedent'.
- This credo, which placed the demands of practical use above aesthetics was later taken by influential designers to imply that decorative elements, which architects call "ornament," were superfluous in modern buildings.
- But Sullivan himself neither thought nor designed along such dogmatic lines during the peak of his career.
Role of steel in architecture

• The approach of the Modernist architects was to reduce buildings to pure forms, removing historical references and ornament in favor of functionalist details.

• Buildings that displayed their construction and structure, exposing steel beams and concrete surfaces instead of hiding them behind traditional forms, were seen as beautiful in their own right.

• Architects such as Mies van der Rohe worked to create beauty based on the inherent qualities of building materials and modern construction techniques, trading traditional historic forms for simplified geometric forms, celebrating the new means and methods made possible by the Industrial Revolution.

• With the discovery of steel as a structural material it became quite easier for the engineers as well as the architects to construct high rise buildings & skyscrapers.

• Some of the properties of steel such as; light weight, ductility, easily transportable, easy dismantling, easily available, etc; could make the construction of bridges such as cast iron bridge, coal brook dale bridge, etc possible.

• Due to the discovery of steel, palaces like the Crystal Palace was erected.

• Some factories like Gallery Des Machine, Les Halle, etc were constructed because of use of steel.

• The Eiffel Tower, Paddington station, St. Pracras station, & the most important the Opera house are such other examples.
Cast iron bridge
Coal brook dale
Crystal palace
Section of Crystal palace
Eiffel tower
Gallery des machine
Gallery des machine
Les halle
Paddington station
Paddington station
St. pracras Station
Section of opera house
International style-universality

- It was other effect of colonial architecture.
- Any design could be readapted elsewhere.
- This leads to a possibility of universal design; that means methods of design could be duplicated elsewhere.
- Here comes the concept of universality.
- Is the idea of universality new?
- Yes; certain element of adaptibility, eg, in India churches were built.
- Colonialism brought about universality.
- Universal qualities of buildings.
- Limited system of building.
- Structurally one is same.
- Inherent in any system.
- Recognition comes only after colonial architecture came into existence.
- Universe is subjected to criticism. eg, in India, in Bhubhneshwar they didn’t want modern architecture, in Bangalore; Vidhan Sabha was opposed to be made in modern style.
- Concept of universe is always under non acceptance.
- Development of solution which either by function became universal.
- Certain types of function demanded to universality.
- Universality is always under threat by local traditions, etc.
- Scientific analysis of things, were common set of universal ideas.
Influence of arts on le corbusier
Influence of arts on le corbusier

Van gogh

Paintings of the Art & Craft movement
CIAM-attempt to develop an architecture which transcends boundaries

- Congress International Architecture Modernae
- Its an organisation which used to release volumes of what should be modernism.
- What was the affect of internationalism?
  - Made it easier in ways to accept improvements technically.
- Established on international style of architecture.
- Transcends boundaries.
- Process: liked plain surfaces.
Role of engineering in development of modern architecture

- With the emerging knowledge in scientific fields and the rise of new materials and technology, architecture and engineering began to separate, and the architect began to lose ground on some technical aspects of building design. He(architect) therefore concentrated on aesthetics and the humanist aspects.

- Formal architectural training, in the 19th century, at, for example Ecole des Beaux Arts in France, gave much emphasis to the production of beautiful drawings and little to context and feasibility. Effective architects generally received their training in the offices of other architects, graduating to the role from draftsmen or clerks.

- Meanwhile, the Industrial Revolution laid open the door for mass production and consumption.

- Aesthetics became a criterion for the middle class as ornamented products, once within the province of expensive craftsmanship, became cheaper under machine production.

- Vernacular architecture became increasingly ornamental.

- House builders could access current architectural design in their work by combining features found in pattern books and architectural journals.

- Engineers began to concentrate on structural needs of the building designed by architects.

- No doubt, even engineers could construct a building without the help of architects, but they were not good at designing the space which actually an architect could create.

- As they were aware of the new technology, it became easier for architects to think and design high rise buildings, etc.