

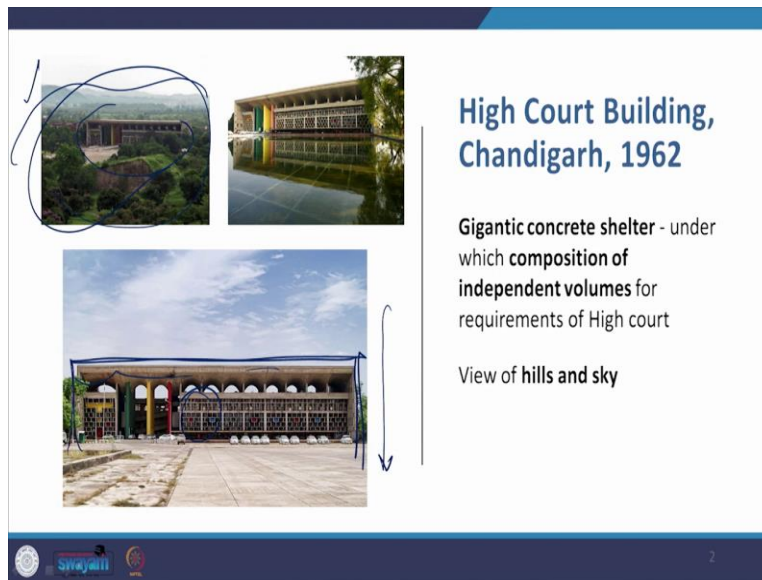
**Modern Indian Architecture**  
**Professor P S Chani**  
**Department of Architecture and Planning**  
**Indian Institute of Technology Roorkee**  
**Lecture: 15**  
**Western Architects in India- Le Corbusier - Part 2**

Hello students today, we will again continue from where we left off in the last lecture. And that was the study of the impact of Western architects in India. And we are looking at the works of Le Corbusier, we are done part 1, we will come to part 2 today. Now, as I told you last time, when the Corbusier came to design Chandigarh in India, the core ideas that he already developed in Europe with the international style and then onwards to brutalism, he brought those same ideas into India.

And that became a very happy issue for India because the kind of technology and materials that were available in India was very suited for the brutalist style of architecture. It was raw concrete, it was a rugged finish, it was not fine finish , with the materials and the labor that we had available in India , It worked with that very well.

And therefore an entire city came up with the capitol complex, being in brutalist style, and became a kind, of a global pilgrimage for architectural students and people connected the architecture from all over the world. It has become like an entire lesson in architecture for us.

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Let us come to the next building of the Capitol complex and that is the High Court building in Chandigarh that was completed in 1962. As you can see from this picture, and what I was telling you last time is the amazing way in which, Corbusier frames his buildings with the landscape in the background the Corbusier was not a very great sketch artist. In fact, when you look at his sketches, and I will show you one of the slides of sketches, they are not exceptional works of a sketch artist.

In comparison, Eiffel Wright was a , handed sketching, if you look at the perspectives that he has made, the drawings are very, very good. But there was one common thing that was defining the drawings or the sketch work of Wright and Corbusier, the sense of proportion, the way they are placing the building on the site.

If Wright has placed falling water in Barren Hill Pennsylvania, you can actually imagine the building being there. And when you look at the final finished picture of the falling water , It is so as if he could deduce and imagine it in his mind. Now that you people work in with software tools like Google Sketch up, and many other tools where you can nearly accurately imagine how the building is going to be on a site.

Imagine a world when the tools did not exist. Imagine that all this is going on in the minds of Architects like and Antoni Gaudi and Frank Lloyd Wright, as they are imagining these buildings, and then their country conceiving them in their mind executing them on site. And it seems as if

they could see it having been finished from before , in the case of Corbusier, the sketches have more to do with a very vast landscape behind them.

So, when you look at the High Court building, you can see this landscape of amazing rolling hills behind and dense green areas all around it on this flat site on which Chandigarh was placed particularly the head of Chandigarh, which is the Capitol complex and the entire building is framed in that and it also shows us the monumentality of nature around it.

The building is monumental, but the nature is much more monumental and completely dominates the building. So that the building appears like a minion in the surrounding landscape. But when you come down at the plaza level, the building reveals its monumentality, it is monumental, it is encased in this vast frame.

The high court or the Palace of Justice building and all the various components or independent volumes of the High Court building the entire composition, is completely put together within the frame. So, even if there are different elements to the composition, they are all quells together as one unit under this vast frame of the court of justice.

And then above that, as in the Assembly Building is this very vast sunshade and it is a monumental scale its projecting out and completely shadowing the building. And beyond that there is also the Brise Soleil or the sun breakers in the front facade of the building, in the case of the Assembly building.

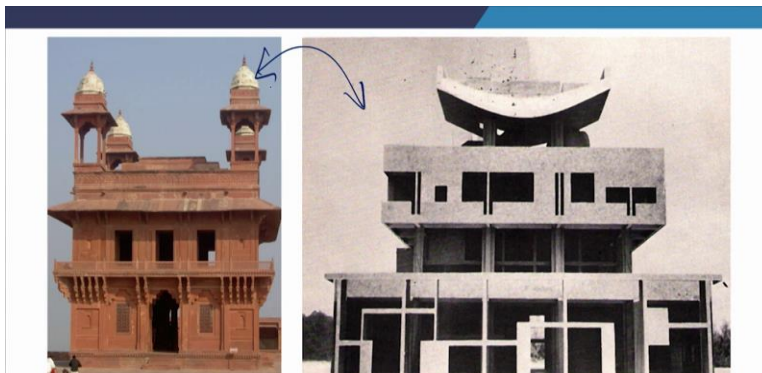
You found the Brise Soleil at an angle of 45 degrees on the side of the building in the front facing this precisely is the assembly building with again having a very deep loggia through which you enter the assembly building. And then so behind it is the view of the hills and the sky.

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### High Court

- Beton Brut
- Primary Colours
- Deep Verandahs
- Monumental sunshading device & louvers



### Unbuilt Governor's Palace

Governor's Palace ~ Diwan-e-Khas, Fatehpur Sikri





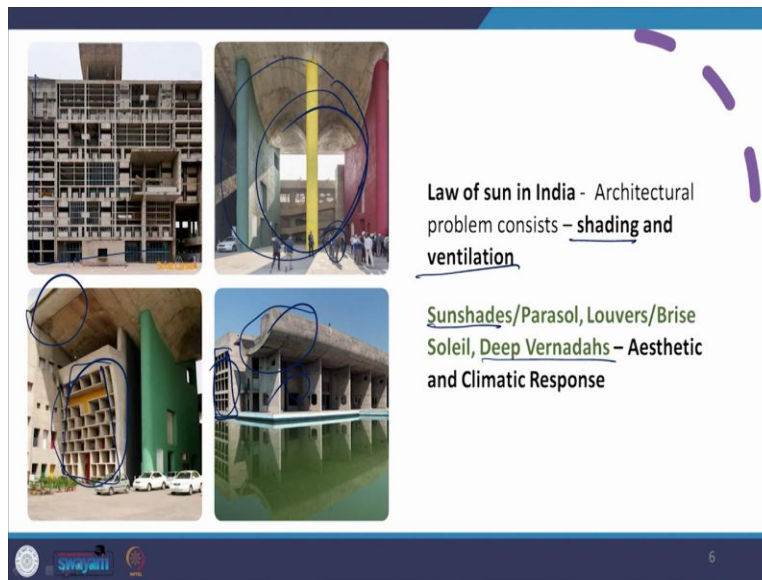
Now, the things that are common to the other buildings of this complex, there is Beton Brut, there are Deep Verandahs and there are the monumental sunshading devices, the Brise Soleil , the louvers and there is an additional thing here which is not there in the Assembly building. It is the use of primary colors.

There is a contrast between the gray of the concrete and the primary colors he has used, for example, in the door of the Court of Justice. Now, there is also the link between the Governor's Palace and the un-built governor's palace in connection with the Diwan-e-Khas, Fatehpur Sikri, they both seem to have a very similar derivation that rather the governor's palace seems to have been derived from the Diwan-e-Khas.

We will again look at this building and will again see, we will look at a threesome example of the Diwan-e-Khas with the Governor's Palace and the Institute of Indology by BV Doshi and we link them together and you will find it so amazing to see how the composition of issues of Indology by BV Doshi is so it is such a reminder of the un-built governor's palace.

Then there is the open hand, the vision of Corbusier of Chandigarh welcoming people into the city. It is a monumental sculpture in itself. I wish that I had a better picture where I could put the human figure in scale in this the front the part of the Open hand, which is the pit of consideration. And the open hand as you can see is actually shaped like the figure of a bird rather a dove which is the sign of peace and it is prominent in the plaza and the part of the sunken court for public assembly in front of the open hand is the pit of consideration.

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Now there is the law of sun in India, no architect is able to escape that I have been repeatedly mentioning that, every architect who came into India, particularly with our emphasis on modern architecture, they had to adopt the buildings to Indian climatic conditions, all the way from pre independence with the works of the British architects, even to the dominant architecture of New Delhi by Lytuens and Baker and Walter Syke George Houston and all the rest of them.

They had to climatically adapt their buildings to India , Corbusier did exactly the same. So, the architectural problem consists of shading the building and ventilating the building. So, to do that Corbusier provided in his buildings, there are sunshades so you find this vast sunshade over the High Court building.

And this inverted parasol, parasol is a Japanese umbrella, this inverted parasol over the Assembly Building. Then there are the louvers that you see here or the Brise Soleil you see here in the front of the High Court building and you see an entire amazingly aesthetic composition of the overall the louver system on the Secretariat building.

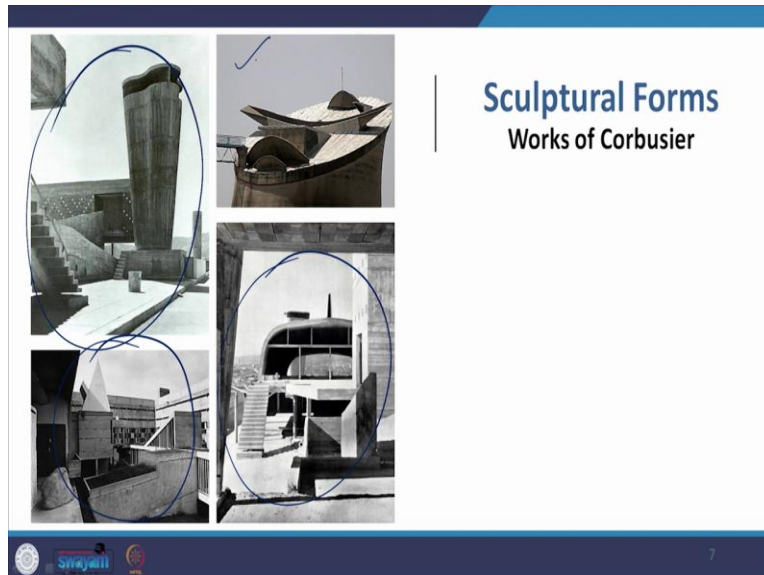
And then there are the Deep Vernadachs that you find here. You find it here in the High Court building. So, in fact, what Corbusier did was that he took these elements and not just did not keep them as a climate response, but made it also an aesthetic response. The sculptural force of the Brise Soleil in the Assembly Building is so powerful. If you remember, go back to my previous presentation.

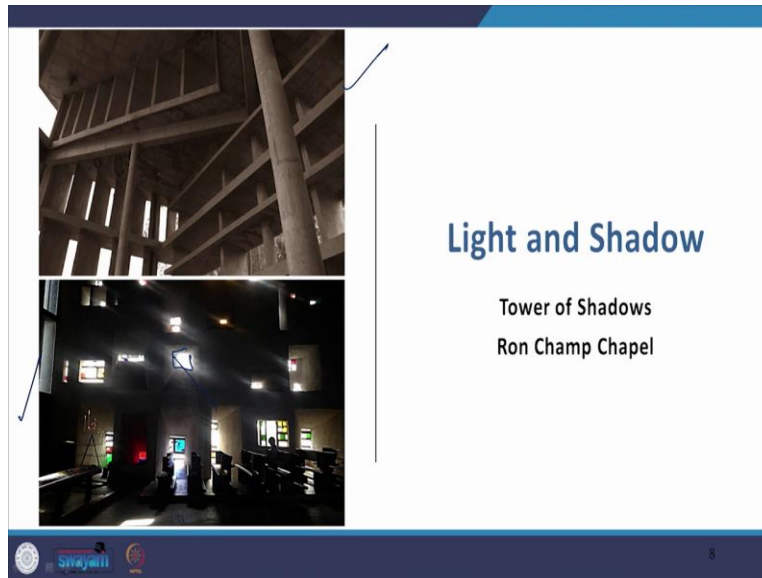
When I compared this with the louvers of Chitale in Chennai, what I told you was that Chitale's louvers which are horizontal louvers, they are very dense, they seem to be more functional, vis-a-vis Indian climatic conditions, but the Chandigarh louvers are monumental and sculptural and have a tremendous impact aesthetically and, they also do the job.

They help in accentuating the monumentality of the building. Everything that Corbusier does, he does it in a certain hierarchical fashion. If he is doing monumentality, if he is bringing that into his buildings, then every feature in the building, every component in the building responds to that monumentality.

So, if you are talking of the Brise Soleil or the Egg crate louvers here or on the side of the Assembly building, they are monumental. If you talk about the Vernadachs, the Vernadachs are monumental as you can see from the human scale that, the humans in front of it. It is a vast and massive Vernadah, and yet it continues to be very well shaded.

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Then there are the sculptural forms in the work of Corbusier. He had already started doing that, if you refer back to my previous lecture, I had told you that as he moved towards brutalism, right from the RonChamp Chapel onwards to the Monastery La Tourette, et cetera. And then you find these at the terrace of the unite D habitation. This is the pure, rugged, geometrical forms of Monastery La Tourette.

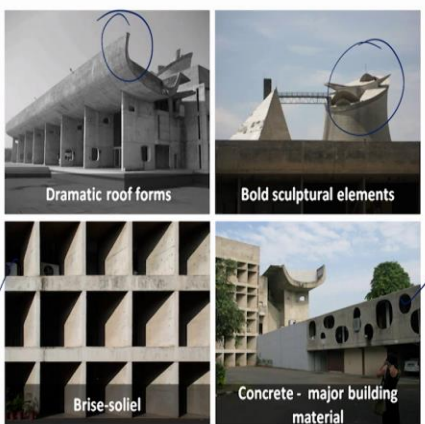

This is again the terrace of unite D habitation, these are composition of pure geometrical forms, or sculptural forms, and then you find this cosmic , this top of the Assembly Building, which is also in relation to cosmic signs. We cannot go in detail about that, but I am giving you a kind of a hint here and you can read up on it, there are more details available. So, here he brings that sculptural form over the assembly building and like I said, the monumentality also continues to maintain a hierarchy. This is also monumental, the sculptural forms are also monumental.

Then there is light and shadow, we see light and shadow we see that amazing light and shadow impact in the Ron Champ Chapel, where the walls are very thick in rugged masonry. And then there are these cavities through which is a very thick wall and the light filters into the chapel. Now the same impact is not there in the Villa Savoye, because in Villa Savoye, the light was flat, it was a straight cut ribbon window and the light filtered in and it was not having the impact of light and shade. It was a flat light, but here in the Ron Champ Chapel, it turns into light and shadow and then carries the same idea in the Tower of Shadows in the Capitol Complex.



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## Features




Dramatic roof forms

Bold sculptural elements

Brise-soleil

Concrete - major building material



## Features



Solids and Voids

Interpenetration of Spaces

Shadow and Light

New to 20<sup>th</sup> century India (V. Prakash, 1999)



## Features



With concrete, standard bldg. components become celebrated features



## Use of Primary Colours

Bright primary colours for doors & windows (High Court) in strong contrast to grey concrete



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**Inspirations**

Assembly Building, Chandigarh  
 ~ Cooling Towers of Thermal Power Stations + Japanese Parasol

Assembly Building, Bhopal ~  
 Sanchi Stupa

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All architects of Chandigarh needed to deal appropriately with Indian climate

And

Construction techniques (incl. labour intensive bldg. methods)

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## Construction

Desire for **grandness** hampered by need for **strict economy**

Corbusier **consulted programme** for each building as given in **budget** and then **prepared initial project**

Available in quantity - good clay, stone, sand and human labour

Chandigarh

Then there are the features which are the dramatic roof forms. There are the Bold sculptural elements on top of the Assembly building the Brise soliel and concrete which is a major building material. Some of the features like I said again responding to monumentality, then there are the solids and voids - the play of the voids with the solids.

Then there is the interpenetration of spaces and the exposed RCC and then they have the shadow and light in the Tower of shadows. There are features which became standard building components, which he used here became celebrated features in buildings to come in the works of BV Doshi and many other architects. We see for example, the rain waterspouts if you remember, I had mentioned about them in the Gandhi Smarak Sanghralaya.

And these rain waterspouts were put together in RCC here in Chandigarh and then taken forward by the young Indian architects. Then you have the balusters and you have the Ramps. And then there is of course the use of primary colors. There is the bright primary colors of these vast pilotis flat pilotis in green, yellow and red.

There is the vast door, the entrance door to the Hall of Justice. And then the doors and windows are having the primary colors in strong contrast to the gray concrete right adjacent to it. So, if the sunshade on top is in gray concrete, the pilotis is in primary colors. So, this kind of clash between to a very dull gray to very sharp primary colors and how amazing it comes in front of us in these buildings.

Then there are other inspirations in Chandigarh there is no lack of the number of ways the buildings have been inspired Mughal architecture and many other things that I have already mentioned. But here we have it, there are the cooling towers of thermal power stations from which this element has been borrowed, I would not say borrowed but interpreted.

And then there is , we will see later I mentioned it here but I will talk about it later that just as in the Assembly Building of Bhopal, done by Charles Correa is a response to the Sanchi Stupa here, and I am particularly referring here to the dome over the assembly building of Bhopal. Here in this case, this feature in the Assembly building is in response to the cooling towers of the thermal power stations.

I will drop the hint here, and I will talk about it later that this feature that you see here actually goes all the way down into the section of the building. And that is where the assembly hall proper is within the assembly building where the state legislators they all meet here. And in the Bhopal Assembly building by Charles Correa, it is more domical like this, which is the assembly hall.

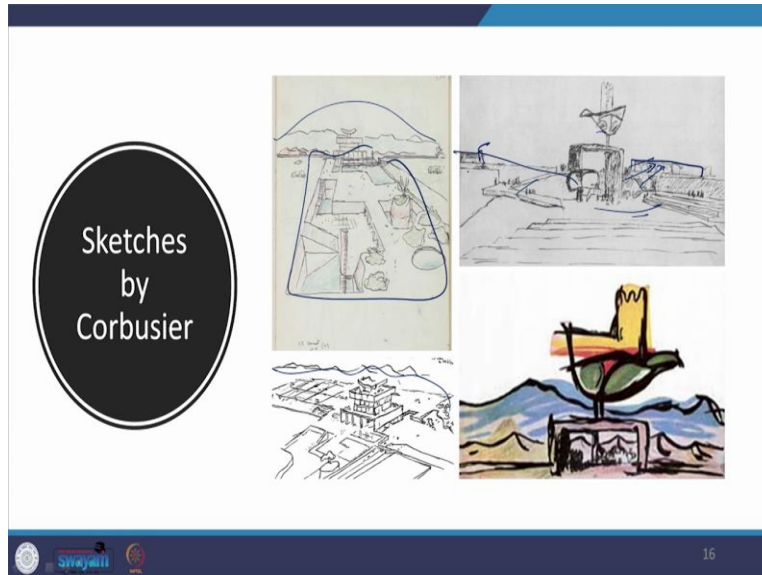
But we will again come back to that later. The other of course is the inverted parasol that have talked about this is the Japanese parasol. And this is an inverted version of the parasol. Now all architects in Chandigarh needed to deal appropriately with Indian climate and with Indian construction techniques, including labor intensive building method and building materials which were offer more primitive quality than available in the West. The construction itself when we consider how Corbusier responded here is something very interesting.

It is not true that iconic or great architects do not respond favorably to budgets and cost constraints. No they do. And I see here in the case of Corbusier as is well documented that when he did this design of Chandigarh having been aware that he was hampered with because of the need of strict economy in the program. Corbusier consulted program for each building, as given in the budget.

And then prepared the initial project, he maintained a very strict vigil on the budget he had in front of us, while doing these buildings. And he knew there is the available in quantity for the materials like clay, stone, sand, and of course, human labor. And he used them wonderfully, he

marshaled resources his resources really well, to come up with an architecture, that is probably one of the greatest in the 20th century.

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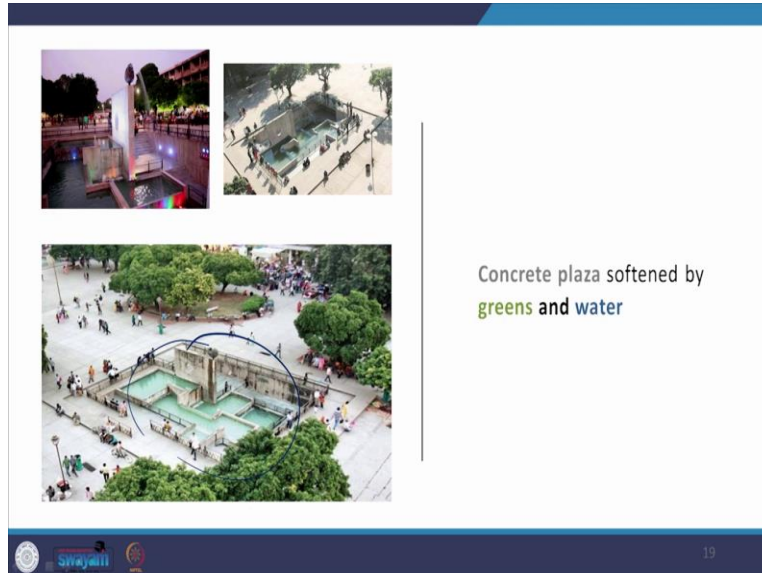
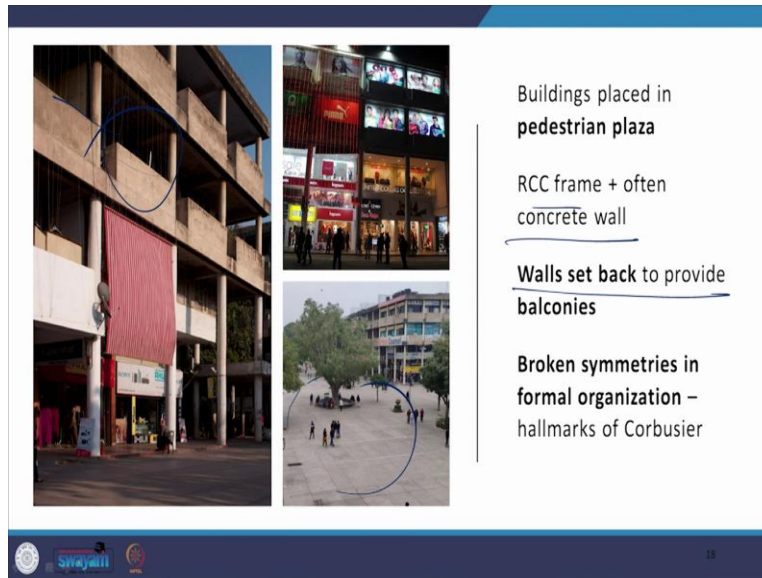
Open Plaza

## City Centre

Sector 17

- Best exemplifies architectural 'type' of Chandigarh
- Layout like that of Capitol Complex
- Based on super-block scheme with vehicular traffic kept to periphery and pedestrianised area in centre

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These are the sketches by Corbusier, as I told you that he is not a great sketch artist, but he is able to put together the building in a manner that you can feel the presence of the building in the landscape. So, if the palace of the governor's palace was to be built, you would have seen this amazing landscape behind it. As you can see this bird's eye view of the governor's palace with the rolling hills behind it, and the plaza in front and so when you see the Open hand.

From the Open hand, you are able to see on one side, the Assembly Building on one side, the Palace of Justice of the High Court building. And then, it is not a great sketch in terms of the fine quality of the sketch, but a great sketch in terms of scale. So, the way it has been put together

here in the pit of consideration here. And on one hand, the scale of the High Court and the Assembly Building on, either, side and the overall way that they fit together in the landscape.

The city center, sector 17, let us look at sector 17. At best exemplifies the architectural type of sector in Chandigarh, the layout is very similar to the Capitol complex and how is that? Now, ideas used in one place, then multiplied from the urban design level to the built form level? And what is that? What did I mention about the High Court building, that there are these composition of broken symmetries and he unites them together in this frame.

Now the same thing happens in the capitol in terms of the open plaza. The open plaza unites these composition of buildings and puts them together as one. In the sectoral planning the same thing happens around with this road network on all sides the sector is framed. Within it the buildings are not composed on some axial symmetry. The buildings are placed in what I might call , as I am putting in inverted commas an “open plaza”.

The sector itself is like an open plaza, where the buildings are put together, like the layout of the Capitol complex. So, this is based on the superblock scheme with vehicular traffic kept on the periphery, and the entire area within is Pedestrianised. The buildings of sector 17 are placed in this vast pedestrian plaza.

Now, we come down to the level of the built form. And again, the buildings within sector 17 respond to this plaza, as the buildings of the Capitol Complex do they are in RCC frame, and often there is a concrete wall, the walls are set back to provide these balconies. So, the walls are set back and the balconies are provided, again, the broken symmetries informal organization.

So, though the symmetry is broken, but the formal composition of the building, just harmonizes them together or binds them together, as in the High Court building. Now, the concrete plaza itself, unlike the Capitol complex Plaza is softened by greens and water. Of course, there are greens and water in the plaza of the Capitol complex, but here, the response is more intimate. So, we find it here that this is the one of the features within the Sector 17 having the water body and the greens.



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## Hierarchy of Roads

To make every place in city swiftly + easily accessible

Ensuring tranquility + safety of living spaces

- 7Vs establishes a hierarchy of traffic circulation ranging from:
  - Roads (V1)
  - Major boulevards (V2)
  - Sector definers (V3)
  - Shopping streets (V4)
  - Neighbourhood streets (V5)
  - Access lanes (V6)
  - Pedestrian paths and Cycle tracks (V7 and V8)



A Hierarchy of Green Spaces can be observed in both the layout ranging from Public Greens at City Level to Semi-Private to Private Green Areas.

1. City Level Public Green Space with Artificial Water Body
2. Free-Flowing Green Space, connecting the entire site
3. Semi-Private Green Areas for neighborhood pockets
4. Private Green Areas for Residential Units

## Green Spaces

Hierarchy of green spaces

Built up areas interspersed with green areas

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And, the hierarchy of roads to make every place and city swiftly and easily accessible and to ensure tranquility, and safety of living spaces because within the neighborhood per se that is completely more or less pedestrianised. So, what are the 7Vs please forgive me that in the last session that I shared with you, I had talked in reverse order of the V1, V7, I correct myself by saying that the main roads are the V1. Then the major boulevards are V2, the sectoral definers are V3, shopping streets V4, neighborhood streets V5, access lanes within the neighborhood are V6 and the pedestrian paths and cycle tracks within the neighborhood are V7 and V8.

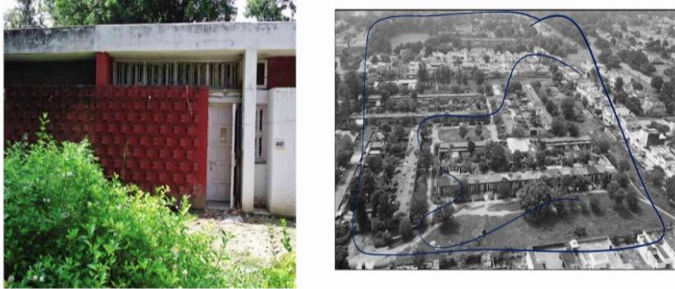
Now the green spaces, there is a hierarchy of green spaces also this amazing hierarchical structure that Corbusier follows from the smallest to the largest element is the original idea of the new architecture that I talked about in the previous lecture, where he talked about the development of standardized elements lead going on to perfection.

For example, in the Greek temple and the Ford automobile, so that if you identify the elements you can keep on building on the same idea. So, the hierarchy of monumentality, for example, the hierarchy of spaces for example, and the hierarchy of green spaces for example. So, the hierarchy of green spaces can be observed both in the layout from the public green areas at the city level to the semi private and private green areas at the residential level.

So, you have the public green areas with the artificial water bodies, then you have the free flowing green spaces, you have the semi private areas within neighborhood pockets, and the completely private green areas in the residential units. So, this hierarchy continues, then, the built up areas are wonderfully and magnanimously interspersed with green areas.

So, there is never this feeling that you are in a concrete jungle, but you are in a green forest with concrete buildings in between of course, when I say this, I need to also say this that the actual feel of what Chandigarh is today may not have been what Corbusier originally intended to be. But right now we are also focusing on the intent of the architect.

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**The Neighbourhood**

Pierre Jeanneret, Maxwell Fry & Jane Drew  
- developing neighbourhood sectors with schools, shopping bazaars + tracts of government housing

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Rough concrete in capitol complex and central business district and.....  
.....for most of city, esp. in housing, locally produced brick



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## Programme for Architects

### 13 categories of houses

Each category corresponding to a level of govt. employment

**Small windows openings consistently employed**

Flat roof employed through out housing - useful as sleeping area

Residential plots ranging from 75 sq.yards and above



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## Housing Design

Variety of innovations

Interplay of decorative brickwork and plain plaster

Jaali work for Indian climate

Aesthetic new to India



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So, the Leisure Valley is traversing through the entire city. The neighborhood was designed by Pierre Jeanneret, Maxwell Fry, Jane Drew, they develop the neighborhood sectors with the school shopping bazaars and the tract of government housing. This is the picture of one of the neighborhoods and the way it is laid out as you can see dense greens in between low rise buildings as against the high rise buildings he had earlier thought of in the radiant city.

Now, the rough concrete of the Capitol Complex is traded with the locally produced big brick in the housing district. So, there is a clear contrast. If you are looking at the monumental buildings of the Capitol complex they are in RCC exposed concrete. And if you look at the neighborhood level, then you are talking of exposed brick and plaster work.

Now, the program of that was in front of the architects consisted of 13 categories of houses. Each category corresponded to a level of government employment, there are small windows which are consistently employed, whether they are vertical or they are horizontal units, and the flat roof is employed throughout the housing, because it is useful for to serve as a sleeping area.

Now, in this generation, as I talk about it, I know that you are not able to relate to it, but those of us who are from the 60s in the 70s, we know of a time when in the northern part of India, the terrace was a frequent place of sleeping at night in the summers and it used to be a very pleasant experience. Of course, it is no more the thing that is happening in urban areas.

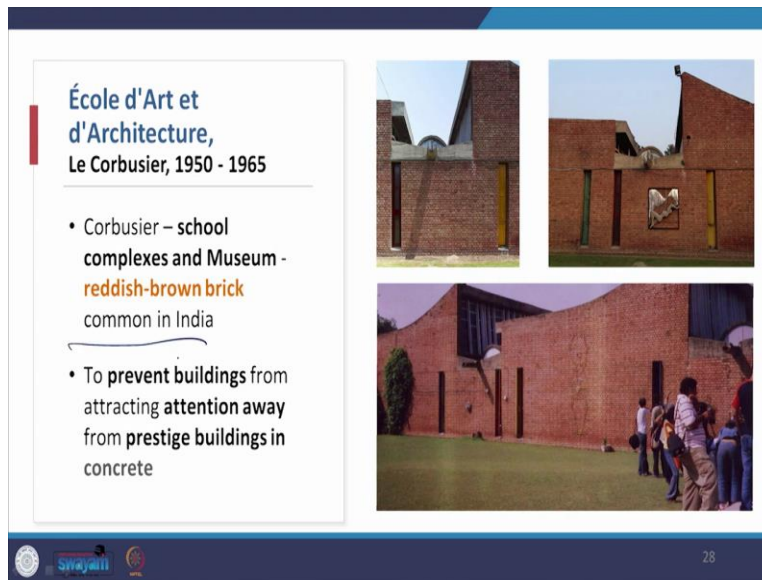
But that was the idea behind giving these flat terraces in Chandigarh, now remember that the idea of the flat terrace came in modernist architecture or international style, when Corbusier gave flat terraces in his villas, to provide the roof garden and that would be the sit out space right at the top of the house, that would have been a sit out space and a terrace in France became a sleeping area in India.

And again, the development that happened in Europe turned out to be very, very fortunate for India. Now, remember that they were not doing these flat roofs in Europe, the traditional architecture was pitched roofs, but the modernist adopted the flat roof. Now, the residential plots are ranging from 75 square yards and above.

And these are examples of housing design , this is Jean Pierre Jeaneret, the own house here used to live. And there is this variety of innovations even in these buildings, there is this decorative brickwork and plain plaster, there is the Jaali work for the Indian climate and there is an aesthetic which is completely new to India.

So, you find that this is a modernist building, it is a modernist building, but it also has Jaali work, so as to support the climatic conditions of India, it is a typical modernist building, but it is adopted to our climatic conditions.

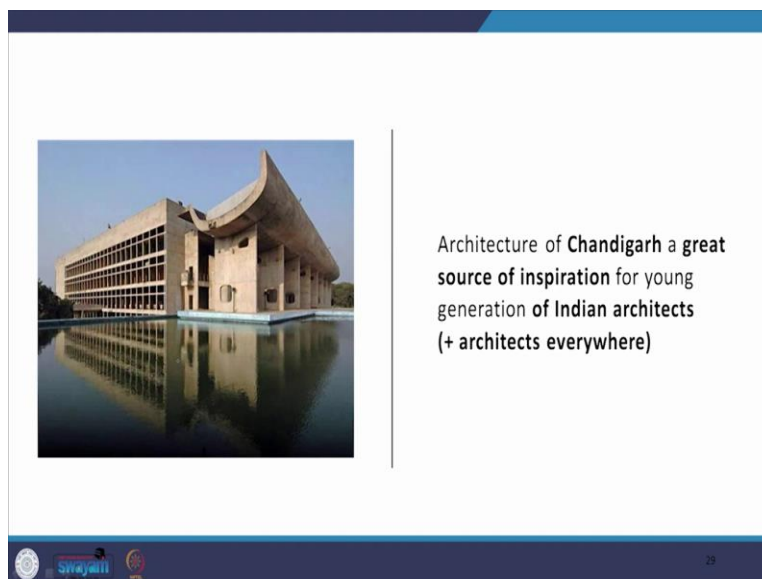
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**École d'Art et d'Architecture,**  
Le Corbusier, 1950 - 1965

- Corbusier – school complexes and Museum - **reddish-brown brick** common in India
- To prevent buildings from attracting attention away from **prestige buildings** in concrete

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Architecture of Chandigarh a **great source of inspiration** for young generation of Indian architects (+ architects everywhere)

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Then we have the Chandigarh College of Architecture, or Ecole d' Art et d' Architecture by Le Corbusier from 1950 to 1965. Again, this has been done , in fact , all the school complexes and museums and the neighborhoods have been done, as I told you in this brick or reddish brown brick, which is common to India.

To prevent these buildings from attracting attention away from the prestigious buildings in concrete of the Capitol Complex. Thus, I end by saying that the architecture of Chandigarh has been a great source of inspiration for a young generation of Indian architects, plus architects everywhere in the world.

And many of these ideas that came up here, we will see a whole series of the ways in which the ideas of Corbusier were adopted at different points in time. And we will look at least four parts to that series, how they were adopted, how they were looked upon, and then we will look at those correlated projects in the presentations to come. Thank you so much.