

# **Introduction to Theory and History of Architecture**

SBEA 1513

**Modern Master Builders**

**Le Corbusier & Mies Van Der Rohe**

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## Le Corbusier



Image of Le Corbusier – By Susleriel

<https://www.flickr.com/photos/27608953@N06/3200164455>

- Born as Charles-Édouard Jeanneret-Gris, who chose to be known as Le Corbusier (October 6, 1887 – August 27, 1965)
- A Swiss-born architect, designer, urbanist, writer and also painter, who is famous for his contributions to what now is called Modern architecture.
- Le Corbusier was attracted to the visual arts and studied at the La-Chaux-de-Fonds Art School under Charles L'Eplattenier, who had studied in Budapest and Paris. His architecture teacher in the Art School was the architect, who had a large influence on Le Corbusier's earliest houses.
- In his early years he would frequently escape the somewhat provincial atmosphere of his hometown by travelling around Europe. About 1907, he travelled to Paris, where he found work in the office of Auguste Perret, the French pioneer of reinforced concrete.
- Between October 1910 and March 1911, he worked near Berlin for the renowned architect Peter Behrens, where he might have met Ludwig Mies van der Rohe and Walter Gropius. He became fluent in German. Both of these experiences proved influential in his later career.

## Corbusier's architectural approaches and theories

- Building as 'machine for living (in)'
- Usage of platonic forms and shape
- Aesthetical values much refers to divisional of spatial organization (interior & exterior)
- '5 points of international style'
- Usage of 'Modular system'

- Building as 'machine for living (in)' – *functionalism*
  - *building's size, massing, spatial grammar and other characteristics should be driven solely by the function of the building.*
  - *The implication is that if the functional aspects are satisfied, architectural beauty would naturally and necessarily follow.*
  - Eg of building : villa savoye





Villa Savoye

[https://en.wikipedia.org/wiki/Le\\_Corbusier\\_-\\_/media/File:VillaSavoye.jpg](https://en.wikipedia.org/wiki/Le_Corbusier_-_/media/File:VillaSavoye.jpg)

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- Basic tenets of a new aesthetic of architecture constructed in reinforced concrete:
- The pilotis, or ground-level supporting columns, elevate the building from the damp earth allowing the garden to flow beneath.
- A flat roof terrace reclaims the area of the building site for domestic purposes, including a garden area.
- The free plan, made possible by the elimination of load-bearing walls, consists of partitions placed where they are needed without regard for those on adjoining levels.
- Horizontal windows provide even illumination and ventilation.
- The freely-designed facade, unconstrained by load-bearing considerations, consists of a thin skin of wall and windows.
- The polychromatic interior contrasts with the primarily white exterior. Vertical circulation is facilitated by ramps as well as stairs.
- In keeping with the cubist-purist principles, ideogrammatic structures are embedded, interpenetrated, juxtaposed and pass through one another to give rise to the specific 'syntax' of this work.
- anthropomorphic, humanistic: a 'baroque' pattern based on geometries of the square and oval.\*

- Usage of platonic forms and shape (based on the idea of purism and cubism) - return to more basic forms inspired by modern machinery.

Cubism - objects are broken up, analyzed, and re-assembled in an abstracted sculptural form -

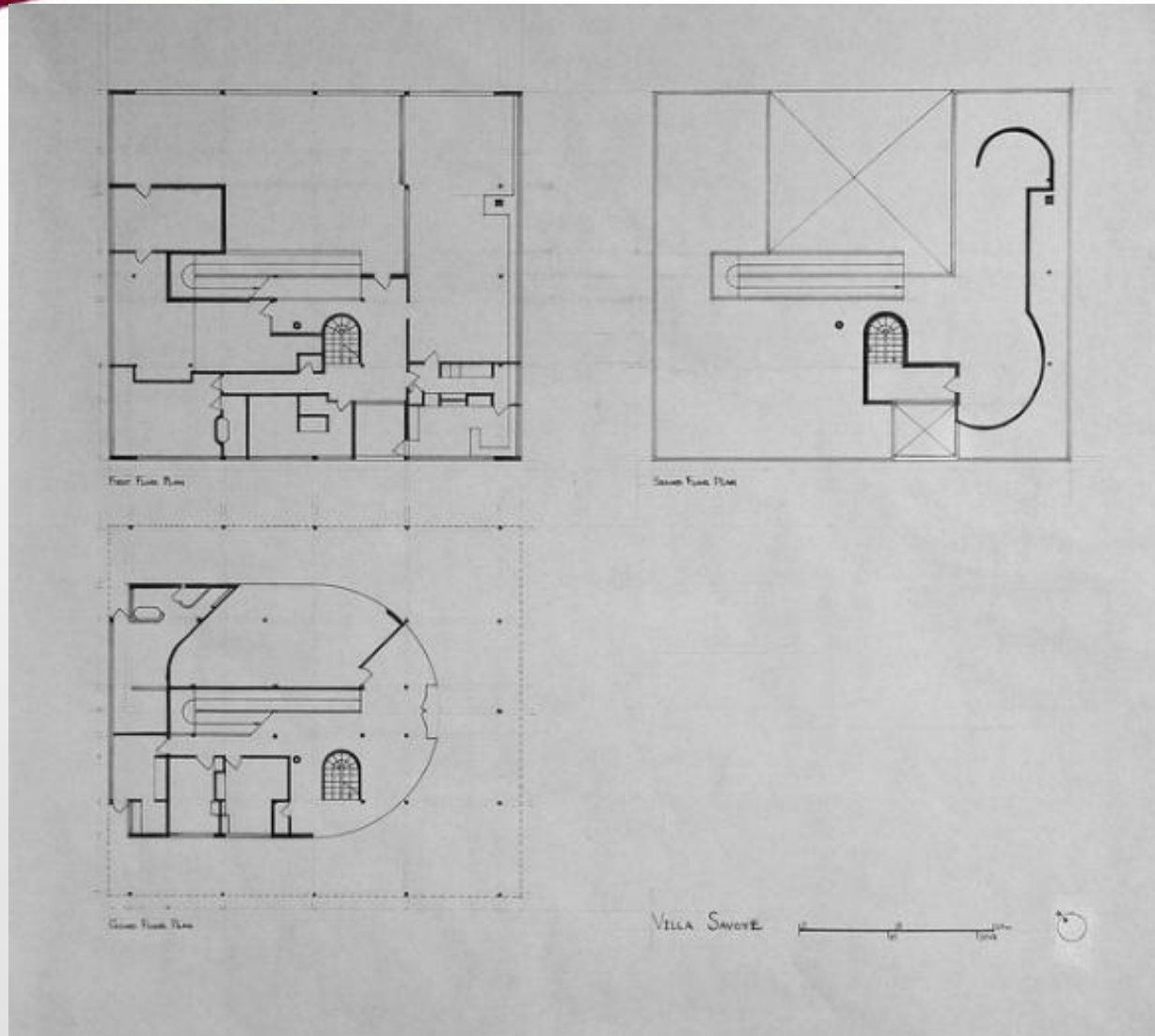
Purism - explicit use of geometric form and large areas of pure colour, for the detached paint surfaces (white on the outside, a color with associations of newness, purity, simplicity, and health )

—

no historical ornament

Imply the use of additive and subtractive forms-

- a. Subtractive occurs when a portion of the shape of the form and its volume is subtracted. This results in alteration of the form identity and profile. The shape of the form, however, may be retained if portions of the volume are removed without deteriorating their edges, corners and overall profile.
- b. Additive transformation, a number of different elements may attach to the existing volume. This situation helps to determine the identity and give a different appearance to the shape of the form.



Plans of Villa Savoye – by Luke

<https://www.flickr.com/photos/lukehan/4612824192>

- The plans reveal an evident structural simplicity
- Shows a wonderful plasticity in the handling of the rooms—in their form, their dimensions, in the shadows of the brise-soleil on the facades and of the roof parasol, and moreover, in the hanging gardens swept by an orchestration of beneficent air currents.
- Division of cubes to quadrants forms and plans
- The house is an application of the free Plan based on the principle of the Maison Domino.
- The functions of the parts are independent of its structure, without interior separations, in order to let penetrate the light as architectural element and some space. The breeze crosses the house, connecting the house to its environment.





Interior and exterior of Villa Savoye – By Roxanna Salceda

<https://www.flickr.com/photos/roxsm/3097929209>



Aesthetical values much refers to divisional of spatial organization (interior & exterior)

In the **space within space** type of spatial relationship, large space functions as a three-dimensional field enveloping a smaller space within its volume. This contained space may share a similar form as the enveloping shape and be orientated in the same position or it may differ in shape and position.

In **interlocking space**, two spatial fields overlap with each other in three main ways:

- i) The two spaces may share equal interlocking size dimension with each other.
- ii) These two spaces may also merge in with one or the other and become integrated with the interlocking space
- iii) An individual space may also be formed when these two spaces are linked with each other.

In **adjacent space**, visual continuity of spatial context and flow of movement occur between two adjoining spaces. These two spaces, however, are defined by the position and placement of the vertical planes that border the spatial layout. These vertical planes may be in the form of a row of columns, or entranceway.

In **spaces linked by a common space**, two different spaces are linked by an intermediate space. This intermediate space may be a separate entity from the two main spaces, closely integrated or individual in character, where its position and placement is determined by the two linked spaces

Eg –chapel notre dame du haut



- The main part of the building consists of two concrete membranes separated by a space, forming a shell which constitutes the roof of the building.
- Visual continuity of spatial context and flow of movement occur between two adjoining spaces (interior and exterior).
- This roof, both insulating and watertight, is supported by short struts, which form part of a vertical surface of concrete covered with "gunite" and which, in addition, brace the walls of old Vosges stone .
- These walls which are without buttresses follow, in plan, the curvilinear forms calculated to provide stability to this rough masonry.

Notre Dame du Haut – Ronchamp by **Sandra Cohen-Rose and Colin Rose**

<https://www.flickr.com/photos/73416633@N00/86737659>



Interior of the Notre Dame by Rory Hyde

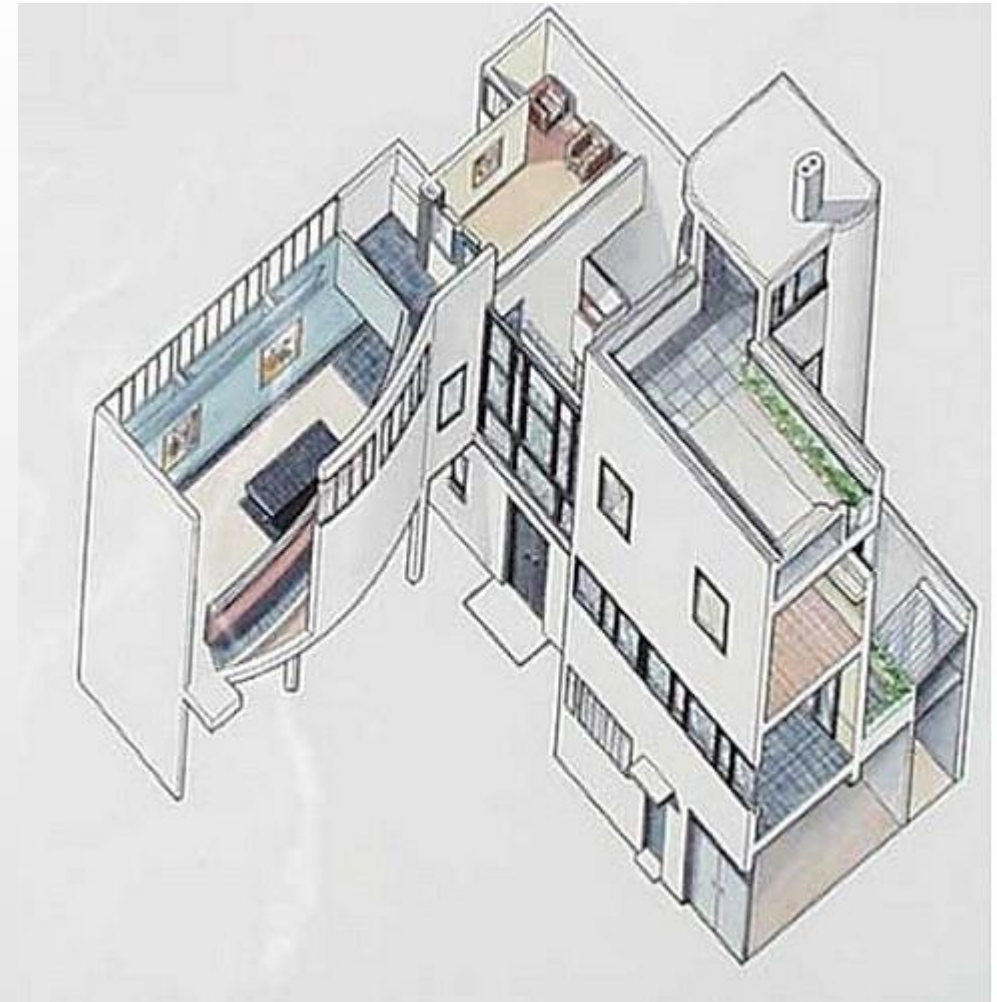
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- The building has walls that allows the entry of daylight into the interior space.
- Notre Dame du Haut is a building that was designed according to the natural topography of the site, where by the building sits naturally on the lopes of the hill down towards the altar.
- The building material is mainly masonry and capped with cemented domes.
- The surface of both interior and exterior is being articulated with cement and white-wash plastered wall.
- The roof featured a rough concrete shell, just as it comes from the formwork.



## '5 points of international style'

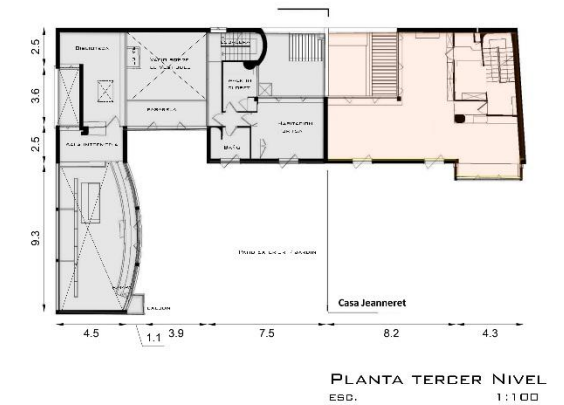
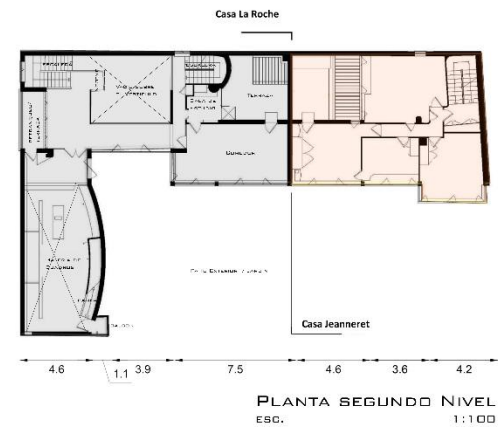
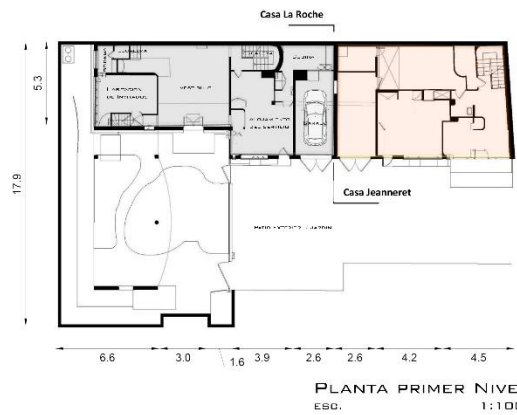
- i) The bulk of the structure off the ground, **supported by pilotis – reinforced concrete stilts**. These pilotis, in providing the structural support for the house, to separate it from the earth, and to use the land efficiently. These also suggest a modernized classicism.
- ii) **A free façade**, meaning non-supporting walls
- iii) **An open floor plan**, meaning that the floor space was free to be configured into rooms. (dynamic , non-traditional transitions between floors)
- iv) **Long strips of ribbon windows** that allow unencumbered views of the large surrounding yard (echoing industrial architecture, but also providing openness and light)
- v) **Roof garden** to compensate the green area consumed by the building and replacing it on the roof. (with both plantings and architectural (sculptural) shapes)  
eg villa la roche



Villa Roche – Image by Jacques

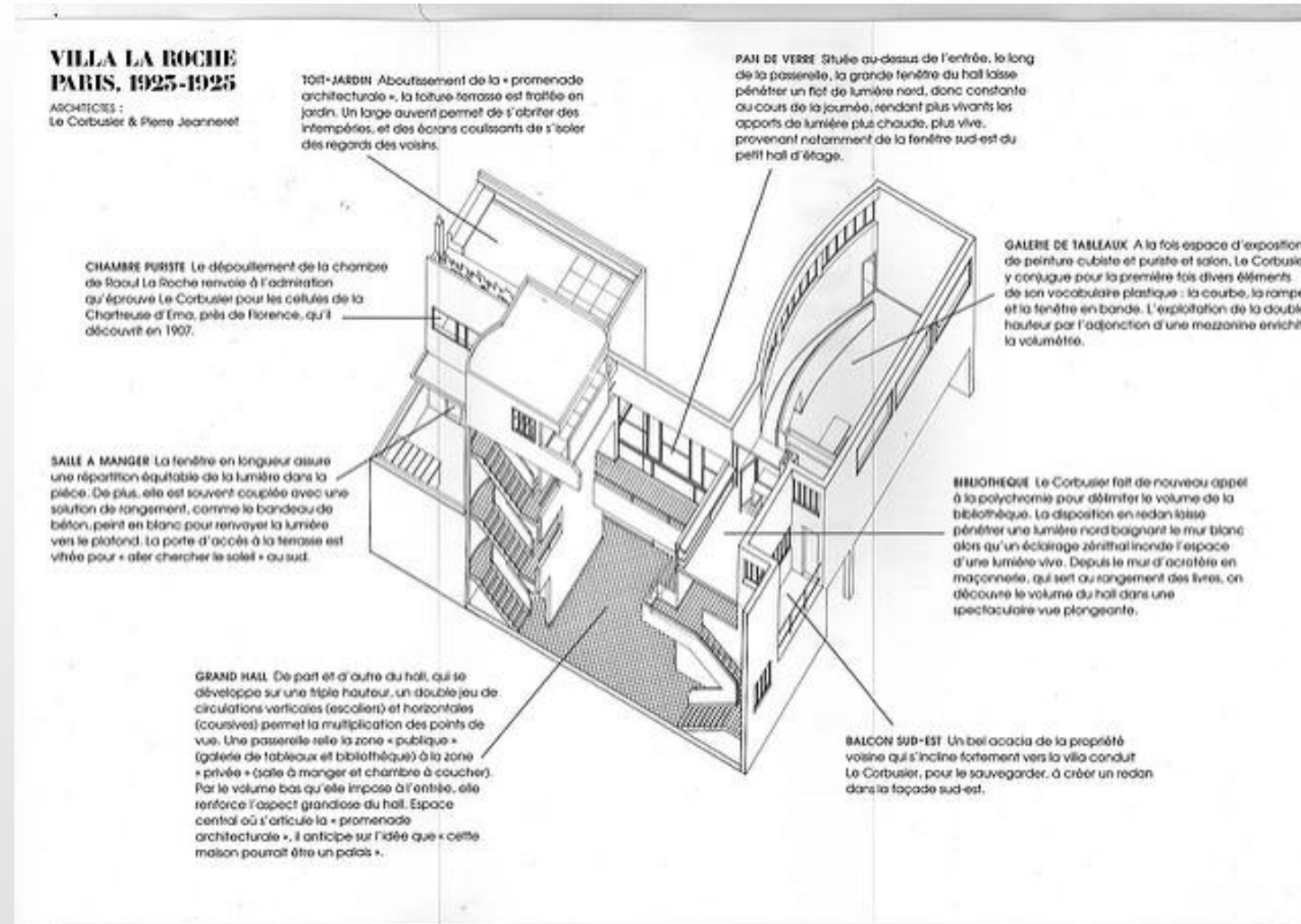
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## Floor Plans of Villa Roche

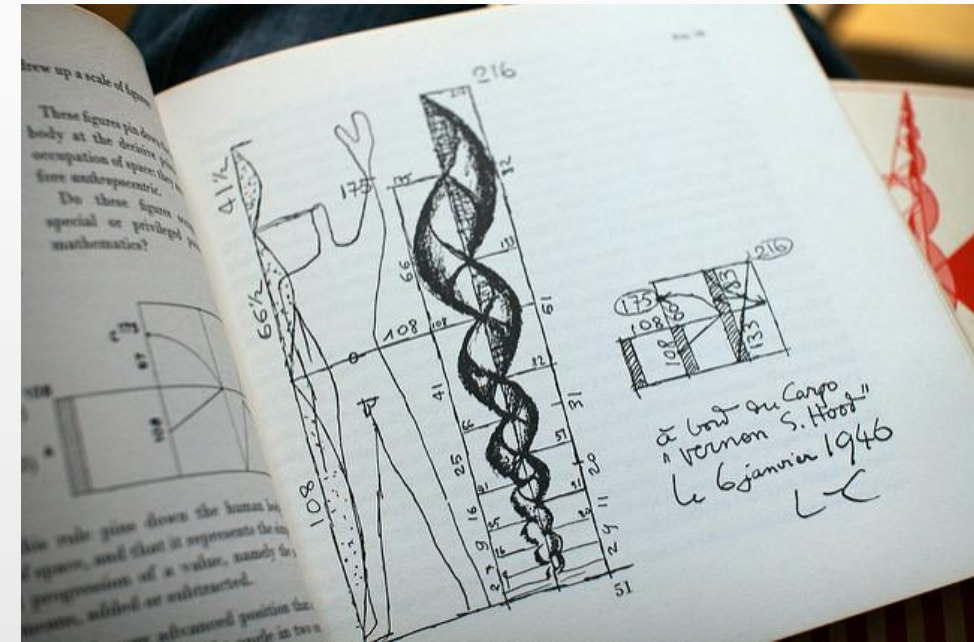
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Diagrammatic Layout of Villa Roche

## Usage of 'Modular system'

- Le Corbusier explicitly used the golden ratio in his Modulor system for the scale of architectural proportion.
- used the proportions of the human body to improve the appearance and function of architecture. In addition to the golden ratio, Le Corbusier based the system on human measurements, Fibonacci numbers, and the double unit.
- sectioned model human body's height at the navel with the two sections in golden ratio, then subdivided those sections in golden ratio at the knees and throat; he used these golden ratio proportions in the Modulor system.



The modulor system – image by Nicolas Nova

<https://www.flickr.com/photos/nova/3721112743>



## Mies Van Der Rohe



Portrait of Ludwig Mies Van der Rohe by Yousuf Karsh

<https://www.flickr.com/photos/rocor/13510748443>

- **Ludwig Mies van der Rohe** born on (March 27, 1886 – August 17, 1969) is a German-born American architect.
- Establish a new architectural style that could represent modern times.
- Began his architectural career as an apprentice at the studio of Peter Behrens from 1908 to 1912, where he was exposed to the current design theories and to progressive German culture.
- He began his independent professional career designing upper class homes in traditional Germanic domestic styles.
- After 1933, Nazi political pressure soon forced Mies to close the government-financed school (Bauhaus school).
- Frustrated and unhappy, he left his homeland, Germany reluctantly in 1937, accepting a residential commission in Wyoming and then an offer to head an architectural school in Chicago.
- Mies settled in Chicago, Illinois where he was appointed as head of the architecture school at Chicago's Armour Institute of Technology (later renamed Illinois Institute of Technology - IIT).
- His architecture, with origins in the German Bauhaus and western European International Style became an accepted mode of building for American cultural and educational institutions, developers, public agencies, and large corporations.



## Major influence in Mies's architectural design



Mies Pavillion using steel and glass

- Mies developed a design approach based on advanced structural techniques and Prussian classicism under 'Peter Behrens' influence.
- -He developed a sympathy for the aesthetic credos of both Russian constructivism and the Dutch De Stijl group.
- -Mies borrowed from the post and lintel construction of 'Karl Friedrich Schinkel' for his designs in steel and glass.

[https://commons.wikimedia.org/wiki/File:The\\_Mies\\_van\\_der\\_Rohe%27s\\_Pavilion.jpg](https://commons.wikimedia.org/wiki/File:The_Mies_van_der_Rohe%27s_Pavilion.jpg)

## Mies's architectural approaches and theories

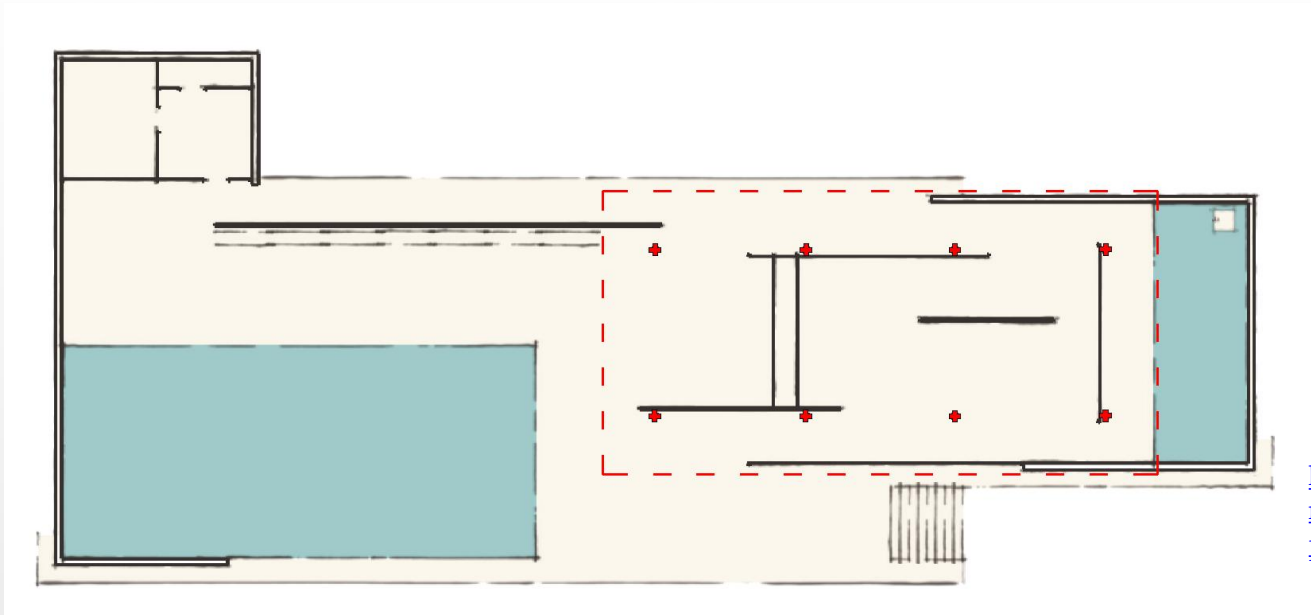
- 1. **Minimalism** in design – **Simplicity (skin and bone architecture) & less is more**
- 2. **Structuralism in design – steel and glass system** as the main material of the construction
- 3. **'Universal Space Architecture'** concept – stated that all the buildings should be designed in universal manner that it can be **adapted into various function and context.**
- 4. Façade based on **classical principle – exposed the structure**, 'dinding tirai' expression, glass and placement of the building on the top of the concrete slab
- 5. Free-flowing inter-connected spaces- encompass **connection between outdoor surroundings with indoors.**
- 6. Use of simple **rectilinear and planar forms** – cuboid, cubes with clean lines and pure use of color.

## Mies's prominent building design

### **The German Pavilion for the Barcelona exposition (often called the Barcelona Pavilion) in 1929.**

- It was an important building in the history of modern architecture, known for its simple form and extravagant materials, such as marble and travertine.
- The building stood on a large podium alongside a pool.
- The structure itself consisted of eight steel posts supporting a flat roof, with curtain glass walling and a handful of .
- The overall impression is of perpendicular planes in three dimensions forming a cool, luxurious space.
- Mies designed the Barcelona chair for the pavilion. The Pavilion was dismantled at the end of the exhibition, but a replica has since been built on the same site (1988).

## (BARCELONA PAVILION, 1928-1929)



[https://en.wikipedia.org/wiki/Barcelona\\_Pavilion\\_-\\_/media/File:Planta\\_libre-pabell%C3%B3n\\_de\\_barcelona.png](https://en.wikipedia.org/wiki/Barcelona_Pavilion_-_/media/File:Planta_libre-pabell%C3%B3n_de_barcelona.png)

- Using exclusive materials-marbles : polished
- Pure form (**minimalism**)
- Water** : Part of the construction material  
: **Reflection element**
- Column = **steel**  
**Glass** as **cover** , wall (marbles)
- An icon of the **modern movement**,  
**free plan exemplar**
- Using **skeleton steel** (inside)-concrete slab
- Basically using **plane**
- Exposed structure**



**Between 1946 and 1951, Mies designed and built the Farnsworth House, a weekend retreat outside Chicago for an independent professional woman, Dr. Edith Farnsworth.**

- Mies explored the relationship between ourselves, our shelter, and nature. Highlights the individual's connection to nature through the medium of a man-made shelter.
- This small masterpiece showed the world that cold exposed industrial steel and glass were materials capable of creating architecture of great emotional impact.
- The house has been described as sublime, a temple hovering between heaven and earth, a poem, a work of art.

## (FARNSWORTH HOUSE, 1946)



[https://en.wikipedia.org/wiki/File:Farnsworth\\_House\\_by\\_Mies\\_Van\\_Der\\_Rohe\\_-\\_exterior-8.jpg](https://en.wikipedia.org/wiki/File:Farnsworth_House_by_Mies_Van_Der_Rohe_-_exterior-8.jpg)

- A white house with **glass** – framing up the landscaping at outside
- The addition of **silk curtains** – resulted in the **loss** of the **transparency** of the glazed box
- Minimalism**





The back of the house- image by The Shifted Librarian

<https://www.flickr.com/photos/shifted/10633699506>

- The plan allows the **maximum transparency** and views to the landscape
- Marbles slab – **horizontal planes**
- Elevated the floor** above the grade



The interior of Farnsworth House - image by The Shifted Librarian

<https://www.flickr.com/photos/shifted/10633737206>

- The extensive use of clear floor-to-ceiling glass opens the interior to its natural surroundings to an extreme degree.
- Two distinctly expressed horizontal slabs, which form the roof and the floor, sandwich an open space for living.
- The slab edges are defined by exposed steel structural members painted pure white. The house is elevated 5 feet 3 inches (1.6 m) above a flood plain by eight H-shape steel columns which are attached to the sides of the floor and ceiling slabs. The slabs ends extend beyond the column supports, creating cantilevers.



- The house seems to float weightlessly above the ground it occupies. A third floating slab, an attached terrace, acts as a transition between the living area and the ground.
- The house is accessed by two sets of wide steps connecting ground to terrace and then to porch.
- Mies found the large open exhibit halls of the turn of the century to be very much in character with his sense of the industrial era. Here he applied the concept of an unobstructed space that is flexible for use by people.
- The interior appears to be a single open room, its space ebbing and flowing around two wood blocks; one a wardrobe cabinet and the other a kitchen, toilet, and fireplace block (the "core").
- The larger fireplace-kitchen core seems like a separate house nesting within the larger glass house.
- The building is essentially one large room filled with freestanding elements that provide subtle differentiations within an open space, implied but not dictated, zones for sleeping, cooking, dressing, eating, and sitting. Very private areas such as toilets, and mechanical rooms are enclosed within the core.

## Mies's architectural philosophy

- “I want things to be **simple**. Mind you : a simple person is not a simpleton. I like **simplicity**, probably because I like clarity, not because of cheapness or something like that. We never think of reducing cost when we work”
- -For Mies, architecture was a **function of industrialization** and **new materials of structure** and **space**. It had to be accepted and understood on its own terms free from political implications or associations.

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