



By 1909, Peter Brehens, a semi-classicist architect in Berlin, was becoming one of the most **sought out studios by the progressive generation of young architects**. Primarily because of his industrial work, the sort of work most architects of the time did not consider architecture, but the sort of work you did to meet the office overhead.



It was his use of new materials, steel and glass, in factories such as the A.E.G. Turbine factory (1909), that broke from the more ‘polite architecture’ of the neoclassicist beaux arts popular of the time. These utilitarian buildings were **designed purely around their function as efficient factories to assemble the machines of the industrial age**. And, this honest reflection of architecture was exactly what Le Corbusier was seeking, when he found his way to his studio.

It is true, when Corbusier was a young architect, it was difficult to obtain commissions of ‘polite architecture’. But, he was also **driven to develop a new aesthetic**, one that spoke of this new modern age of industrialization he found himself in.



In Brehen’s office, he would not only design the factories to build the machines of this new age, he would also design everything from the lighting fixtures to go in those factories to the typography on the stationary of these industrial clients. He was the **first modern industrial designers**, branding **corporate identity** through a **gesamtkunstwerk** (gez-umt-kunz-verk) “**total work of art**” approach. In this was the seeds of the Bauhaus pedagogy to come.

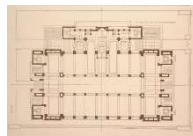
In the five months that Corbusier apprenticed in Brehen’s office, two other young architects were there at the same time – **Mies van der Rohe**, who we will discuss next week, and **Walter Gropius**, the founder of the Bauhaus in 1919 (Weimar).



In 1911, Wasmuth published Executed Buildings and Designs of Frank Lloyd Wright, along with an exhibition in Berlin of the original drawings. When a copy of the portfolio arrived in Brehen's office, he stopped work for a day, so everyone could study Wright's designs.

Mies remembered the occasion well, saying "Wright's work presented an architectural world of **unexpected force**, **clarity of language** and **disconcerting richness of form**." The 'disconcerting richness of form' referred to Wright's articulation of detail, the ornamentation of plantings covering his buildings, reflected in the window fenestration and stained glass designs.

For Brehen and his apprentices, Corbusier, Mies, Gropius, they were interested in the **pure geometry of the machine forms**, which they found to some degree in Wright's Larkin building of 1904. Reminiscent of Brehen's A.E.G. Turbine factory.



In this building is the Japanese pavilion, the **large open space**, the **symmetrical axis** with the **focal (shrine) on the back wall**, with the **cross axis and continuous space** carried outside by the **framed perspective view**.

Despite Wright's articulation of the line, they admired the work for its breadth, depth and **gesamtkunstwerk** (gez-umt-kunz-verk) "**total work of art**". And, nearly overnight, Wright became known to the architects of Europe. For Corbusier, a building must be **a clear, sophisticated statement**. And, in Wright's work, this was visible.



Yet, a second force was occurring in this same time period, which had an equal influence on Corbusier's development – **Cubism**. A movement popularized by the paintings of Picasso and Braque, which portrayed people and objects in a way that **several sides were visible simultaneously**.

Corbusier studied their work and **Painted himself**, in a letter to his mother he wrote:

**“I haven’t stopped painting every day, grabbing the secrets of form wherever I find them and developing my spirit of invention just as an acrobat daily trains his muscles and cultivates his skills. I think that if people see anything in my work as an architect, its essential virtue is to be attributed to this secret striving.”**



Through painting, the **compressing of three-dimensional space** into a two-dimensional surface, Corbusier perceived space differently.

Like Wright, space was **not something bottled up and contained within four walls and a ceiling**. However, unlike Wright who view architectural space as the living that goes on within those walls, for Corbusier, space was something that was **experienced both inside and outside simultaneous**, seen by the **observer passing through, rather than frozen in a single spot with a framed perspective**, as we saw with the Japanese garden.



In this still life (1920), we see the **shadow of the violin revealing the side** profile shape of the neck, while the violin itself is depicted with the front face visible. The same shadow technique of his earlier guitar painting, but here **flattened in one plane, without the use of a corner wall** to receive the cast shadow.



He would develop a particular arrangement of objects, returning to them over and over, refining and discovering news ways of seeing them. **Experimenting with light and shadow, color variations, complimentary tones.**

Here he has replaced the violin with the guitar, with the same flatten shadow, but this time the neck severed from the body, **parts being dissected, pulled apart.**



Carrying these ideas over to his buildings (Ozenfant studio, 1922), he would hollow out parts of the object, to create **outdoor space within his buildings**. And, at the same time, enclose parts of the outdoors, to create **defined rooms outside** of the building.



Further, he would make his buildings (Maison Citrohan, 1920) to be seen in the round, as a cubist painting, to be seen from the **front and side simultaneous**, as Wright had done with his diagonal perspective. But, like the Japanese pavilion, Corbusier lifted his building up off the ground, atop pilotis, to be seen in **front, the side and underneath simultaneously**, the **third dimension depth**.

Named after the Citroën motorcar, a **house like a car, a practical house like a machine or a tool**. The house was **simple, clean, hygienic, logical dwelling**, much like the Shinto concept of clean, in the Japanese house.



These ideas were displayed in 1925, by Corbusier and Pierre Jeanneret (cousin), with the **Pavillon l'Esprit Nouveau**, for the International Exhibition of Decorative Arts in Paris. The three dimensions simultaneous, front, side, underneath.



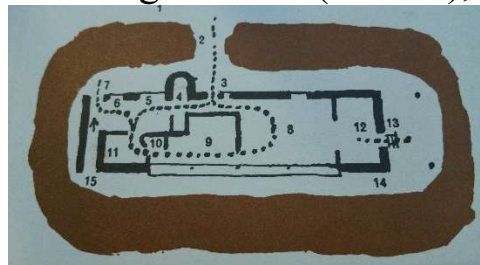
Inside the clean aesthetic, with the vaulted ceiling. Wright's continuous horizontal space, three rooms in succession, has been **folded in section** by Corbusier, the two **flanking rooms stacked atop each other**, with the dominant **central hall off-center**.



In 1923, Corbu designed and built a house for his parents, **Une Petite Maison**.

This house spoke of the Modern times and materials, where a house could be designed in accordance with the logic of reasonable functions. The **new materials and methods made it possible to adapt to a site** whatever the circumstances.

So, a **plan no longer need respond to the site**, the house could be designed with the site unseen, which is precisely what he did with this house. Then, he went out and found a south facing lot, overlooking the lake (Leman), on which to build.



In this plan, we see the influence of Wright's prairie house and the Japanese pavilion. Like the prairie house, Robie house in particular, the site is a long, narrow, linear lot. Like the pavilion, the **property is lined with a wall to enclose a garden**.

Entering through a gate, we **arrive at the back of the house**, like the Robie house. And, once inside, we **enter the central living space on the corner**, the **diagonal view**.

Flanking the central living space, we find two rooms (bedrooms). The Japanese interior with the **view to the south, looking across a lake to the mountains** on the horizon. Likewise, the end room with Wright's **elongated view through an outdoor cantilevered roof and into the garden**.

And, for the first time, Corbusier uses a long **horizontal, continuous, ribbon window**. A window that is 11 meters (36 feet), the same length as the series of doors in the Robie house, running the length of the open floor plan.





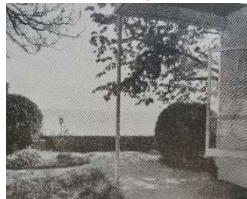


But, it is outside, in the garden that Corbusier has achieved the balance of nature and the man-made. Here is his greatest blurring between the two, dissolving the distinction between inside and out. Under the Paulownia **tree canopy as a ceiling** (a species from the Japanese gardens), defined by the **perimeter wall**, he has created the most **sublime room of the house, outdoors**.

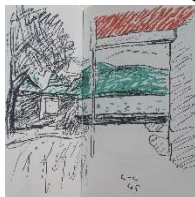
The open landscape, with view in every direction, becomes fatiguing, you soon tire of looking at it. The exterior, **open space needs to be delimited, dimensioned, the horizon obscured** by raising walls, then revealing the horizon by opening the wall at strategic points.



The ledge, table, benches, jug, not only contribute to a human scale, but also create the **feeling of human presence**. The branches and shadow of the tree envelopes the space with a protective **sense of security**.



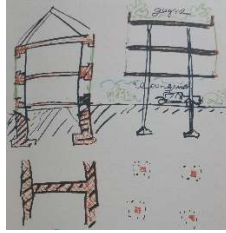
And, with poetics, as the **single metal column** supporting the corner of the projecting roof, stands **perpendicular to the horizontal of the lake**. The vertical line, perpendicular to Wright's horizontal. Symbolizing the **individual, the free spirit, standing in opposition to nature**, the horizontal ground plane, Wright's prairie.



**“You employ stone, wood, concrete, build houses, that is construction. But suddenly you touch my heart, you do me good, I am happy and I say ‘This is beautiful’.**

**Walls rise toward heaven in such a way that I am moved, I perceive your intentions, the stones you have erected tell me so. Behold something which expresses a thought without word or sound, but solely by means of shapes. The language of Architecture.**

## [ 10 MINUTE BREAK ]



11:10

In 1926, the **Five Points of Architecture**: **Free plan**, **Free Façade**, with continuous **Ribbon Windows**, **Roof Garden**, all **raised atop Pilotis**.

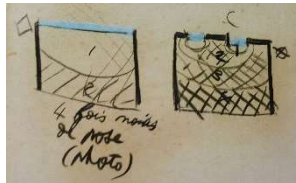
By raising the building up off the ground, **atop pilotis**, he finally achieves **cubism** in architecture. Three sides simultaneously, the third dimension in architecture.

Historically, houses were built with **masonry bearing walls**, each floor plan the same as the one above and below it, so walls can stack, to transfer the floor loads to the wall to the ground.

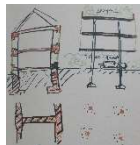
Raised on pilotis, the floors **cantilever out from the grid of columns**, so the interior walls are free to move about, without any structural implications, **free plan, free individual**.

With cantilevered floor, the exterior walls are hung, a **curtain wall**, which is free to arrange window openings anywhere without the structural implications of a load bearing wall, the **Free Façade**.

And, for the first time **a ribbon window**, without structural header above, since wall loads are hung from the floors above, not stacked atop the walls below.



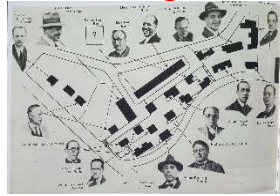
The ribbon window changes the **light, uniform distribution**, the deep shadows of the Japanese house are gone, no more differentiation between light and dark.



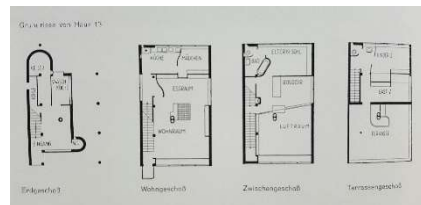
Finally, the roof is made flat, to provide for a **roof garden**, thereby doubling the garden size, increasing the land area of the lot. These five principles became the outline for all of Corbusier's buildings going forward.



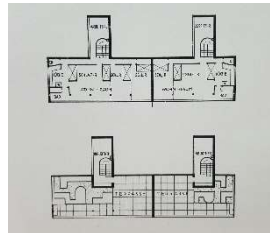
In 1927, these five points were realized for the first time in two buildings built in the experimental **Weissenhof quarter**, a Stuttgart development.



17 architects: Peter **Behrens**, Walter **Gropius**, **Mies** van der Rohe, J.P. **Oud**, Bruno & Max **Taut**.



In Corbusier's first building, Haus 13, we see the full development of the Citrohen vertical unit. The **folded space in vertical section**.



In Corbusier's second building, Haus 14, we see the full development of Wright's horizontal prairie house. The **continuous space in horizontal plan**.



In this building, we see a hint of the Petite Maison, now elevated off the ground, to experience in  **cubist form, three dimensions simultaneously**.



Inside the curtain wall, ribbon window, and the Japanese shoji screens pulled back to have **three planes dissolve as one, without differentiation**.





In 1928, these two houses, the vertical and horizontal, fused into one house, **Villa Savoye**. A perfect square, fully raised atop a grid of pilotis, from a single point of view and single glance, the entire form simultaneous. Even more significant, perfect symmetry of ribbon window and wall on each side, all notions of **'front', 'back' or 'side' dissolves, indistinguishable**, by regularity of the plan.



The ground level entry diameter determined by the exact turning radius of the 1927 Citroen car.



**Air circulated** everywhere, **light circulated** everywhere, the **inhabitant circulated** everywhere: architectural **liberties brought by modern materials and techniques**.



The hollowing out of outdoor space inside until only a thin skin remained. Where FLW interlocked form and space in horizontal plan low to the ground, Corbu was interlocking form and space in vertical section reaching for the sky.



In 1946, Corbusier developed the **Modular** concept: **interlocking system of proportions, a gradually diminishing scale of proportionate dimensions**.

FLW's ceiling was set to 6'-4" (**the shoji screen height of a human upright**), Corbu's ceilings were 7'-6" (**the height of a human reaching for the sky**)  
**"Something personal about a ceiling you can touch with your fingertips, The bond gained by tactile with the hand, a handshake, a hug."**