Modern Indian Architecture
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Lecture 16
Western Architects in India - Le Corbusier - Part 3

Hello students. I once again welcome you to this ongoing series on Modern Indian Architecture and we will continue our study of Western Architects in India, their contribution. And we are currently focusing on Le Corbusier.

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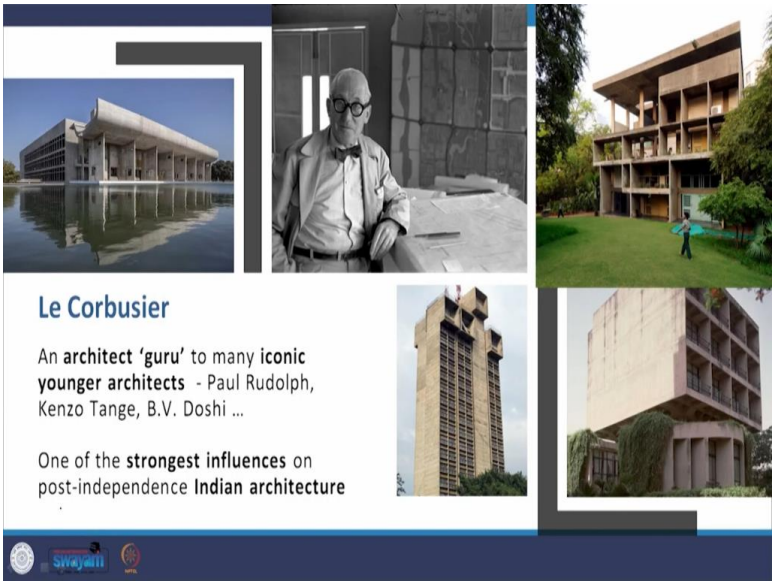

The role of Le Corbusier in modern architecture can never be understated. He is probably the, if not the greatest, we can at least call him the most famous modern architect in the world. And probably the other architects that rival him in the contribution they have made is probably Frank Lloyd Wright, Walter Gropius and Mies van der Rohe, there are a whole lot of others also but it seems as if he is a little above in his contribution over all the rest. That is primarily because the work that he initiated, the ideas that he brought forward have sip so deeply into global architecture.

Whether it is talking about the third world or the first world, every country in the world has been impacted by his architecture. And so, we can say that he is the guru of many iconic younger architects of that generation. And even in the current generation, architects continue to be influenced by him.

Of that generation, we can look at Paul Rudolph, Kenzo Tange, B. V. Doshi, Charles Correa and many others in the west and in India. And he has been one of the strongest influences on post-independence Indian architecture. He was hired in 1950 along with his cousin John Pierre Jeanneret and the British couple Maxwell Fry and Jane Drew in this for the design of Chandigarh.

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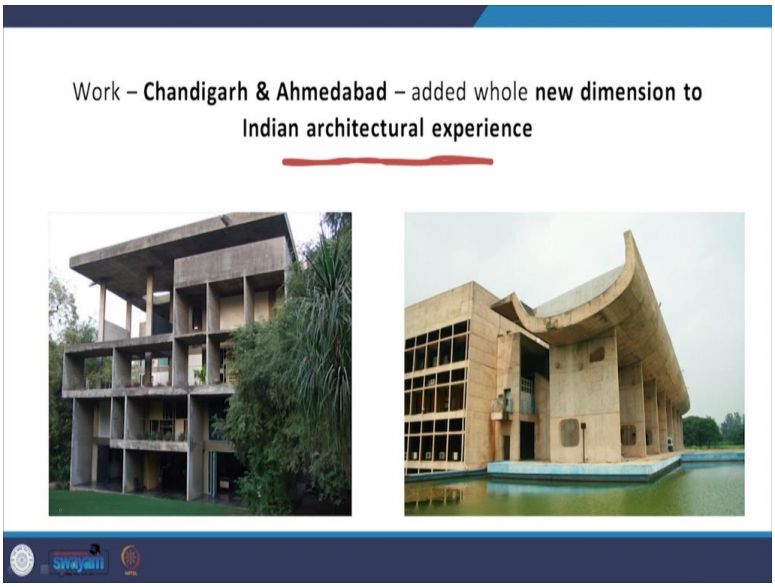

His work was spread over Chandigarh and Ahmedabad and added a whole new dimension to the Indian architectural experience.

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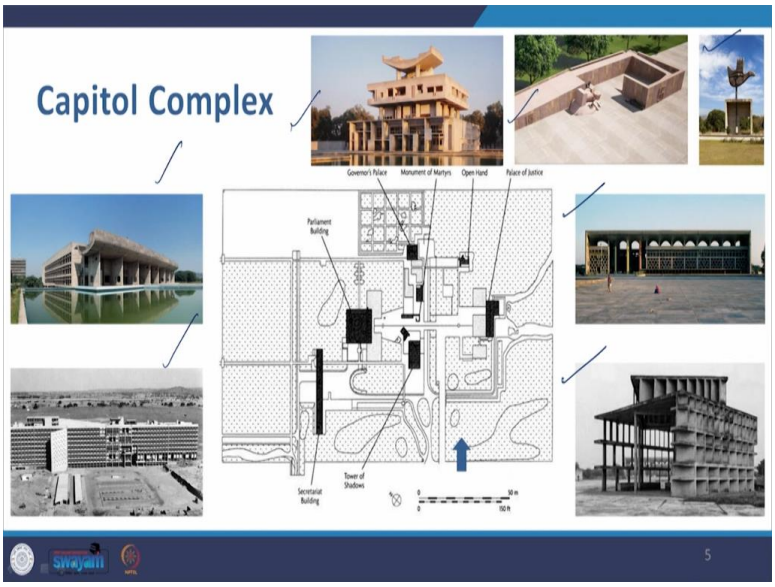

For example, again I am just recapitulating back to what we studied last time the Capital Complex, the various buildings that they designed, the very design of the overall sectoral planning of Chandigarh and specifically the design of the Capital Complex with its buildings housed or placed around an open plaza, whether it is the assembly building, the Secretariat and the Tower of Shadows, the high court, the open hand, the Martyrs Memorial and then there is the palace of, the governor's palace that was never built.

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And the Capital Complex Plaza in itself has been compared by some critics with Fatehpur Sikri. Because in both cases, the plaza binds the buildings together. So, if you look at the Capital Complex with this plaza binding all these buildings together. And in Fatehpur Sikri is not, in fact, one consolidated plaza.

It can be considered as a series of spaces which are linked together and there is no defined path in either of them and most of the movement is from space to space, particularly, if we look at Fatehpur Sikri, if you want to really compare it with the Capital Complex then we need to focus more on this much, this part of it, where we have the place where this particular picture, this particular image highlights the space which is as close as we can come to the Capital Complex, these images highlight that.

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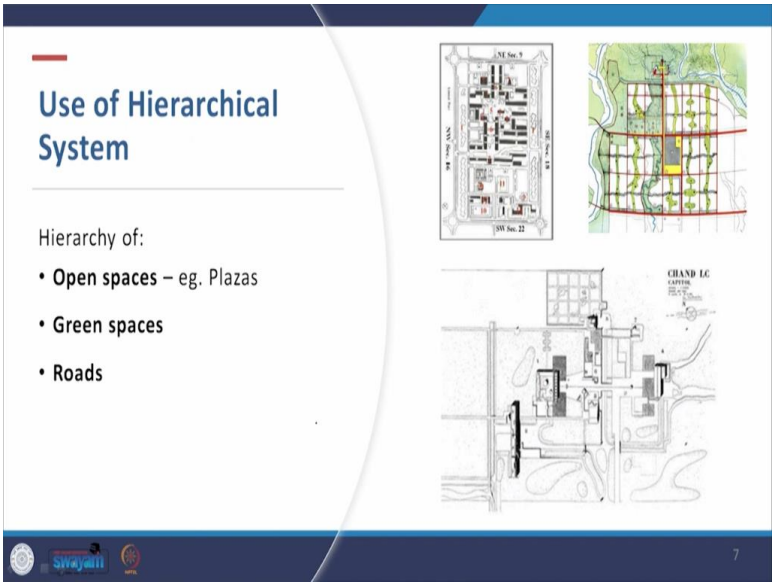

Now, there is also the use of the hierarchical system. There is he establishes the hierarchy and then he continues on with that hierarchy. For example, in the open spaces. So, if there is a plaza in the Capital Complex then we also find the plaza in sector 17, for example. And so, there is a hierarchy of a plaza at a bigger level and then at a smaller scale.

And then the green spaces. So, the entire green spaces are divided in a hierarchy. The road network from v 1 to v 8 is a hierarchy. All architects in Chandigarh needed to deal appropriately with Indian climate and the construction techniques and this became a template for construction in India, particularly, from the 1950s onwards into the 1980s and even into the 1990s and even today. Though we are far more mechanized in our construction today, though we have a far more better technology available in construction on site, yet our dependence on human labor continues to be there.

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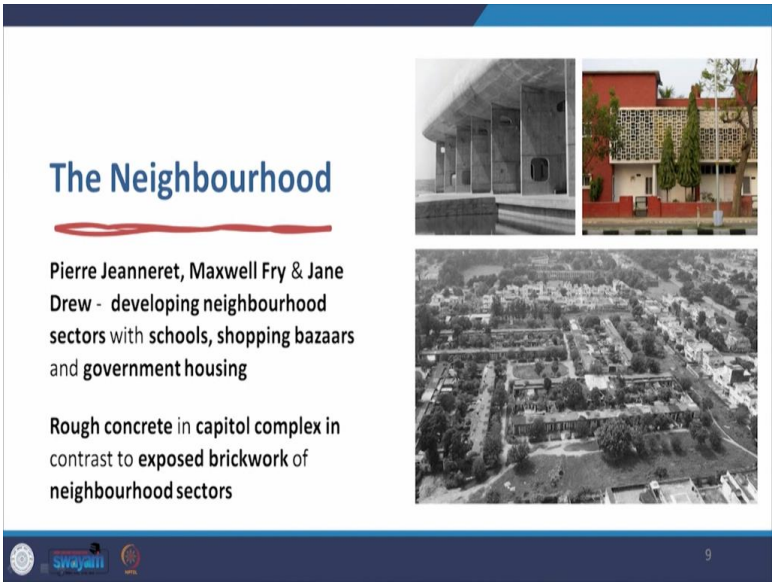

Now, with regard to neighborhood planning Pierre Jeanneret, Maxwell Fry and Jane Drew took charge of that developing the neighborhood sectors with schools, shopping bazaars and government housing. And whereas , if the capital complex was done in rough concrete, the neighborhoods was done in exposed brickwork and stucco or in some cases brick can expose concrete some of the buildings later. And this was so that the buildings of the Capital Complex would remain as a separate, very clear-cut identity in the planning of Chandigarh.

And not only were the buildings in the Capital Complex identified with the use of rough cast concrete versus brick, exposed brickwork in the other parts of Chandigarh but also the scale, Capital Complex scale was monumental. Whereas you come down to a human scale, in nearly all the buildings that we come across in the other parts of Chandigarh.

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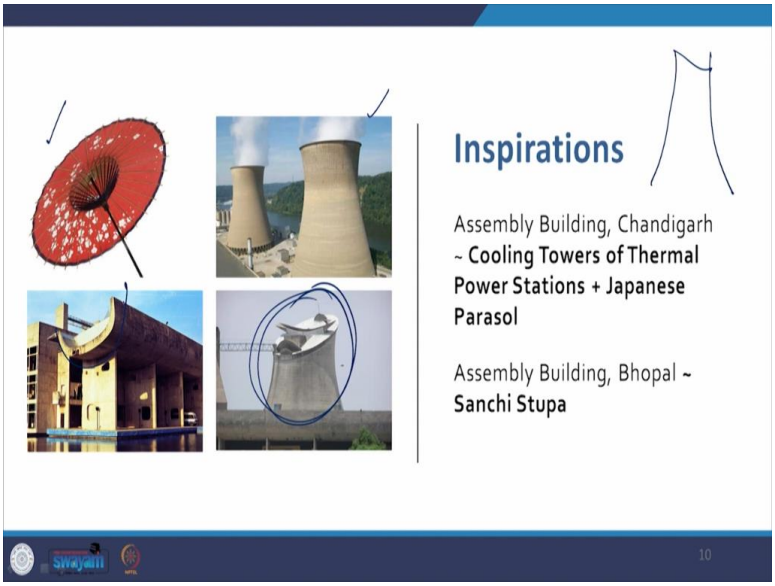

There were other inspirations also which I would like to highlight. For example, the assembly, where the assembly proper sets in the assembly building. This is that unit. I had shown it to you last time that this is how the form is going all the way down into the building. And this form that is appearing on top above the roof of the assembly building has been considered to be a derivation from the cooling towers or thermal power stations.

Jawahar Lal Nehru had a tremendous emphasis on the industrialization of India and so the towers of thermal passage, the cooling towers were a very apt symbol or a symbolic representation to be shown here. Then there is the inverted parasol. Parasol is a Japanese umbrella. So, this is considered to be an inverted parasol which is in front of the assembly building to provide shade to the façade.

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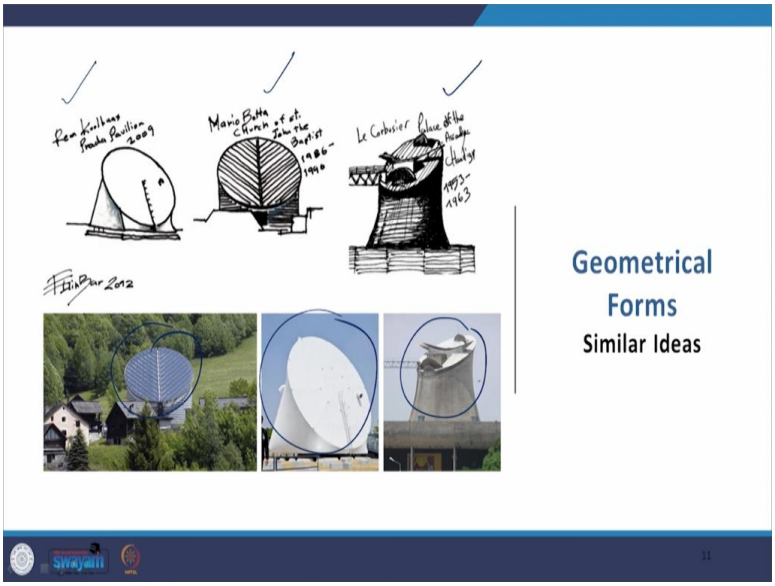

Then there are the similarity of ideas. Now, this slide I have put forward to you in this presentation to indicate to you, how ideas can be seen in different architectural works by different architects. They may not have been inspired or imitated or derived from another work. They may be appearing in isolation. But there seems to be a connection in them.

So, the connection that I see here is, for example, in the work of Le Corbusier in the assembly building. In the work of Mario Botta in the Church of John The Baptist from 1986 to 1990 and in the work of Rem Koolhas in the Prada building in 2009. So, the same element appears in a different way in the other two buildings.

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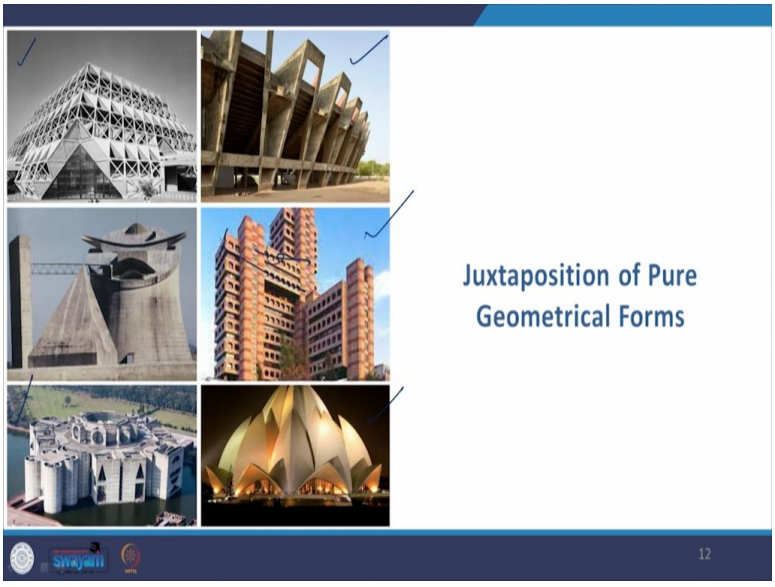

Then the pure geometrical forms that he brought forth in front of us in the Capital Complex, particularly, the assembly building. We see that also coming in the work of Louis Kahn who was a master of the use of geometrical expression in buildings. And we see that in the Sher e Bangla Assembly in Bangladesh. And we see that happening in other buildings in India.

So, there is not just a juxtaposition but a geometrical form derived and then multiplied throughout the building. It being used as a modular unit. So, we have it in the Hall of Nations in Pragati Maidan where a tetrahedral unit has been multiplied. We have it in the Sardar Vallabh Bhai Patel stadium in Gujarat.

We have it in the Baha'I Temple, the Lotus Temple where each of the units is repetitive and we have it in the STC building by Raj Rewal where the Vierendeel truss system has been used and these hexagonal cutouts and the overall truss form has been multiplied over the building.

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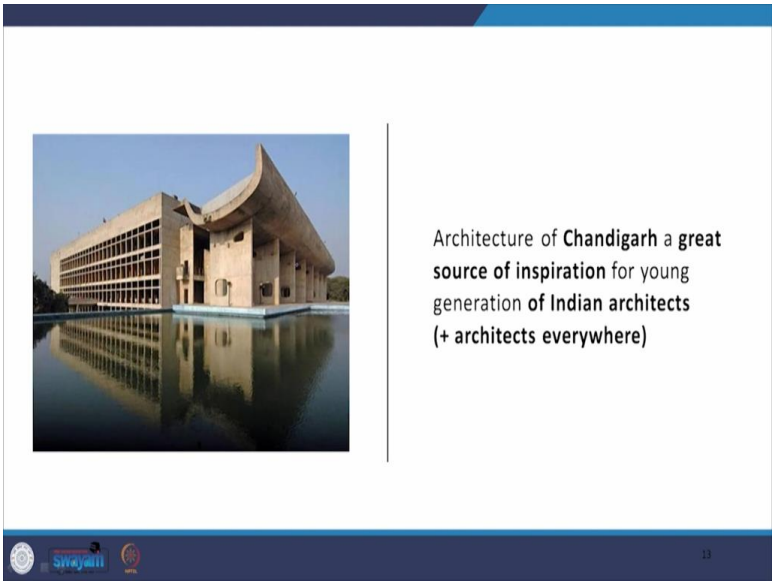

So, the architecture of Chandigarh is a great source of inspiration for not only young Indian architects of that generation but also architects all over the world.

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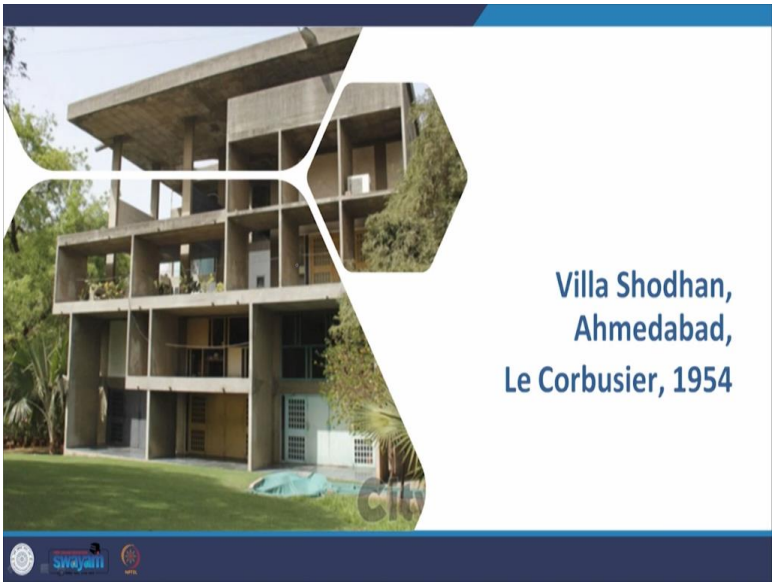

Now, moving forward from here, let us now focus on Ahmedabad and we come to Villa Shodhan that is designed in 1954. So, the design and planning of Chandigarh was happening parallelly to the works that he was doing in Ahmedabad.

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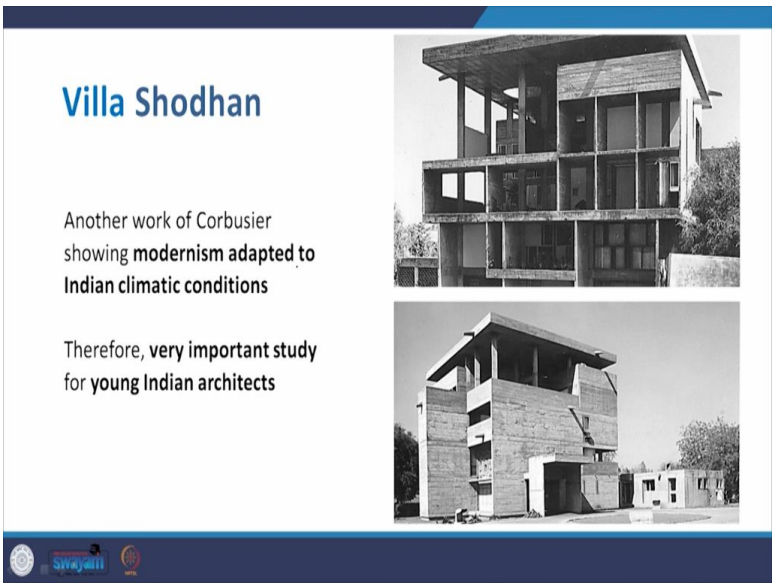

In Villa Shodhan another work of Le Corbusier shows the adoption of modernism to Indian climatic conditions. Now, this is a very important contribution of Le Corbusier. Please, remember as I have often repeated earlier also that even others who came into India earlier, whether it was the Mughals or the British, they did adapt their buildings to Indian climatic

conditions. The Mughals did that, the British did that, whether it was in indo-sasenic or in colonial architectural style.

And CPWD having brought modernism into India through its buildings also did that. But in a sense in modernism we see that appearing in the works of Le Corbusier. Therefore, we come to this one simple inference. We can never overlook climate in India. Climate responsiveness in our buildings has been a vital ingredient of buildings during that time, all the way into the 1980s even and 1990s.

But with the coming in of liberalization and with the coming in of advancing building technology, easier access to, for example, HVAC systems, air conditioning units, heating and cooling systems within our buildings today and with more economical, more efficient and also because we are more economically stronger to afford this kind of technologies, our buildings have become more and more actively controlled, particularly, in the urban areas.

As a result of that we have for a very long time done away with passive controls in our the important so called the corporate buildings and institutional buildings etcetera, going in for active controls. But then climate change became a very very important issue. In fact, active control happened all over the world.

Starting from the west, even in the middle-east, where because of strong economies and because of the emerging, the new technologies, buildings that were being built in the western colden climates began to be built in the hot desert climates of the middle-east. Glass and steel buildings like Burjalara, Burj Khalifa and many others that are in pure glass and steel, completely actively controlled. So, therefore the climate plays no role in the design of these buildings.

Climate is, the building is so controlled that very limited role is there. Even in India the same thing happened and in other parts of the world. Whether it was hot and humid climate area because it was composite in India, whether it was very cold or very hot regions, active controls did away with the surrounding climatic conditions. But what happened?

At one time, we were applying, we were using the climate to our advantage because we did not have active controls. Neither were the technologies available, neither was the economy of that caliber that it could afford those kind of technologies. But since we could do it, climate was done away.

But now, all over the world what we realized was that this resulted in larger carbon emissions, in fact, 39 percent of the carbon emissions globally is through buildings and that is a huge contribution resulting in major climate change, a major impact on climate change and global warming.

And because now, all over the world is such a strong focus on sustainability on green building design to lower carbon emissions, we once again are looking at passive designs. And when we come to the end of this series on modern Indian architecture, we will again be looking at that idea that it is taking deep root in our modern buildings. Of course, active devices will continue to be there and become more and more efficient. Probably, in the days to come the buildings will become more hybrid between passive and active technologies.

Coming back to this, in these passive controls, this modernism was adapted to Indian climate and this continues to have a very important focus in our buildings in the 21st century. Architects that followed him like V. B. Doshi and Charles Correa used these ideas very dominantly in their buildings. Therefore, this was a very important study for young Indian architects.

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So, the design of Villa Shodhan was focused on controlling sun penetration, ventilation, landscaping and views.

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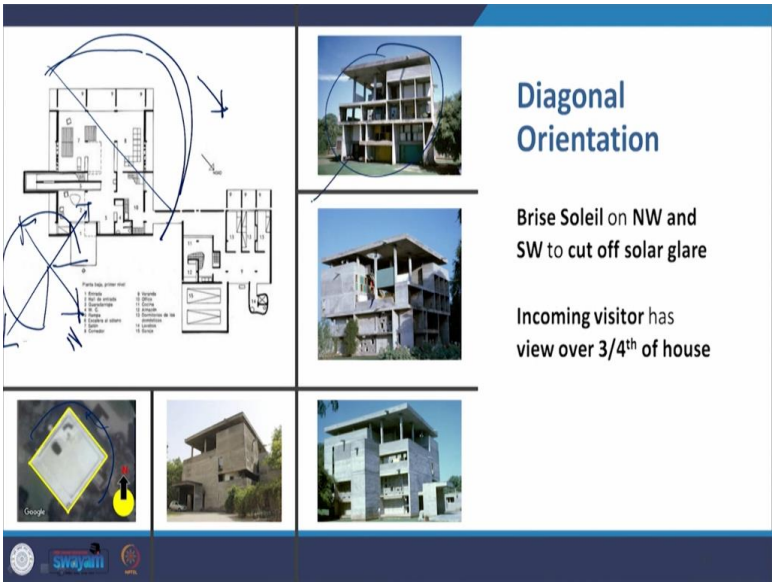

The diagonal orientation of the building, this is north, so, the diagonal orientation of the building resulted in the Brise Soleil being provided here on the south-west. And here on the North-West side to cut off solar glare. So, if the sun path is in the summers, if this is the north, then sun path is like this, then much of the sun path is taken care of by the Brise Soleil on this side which is this façade, the southwest façade and this is the north west facade.

So, not only that, this also provided to the incoming visitor. The visitor comes here. So, the visitor gets about three fourth the view of the house. The only side of the building not visible to the visitor is the more private area of the building which is to the rear towards this Brise Soleil opening towards a pool and a garden.

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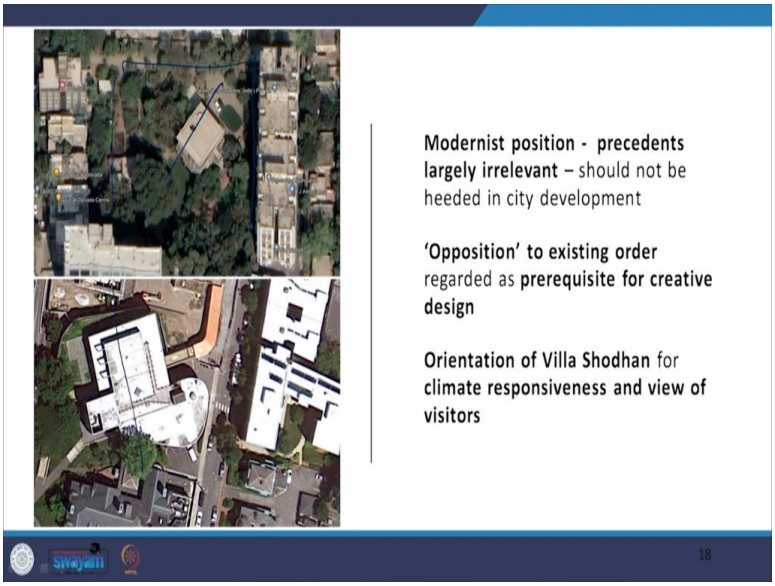

Now, the modernist position has been with regard to breaking the axis of a particular area that precedents are largely irrelevant. Therefore, they should not be heated in city development. This is the point that I made earlier in on the presentations. Therefore, opposition to the existing order is recorded as a prerequisite for creative design in modernism.

Whereas this is evident in Villa Shodhan I believe the orientation of Villa Shodhan had more to do with providing view and orientation, not so much as the breaking of the existing precedent, though it does break the precedent. If you see the buildings around villa shodhan, they are in a particular direction and Villa Shodhan breaks the direction as the carpenter center breaks the direction in Harvard.

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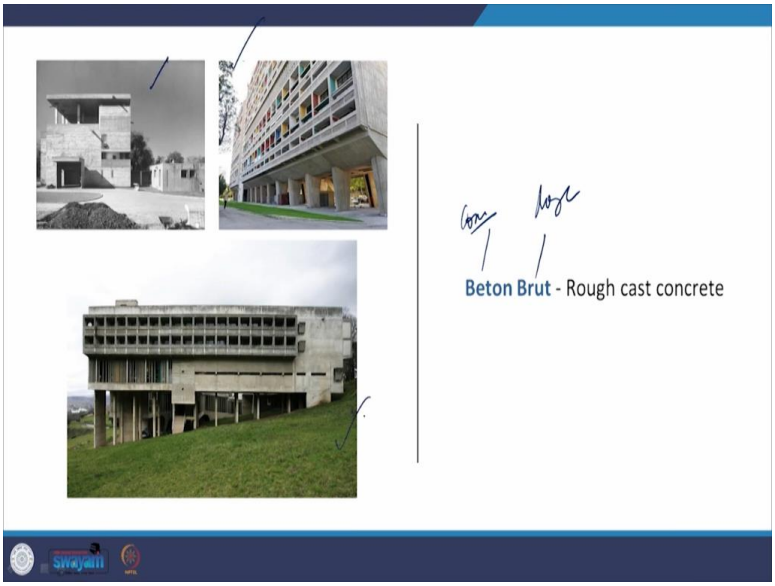

Now, Beton Brut that is rough-cast concrete beton in french means concrete and brut in french means rough or raw. So, raw concrete or rough concrete as it appears in Villa Shodhan, it was earlier in I have told you earlier in the Unite d'habitation and monastery La Tourette and many other buildings.

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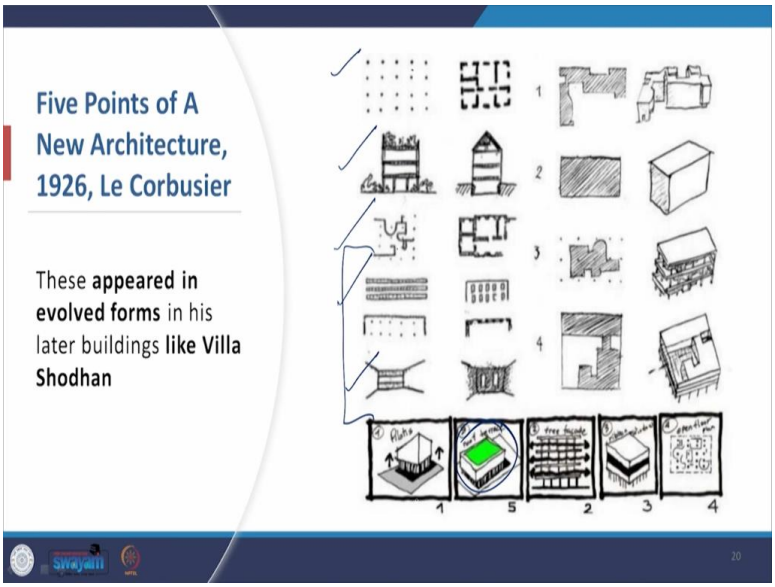

Now, again revising the five points of a new architecture, we have the Pilatus, we have the free façade, the free plan, the ribbon windows . So, this is the ribbon window again and there is the roof garden. So, we have the Pilatus, the free façade, the free plan and we have the ribbon windows and there is the roof garden.

So, five points, these appeared in an evolved form in the later buildings like Villa Shodhan. They appeared first in houses like Villa at Garches, Villa Jonnre, Villa Stein, Villa Coke, Villa Savoye and culminating of course in the 1928 Villa Savoye and then post world war II it appeared in buildings like United Habitation and then here in Villa Shodhan and also in the buildings of the Capital Complex in Chandigarh.

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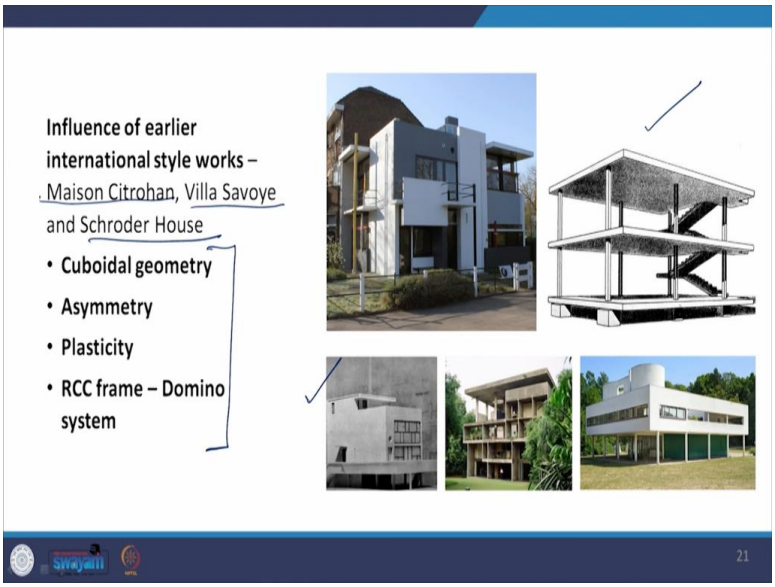

Now, the influence of the earlier international styles works that is there on Villa Shodhan. There is, of course, the influence of the original domino system that he developed along with Max Dubois there is also the impact of Maison Citrohan which was a model prototype that he developed in early around, we will come to the dates.

And then there is Villa Savoye in 1928 and Schroder House that was designed in the D style movement by G. T Rietveld. So, what do they have? They have cuboidal geometry, they have asymmetry, they have a plasticity in the plan in the form and as a result of the RCC framework, the cube has been decomposed. There is an attempt to decompose the cube.

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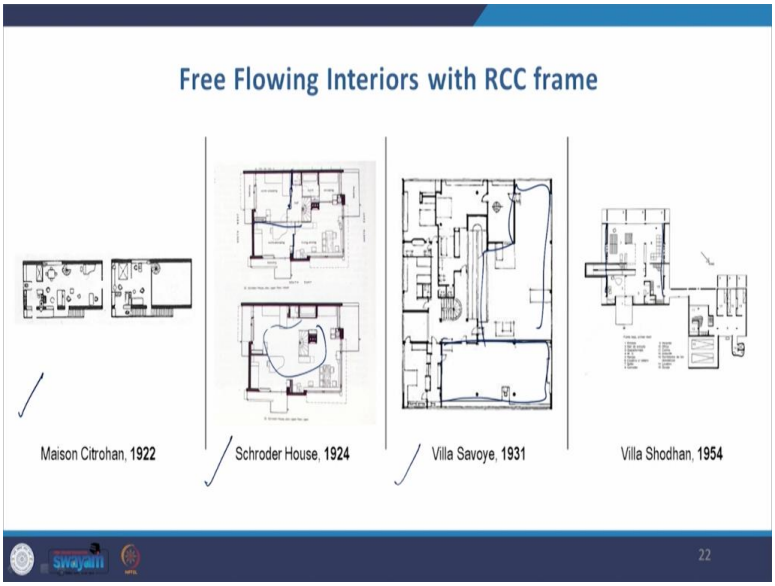

So, the free flowing interiors, the plasticity because of the RCC frame appeared in the Maison Citrhan prototype in 1922. And here he had still not evolved the pilotis but these side walls were more like shear walls to take the load. Then we see the same thing happening in the Shroder House where the entire plan is completely free but it has partitions that can be opened up to divided into rooms.

Then it appears when the Pilotis disappears in Villa Savoye. Well, in 1928 to 31, so, completed in 1931. So, we have these, for example, the large living room and the terrace on the first floor etcetera and the other facilities. So, this is the first floor raised on the Pilatus. And then again a combination of the shear, the combination of the there are the brick walls on either side and then there are the columns within. So, that is the Pilotis.

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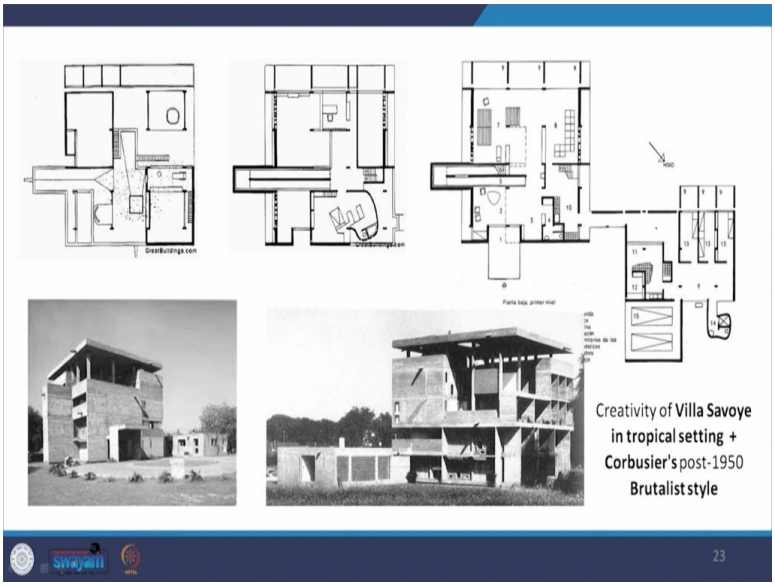

So, now, the creativity of Villa Savoye reappears in a tropical setting with vis-à-vis Villa Shodhan and also Le Corbusier post 1950 Brutalist style appears in this building.

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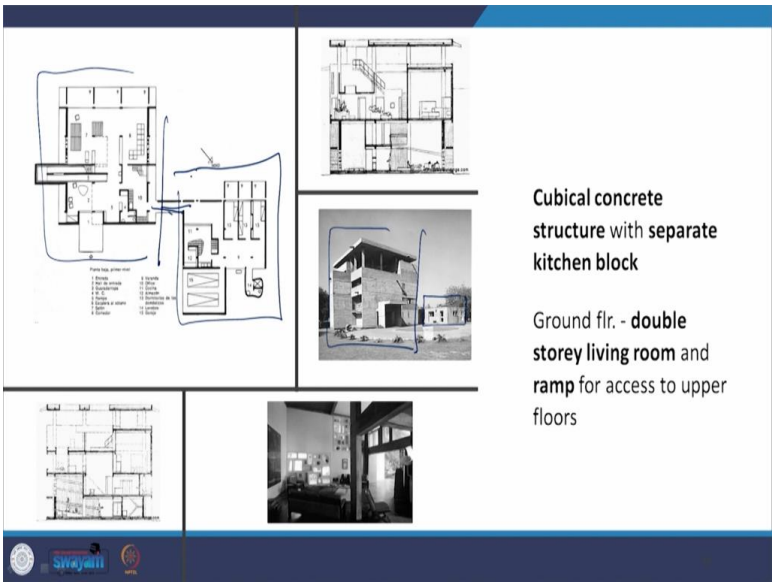

So, this is a cubicle concrete structure. This is the cuboid which is representative of his earlier cuboidal works again culminating in Villa Savoye. And there is a separate kitchen block. So, when you look at this, this is the cuboidal block. There is this connecting wing and there this is a connecting corridor and then here is the kitchen wing. So, the ground floor is a double storey living room and a ramp for access to the upper floors.

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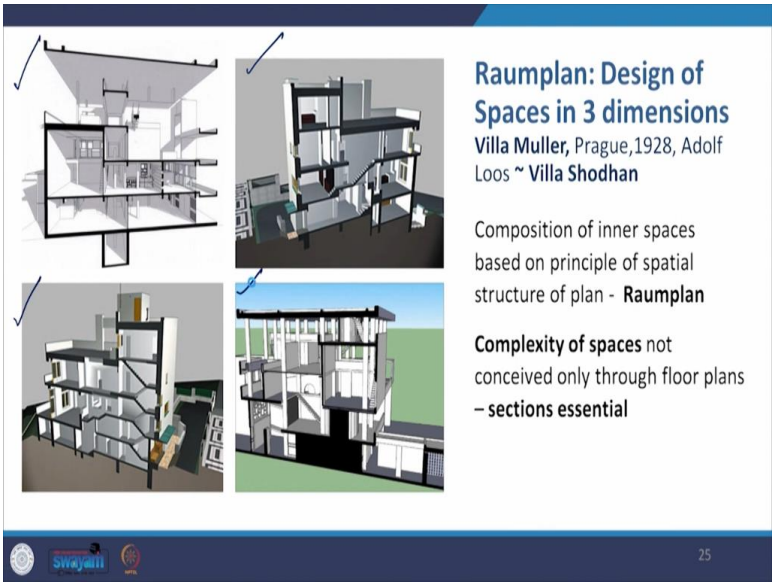

Now, there is also the idea of the Raumplan. Raumplan is the design of spaces in three dimensions and this idea was proposed by Adolph Loos who said that I do not design plans or floors, I design spaces. And he gave us this idea in Villa Muller in Prague in 1928, the same year that Le Corbusier had done the Villa Savoye or rather begun the Villa Savoye. Then this is comparable to the sections of Villa Shodhan. Now, why am I saying section is?

Because the perception of the Raumplan that is design of spaces in three dimensions, can only truly be observed in the section. So, for example, this is the section of Villa Muller and this one. And these are the two sections of the Villa Shodhan. The composition of inner spaces are based on the principle of a spatial structure of the plan. If you look at the plan of Villa Shodhan, it will be very difficult.

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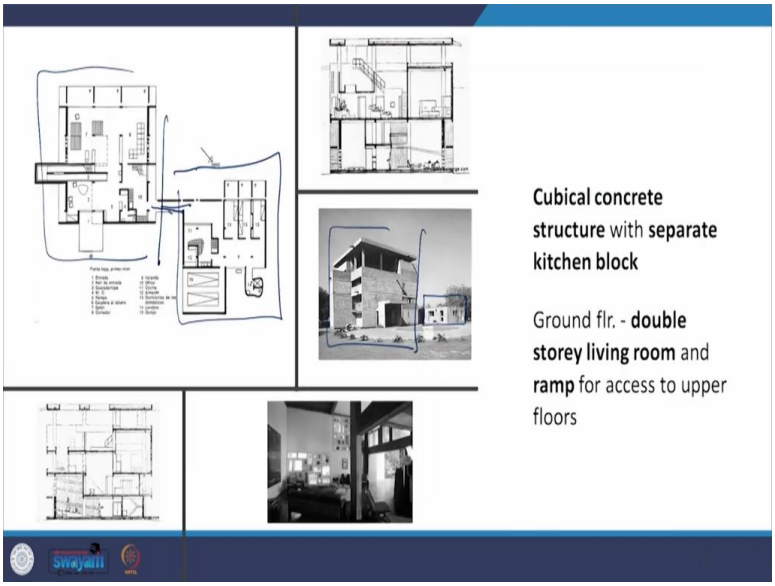

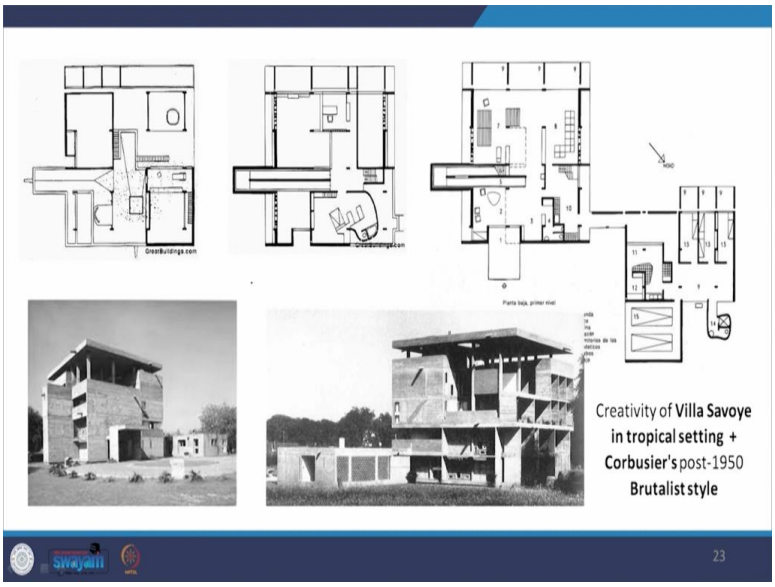

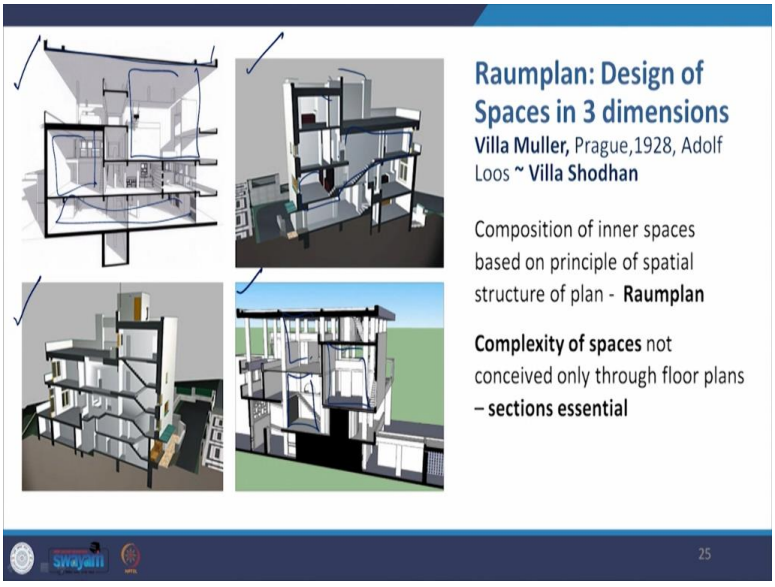

If you look at all the plans, for example, it is not easy for, at least, for eye to conceive that the organization of the rooms is not from one level to the other. The organization of rooms is much more complex. So, you have a space like this here with the parasol on the top and we will come to that discussion.

Then you have, there are at least three separate apartments in Villa Shodhan. So, you have double height spaces, you have single floors like this and then this spaces vary, they vary. So, this is the idea of the Raumplan because the same idea appeared in the Villa Muller that it was not easy to conceive the levels in of Villa Muller just by looking at the floor plan. So, the complexity of spaces is not conceived only through floor plans, the sections are essential.

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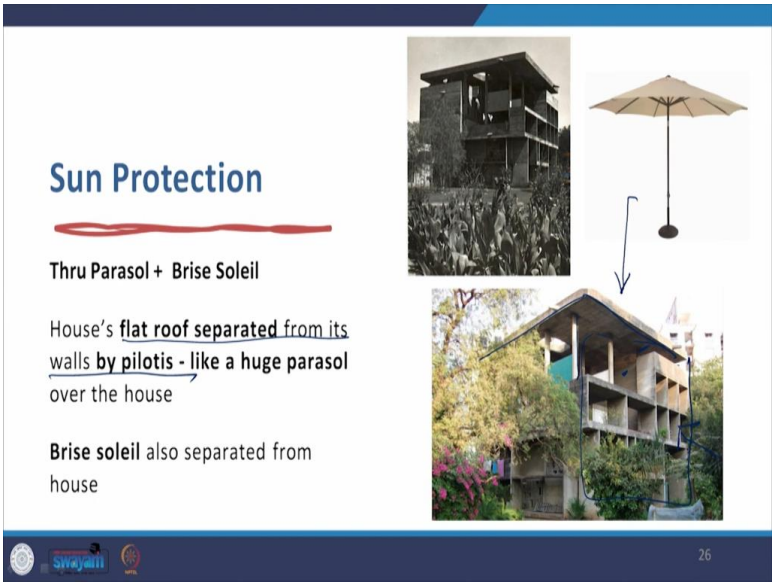

Now, there is the idea of the sun protection. That has been done through the Parasol and the Brise Soleil. The house has a flat roof separated from its walls by the pilotis. So, this is the pilotis and this is the slab which is like a Parasol like an umbrella on top of the house. So, therefore the Parasol and in front of that here is the Brise Soleil which is also slightly detached from the house. So, both the Parasol and the Brise Soleil are not directly connected with the house.

So, therefore when the sun radiations fall on the roof that is on the Parasol there is this gap in between and kind of an air gap and therefore this floor right at the top is also equally thermally comfortable as the floors beneath it. And similarly, the direct solar glare from this side is also cut off by the Brise Soleil.

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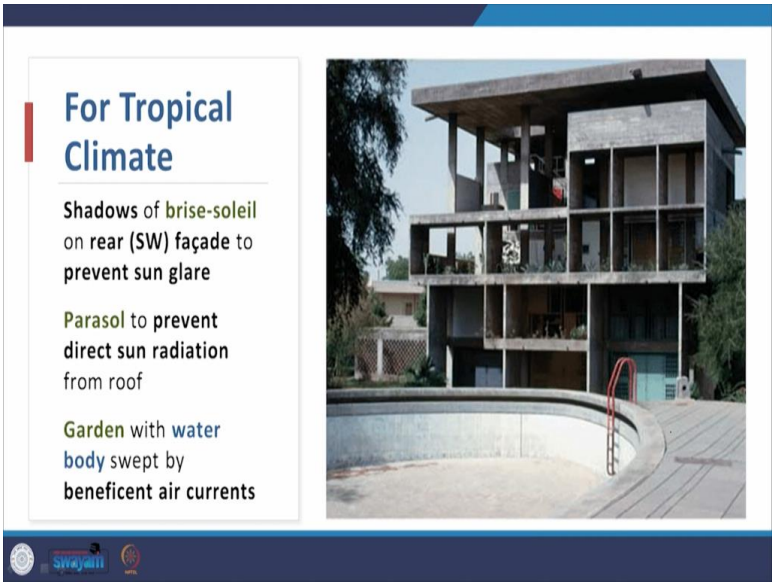

So, the shadows of the Brise Soleil on the rear that is the southwest façade are to prevent sun glare. The Parasol is to prevent direct sun radiation from the roof and the garden towards the rear of the southwest side is to allow for these beneficent air currents to flow into the building. When the air flows over the water body passes through the Brise Soleil and into the house that cool air comes in.

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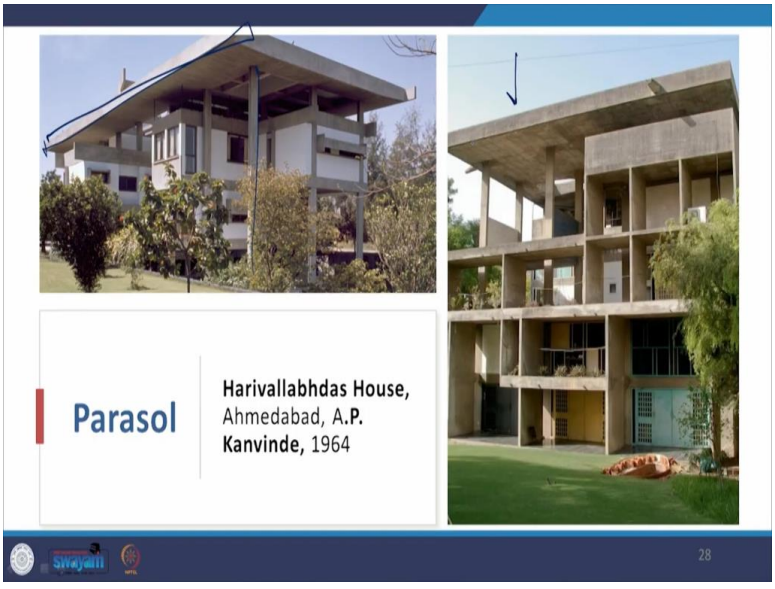

The idea of this kind of a Parasol lifted on the pilotis above the house has also been adopted or the idea was adopted by Kanvinde in the Harivallabhdas House in Ahmedabad in 1964. So, we find a very similar Parasol over the pilotis, overshadowing the whole house, exactly

like an umbrella would overshadow you and you know take the glare or the rain as it is happening here in Villa Shodhan.

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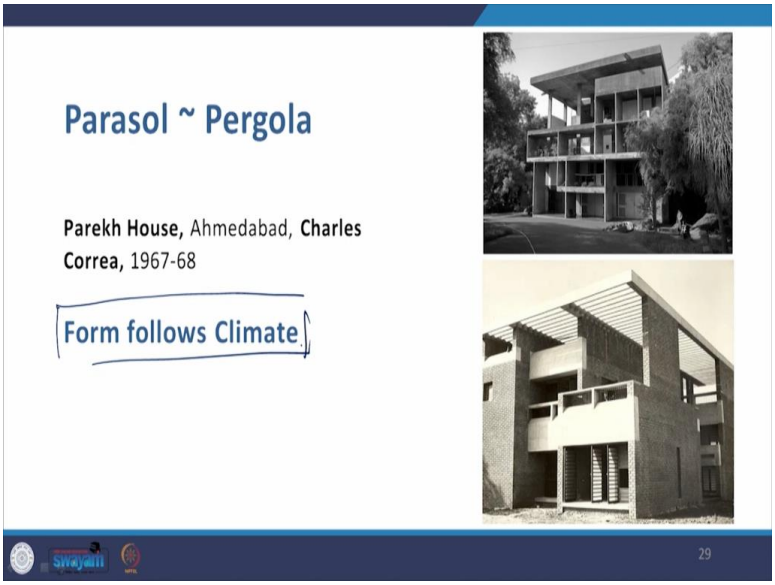

Then the idea of the Parasol was interpreted by Charles Correa as a Pergola. So, rather than having a flat slab he went in for a series of beams, the idea of the Pergola. And we see that happening in the Parikh House in Ahmedabad by Charles Correa in 1967 to 68 and the very famous dictum associated with Charles Correa ‘form follows climate’ in India.

So, whereas Louis Sullivan coined form follows function which became the backbone of modernism. Charles Correa coined form follows climate and I really believe that this is one of the very strong dictums for Indian buildings. Because like I said you cannot neglect climate when you design in India.

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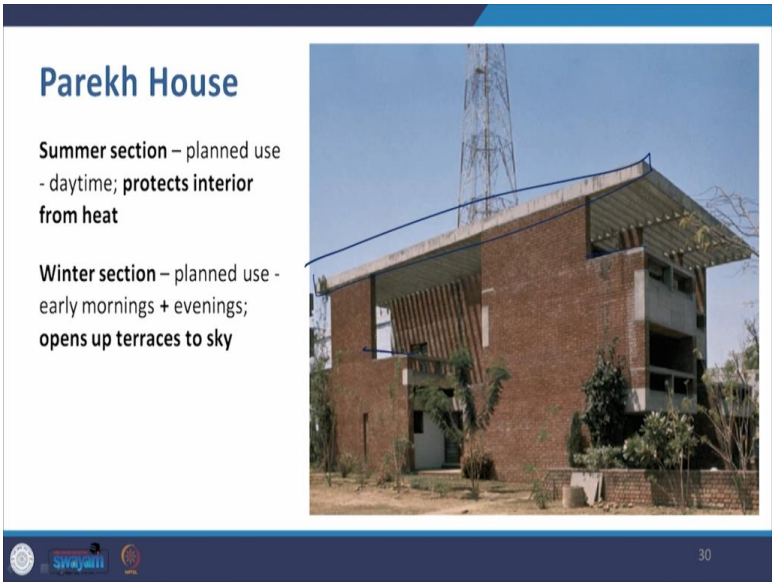

So, in the Parekh House, it is an amazing composition because there is a summer section and there is a winter section. The summer section is planned for daytime use and summer use and it protects the interior from the outside heat. The winter section is planned for early morning and evening use and winter use and it opens up opens up terraces to sky. So, this is how the Pergola functions very similar to how it did it in the Villa Shodhan and the Harivallabhdas House by A. P. Kanvinde except it is perforated. And the similar idea of terraces appears as it did in the Villa Shodhan.

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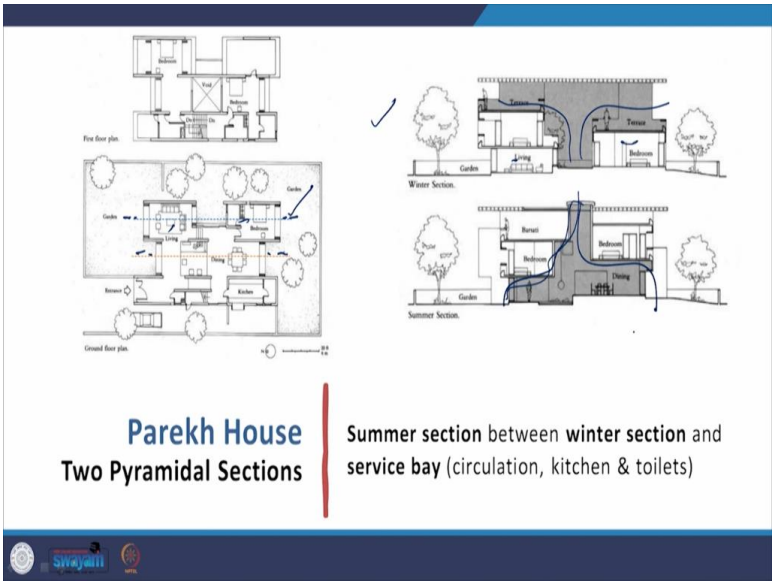

Now, in the Parekh House, there are two pyramidal sections defining the summer section and the winter section. So, if you look at this line, this section and I am sorry it should have been more appropriately done as you would do it properly graphically but I have just done it as a single line to get indicated more clearly.

So, this line that you see is the winter section which is cutting through this. This is the bedroom, this is the living room as you see here and it opens up in this manner towards the terrace and you can use it in the winter times and also in early mornings and in the evenings. Now, the summer section on the other hand is inside the house. This is how the summer section becomes and this section line that you see here indicate the summer section that is deep inside the house and it opens up like this. And it completely protects you from the sun glare.

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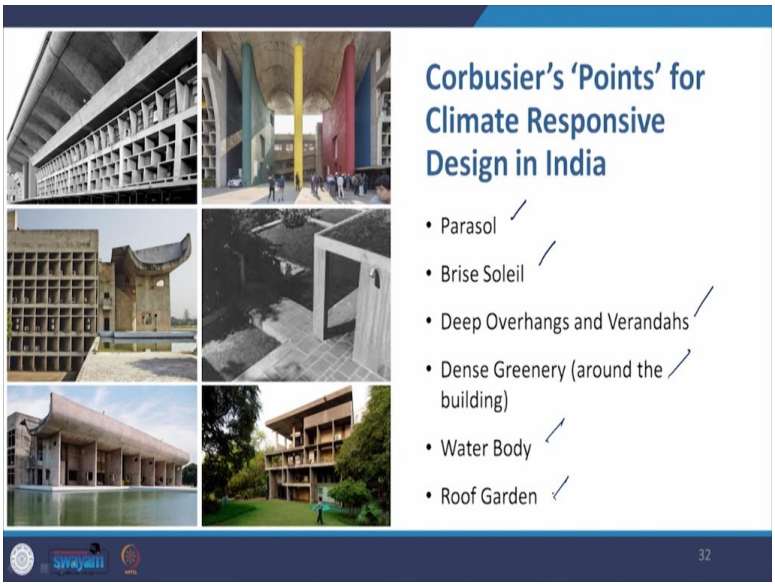

Now, putting it all together, we have Le Corbusier and I have coined them as points. Le Corbusier points for climate responsive design in India. According to him was the Parasol, Brise Soleil, deep overhangs and verandas, dense greenery, water bodies and a roof garden, many of these were adopted later by Indian architects and continued to be used.

Probably, the Brise Soleil has more, has appeared more now in the form of the traditional Indian jali in a modern interpretation. The Parasol has appeared more like a Pergola as Charles Correa showed it. Deep overhangs and verandas continue to be there, greenery continues to be there, water bodies continue to be there, roof gardens are also a part of many

projects today. Particularly, when we talk of the roof garden as a part of green building design, the green roof.

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So, I will stop here for today and I will continue with the next important building of Le Corbusier, which is the Mill Owners Association building in the next presentation. Thank you.