



FALLINGWATER

organic, democratic, plasticity, continuity

FRANK LLOYD WRIGHT'S FALLINGWATER



Frank Lloyd Wright was born in Wisconsin in **1867**, two years after the end of the Civil War. He died at the age of 92 **in 1959**, just two years after the launching of the first satellite into space, Sputnik.



Wright is considered by many architectural authorities to be one of the 20th century's greatest architects. He designed over 1,100 works, of this total 532 resulted in completed buildings.

He was 68 the year he designed Fallingwater and had founded **his school of architecture**, Taliesin, in Wisconsin.



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One of Wright's students at Taliesin was the son of a wealthy Pittsburgh family, **Edgar Kaufmann jr.**

Edgar and Liliane Kaufmann owned a large department store in the city of **Pittsburgh**, called Kaufmann's. Mr. Kaufmann was the president of the store and Liliane managed her own shop on the 11th floor of the store, where they sold designer clothings, antiques and gifts.



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In 1916, Kaufmann's Department Store bought land just outside of Ohiopyle. The property had been operated as a camp for years and came with many existing buildings, such as a lodge and several cabins. Department store employees enjoyed the many activities that the camp had to offer and the Kaufmanns built themselves a small cabin near the main road 381. (left)

They decided to build a new vacation home, one that would be located away from the road and close to the waterfall. A home that would still allow them to “get back to nature”.



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It was **Bear Run stream** along with **its waterfall** that was the main focal point for people. One could fish or splashing below the falls.



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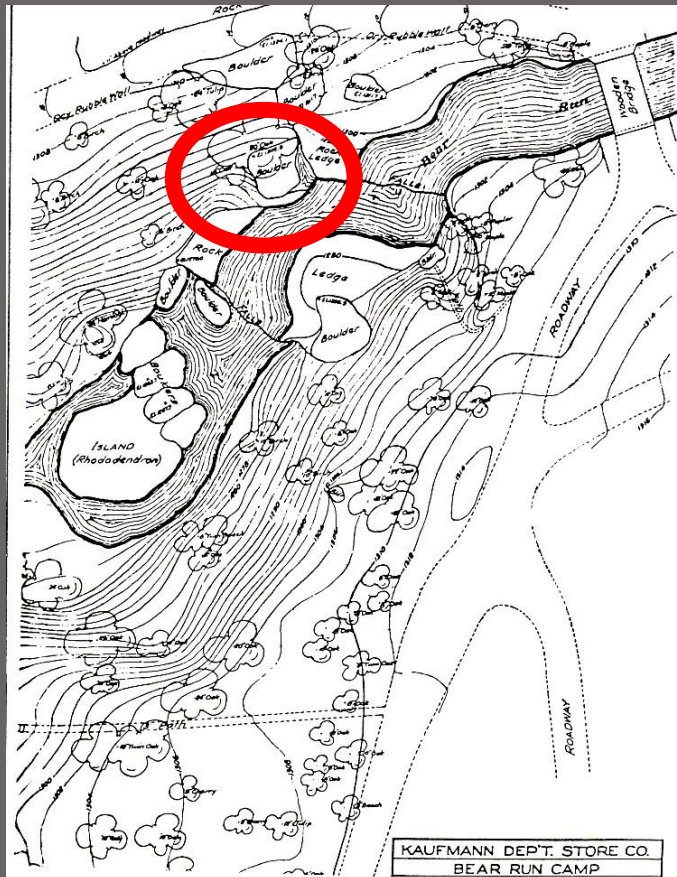
The Kaufmanns invited Wright to Bear Run in **December 1934**. Mr. Kaufmann and Wright walked about the property and looked **at the waterfall, with its wide, horizontal ledges of rock.**

Some of the family's requests were:

- **Year round use**, so central heating would be necessary as well as electricity and running water;
- **large outdoor areas** for sunning;
- **large areas for entertaining**; however, areas set aside for reading or relaxation should be important too.



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11. Topographic map of building site, March 1935.

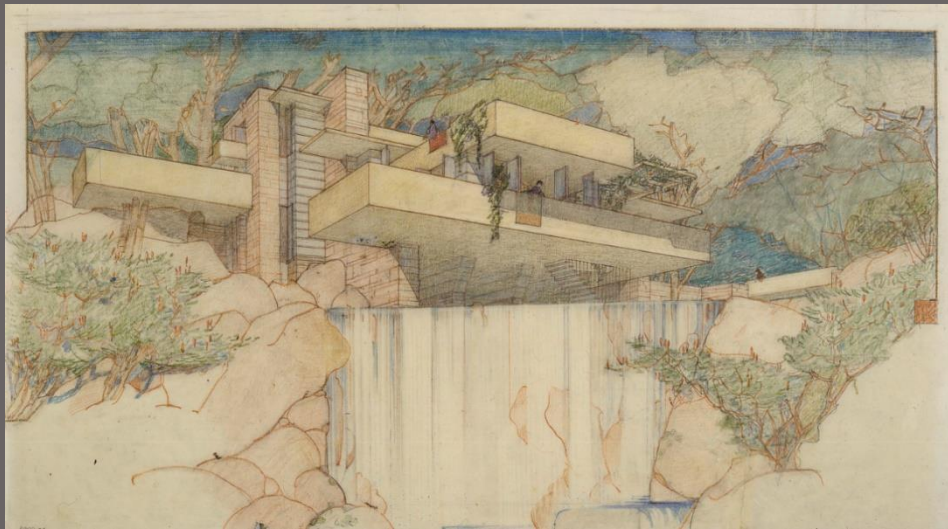
Wright asked that a **topographical map** of the waterfall be prepared. This map would indicate where **trees and rocks were located** and would help him site the new home.

A form for the new building began to take shape in his mind, a shape that would draw on those large **sandstone ledges** for its inspiration.

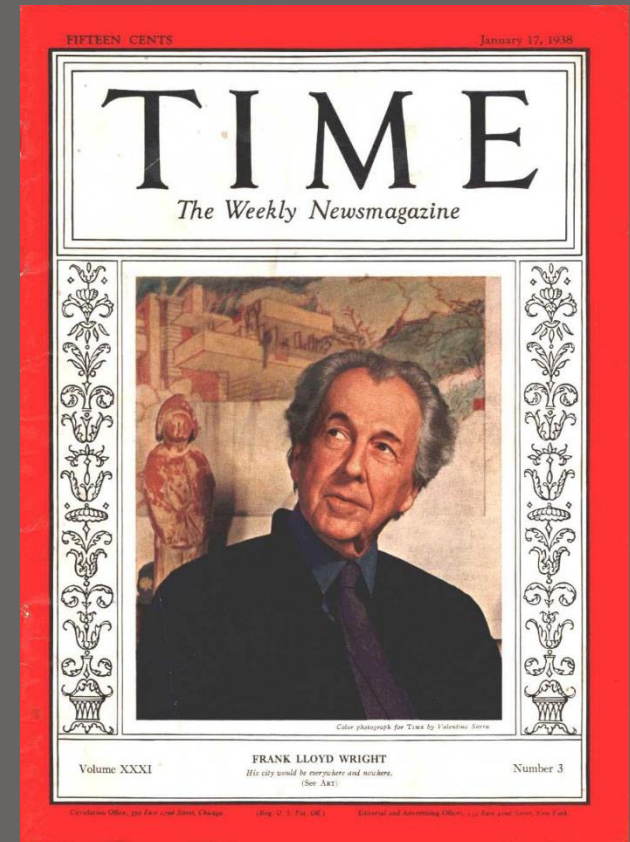
Initially surprised at Wright's suggestion to **build on the waterfall, not below**, they were quickly captivated by his idea of **living with the waterfall** and not just looking at it from a distance.



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Frank Lloyd Wright and the drawing of Fallingwater on the cover of Time, 1938.



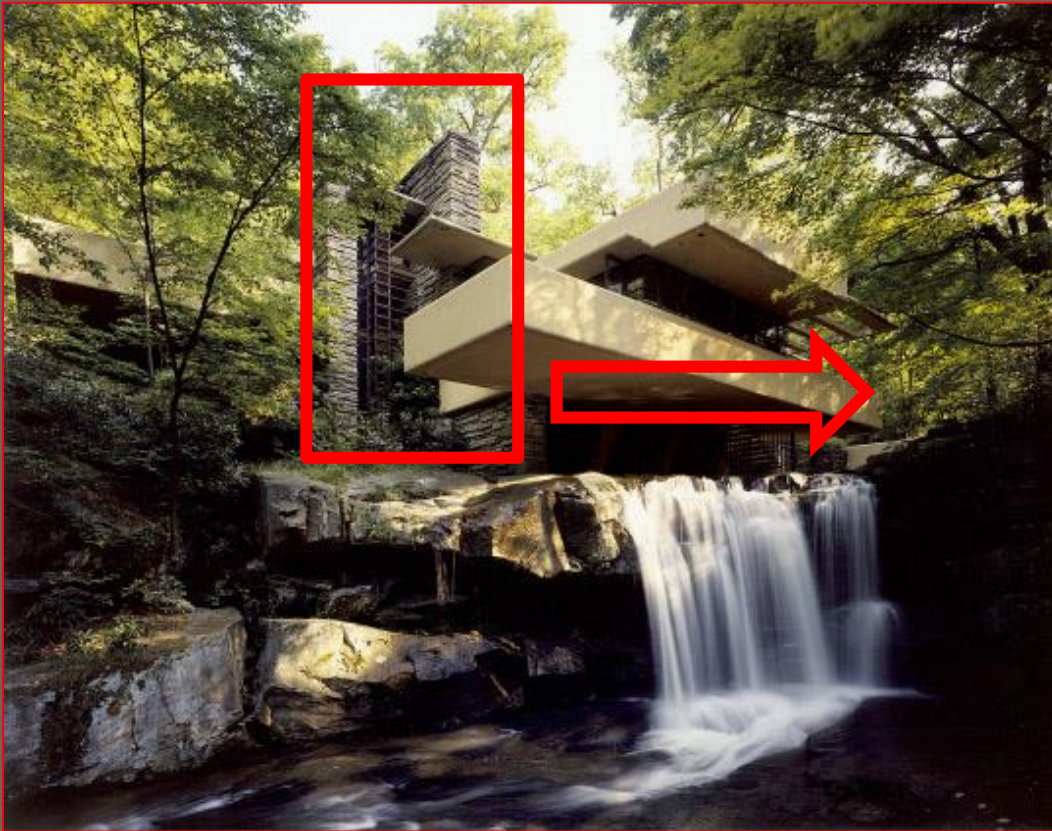
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The stream flows in front of the house, from right to left in the photo (and under part of the cantilevered living room and terraces), but breaks at an angle away from the house at the upper falls, creating the illusion **of water flowing out from the house itself.**



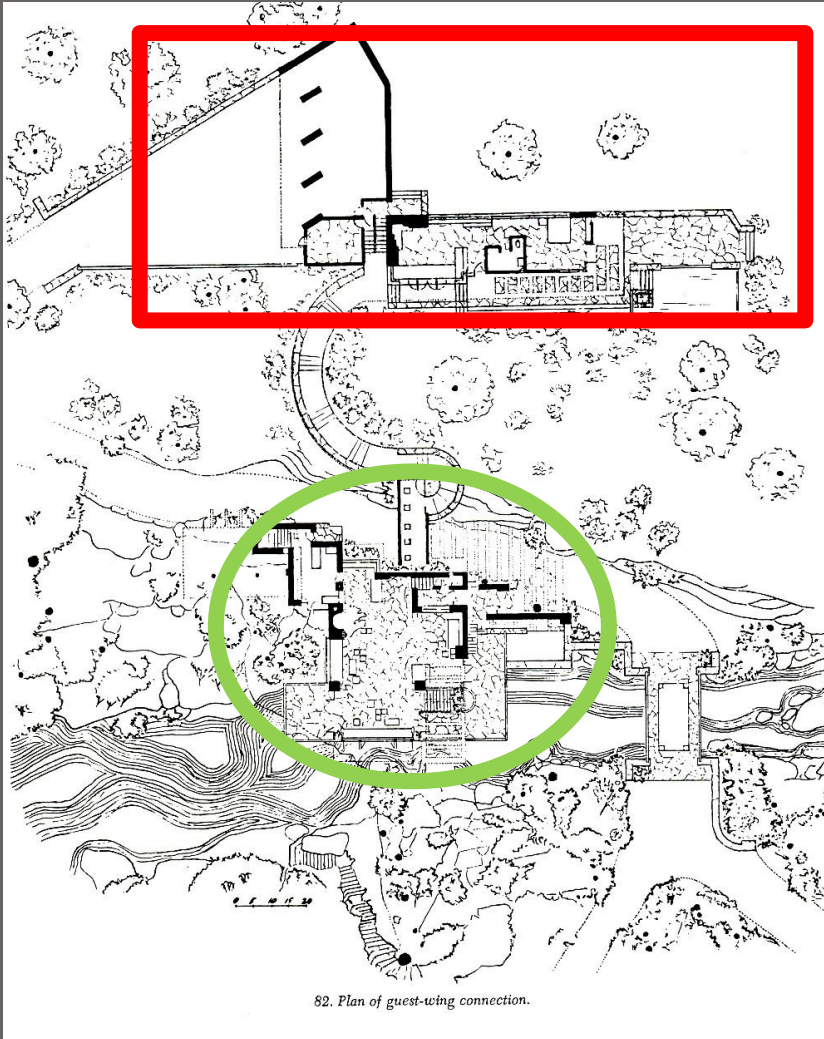
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Parts of the cantilevered house - especially the **terraces** - seem to float in the air above the stream (Bear Run). The soaring vertical tower (on the left) **rises more than three stories**, windows stretching from floor to ceiling, creating a **continuous column of glass**, broken only by narrow steel support beams, painted as earthy **brick-red**.



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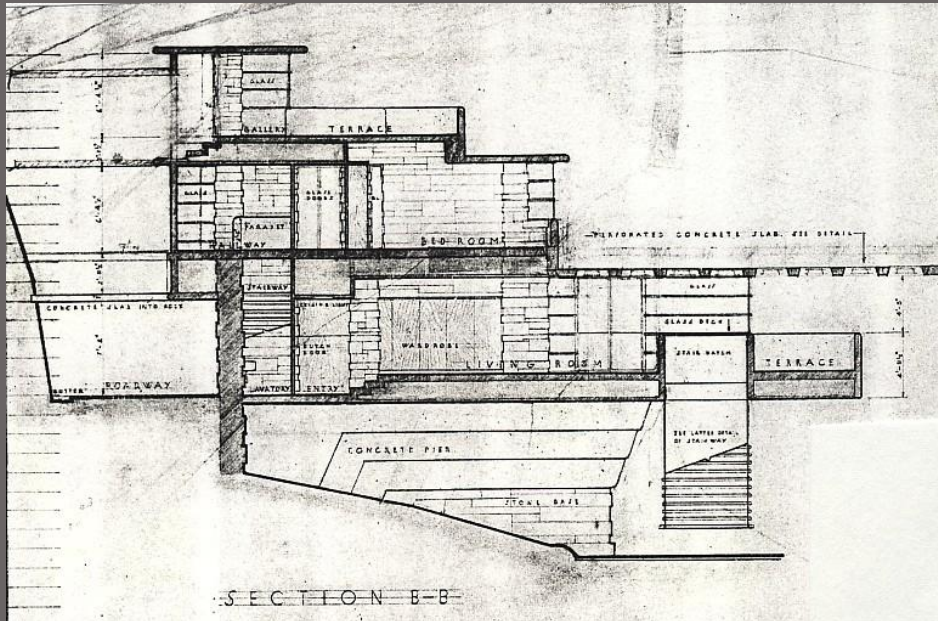


The entire house is divided in two structures, **the main house** and the **guest wing**, that are connected by a **semi-circular stone walkway** protected by a cantilevered canopy of reinforced concrete.

The main house is situated above a twenty-foot drop waterfall, the largest Bear Run waterfall; and the guest wing is located on a hill, north of the main house.



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Fallingwater's structure consists of **cantilevered reinforced-concrete floors** and with integral parapets, supported **by natural rock outcroppings**, tapered **concrete piers ("bolsters")**, and **stone-bearing walls**. The stone (a calcareous sandstone) is of very high quality and was quarried on site.

The main house was completed in **1937**, and the guest house in **1939**. At \$155,000, the total cost of the complex, architect's fees included, was well over the estimated budget.



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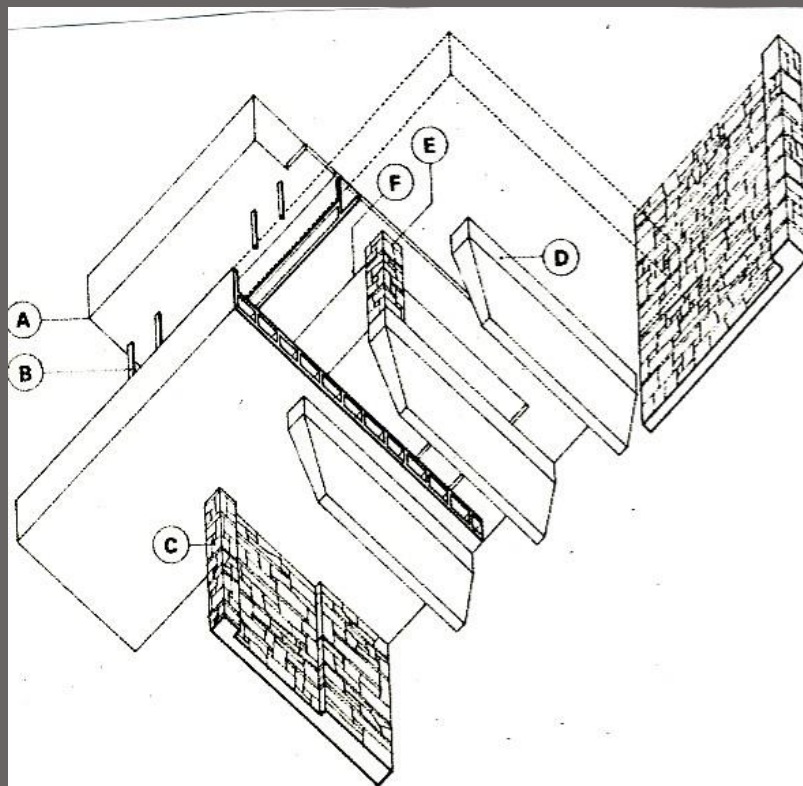
Fallingwater uses four main **piers** or **bolsters** for its foundation, **three of which are reinforced concrete with the fourth being stone masonry.**

In the image shown, the four bolsters can easily be seen below the first floor cantilever.

Four cantilevered beams project from these piers suspending the first floor out over the stream.



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Esecutivo assonometrico della struttura portante della casa sulla cascata: A) balcone a sbalzo; B) montanti in acciaio; C) pilastri in muratura; D) setti in cemento poggianti sulla roccia; E) pilastri in muratura poggianti sui setti in cemento; F) soletta in cemento.



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Dramatic **cantilevered terraces** reflect the similar structure of the **rock ledges** below. Roomy terraces on either side of the living room on the main level, as well as the large terrace above it, create **strong horizontal lines** balanced by the almost unbroken vertical lines in the tower on the left (which in addition to stone columns over 10 meters tall, has 3 stories of floor-to-ceiling windows).



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These and many other **clear horizontal and vertical lines** in the house may be compared with the **formation of the rock**, with the horizontal and vertical of **ground and trees**, and with the **water moving horizontally** in the stream (Bear Run) and **vertically as "falling water"** in the form of waterfalls .



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The bridge on the right leads across the stream (Bear Run) to the "front" door, which at first seems to be an insignificant corner.

The terrace in the foreground on the main level (first floor) leads to the living room.



There is another terrace on the other side of the living room, and the stream (Bear Run) runs under them, flowing from east to west (roughly right to left).

The second-floor terrace on the left leads out from the master bedroom.



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The **front door** is rather small, a bit **hidden**. Some would be surprised at its location, at the opposite corner of the house from the famous view from downstream, but others would recognize this unpretentious choice as an aspect of Frank Lloyd Wright's "natural" and "organic" emphasis in his architecture.



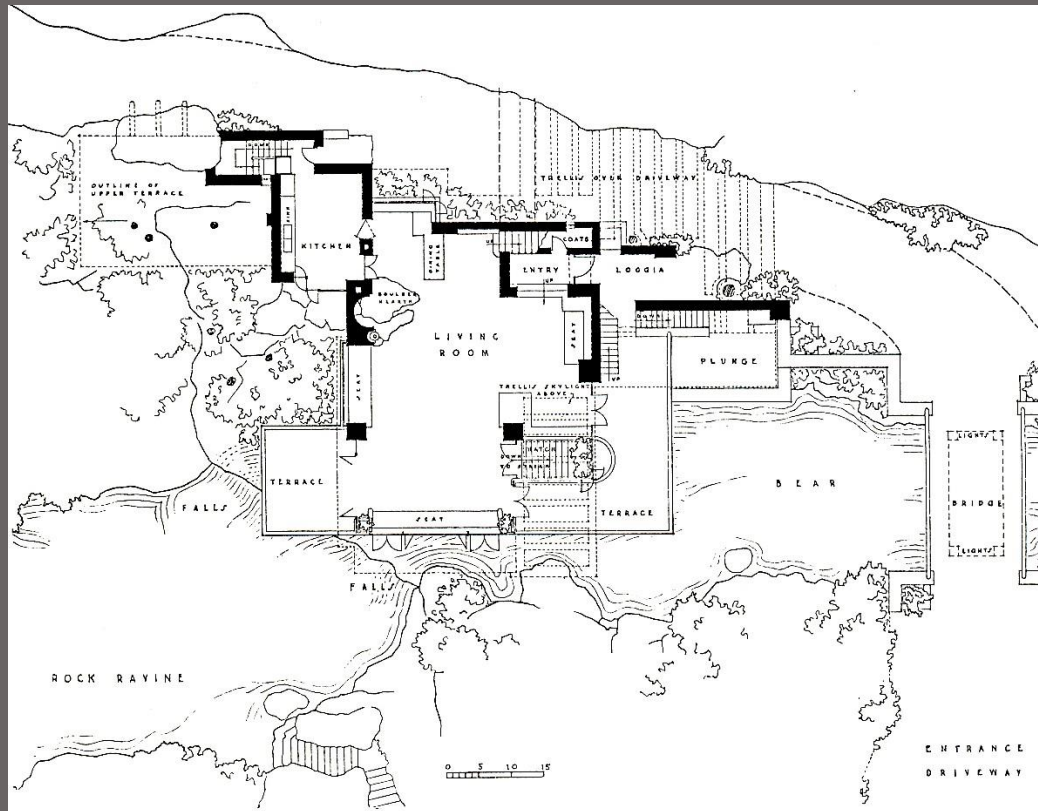
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The **driveway trellis** connects the back of the house to the hillside. On the right the walkway that leads from the second floor up the hill to the guest house.



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The first story includes a large central living room with a kitchen and a dining area, two terraces, one on the east and the other on the west, and a glazed hatch leading down steps to the stream.



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After one comes in the "front" door of the Fallingwater house enters **the living room** and sees it from the view in the photo above.

On the far right in the photo is a bit of the **fireplace and hearth**, the **natural boulder** protruding up through the floor. Near it in the photo, just a small corner of the **dining table** is visible.

Next to the fireplace is the **sitting area**, and above the sitting area a large window through which one can look down the canyon.



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The living room, or great room, at Fallingwater includes several **sitting areas**, a **dining area**, a large built-in desk, and **the fireplace** seen in the middle of this photo.

The dining area can be seen on the right, and a door to the kitchen is at the corner, just to the right of the fireplace.



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The sitting area includes a long built-in upholstered bench accompanied by cushioned modular seating. A similar, longer bench extends practically the full width of the living room, under the "front" windows at a right angle to the window in this picture. Cushions on the benches and in the modular seating are stone white or autumn colors. In front of the fireplace, lighter stone is visible; this is actually the top of an original boulder on the site, left in place, and which protrudes slightly above the level of the rest of the floor, becoming the hearth.



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The “hatchway” consists of small vertical glass doors that open out toward the camera as well as horizontal sliding glass panels that can be pushed back. This opening leads to the staircase to the stream below.

Notice that the ceiling here (but in no other part of the house) is glass, set on a continuation of the trellis over the southeast terrace, so that a vertical openness above and below is created, which Edgar Kaufmann, Jr. describes in his beautiful book as a “column of air” to be contrasted with the “column of stone” that was the great, solid chimney wall.



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Through the glass double doors on either side of the hatchway is the living room. The trellis above, partly outside (over the terrace), and partly inside (over the living room) adds to the theme of the vertical openness of the hatchway. It is open to the sky, and also extends horizontally into the living room, **two of the many suggestions of the continuity of inside and outside.**



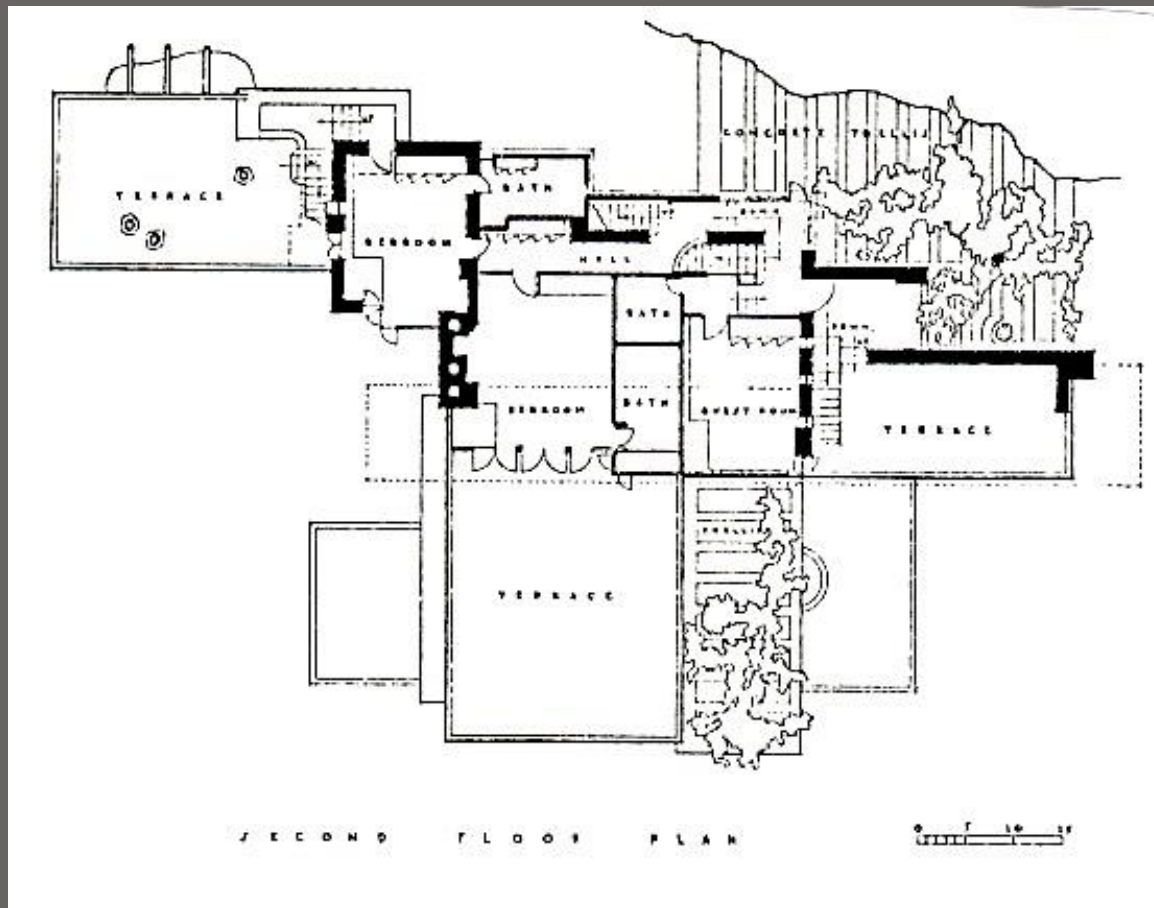
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A **stairway**, with no supports from below, reaches down to a point just over the stream. The top of the stairway is inside the living room (or great room), and can be accessed through a "hatchway" with sliding glass panels. So people can take a path that flows right down from the main room in the house to the stream itself, echoing the flow of water over the falls.



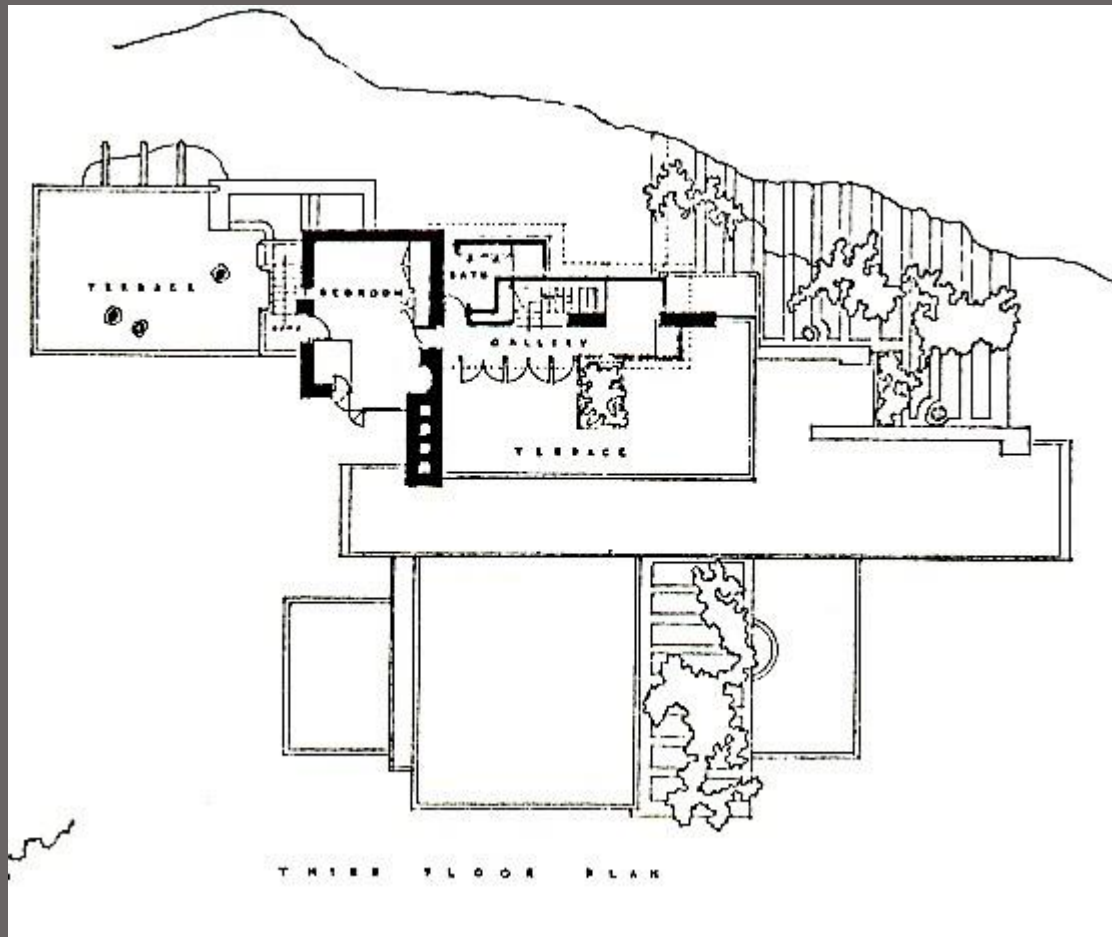
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The second story is comprised of a master bedroom opening into a large terrace, a guest room, a dressing room and two more terraces.



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The third story includes a bedroom, a study and a gallery opening onto a terrace above the center of the house.

The guest wing, built in 1939, is two-story high.



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Many features of Fallingwater are designed to maintain a **continuity between inside and outside**. Rather than setting a steel beam running up and down along the wall and setting the glass into it, the glass set directly into the stone wall eliminates the visual barrier along the wall between inside and outside.

Large arrays of windows create a direct visual experience of the closeness of nature. Some of these even extend to horizontal glass, as over the hatchway in the living room.



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One of the best known houses in the history of Modernism is not a house at all, but an elaborate movie set. Created entirely at MGM studios in Culver City, California for **Alfred Hitchcock's** classic film, **North by Northwest**. In 1958, when the movie was in production, **Frank Lloyd Wright** was the most famous Modernist architect in the world. His magnum opus, **Fallingwater**, was conceivably the most famous house anywhere. **Hitchcock** instructed the set designers at MGM Designers (Robert Boyle, William A. Horning, Merrill Pye, Henry Grace, and Frank McKelvey), to design a house **in the Wright style**, by its creation, the image of the **Vandamm House** became an **icon of Modernism** in architecture.



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From the beginning **Alfred Hitchcock** wanted **North By Northwest** to show the trappings of wealth, power and prestige. He and his art team carefully surrounded the hero Roger Thornhill (**Cary Grant**) with examples of **1950's luxury**: the Plaza Hotel in New York, the Phipps Estate on Long Island, the new United Nations Building, the Twentieth Century Limited, The Ambassador Hotel in Chicago.



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Many features of the Vandamm house are inspired by Fallingwater and other Frank Lloyd Wright's buildings.



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House Stahl, Los Angeles, 1958. The **Stahl House** (also known as Case Study House #22) is a modernist-styled house designed by architect Pierre Koenig in the Hollywood Hills section of Los Angeles, California, which is known as a frequent set location in American films or fiction, among the last Harry Bosch.



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Officially opened in October 2014, **Bosco Verticale (Vertical Forest)** is a pair of award-winning residential towers in the Porta Nuova district of Milan, Italy designed by **Boeri Studio** (Stefano Boeri, Gianandrea Barreca and Giovanni La Varra).



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The towers have heights of **110 metres and 76 metres** respectively and host **900 trees** (each measuring 3, 6 or 9 meters) and over 2,000 plants from a wide range of shrubs and floral plants distributed in relation to the façade's position towards the sun.



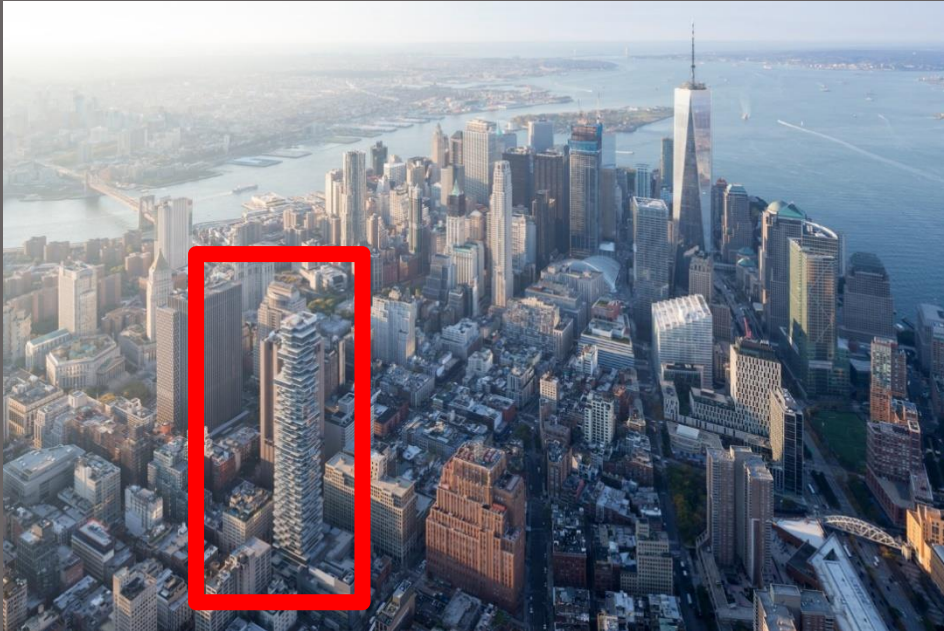
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Nanjing, Guizhou, Liuzhou, Shijiazhuang, and Chongqing are the Chinese locations where a horde of “Vertical Forests” will soon bloom. Stefano Boeri’s studio has a more far-reaching project, to create new buildings in Astana, Bratislava, and Lausanne (the latter of which has already begun construction). Thus, Boeri has designed new buildings (all of which have greenery on the balconies) for the crowded and polluted Chinese cities.



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Herzog & de Meuron's
skyscraper in Tribeca, 56
Leonard Street, New York, also
called “Jenga Tower”.

Its stacked form, which houses 145 residences,
has resulted in comparisons to wooden block
game **Jenga**.



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Herzog & de Meuron's skyscraper, Jenga Tower., cantilevering terraces.



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Concrete is used predominantly across the two levels, which are connected up a sculptural circular staircase also made from the material. The double-height spaces are supported by thick cylindrical columns, with thin lengths of LED lighting suspended in loops from the ceilings.



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The tower comprises a series of cuboid volumes that become increasingly offset from one another towards the top, drawing comparisons with the wooden blocks used in a game of Jenga.



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Jacques Herzog and Pierre de Meuron designed **Beirut Terraces** as part of a new masterplan developing around the St Georges Hotel.

The residential tower is made up of **irregularly sized floor slabs** that give it an indefinite outline, not dissimilar to the firm's Jenga-like 56 Leonard skyscraper in New York.

Five modular floors are repeated in different combinations to create the **staggered arrangement**.

The white slabs overhang the double-glazed walls by at least 60 centimetres to provide shade and to create terraces.



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Various perforations in the **overhangs** expose areas of the terraces to the sun, while others are cast in shadow.

White columns located in the corners of the tower support the overhangs, while **glazed balustrades** run around the edges.



Pot plants and trees add touches of greenery to the otherwise white block, which is envisioned as a **vertical boulevard**. The planting also serves as a screen, to ensure a degree of privacy for the glazed living areas while still permitting views out to sea.



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Carlo Scarpa, Revoltella Museum
Trieste, 1963 (left), Angelo Masieri
(with Carlo Scarpa and Bruno
Morassutti) **Romanello House**, Udine,
1951-55.



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Gino Valle,
House Brigo
Talmone
(Palazzo Rosso),
Udine, 1963.



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China Central Television Headquarters in Beijing by **architects OMA** (2012) comprises two towers that lean towards one another and are bridged at both the top and bottom to form a distorted loop.



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The structure of the CCTV Headquarters, and the forces at work within it, is visible on its façade: a web of diagonals that becomes dense in areas of greater stress, looser and more open in areas requiring less support.

The façade itself becomes a visual manifestation of the building's structure.



Rem Koolhaas commented: "I am very happy, after years of intense collaboration, that the CCTV building will soon begin to perform its role in the way it is intended."



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Balconies fan out like leaves from the mixed-use **L'Arbre Blanc tower**, which **Sou Fujimoto** has completed in **Montpellier** with **Nicolas Laisné, Dimitri Roussel and OXO Architectes**.

Modelled on the shape of a tree, the curved **17-storey** building contains **113 apartments** with cantilevering balconies, alongside publicly accessible facilities on the ground floor and rooftop.



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"To reinvent the **tower block**, by designing it on a human scale, we wanted to give everyone the chance to take ownership of it. We created **public spaces at the top and bottom** of L'Arbre Blanc," explained Fujimoto.

"The large number of balconies and pergolas really do **promote outdoor living and enable a new type of relationship between residents.**"



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The 113 apartments in the L'Arbre Blanc tower each face a different direction, and all have their own balconies.

Some of the balconies **cantilever to over seven metres**, and the duplex flats feature two that are connected by stairs.

Intended for use as external living space, these encourage residents on different floors to interact.

