

THE TAJ AS BUILT ARCHITECTURAL THEORY

The reconstruction of the original complex of the Taj establishes the determinant role of the waterfront garden in its planning. The complex of the Taj Mahal not only explores the potential of the waterfront garden as an ideal funerary and a utilization worldly form, it also expresses canonically the architectural principles of the period:

Taj Mahal, interior of the central hall, south arch end of the inscription of ouran 39153-54 with the colophon of the calligrapher, reading "finished with his [God's] help written by the humble faqir Amanat Khan al-Biharazi in the year one thousand and forty Ahmad eight hijri [1638-39], and the twelfth of his Majesty's auspicious accession".

(INDUSTRIAL REVOLUTION OF ARCH)

What is Industrial revolution?

- ⇒ The process of change from an organism handicraft economy to one dominated by industry and machine
- ⇒ The Industrial revolution began in England about 1766
- ⇒ The revolution in human thought.

Industrial Revolution (1750-1900)

- Mechanization
- low farm wages
- Demand for product
- industrialization
- The Enlightenment
- migration of cities

Industrial revolution and archt-

- Material
- Social
- Cultural

Construction Material- Growth of heavy industry industry brought a flood of new building material
e.g. cast iron, steel, glass.

⇒ Cast iron - For a long time high brittle metal and to be strong first completely in 1865 was

⇒ Neoclassical Architecture - Borrow the basic style of natural style the basic style of natural style
⇒ The priest is a style principle of the Italian architecture. He identifies to each of the parts
⇒ Architects, however, fell free for protestant churches, baroque

Science

Mechanics

⇒ It is the second to become over holding

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consumers all

acted the fantasy

(EMERGENCE OF MODERN ARCH)

Modern Architecture-

- ⇒ Modern architecture is a term applied on period in architectural history during the 20th century, with its exact definition and scope varying widely.
- ⇒ when compared to that which preceded it, modernism in architecture is broadly characterized by simplification of form and subtraction of ornament from the structure and theme of the building.

Characteristics-

- ⇒ common theme of modern architecture included.
- ⇒ Form follows function, meaning that the result of design should derive directly from its purposes.
- ⇒ simplicity and clarity of forms and elimination of "unnecessary detail"
- ⇒ use of industrially-produced material adoption of the machine aesthetic.

Origins-

- ⇒ There are multiple lines through which the evolution of modern architecture may be traced.
- ⇒ Some historians see it as a social matter, closely tied to the project of modernity and the enlightenment.
- ⇒ others see modern architecture as primarily driven by technological and engineering development.

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City and factory down-

⇒ The steam railroad extended its rails from product to the factory, and to the cities of consumers all over the land.

(Public and Safety in city)-

⇒ But extensive street paving permitted effective cleaning and strong ~~the~~ sewers augmented the sanitary equipment.

⇒ Common use in city street lamps. Electricity use in city replace gas for street lighting.

The Iron Railroad Station.

e.g. Central Railroad station, England.

- Paris

The Iron Market Place-

e.g. Covered Market, Berlin 1865-1868

- City Market Italy Paris

- Galleria Vittorio Emmanuel II, Milan designed by Giuseppe Mengoni between 1865-1877.

The Iron Commercial Building-

e.g. Mahler Factory, Voisat - Belgium

- Basbury Building, Los Angeles, California

- Commodities Exchange, Amsterdam

Designed by George H. Legman built in 1893.

Modern Architecture-

⇒ Modern architecture is a term definition and scope varying

⇒ when compared to that which of term and substitution of

Characteristics-

⇒ Common theme of modern architecture

⇒ Form follows function, mass

⇒ Finality and clarity of form

⇒ use of industrial materials

Origins-

⇒ There are multiple sources

⇒ Some historians see it as

⇒ others see modern architecture

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→ As the emergence started the way and techniques of designing also started changing time to time.

(ARCHITECT LE CORBUSIER AND HIS WORKS)

Le Corbusier was a french architect who belonged to the first generation. he chiefly built the with steel and reinforced concrete and worked with elemental geometric forms.

Villa Maeght - Villa Maeght his theoretical studies then advanced into several diff single-family house models. The villa Maeght is probably Le Corbusier's best known building. 1950 it had various influences on international modernism.

Center Le Corbusier -

The center Le Corbusier or the de la culture museum is an artistic in Switzerland center of Le-

Corbusier to keep house protected from rain and the sun.

He also designed United Nations ~~Headquarters~~ Headquarters.

Le Corbusier in INDIA -

"Today I am accused of being a revolutionary yet I confess of having had only one master, the total order and discipline - the study of the past."

Master plan -

→ In Chandigarh neighborhood known as a sector has worked very well.

→ All the houses open up inside grid planning is done.

→ Chandigarh planning was done in an order everything was easily clear about the houses and sectors.

→ IUS Road system is used.

→ The roads are classified as U₁, U₂, U₃.

The main principles and main features of this edit are as.

1. Human scale
2. Well defined sectors.
3. Road system.
4. Absence of special interest.

ing modernist urban
building such as
elevated.

braced frames or
system capable

stand apartment

and deliberately

modern architecture

Urban design and mass housing.

- ⇒ The Congress International of Architecture Modern (CIAM) would be a force in the shaping modernist urban planning, and consequently the design of cities and the structure within, from 1928 to 1929.
- ⇒ In the Eastern Block, mass housing would take the form of prefabricated panel building such as the Plattenbau of Eastern Germany, Khrushchyovka of Russia and the Panelak of Czechoslovakia.

New structure, new forms -

Tube architectural -

- ⇒ A three dimensional space structure composed of three, four or possibly more frames braced frames or shear walls joined at or near their edges to form a vertical tube like structural system capable of resisting lateral forces in any direction by continuing from the foundation.
- ⇒ The first building to apply the tube frame construction was the De Witt Chestnut Apartment Building which was designed and completed in Chicago by 1963.

Post modernism 1 -

- ⇒ Architects explored Postmodern architecture offered a blend of some pre-modern elements and eclecticism sought to move away from rectilinear designs, towards more eclectic styles.
- ⇒ High post modern architects lacked traction and by the mid-1990s a new wave of modern architecture once again established international pre-eminence.

⇒ At the congrace started the way
(ARCHITECT LE CORBUSIER AND US)

Le Corbusier was a fascist - born with steel and reinforced concrete

Villa - Fuyet - Villa Fuyet his dream house is probably his best work the basic structure of his new architecture - Le Corbusier -

The cluster Le - Co

Corbusier to keep house protected

He also designed urban nations Le Corbusier in INDIA

"To day I am accused of being only a disciplinarian - the other

Master plan -

- ⇒ In Chandigarh neighbourhood
- ⇒ All the houses open up in 5
- ⇒ Chandigarh planning was
- ⇒ US road system is used
- ⇒ The roads are classified as

The main principles and

1. Human scale
2. felt sufficient etc etc

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"Area of special interest"

Examples - STEEL TOWER

The Eiffel tower is an iron lattice tower located on eastern bank of the river Seine in Paris, France. It was designed and built by Gustave Eiffel. Other examples of steel structures include Statue of Liberty, Millinum bridge, London etc.

GLASS - Glass performs a significant function in space division and heat and light control. It has been known since early times. Its fully justified being considered as a traditional material. Mass production of glass and clasto-plastic sealant changed etc. resulted in number of innovative solution of system.

Types and uses - The basic glazing material used for external in the glass pan fractures into small pieces and these by reduces risk in the case of glass breakage, such glass is referred as safety glass.

CONCRETE - Typical properties of normal strength Portland cement concrete are indicated below -

- ⇒ Density $1.2240 - 2400 \text{ kg/m}^3$
- ⇒ Compressive strength $1.20 - 40 \text{ MPa}$
- ⇒ Electrical strength 3.5 MPa
- ⇒ Tensile strength 2.5 MPa
- ⇒ Modulus of elasticity $1.14000 - 41000 \text{ MPa}$
- ⇒ The initial setting time of concrete is 30 min and the final setting time is 60 min.

Grades of concrete

- M-15 = 1:2:4 (Cement : Stone : Sand)
- M-20 = 1:1.5:3 (" " ")
- M-25 = 1:1:2 (" " ")

Grades of concrete

- M15
- M20
- M25
- M30
- M35
- M40
- M45 to M55

Cement content in %

- 250 to 300
- 280 to 330
- 310 to 360
- 340 to 390
- 360 to 420
- 380 to 450
- 400 to 450

(MODERN ARCHITECTURE)
(CONSTRUCTION)

Construction Material.

- ⇒ Stone
- ⇒ Mud
- ⇒ Brick
- ⇒ Timber
- ⇒ Steel
- ⇒ Glass
- ⇒ Concrete
- ⇒ Fabric

⇒ STEEL - There are many types of metals used for building steel is a metal alloy where major component is iron and is the usual choice of metal structural application. Structurally a building can either be a steel or a steel framed building.

Modular steel construction -

- ⇒ Modular construction uses light steel framing as its basic components.
- ⇒ The dimension of the modular unit are limited only by transportation of 3 to 4m are typical.
- ⇒ Open sided unit can be placed together to form larger spaces.

Roofing system -

- ⇒ Single roof metal cladding
- ⇒ Roof decking
- ⇒ Insulated panel.

Composite or sandwich

Wall cladding - wall cladding

- ⇒ Double skin cladding composite or sandwich
- ⇒ Clay finishes

Examples - STEEL Tower

The tower the Eiffel tower is an iron structure of liberty. Millium to

concrete glass performs a significant known since early times so the fully clastic-plastic product changed etc. are

Types and uses - The basic glazing and there by reduces weight in

CONCRETE - Typical properties of

- ⇒ Density - 2240-2400 kg/m³
- ⇒ Compressive strength - 20-40 MPa
- ⇒ Electrical strength - 3-5 MPa
- ⇒ Tensile strength - 2-5 MPa
- ⇒ Modulus of elasticity - 14000-41000
- ⇒ The initial setting time of concrete is

- Grades of concrete
- M-15 = 1:2:4 (Cement : Stone : Sand)
- M-20 = 1:1.5:3
- M-25 = 1:1:2

Grade of concrete	Cement
M-15	100 kg
M-20	125 kg
M-25	150 kg
M-30	175 kg
M-35	200 kg
M-40	225 kg

there are drawings

1917 design pages for the Massachusetts Institute of Technology, for which it was built at Alfred H. Beal in 1917.

Design factory - The modular gym building was the first to extract simplicity as repeated in the first aesthetically unambiguous interior impact from the structural development

Ground floor plan -

View of the complex in which the elevation shows the linear nature of individual structures. The complex is divided into three main wings: kitchen and gymnasium to first floor plan. The long narrow

- workshop
- Dining hall the wing off
- studio workshop
- Administrative office craft wing on the right

to design architect

ARCHITECT FRANK LLOYD WRIGHT

Description:-

Frank Lloyd Wright was an American architect, interior designer, writer and educator whose

- states
- Projects - Union houses, Broadacre City
- Spouse - Catherine Lloyd Wright (1924-1953)
- Structure - Falling water, Frank Lloyd Wright home and studio.

Quotation - Let it only mean where more is good the mother art is architecture. without an architecture without an architecture without an of our own have never of our own civilization

The longer live, the more beautiful life become, with career spanning over 70 years, American architect Frank Lloyd Wright changed the course of American architecture.

In fact in 1995 the American Institute of Architects named him the greatest American architect of all time. Only many of his buildings have been nominated on UNESCO world heritage sites.

Falling water in the mill Run PA is perhaps most famous example of organic architecture through repeating patterns based on nature throughout the building as well as the use of natural materials.

on 18 May 1883.

Why was influential and had full

Construction Methods-

Pumping method- A concrete pump is a machine used for transferring liquid concrete by pumping there are 2 types

(i) trailer-mounted boom concrete pump.

(ii) truck-mounted concrete pump.

Modern methods of construction:-

→ Pre-cast flat panel system.

→ 3D volumetric construction

→ Tunnel form

→ Hybrid concrete construction

→ Insulated concrete formwork

Los Manantiales Restaurant in Mexico city Felix Candela.

A booming period of widespread concrete shell construction took place from the 1930s. Managed by to design delicate and construct extremely elegant concrete shells.

ARCHITECT WALTER GROPPIUS.

General Introduction- Walter Gropius full name, George Walter Adolf Gropius. Born in Berlin on 18 May 1888. was a German American architect and educator. He was taught by his father.

Psychology of his thoughts- Gropius was not only an architect but an educationist. His psychology was influenced by the constant state of learning and implicitly that knowledge around himself. His designs had full command of the elements of architecture.

1947 design for factory and design factory. The modular form was highly influenced by the impact from the

ground floor plan. View of the

the complex is divided into blocks

1. workshop
2. Dining hall the wing left
3. studio workshop
4. Administrative office wing on the

Description-

Exact diagonal weight

States
Project's human houses, Branch
space- Diverse beyond wing
Structure- falling water, Forest
home and studio.

Quotation- left is only mere is
without an architecton with

The longer live, the more
Form's design overall changes

In fact in 1945 at
all time. only many of his

Fallingwater in the mid
through overprinting part

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(ARCHITECT LUDWIG MIES VAN DER ROE)

Description:- Ludwig Mies van der Rohe was a German-American architect. He was commonly referred to as Mies by his name. Along with Alvaro Siza, Le Corbusier, Walter Gropius and Frank Lloyd Wright, he is regarded as one of the pioneers of modernist architecture.

Quote:-

Architecture starts when you carefully put two bricks together there it begins
Architecture is the will of an epoch translated into space.
A chair is a very difficult object. A big crane is almost easier.
That is why Chippendale is famous.

- => Interior, Robert House
- => Prairie style glass from Frank Lloyd Wright house in Oak Park
- => Beaman R. Safferman Museum, completed 1959, New York City

(ARCHITECT 2016 BULLIVANT)

Louis Henry (Sep 3, 1856 - April 14, 1924) an American architect called the father of skyscrapers. An influential architect and critic of the Chicago School. A mentor to Frank Lloyd Wright and an inspiration to the Chicago group of architects. He received the AIA gold medal in 1954. Born in Irish and Jewish immigrants in Chicago. He studied in Paris in 1874, returned to Chicago in 1875, got a job as a draftsman in the office of Joseph & Johnson and John Edelman.

Philosophy - Louis Sullivan coined the phrase form ever follows function. Sullivan employed such arches throughout his career.

- => in shaping entrances
- => in framing windows as
- => as interior wind

All of these elements are widely admired by Sullivan.

Auditorium Building - Location 430s Michigan Avenue Chicago. It has 6000 seats. United Nations coordinates 41°52'31"N 87°37'31"W. ~~It~~ Built 1889. Architect - Daniel H. Burnham & Louis Sullivan. Architectural Style - Late 19th and early 20th Century American movement governing body: Added to NHP April 7, 1970. Designated NHL May 15, 1975.

Origin and purpose - Ferdinand Pack, a Chicago businessman, incorporated the Chicago Auditorium Association in Dec 1886. He was faced to ~~construct~~ wanted to make high culture accessible to the working classes of Chicago.

He also designed following buildings

- => Wainwright Building, 99 Louis, Missouri
- => Benson House, Riverside, Illinois

Description - Ludwig Mies van der Rohe
 German along with Alvaro Sotta to be
 pioneers of modernist architecture.

Quote - Architecture starts when you
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