Modern Indian Architecture
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Lecture: 14
Western Architects in India- Le Corbusier - Part 1

Hello students, I, once again welcome you to this next presentation on modern Indian architecture. And today, we will be starting with regard to the western architects in India. The impact of architects like - Le Corbusier, Louis Kahn and Walter Gropius, et cetera, on the architecture of India.

And particularly the deep impression they created in the minds of young Indian architects who had been educated in the west and had now come back to India and started practicing in India. Not only them, but also architects who were in India, architects like the architects United of Pune, I had mentioned about that earlier, who did not go out but studied in India.

They also were deeply impacted by the architecture of these architects because they built major buildings and major for example, an entire city Chandigarh was built by Corbusier, and it had a very deep impact on these people. So, coming to probably the greatest architect of the 20th century Le Corbusier and parallaly with architects - like Frank Lloyd Wright, Walter Gropius, Mies van der Rohe, Alvar Aalto, Eero Saarinen, these all have been at the forefront of the modernist architectural movement, but probably the one who ranks ahead of probably all the 20th century architects in terms of the expanse of his impact on modern architecture is Le Corbusier.

His presence transformed modernist architecture in India and for the next two decades and as we will see in these presentations on Corbusier, his impact is being felt even today in modern architecture in India, and not only in India, but internationally globally. His impact was felt and continues to be felt.

His theories that he propounded with regard to architecture and urban planning, continued to be explored, continued to be dissected, studied, there are pros and cons to the views that he expressed through his works. And I believe that for quite a while to come, a lot of importance will be there for their role in the education of students :architecture students, and planning students all over the world.

Now one of the strongest influences on post independence. Indian architecture was that of Le Corbusier. He was a French architect, and you might have studied his contribution to world architecture in the beginning of the 20th century, somewhere around the 1910 the 1920s.

When he came up with the laying the foundation of the RCC construction in housing, he came up with what was called as the Domino system along with an engineer Maxwell Fry, Jane Drew. And this feature ,the structure that he evolve, a series of columns and slabs and an RCC staircase. That simple model then became the foundation stone of the villas that he designed and what he termed as the points of a new architecture.

He began by giving fundamentally 5 points, graduating onto 9 points. So, houses like the villa Stein, the villa Gashi, and culminating with the Villa Savoye, formed the basis of this new architecture that he propounded and his strong ideas concerning prefabrication and standardization that came out in a book that he wrote during that time.

Where he talked about how once we identify the standard elements of any object, we can take that to perfection. For example, if there is the Greek temple and we identify its elements, the critical elements in it, that is the column with the base shaft and capitol, the entablature, in the pediment, et cetera, having identified them, the Greeks kept on taking the temple to perfection, and for example, ending with the Parthenon.

So, those elements identified earlier in the classical Greek temple, was taken to perfection. So, he then he gave the parallel example of the automobile, the most one of the most iconic products that came out, and that is radically transformed our lifestyle and our cities, the way we commute. And so, he took the example of the Ford automobile - and he showed how from the early beginnings of the Ford automobile, how the car has evolved with time. And he only gave the example of the transformation of Ford, because that was what was in front of him during those years. And he said when we identify the car with his engine, it is just a steering wheel, accelerator, brake, clutch, et cetera, having done that, we can take these elements to perfection.

So, what he was doing was he was explaining to us there are these modular components, or the standard components, and then we can take them to perfection. He said, the similar thing can be done in housing, in houses. And he gave a dictum; a house is a machine for living. And he said a house is a machine for living with hot and cold water.

And with the sunlight and various other features within the house, it is a machine for living. So, everything is a machine, a machine for shaving, for example, a machine for writing a machine for typing a machine for working on your, soft skills like a computer. So, these are all machines. And according to him, in the same way a house is a machine for living.

And having identified the points of this new architecture, he said these 5 points are the first of all, the Pilotis**,** the RCC grid, the columns or the Pilotis are the foundation of the RCC frame along with the slabs. And then the Pilotis leads us to a free plan, because the entire structure is standing on a frame.

Therefore, the plan can be free, the walls internally are non load bearing, and you can place them as you want, you can curve them, you can remove them, you can give a puncture in the building, it does not impact the building per se, because it is standing on a frame, in this case, the Pilotis and the slabs.

And then the free facade in which the front facade of the building can be radically restructured because the outer wall is not carrying any load ; it is a curtain wall. So, because of that it is a thin membrane. And so he proposed a third thing, 4^{th} thing rather. So, Pilotis, the free plan the free facade and the ribbon windows.

That means windows from end to end, clearly indicating that the outer wall is only a curtain wall. Later on this would go on and be expanded much further in, for example, the Bauhaus where the entire wall of the workshop being was in glass, as done by Walter Gropius. And so, the idea of curtain already caught on particularly in skyscrapers.

The fifth point was the roof garden. So, according to him, now, the reason for that was that they were having this row housing, for example, in Paris, and if the garden was at the ground level, you would not have much of a view because there would be houses in front of you. So, he said, let us reconfigure the house.

And it is easy to do that, because now it is completely free with regard to the walls et cetera. So, he shifted the garden on the terrace. So, the house begins by the initial facilities at the ground level and the living facilities or the living room facility say for example, on the first floor level, as in Villa Savoye, and then there is the roof garden at the top.

So there, from there, you can have a vastly different view of the surrounding landscape and a distant view towards the horizon. He later on added four more points to that, that of the scissor staircase, the ribbon window, the curved bathroom, et cetera. And he built on this idea and this concept in his later works also, which has undergone a radical transformation with his adoption of brutalism.

So, I believe you need to go back and read some articles on the works of Corbusier so that when you see this presentation today, that work will supplement the understanding of what I am teaching you today.

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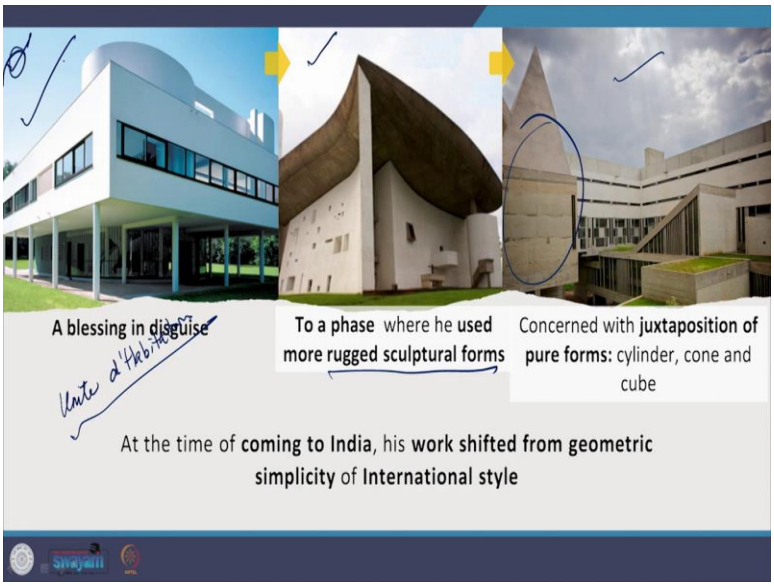

So, just to give you a glimpse. He has begun with the five points of a new architecture and in the villas that he designed and this was the foundation of the international style. This was pure geometrical forms in White Plains with these ribbon windows and the outer walls being curtain walls the building being held on a structural frame in this case: RCC . in the case of means it was in steel, and this is the example of the Villa Savoye.

But as time passed by, and especially after the end of the Second World War, he gradually moved on to more rugged buildings like the Ronchamp Chaple Notre-Dame in France. And this was a phase where he started coming up with more rugged sculptural forms.

Now if you look at the building from the outside, it appears as if this is not having the original credentials that are there in the Villa Savoye. But that is not true - because this building though cultural in its appearance and having these rugged walls and this inverted parasol roof on the top is still following the principles of a frame construction, it is still having inside it a vast hall for the chapel and it has been amazingly done. You need to read more about it.

And then he went on to the juxtaposition of pure forms, as you see here in the Monastry La Tourette , with cylinder cone and cubes being more combined together. But in a sense, the idea of a Pilotis the idea of a frame structure, the idea of outer curtain wall continue to be here.

Now, the only way you can actually understand their presence is if you understand the beginning of the architecture of Corbusier. If you understand this, then you can see that the ideas are conceptually there even in this particularly one building that you need to study. And that is unite d' habitation. It is united habitation or a collective housing complex, multi storied building one single building that he designed in Marseille in France, and this building had housing units. For the people it had a shopping complex, it had even a small hotel, it had a place school at the terrace, and it had even an open air theater at the terrace.

So, the terrace which is a roof garden in Villa Savoye became a much more complex series of activities like the play school, the open air theater, a jogging track, et cetera, on this vast building, and then the Pilotis at the ground level became very heavy Pilotis of Pilotis tapered columns in raw concrete, what he called as Beton Brut and this rock concrete was given the pattern of the shuttering material.

And once the shattering was taken out the pattern remain, you can see that here also to a certain degree in Monastry La Tourette . And this also has been done in raw concrete or beta on brute. So, united habitation had all those principles that he had developed during the earlier points of a new architecture. And this evolution took place. And he moved away from what was very, fine planes, to a more rugged sculptural form and pure geometry.

Now in a very amazing way, this turned out to be very, very fortunate for India, because this kind of rugged (())(13:02) was ideally suited for Indian conditions where the construction material was not of the same quality.

The labor force that we had, our sites were more labor intensive and not mechanically intensive. And therefore the work could not have the same fine finish, as for example you could have in buildings like this, and many other buildings that were coming up in Europe at the time. So, by doing what he did, for certain reasons in Unite d' habitation, and in Monastry La Tourette in the Ronchamp chapel, he developed a completely new vocabulary.

And when he landed in India, to begin working on Chandigarh, he brought that vocabulary along with him and completely transformed the way we look at monumental buildings at the time. So, he is coming to India. His work had already shifted from the geometric simplicity of the international style to, a more rugged sculptural and geometric forms of brutalism.

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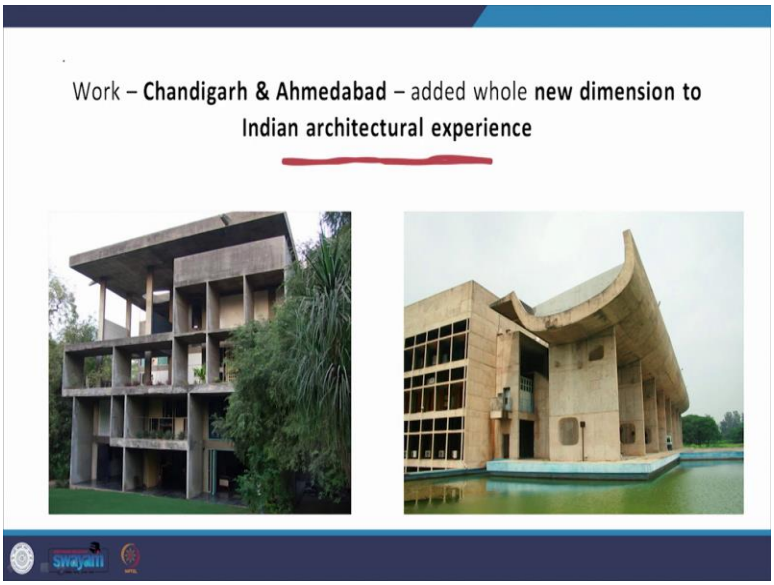

He was hired in 1950, along with his cousin Jean Pierre Jeanneret and the British couple Maxwell Fry and Jane drew to design Chandigarh and he worked in Chandigarh, extensively designing the buildings of Chandigarh along with his entire team. And he also worked in Ahmedabad, and made a series of vitally important and iconic buildings, I would not even call them iconic, I will call them conceptually vital for modern architecture.

So great was the impact of these architects, not only on young Indian architects but globally, that Chandigarh turned out to be a kind of what you might call a architectural pilgrimage for architectural students and even Ahmedabad houses like the Villa Shodhan. The Sarabhai house and the entire capitol complex in Chandigarh, are must study for students of architecture if they want to understand the fundamental principles of modern architecture in the 20th century.

Most of the architecture that we see today I am of the viewpoint that much of it continues to have the same foundation as the architecture of the modernist and the international style and the distributaries that came out of that. So, the work of Chandigarh and Ahmedabad, added a whole new dimension to the modern Indian architectural experience.

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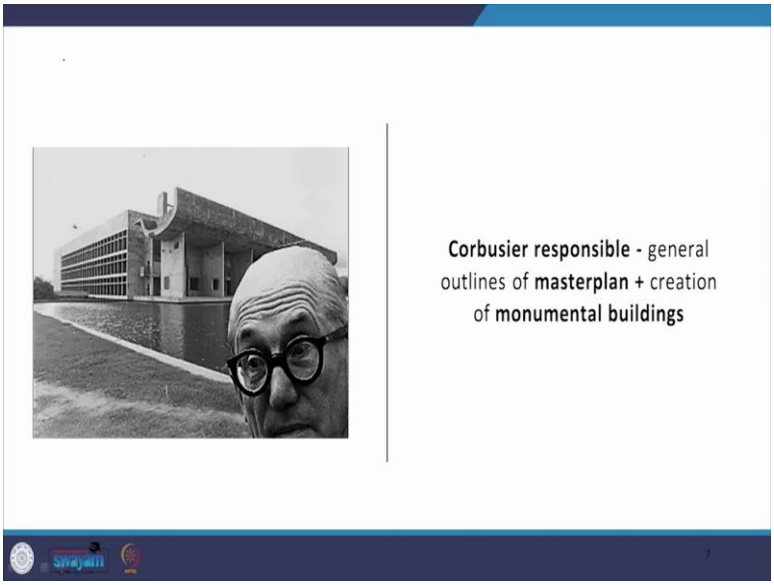

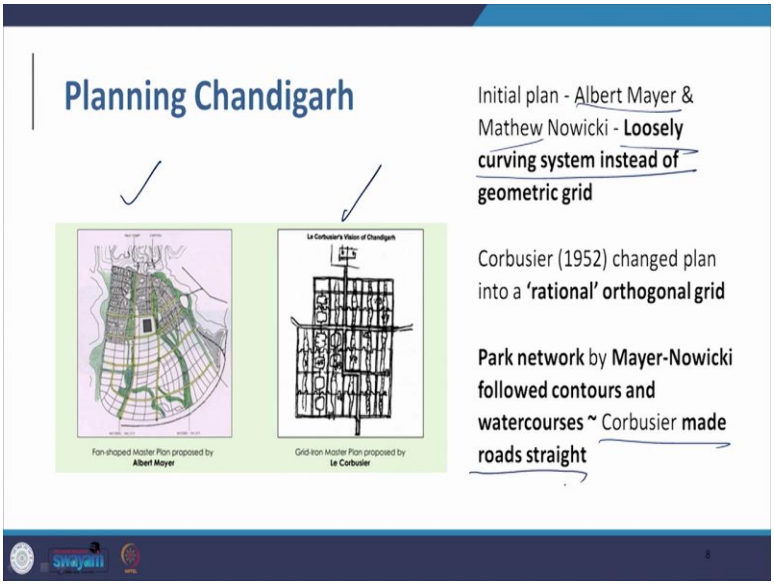

Corbusier was responsible for the general outlines of the master plan of Chandigarh and the creation of the monumental buildings of what came to be known as the Capitol complex. So, in the planning of Chandigarh, the initial plan that you see on your left, more like a fan shaped plan was given by Albert Meyer and Mathew Nowiki which was loosely curving system.

They were both American architects, and they gave a loosely curving system instead of a geometric grid. Now, this was a little strange because the American architects would have been more in tune with the Grid-Iron pattern of design as already been done in New York and Chicago.

By an act in 1785, the United States of America had been converted into a gridiron planning pattern and they were coming from America. But having come to Chandigarh, they gave a completely different curving or a friendship plan. Unfortunately, 1950 Mathew Nowiki died in a plane crash and Albert Meyer withdraw from the design of Chandigarh, in stepped Corbusier with the strong supporter from Jawaharlal Nahru in 1952.

He changed this plan from this curving system to a rational orthogonal grid. This was the new vision for Chandigarh the park network that Meyer - Nowicki had provided, which followed the natural contours and watercourses of the site of Chandigarh Corbusier converted that incompletely and on that flat site, he made the roads straight.

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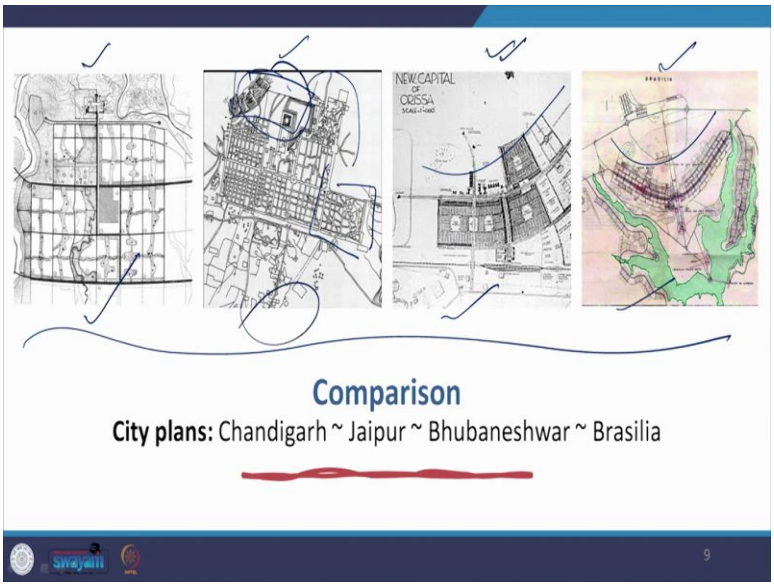

Now to give you comparison between the various city plans, if you look at Chandigarh and then you look at the plan of Jaipur, by I believe Raja Jai Singh and you find that the same orthogonal grid and sectoral planning arrangement is followed there also, did Corbusier get influenced by that? I cannot say for sure, but this seems to be a very close link between the two.

Of course, because of the way the site was where Jaipur had been put, one of the sectors so to speak in this part was taken away and it was added here. We will see more about this when we look at the design of Jawahar Kala Kendra by Charles Correa with the same idea, the planning of the Vastu Purusha Mandela has been utilized by him. Then there is the plan of the capitol of Orissa : Bhubaneshwar by Otto Konigsberger.

And if you link, if you see this plan, like a fan, one part of a fan, and then you see this plan. This is the plan of Brasilia by Lucio Costa, and the buildings were designed by Oscar Niemeyer. So, there is a kind of a connect between at least three modern plans and one traditional Indian plan.

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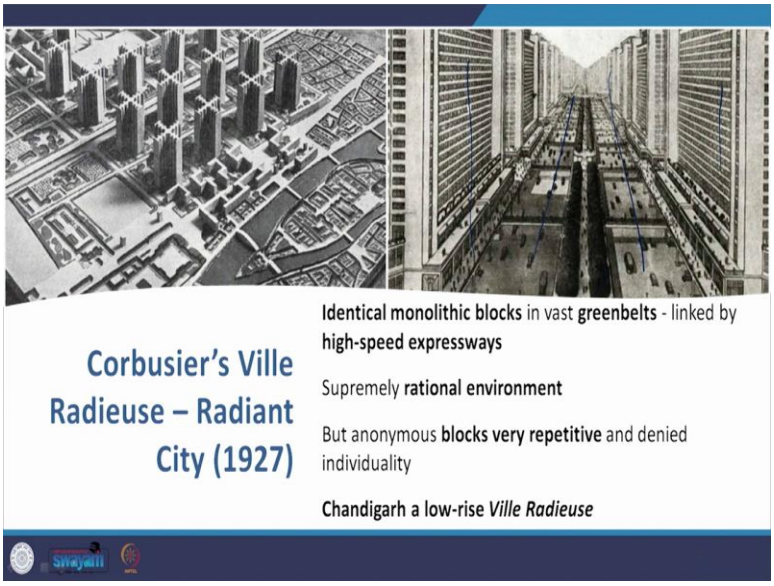

Now, the idea of Chandigarh actually sprang from Corbusier's idea of urban planning, called the Ville Radieuse, that is the radiant city and he came up with that in 1927. It was a series of identical monolithic blocks in vast greenbelts and the blocks could be as high as 200 meters high. And they will link with high speed expressways as you see in the sketch and these monolithic blocks on either side.

It was a supremely rational environment, he did that because once these blocks come up, vast (())(18:56) of green spaces available, which can be so it can be a very dense green area in which these blocks are rising up. But these anonymous blocks proved to be very repetitive. And they denied individuality this plan never came up anywhere in the world.

But Corbusier did get an opportunity to execute his ideas of urban planning or city planning in Chandigarh , and Chandigarh turned out in a sense to be a low-rise Ville Radieuse or radiant city.

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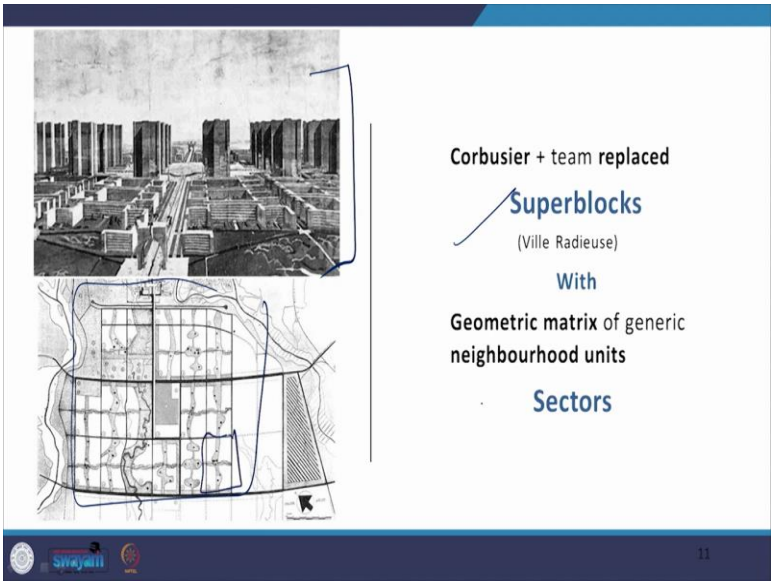
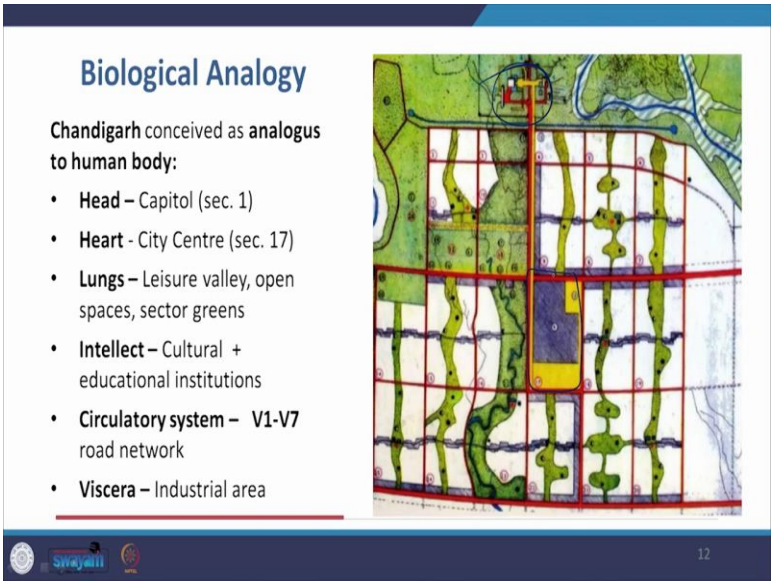




Corbusier identified **4 basic functions** of a **city – Living, Working, Circulation, Care of body & spirit**

"Circulation" of great importance to Corbusier as **determined & connected other 3** – working, living, care of body & spirit

City plan - a **general city** that could be placed **on any flat piece of land**

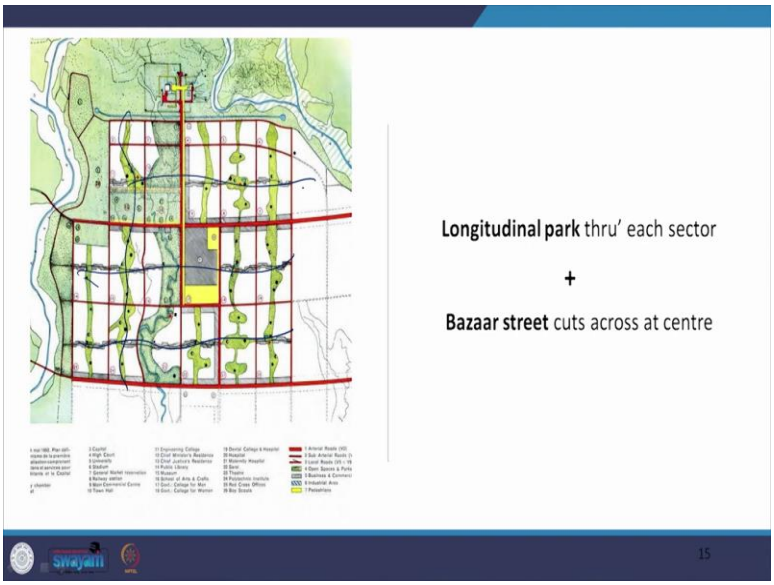
Planned for **150,000** inhabitants - **1st stage** (1951-66) and **500,000** in **'final stage'**

Sectors

In **1st phase, 30 sectors**

Each sector **1000m X 800m,** having:

- Housing
- Shopping
- Community facilities
- Schools
- Places of worship
- Leisure



So, the Corbusier and his team replaced the superblocks of the radiant city with the geometric matrix of generic neighborhood units called sectors. Now there is a biological analogy behind the sector's Chandigarh is conceived as analogous to the human body, the head is the capitol, which is here, that is sector one the heart, which is the city center, the hub of, the socio cultural activity of the city sector 17.

Then there are the lungs, which is the leisure valley the open spaces and the green areas in the sectors, then the intellect are the cultural and education institutions, the circulatory system is the V1 to V7 road network in the viscera is the industrial area.

Now, Corbusier identified 4 basic functions a city should have, it should have living, working, circulation and the care of body and spirit. According to him, circulation is of great importance, because it connects all the remaining 3 living working in the caring of the body and spirit and he determined so they connect ,it connects all the remaining 3. City plan, a general city was planned, which could be placed on a flat piece of land. Now, Mary Nowicki had done exactly the same thing.

The only thing they did was that they turned it into a curved or a fan shape plan, Corbusier modified it that made it orthogonal. This was planned for about 150,000 inhabitants, 1,50,000 people to go on to a final stage of around 5 lakh or 500,000 people.

Sectors, in the first phase, there was going to be 30 sectors, each sector is 1000 by 800 meters, having housing shopping, community facilities, schools, places of worship and leisure. This is the way these sectors have been laid out. This is the example of one particular sector and the way it has been put together. It is a typical sector of Chandigarh.

Now, there are longitudinal parks running thru and through the sectors. And then there are the Bazaar streets that are running perpendicularly to them. And cutting across the center of the sector's and within the sectors are neighborhoods, the entire circulation structure of V1 to V7 each gives an idea of roads graduating from these the smallest ones at V1, to widest ones, which are between sectors and in the city, the V7.

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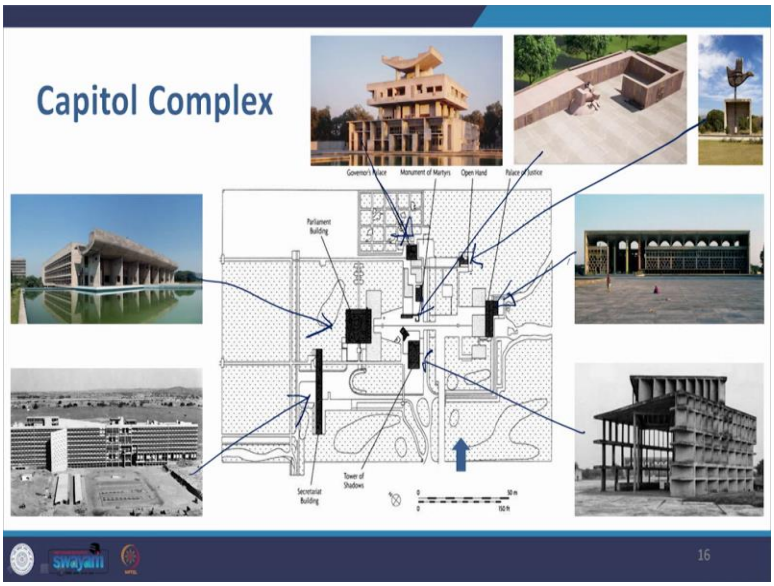

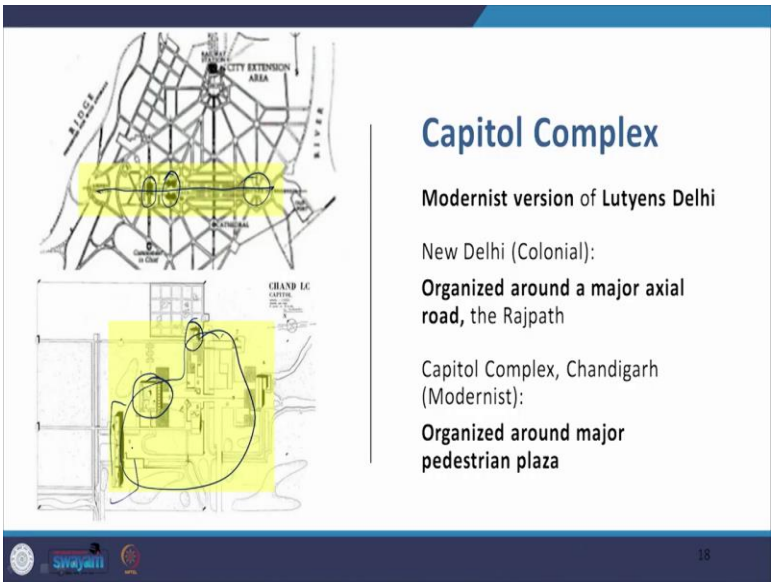

The Capitol complex, which is the heart **o**f rather, the head of Chandigarh was designed around in open plaza. And we will discuss more about that but just to give you an idea of the various buildings which you would have seen before, there is most of all, there is the assembly building. There is the Secretariat building behind it. Then there is the Palace of Justice or the High Court building.

At this side is the hall of shadows, a tower of shadows, then, there is the Governor's Palace, which was never built; it is un-built, there is the monument of the martyrs and there is the open hand. So, these buildings or these features, define this open plaza, and the open plaza connects all of them together.

Now, this is the aerial view of the Capitol complex looking from the Assembly Building towards the High Court building. If you can just go back again from here to here towards the High Court building on this side is the monument of martyr. So, if you look at here, this is very vast landscape of rolling hills and vast green areas. And you have this the monument of martyrs and again if you look at it from the other side, there is the assembly building and there is the Secretariat building behind it this is the monument of martyrs and here you have the tower of shadows.

So, here it is again. Now, the door the plaza is extensive uniting the buildings together, it also has a major cross-axis running like this. Now, there is a fundamental difference between this cross-axis and the axial planning that you find for example, in Delhi. If you look at the Capitol complex and compare the Lutyens Delhi. Capitol complex the modernist version of Lutyens Delhi, New Delhi, which is colonial is organized around a major axial road, this is the axial road; this is the Rajpath; you have the India Gate towards this side, you have the Rashtrapati Bhawan and you have the central Secretariat; north and south block.

Whereas in the capitol complex which is modernist, it is organized around this pedestrian plaza and then you have the Assembly Building (())(24:52) akin to the other monumental buildings at Rajpath : the Rashtrapati Bhavan, what it should have been .The parallel buildings should have been the governor's palace, but it never came up. But then there is a Secretariat building, which is parallel to the Secretariat of Delhi and so on and so forth.

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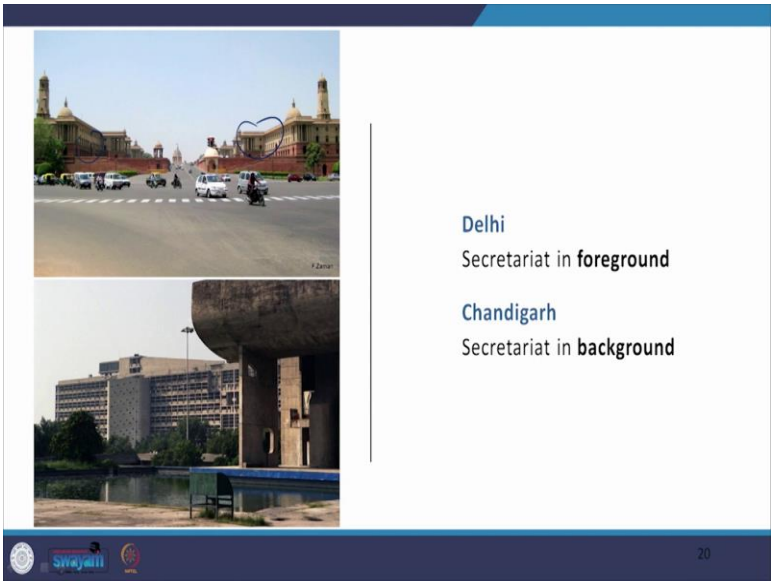

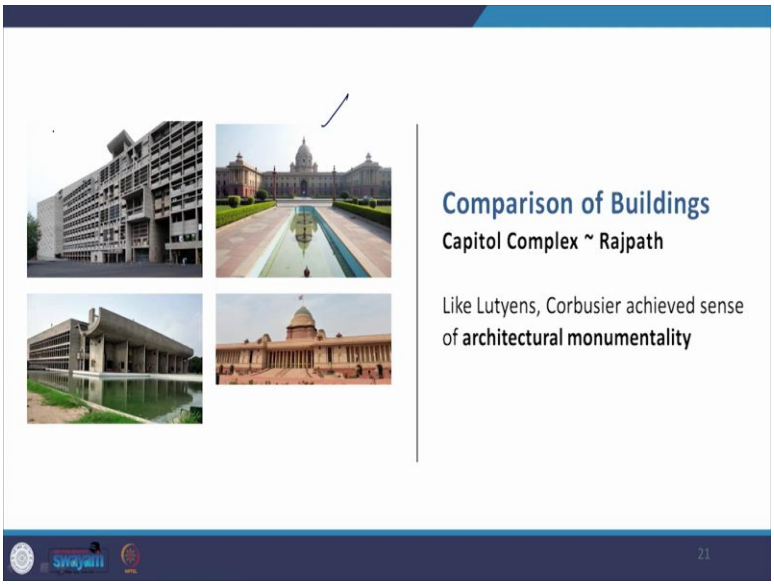

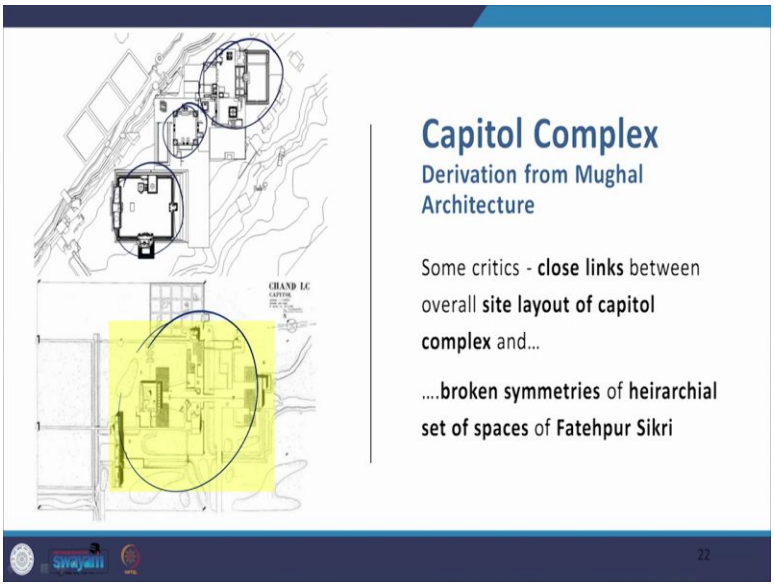

Now, the again if you look at the aerial views of the two, it is very clear to us that we are talking about a very strong central axial symmetry with both, the Secretariat on either side with Rashtrapati Bhawan bank at the end of that axis, and these buildings on either side are asymmetrically most of them are asymmetrically organized, whereas here we have a vast open plaza, and it is not a rigid symmetry.

Again, in this case, in Delhi, the secretariat is in the foreground of the Rashtrapati Bhavan. In Chandigarh, the secretariat is behind the assembly building, and the comparison of buildings between capitol complex and Rajpath, like Lutyens, Corbusier also achieved a sense of architectural monumentality. But the difference being that could Lutyens went the way of the

neoclassical architecture with traditional Indian elements. Corbusier went completely modernist in a brutlist format.

Now, there is also a comparison with regard to Mughal architecture. It is derived from Mughal architecture. Some critics say there is a close link between the overall site layout of the Capitol complex with that of the overall broken symmetries of the hierarchical set of spaces of Fatehpur Sikri in Fatehpur Sikri, the spaces have a sense of hierarchy. So, there are a series of these spaces that you see here. And they are, there is a broken symmetry and this seems to be a connect between the two.

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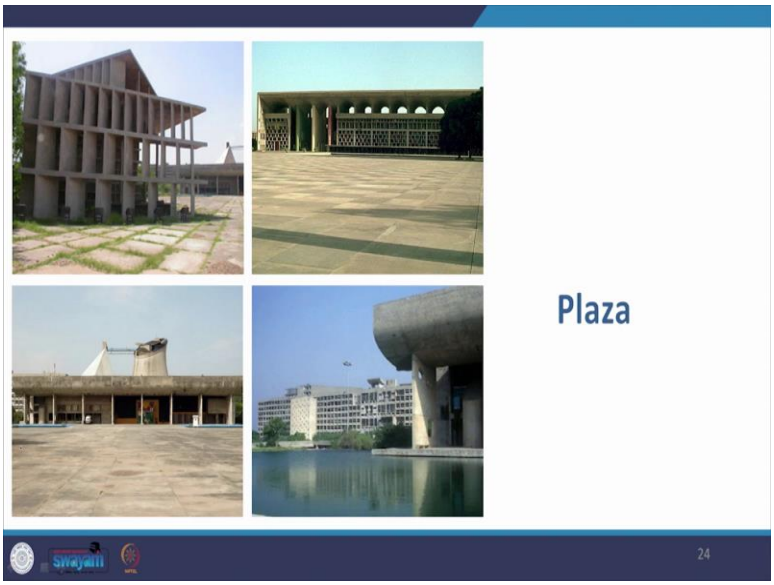

Let us look at this. If you look at the aerial view, this is the view of the entire plaza with these buildings placed at different points, this is where the governor's palace should have been, it is not there, and this is the Tower of shadows somewhere here. And here you have the monument of martyrs, whereas here you have Fatehpur Sikri, flowing like this.

And the plaza itself is vast and extensive, in fact, is it is very bare. There is no tree or greenery that comes in front of any buildings it may be on the site, but not in front. One of the things that the plaza is doing is it is giving you a spectacular view of the entire assembly building on the entire High Court building.

And from a distance the entire view of the Secretariat building in fact, the whole building is framed in view behind it are the rolling hills of this, this region and the surrounding vast green landscape and the buildings are framed in that and the plaza per se does not give a strong axis but gives a fantastic view of the building.

Now to maintain this view, no tree, no greenery or no element is planted in front of them. So, in that case, this turns out to be very controversial, because Chandigarh becomes very, very hot in summers. And this plaza becomes counterproductive with regard to climate.

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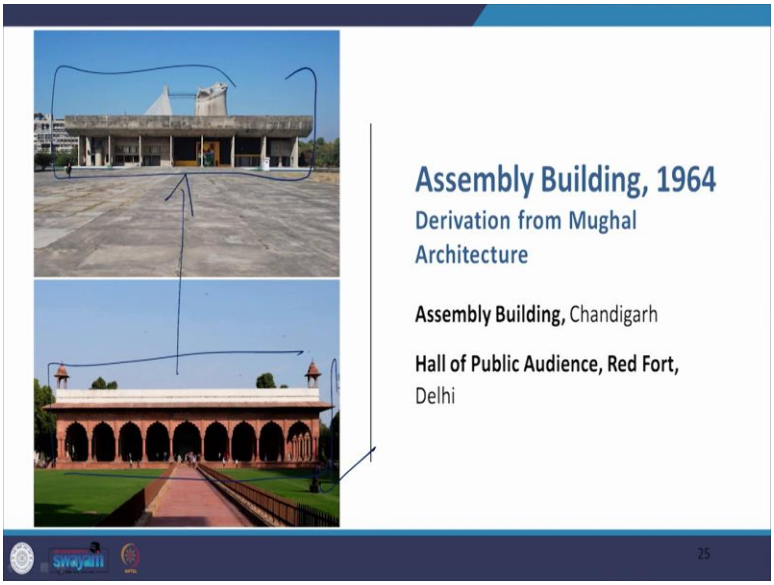
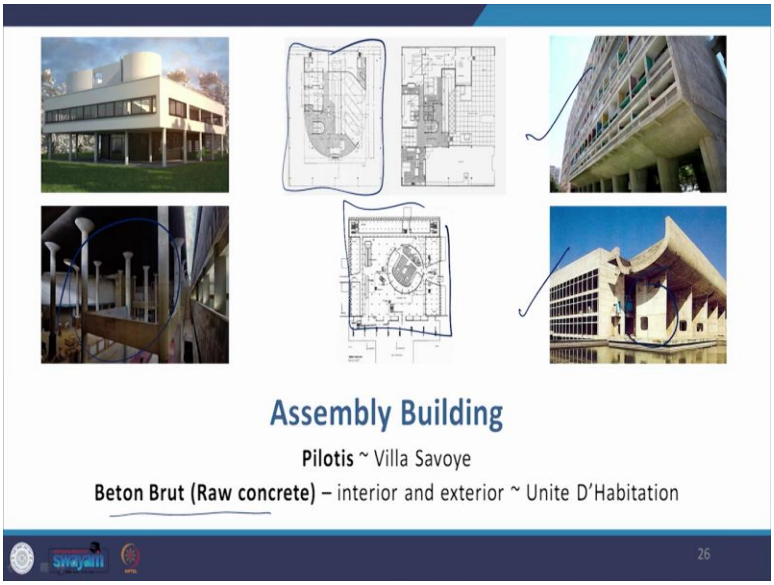
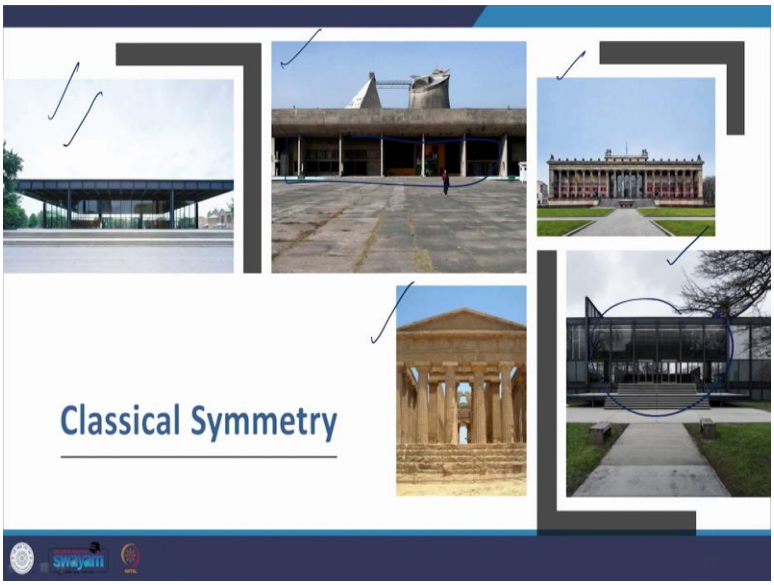
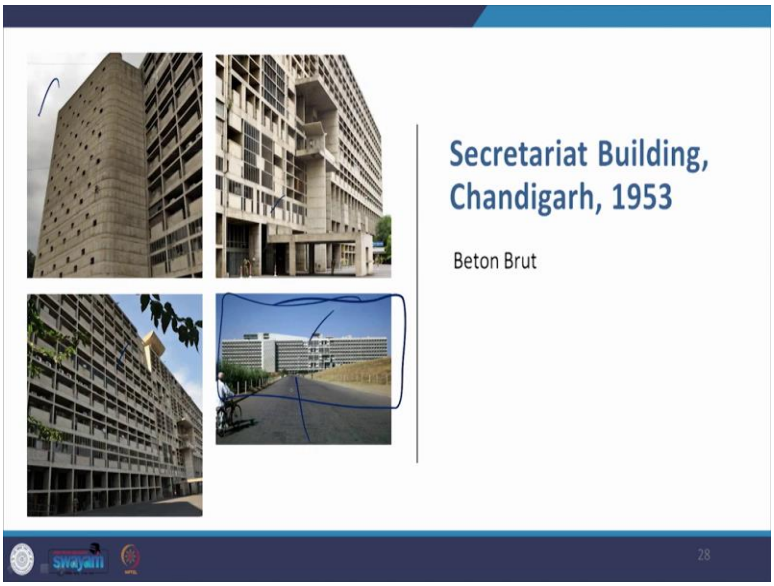





Classical Symmetry


Secretariat Building,
Chandigarh, 1953
Beton Brut
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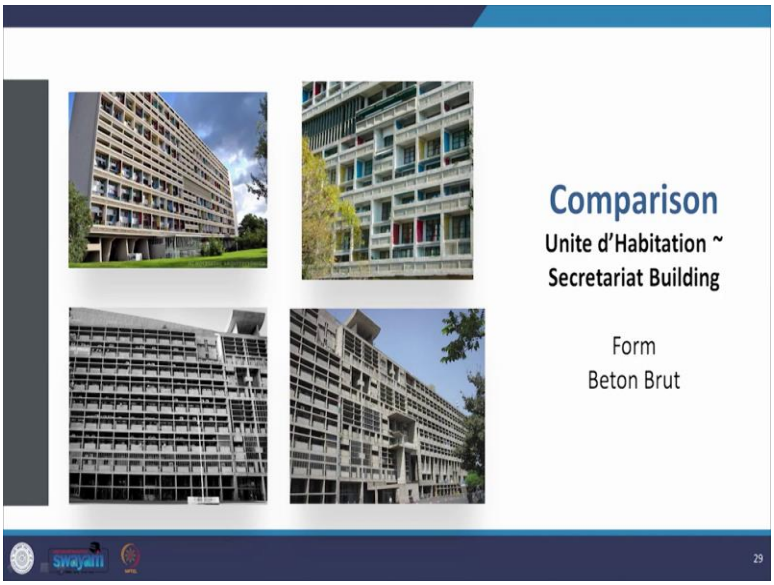

Now, the assembly building which was completed in 1964, again shows the derivation from Mughal architecture, if you compare it with the Hall of public audience in at Red Fort in Delhi. And if you look at the overall massing of this building with that of the Assembly Building, and all you see is that this is a modernist version of a similar idea.

If you look at the ideas being carried forward from his early years, then in the Assembly building, you do find the Pilotis, here is the Pilotis inside the assembly building. In fact, this outside is also a form of Pilotis, but it has become a flat slab Pilotis. Then you have the Beton Brut or the raw concrete, both in the Assembly building in the Secretariat building and the other buildings of the Capitol complex.

So, if you try to compare the plans itself, this is the plan of Villa Savoye, and you see that it is on a grid of Pilotis. And so also is the plan of the Assembly building on a dense grid of Pilotis. But the Pilotis have undergone change. Instead of being white, plastered and find finished. These are in Beton Brut**.**

Then there is the sense of classical symmetry. Not only is the assembly building as I told it comparable to that Mughal architecture at Red Fort. It is also comparable in its overall form to the Greek temple. And then, if you move on in the timeline to the Altes Museum, by Karl Friedrich Schinkel, we seen this comparison earlier with regard to another set of buildings and then there is the Crown Hall by Mies van der Rohe.

There is a new national gallery by Mies van der Rohe in the 1950s in Berlin and then you have the assembly building. So, what Mies was achieving in glass and steel Corbusier was achieving an exposed RCC and Corbusier was whereas, in this case, there is maximum exposure to the sun because it is a cold climate.

In Chandigarh, he gives deep (())(30:23) and verandas and vast sunshades of the building to keep out the hot sun. As you can see, the entire facade of the building is in complete shade. Whereas in Crown Hall, for example, it is not at all in shade, it is completely upfront, because you want to pull in the sun into the building.

Now, the Secretary building was completed 1953, again you find the Beton Brut in the various images of this and here you see that how the entire Secretariat building is also framed in the landscape at or on a different road or towards the side of the Capitol Complex.

A comparison between Unite D'habitation and the Secretariat building is in two ways, the Secretariat building is a very close derivation of Unite D habitation, both in form in the overall mass of the building as well as in the use of Beton Brut raw concrete. So, we will stop here with this series of beginning of the study of Chandigarh and I will then in the next presentation, take you again to Chandigarh and we will revisit some of the buildings and drop certain derivations and comparisons from there. Thank you.