

# Technology and Architecture

**Zeeshan Ahmad Ansari,**

*Guest Lecturer Dep. of Architecture A.M.U Aligarh, U.P India*

\*\*\*

**Abstract** - This paper shows how a technology is highly affected the architecture of throughout the world. When man came to the world one of basic requirement of human was shelter to protect themselves from animals and climate. So human always tried to evolve technology to improve their shelters. So architecture of buildings effects on the basis of improvement or evolution of technology.

**Key Words:** Nano technology, Trabeated, Arculated,

## 1. INTRODUCTION

Architecture is intimately related to the availability of suitable building materials and the ability of craftsmen and engineers to exploit their properties of strength and durability. First of all human live in caves closed the cave by branches of trees and overlapping of stones, and he lived their safely. First technology was beam and trabeated. in this paper I explain first to the last.

### 1.1 Trabeated System

This technology has been commonly used for centuries to support the weight of the structure located above the openings created by windows and doors.

In picture shows Offsetting of stones on wall and beam on an opening.



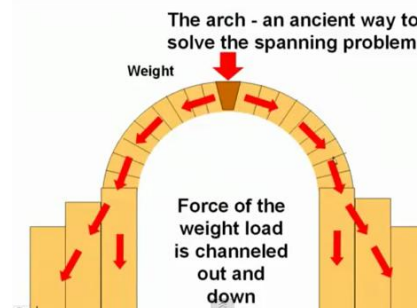
Greek civilization used this technology on their buildings.

The Parthenon is the most famous and the most recognizable ancient Greek building. It was completed in 432 B.C.

But in trabeated system span is much small the openings not more than 2metres.

### 1.2 Arculated Structure

Roman perfectly invented true arch to solve spanning problem. Wedge shaped stones were used to construct arches. At top crown stone is placed, upper load of the structure is transfer by crown stone through other stone this technology is very much used to build bridges.



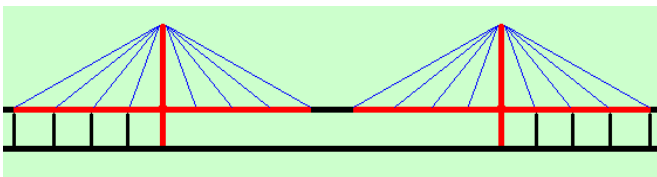
### 1.3 Truss

Needs of human being increase day by day they want to build big spans over the stadium and factories without support so to solve this problem trusses were invented. A roof truss is an engineered structural frame resting on two outside walls of a building. The load carried by the truss is transferred to these outside walls.



Because of evolution of truss big span can possible, we have seen various stadium churches and factories were constructed by using trusses.

### 1.4 Cable Structure



During the end 19<sup>th</sup> century cable stayed structures invented by this technology architecture style is very much changed. in Cable-stayed structures support horizontal planes (bridge decks, roofs, floors) with inclined cables that are attached to, or run over, towers.



The first structures regarded as cable roofs are four pavilions with hanging roofs built by the Russian engineer V. G. Shookhov at an exhibition in Nizjny-Novgorodin 1896.

### 1.5 Tensile Structure

Tension/ Tensile structures is the generic term for surface stressed structures fabricated primarily from cables and structural fabrics or pliable materials which carry applied load in tension only to appropriate supporting structures.



Tensile structures are fabricated as permanent or temporary canopy structures for commercial or public assembly, temporary event structures, modular industrial construction and landscape art work.

Typically used as a lightweight roof, protective cover, shelter, skylight, advertisement and/or identification for stadiums, arenas, shopping malls, amphitheaters, band shell, stage cover, tents, and shade structures for airport and transportation depots.

### 1.5 Brick

Before introducing of bricks construction was depend upon naturally available materials only like timber and stone.

Stone is also not available in every place so brick was widely use as construction material

In load bearing structure, wide section of wall is required so area is wasted, and more than 4 storied structures is not possible because of it height of the building is not exceed more than 16 to 18 m.



Firstly of all Sun dried brick were used after that kiln bricks were used. The Great Mosque of Djenné is the largest mud brick building in the world. The mosque is located in the city of Djenné in Mali. Landmarks in Africa. To minimize the width of wall reinforcement was introduced.



## 1.5 Concrete

After the introduced of concrete architecture is almost change because Of Moulds in any shape Cantilever structures are possible Today they are used in virtually every type of building construction to include commercial and residential buildings, paving and retaining wall landscape projects. Bilbao Museum is one of the starting example of concrete

## 1.5 Lifts

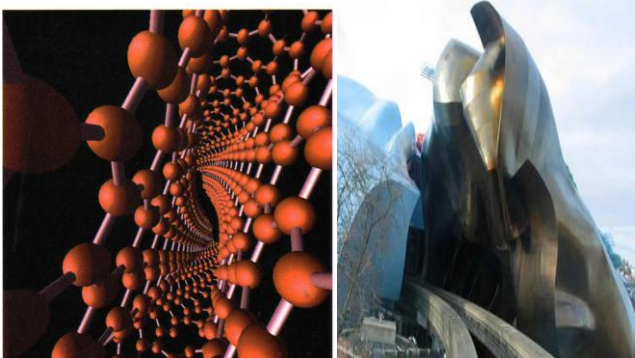
In 1857, the installation of the first passenger elevator in the Haughwout Department Store in New York City made it possible and practical to construct buildings more than four or five stories tall.

## 1.5 Iron and steel

During the Industrial Revolution, engineers began experimenting with two new materials -- iron and steel. Architects and engineers experiment with new styles and building methods, taller and more innovative structures are springing up around the world.

## 1.6 The Nano Technology

A science that works on the molecular scale is set to transform the way we build. It's for science and technology of building devices whose structure is precisely controlled on the scale of single atoms and molecules.1 nm is one billionth of a meter. In science focuses on structures on the scale of 1 to 100 nm. A single turn on a twisting DNA strand measures about 3.4 nm



Matter behaves differently at Nano scale. At Nano scale the object can change color, shape and phase much more easily than at the macro scale.

Fundamental properties like strength, surface to mass ratio, conductivity and elasticity can be engineered to create dramatically different materials.

With the help of Carbon Nanotubes paper-thin sheets might hold up entire buildings, forcing us to rethink the relationship between structure and skin.

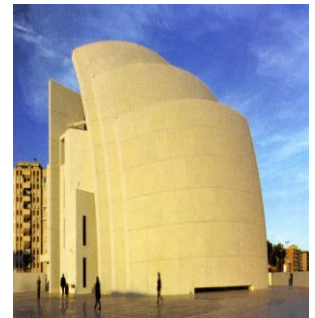
Carbon Nanotubes-sheet of graphite just one atom thick are 50 times stronger than steel and 10 times lighter



Nano composite steel available in the market is three times stronger than the conventional steel.

Nano materials can trap air at molecular level and hence an insulating Nano coating even a few thousand of a centimeter can insulate dramatically.

This technology is good for environment and health. The Hong Kong subway system has coated its cars' interiors with titanium and silver oxide coatings which kill most of the air borne bacteria and viruses that come in its contact. In cleansers and paints, Nano particles fight mildew.



Nano coatings can break down dirt as well, PPG industries and Pilkington Glass both offer self-cleaning window glass that harness nanotechnology.

The Jubilee Church by Richard Meier uses self-cleaning concrete. Photo catalytic titanium dioxide nanoparticles in the precast panels make them shed dirt.

## 2. CONCLUSIONS

Whenever the new technology will introduce Architecture will change. Planning of any building is also depend upon the technology. Even its façade and spaces is designed according to the technology available.

## REFERENCES

- [1] Professor Firoz Anwar PPT on Nano technology.
- [2] Dissertation on Technology by Ar.Ali Javed.
- [3] Thesis on Mile Tower by Ar.M.Kashif Khan
- [4] <http://www.historyworld.net/>.