Modern Indian Architecture
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Lecture 06
Pre-Independence to Independence – Part 2

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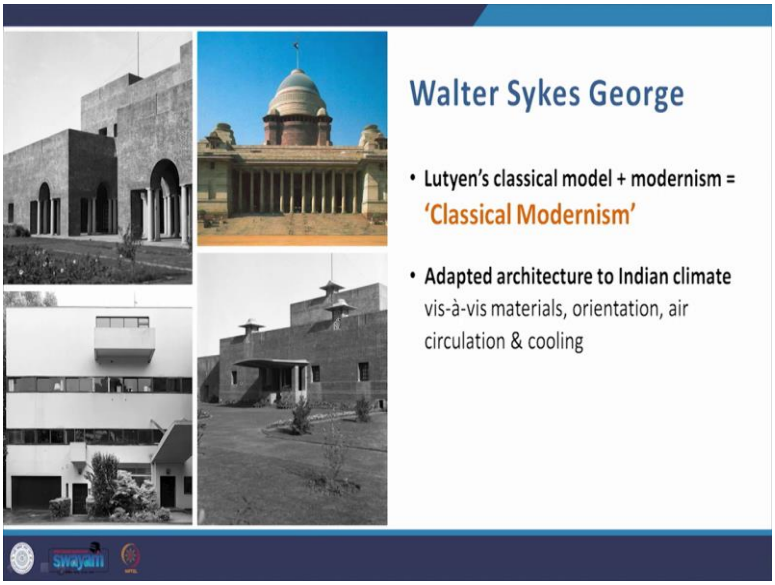

Hello students we like to continue where we left off last time with the study of early modern architecture in India pre-independence to independence and we look at part 2 today. Just to recap we will again go back to some of the things we talked about last time, for example the work of Walter Sykes George who brought in what came to be known as classical modernism that is the combination of Lutyen's classical model with the modernist form and also adapted his architecture to the Indian climate.

Now that was not something unique for Walter George, similarly it had been done by Herbert Baker and Lutyen's also, it had been tried by Lutyen's in the Lutyen Bungalow Zone also so it has always been true for cross cultural architecture coming into India even from earlier times whenever it has come into India they have adapted their architecture to suit our climatic conditions, the materials available and the available construction technology or the kind of labor that is available.

So the whatever architecture has come into India whether from the West or from the Middle East that kind of adaptation has taken place in that and so also here he adapted his architecture to the Indian climate vis-a-vis materials, orientation, air circulation and cooling.

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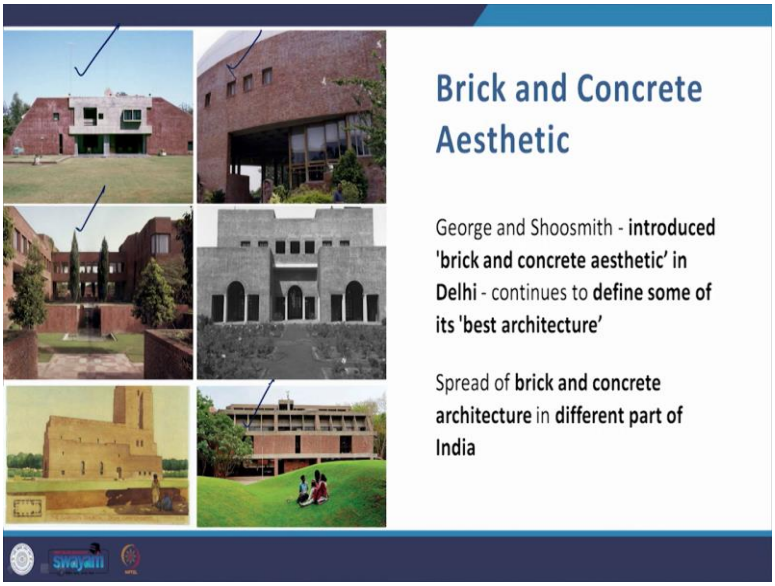

Now one very important contribution that Walter George and Shoosmith made was the brick and concrete aesthetic we see that we had looked at the church that had been designed by Shoosmith, we had seen Saint Stephen's College designed by Walter George and how they introduced this aesthetic in Delhi and it continues to define some of the best architecture the Delhi has today.

And then this spread of brick and concrete architecture in different parts of India, even today it is a very important part of the architectural or rather very important architectural style subset in India, the contribution for example of Charles Correa or the ARCOP Group, Mughal Sheraton in Agra, this building by B V Doshi and then CEPT Ahmedabad, all of these are examples of carrying forward of the brick and concrete aesthetic.

So my boundary lines are getting redefined as I study this subject with you because I was thinking that brick in the modern times was introduced in India through the works of Louis Kahn at IIM Ahmedabad but the or even by Le Corbusier in Ahmedabad in the Sarabhai House or in Chandigarh by Jean Pierre Jeanneret and the others who did the housing part of Chandigarh they introduced plaster and exposed brickwork but then this takes us even further back that it was even before this it had been introduced by these British architects or resident associates of Lutyen’s and Baker.

This is the great advantage when we study modern Indian architecture, there is so much to see that the picture as we keep on reading and studying it keeps on getting more and more

complete in front of us the pieces of the jigsaw keep fitting together to give us a more holistic picture.

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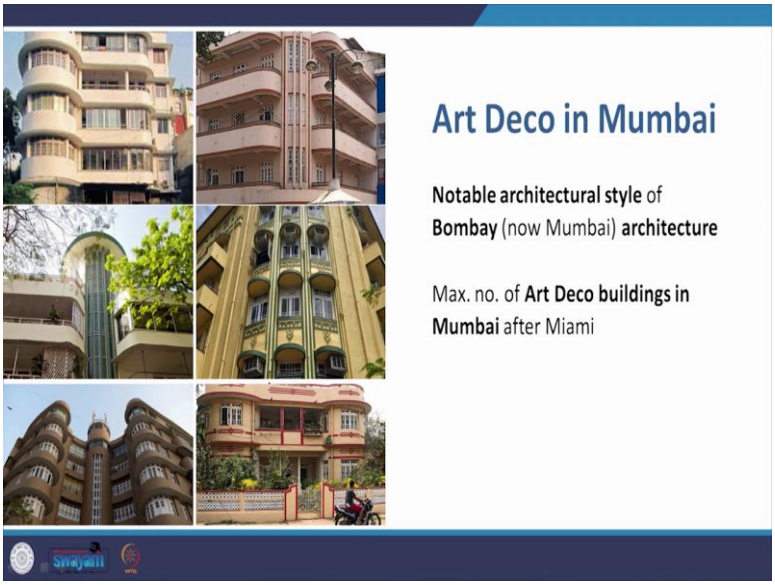

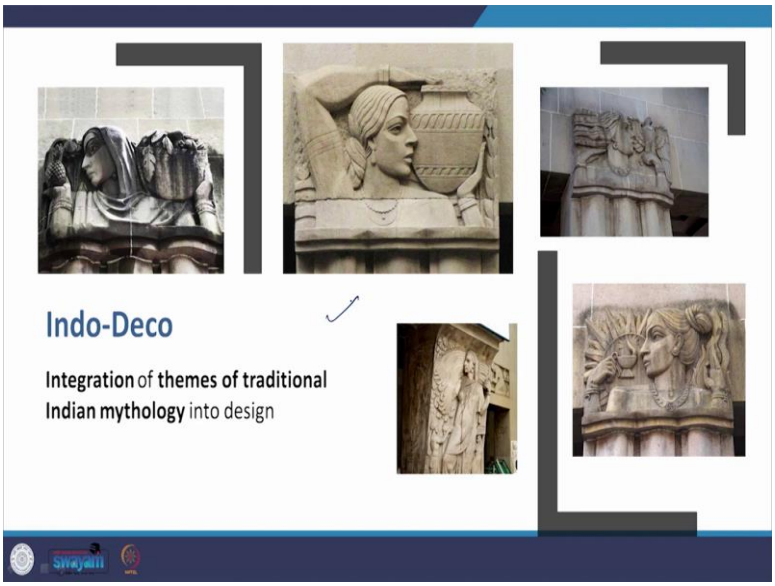

Then we talked about Art Deco in Mumbai notably the architectural style of Bombay architecture having the maximum number of art deco buildings in the world after Miami. And we also talked about a very typical form of art deco called Indo Deco where we integrated themes of traditional Indian mythology in an art deco format so we see that in these artworks that came to embellish the art deco buildings of the time.

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Now we also looked at this slide to have a glimpse of the overall modern architectural thought prevalent in the world at the time so if you look at Europe we are looking at neoclassical buildings, we are looking at art deco and we are looking at modernism, this Villa Stein by Le Corbusier. In the US we were looking at the works of F L Wright organic architecture and also free flowing spaces laying some of the very fundamental principles of modernism that came into Europe from the architecture of Wright.

Then we have Limited European Modernism say for example in this tall glass and steel building and in India it is neoclassicism or some modified version of that as we see in the work of Walter George or we see the art deco as we see in the Eros cinema in Mumbai so this in a very small way is the glimpse of what is happening in the world in around the same time.

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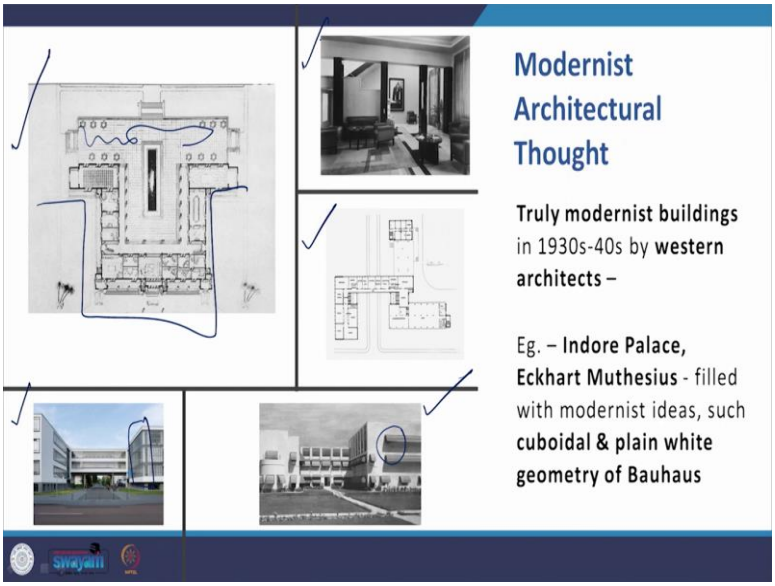

But then the modern architectural thoughts started seeping into India as I have talked about it last time also Walter George had brought in a classical style and modernist form together but now the modernist architectural thought from Europe with the international style being so firmly established in the 1920s then came into India but truly modernist buildings in the 1930s and 40s were done by Western architects not Indian architects or British architects in India or British architectural firms in India but Western architects coming in from the West and working in India.

For example Eckhart Muthesius did the indoor palace which was filled with modernist ideas such as having a cuboidal form though symmetrical, though symmetrical its a U shape with the green area here and the overall white block geometry of the indoor palace and to relate it to the Bauhaus of Walter Gropius you see the same kind of form identity of Bauhaus in this work, the difference being that there is extensive use of glass in the glass curtain wall in Bauhaus but in the indoor palace we do not find that we find these long like ribbon windows, long fenestrations which is an indication that the formwork is in R, the frame is in RCC but they have been amply shaded to account for these the harsh Sun of India.

So again you can compare this somewhat symmetrical plan of Muthesius with the overall functional organization of Bauhaus and this is an interior shot of the Indore palace and if you would to look at other images of interiors of modernist architecture of the time you would be able to relate it with that.

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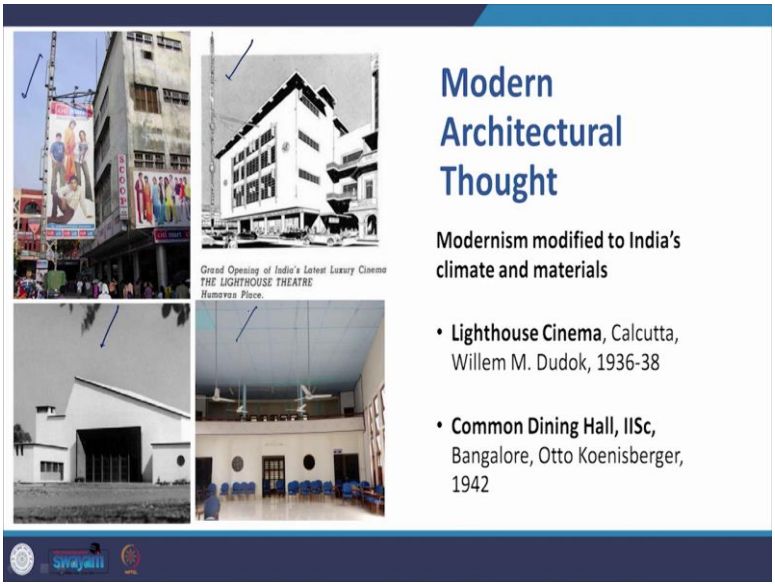

Then there was modernism modified to India's climate and materials, we see that in the Lighthouse cinema in Kolkata by Willem Dudok, this is the picture of that the original design and unfortunately it is in a very dilapidated condition today or there is a common dining hall in IISC Bangalore by Otto Koenigsberger and this is an example as you know that Koenigsberger has played a very important role in the study of climatology in India the one of the most famous study material books that we have in India on climate is a book written by Koenigsberger.

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Whereas parallelly in Europe the international style modernism was taking deep roots and flourishing whether it was Alvar Aalto's Paimio sanatorium, whether it was this building by Corbusier and his cousin Jean Pierre Jeanneret in the Cite' Fruge's project, whether it was the Schroder House by Rietveld or the Bauhaus by Walter Gropius, so a series of movements under the same umbrella of modernist thought that is modernism, international style, minimalism of Mies van der Rohe and the De Stijl architecture of architects like Rietveld.

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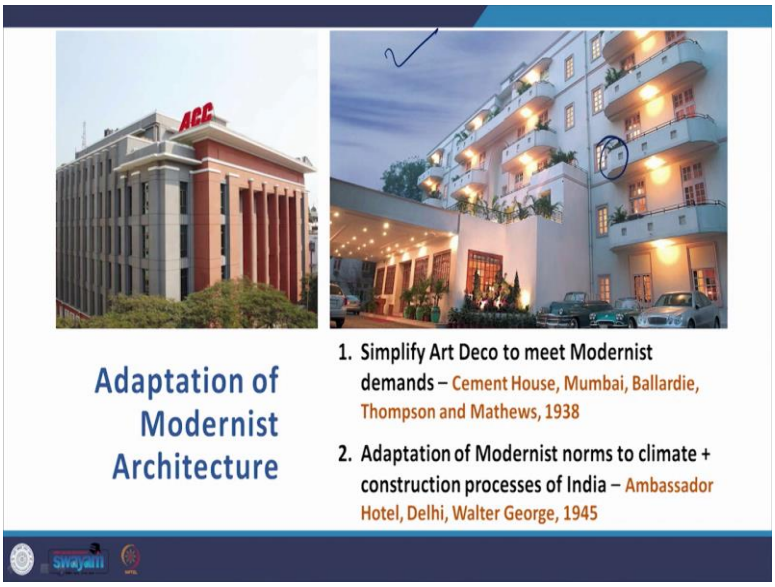

And then the adaptation of modernist architecture in India came in two ways initially by simplifying art deco to meet modernist demands, as we saw last time art deco had formed a very important set of buildings in Mumbai and this art deco then added on a modernist identity, for example the cement house in Mumbai which is now the ACC headquarters by Ballardie, Thompson & Matthews in 1938.

And then the adaptation again of modernist norms to the climate construction process of India the Ambassador hotel here in Delhi by Walter George, of course this is not purely modernist so to say because if you look at the balconies you are reminded of art deco with their curved forms.

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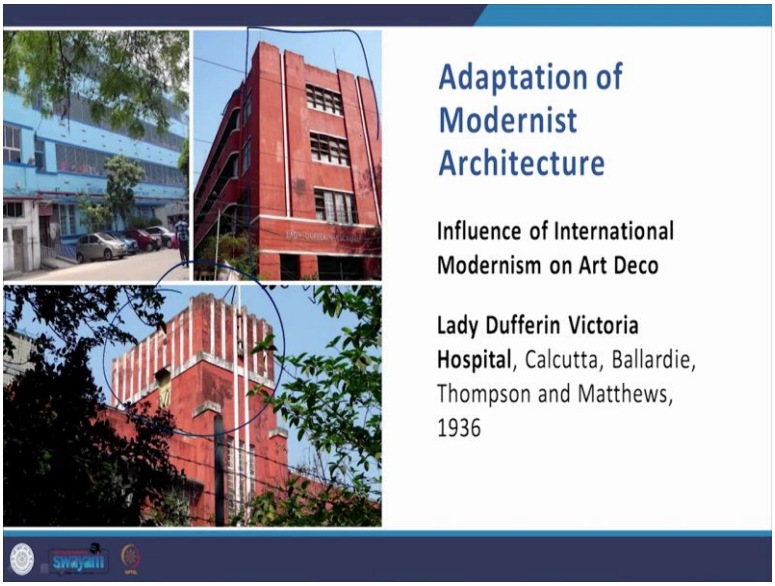

And then the influence again of international modernism on art deco you find that in the Lady Dufferin hospital by Ballardie, Thompson and Matthews in Calcutta in 1936 and how do you see that, you do find remnants of art deco features here whether it is at the top of the hospital, whether it is in the curved segment of the balconies but when you look at the overall form rather than being a curved form or a curvy linear form it is becoming more of a cuboidal form.

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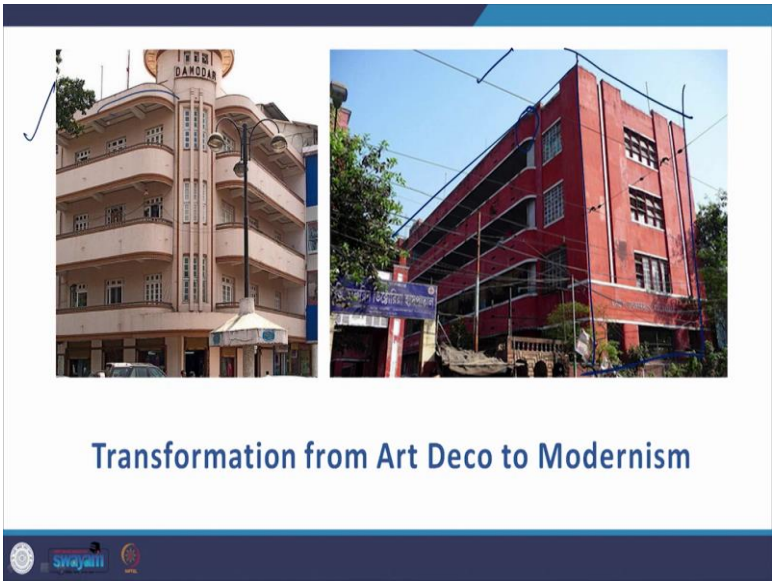

Here is the comparison, transformation from art deco to modernism, we look at the art deco building, it is definitely a modern building as compared to the buildings of the time but a very

strongly art deco in the way the lines are curved and the building curves around the corner but when you come to Dufferin hospital you do find that same limited curve in the balcony but the overall block has become cuboidal, the overall block geometry has become cuboidal.

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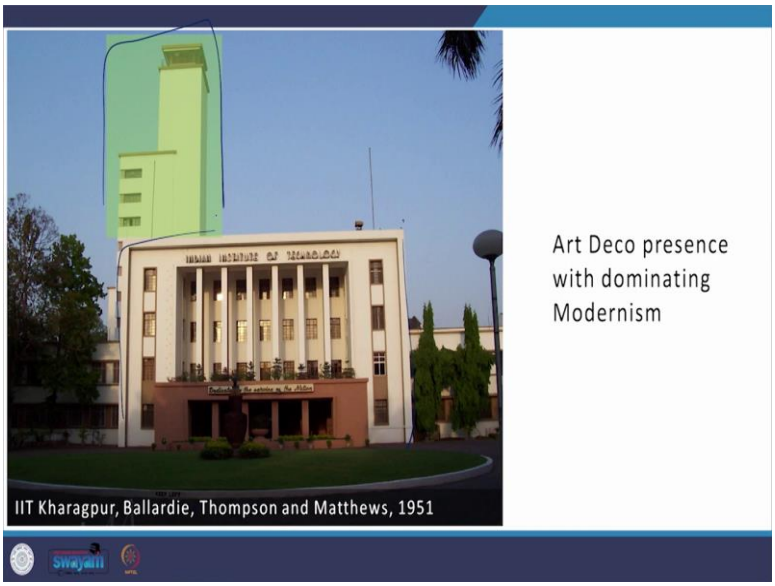

Or for example the main block of the IIT Kharagpur again by Ballardie, Thompson and Matthews in 1951 they continued, this firm continued working in the early years of India's independence. The art deco presence here is with the dominating modernism, let us look at it again when you look at the facade in the front its very strongly modernist but when you look at this tower at the back, this one, this gives you a clue of the presence of art deco within the dominating modernism.

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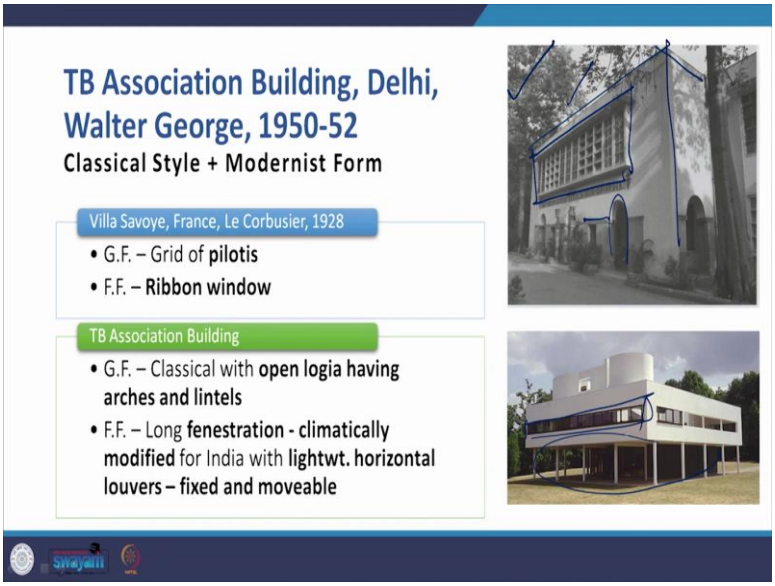

Then we come to another example of mix and merge type of buildings not going all out to create a modernist building but holding on to some of the ideas which had worked in India the TB association building in Delhi again Walter George continued to work in India into the 50s and in this building when you look at this TB association building let us try to compare it to the classic symbol of modernism of the time the 1928 Villa Savoye by Le Corbusier.

Now when you look at these two what you find is that the Villa Savoye is raised on the grid of pilotis, it does have a curved ground floor but that is pushed in so you basically see a kind of I would not call it a logia but I would say a covered space of a grid of pilotis, in the TB association building you do find a logia but the logia again does not have a grid of pilotis, it has these arches, it has these lintels that are completely enclosing the logia and making it a very shaded area open to the front but but not in the way the pilotis is.

So pilotis is modernist whereas what George has done in tuberculosis association building is more in the neoclassical format whereas when you come to the first floor there these two buildings start merging into a modernist thought, the overall form of Villa Savoye is cuboidal you see that strong cuboidal geometry on the first floor its a white planer geometry with these ribbon windows forming a part of the five points or later on nine points of a new architecture of Corbusier.

And then you come to the TB association building, again its cuboidal geometry definitely and this vast extent of fenestration clearly shows that this is also supported with by an RCC frame just as Villa Savoye because you cannot have such an extent of fenestration unless it is a

curtain wall on the outside rather it is a non load bearing wall but the difference is trying to adapt this modernism to India's climate so what you have is a series of louvers, horizontal louvers which are fixed and movable covering the entire so called ribbon window of the TB association building.

Whereas in France, this ribbon window of Villa Savoye is completely flat, flush with the wall just to get maximum sun into the building, TB association just the opposite to keep the sun out of the building, so here we find that there is a classical style and modernist form coming together in TB association building, the overall block is very similar to Villa Savoye but the pilotis is replaced with arches and lintels and the logia having the arches and lintels but as you go to the floor above there you find the similarity but the fenestrations are covered with these louvers to keep out the sun.

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So the adaptation of internationalist modernist norms to the climate and construction process of India is the highlight, one of the major highlights of what we are talking about today, there was a very clear awareness of climate responsiveness in modern Indian architecture at the time, you find that in the Lodhi colony housing by Walter George in the 1940s in Delhi, you find that in the up market Sujan Singh park housing in New Delhi again by Walter George in the 1940s.

And what he said was and this sounds so contemporary when you read his words he says to copy the forms evolved on the continent and in America will not do building frontages entirely of glass and staircases enclosed in glass houses are unthinkable in India here we have

heat and glare to content with climate will have its say, so when I read these words it is as if a modern day 21st century architect is speaking, here is a person who is very strongly pointing out then exposed glass architecture, glass building frontages do not work effectively in the climatic conditions, particularly the composite or the even the tropical climatic conditions of India.

So we have to contend with climate, climate has a very important say in our buildings, we will come to this point later but I digress and I say this point here because this is what I strongly feel about, because of the kind of economic development our country has seen over the past let us say 30 years we have gone to making our buildings more actively controlled, more conditioned and therefore we can afford to have those kind of facades we see in the West in glass and steel or glass and RCC because the building is conditioned and it does not have to depend on the outer climatic conditions whereas way back in the 60s or the 70s or during the time of Walter George we had to take advantage of the climate and keep out its disadvantages.

So we had to make climate responsive buildings because air conditioning was something that was exorbitantly expensive and not really doable in Indian buildings therefore a building form the overall way the building form evolved had more character in it you know each building had its own special identity that is what I feel of course when I look at these buildings and when some of you young people look at these buildings maybe in your mind the images of the tall glass and steel building, a sleek building that you see across the globe that speaks of prosperity, that speaks of success, that speaks of having arrived whereas these buildings which are more suited to our climate speak of a more what you might call laid back, old kind of lifestyle.

But truth is that today we are scientifically returning back to these same principles and we are studying them more systematically because we now realize that in order to mitigate the impact of climate change we cannot avoid it anymore, we will come to that later.

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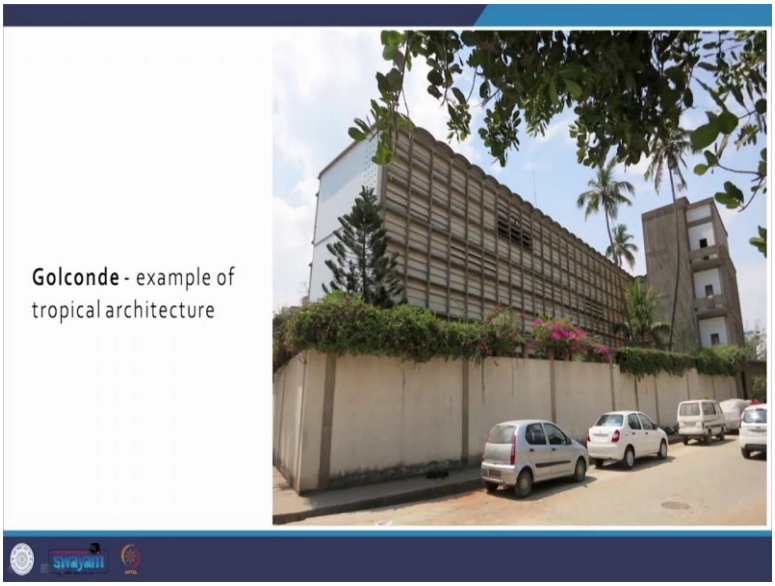

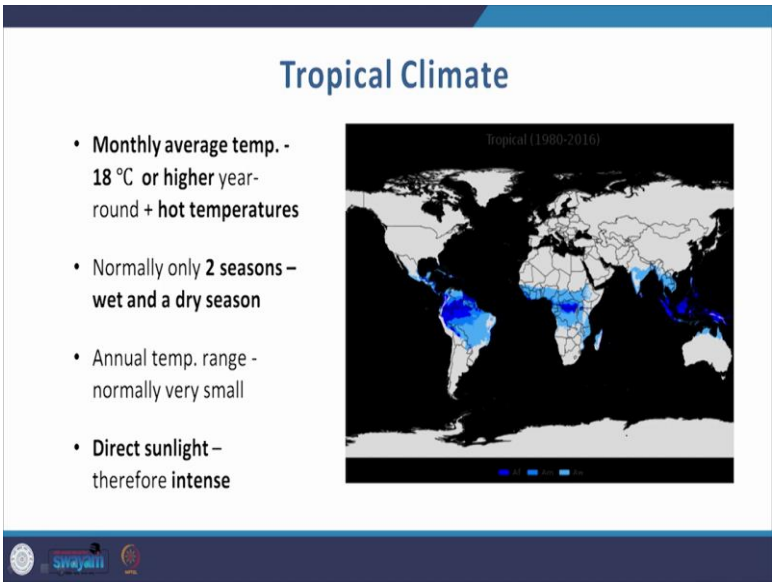

So let us come to the first truly modernist building built in India by Antonin Raymond called the Golconde Ashram in auroville in 1942, it is an example of tropical architecture, what is tropical architecture, tropical architecture or tropical climate monthly average temperature 18 degrees or higher around the year with hot temperatures, normally two dominant seasons, wet and dry, annual temperature range is normally very small, this direct sunlight which is intense.

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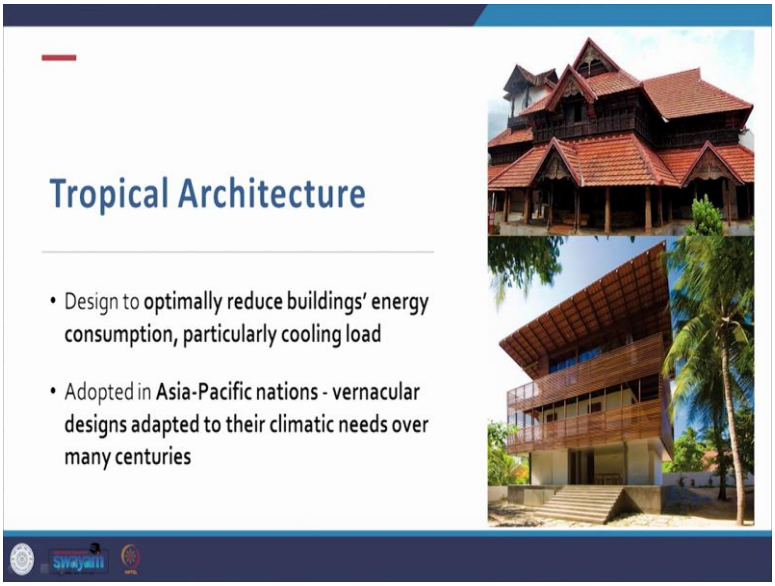

Tropical architecture is a design to optimally reduce buildings energy consumption particularly the cooling load it is adopted to Asia Pacific nations and these are vernacular designs adapted to their climatic needs over many centuries of experimentation and hit and trial, those ideas have evolved and they are now being used even in the contemporary buildings.

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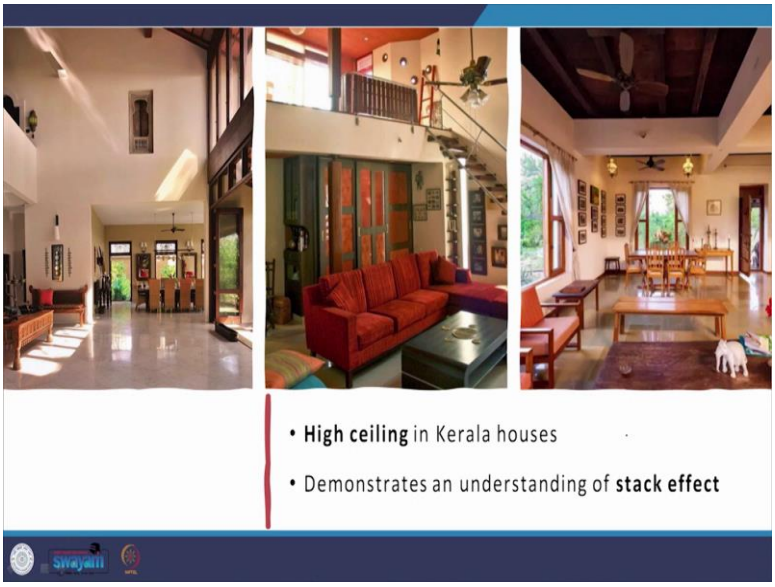

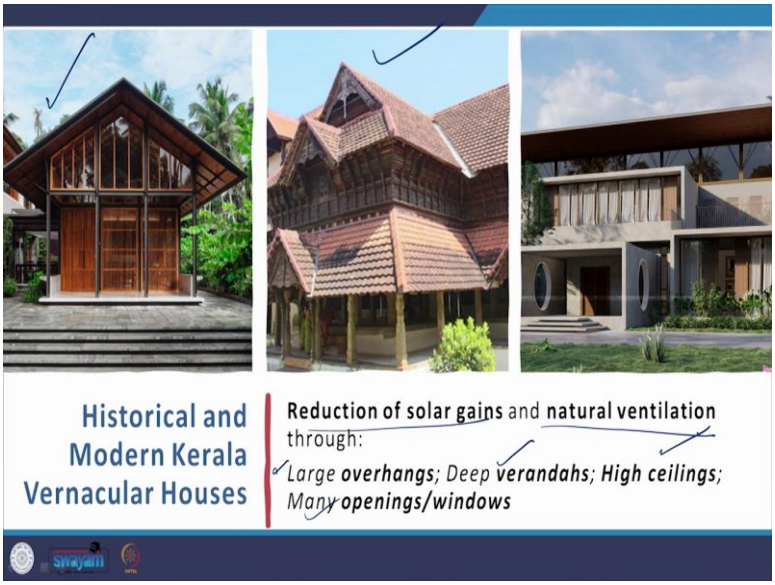

So for example the high ceilings in Kerala houses is done to encourage stack effect so that hot air would rise up, a current would be created and the cool air would move in from outside into the livable area, so when you compare the historical and modern Kerala vernacular houses this is a historical one and this is a modern one, you look at some simple principles of large overhangs, deep verandas, high ceilings and many openings and windows in order to reduce solar gains and promote natural ventilation throughout the building. So the same principles were there in the historical Kerala house and the same principles are there in the modern day vernacular Kerala houses.

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So this is the modernism for a tropical climate with wide open spaces, increase ventilation, focus on local resources and building materials with cooling factors like this example of the Overture house in Kerala by Thought Parallels.

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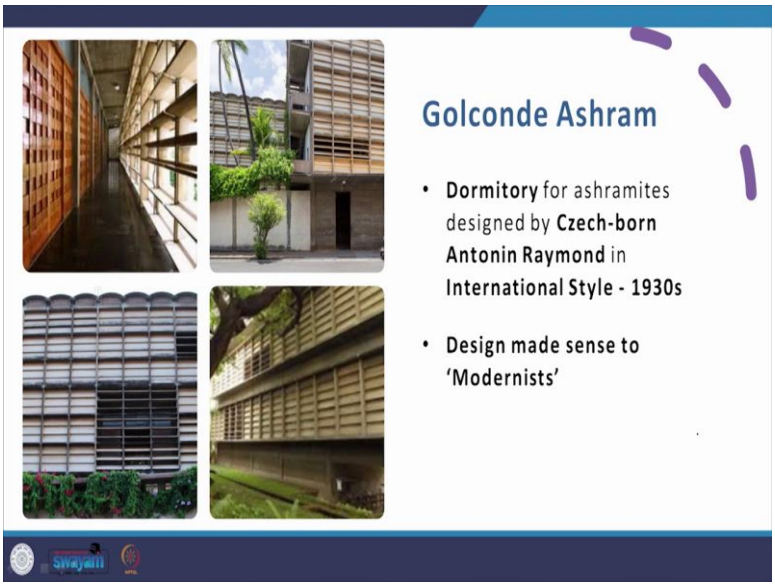

Coming back to the Golconde Ashram it was dormitory made for the ashramites designed by Czech born architect Antonin Raymond in the international style in the 1930s and was a design that made sense to the modernists, it was expression of his design philosophy which is to base our designs on the requirements of the client and to deal directly with conditions that grow out of the work itself and the location of the building.

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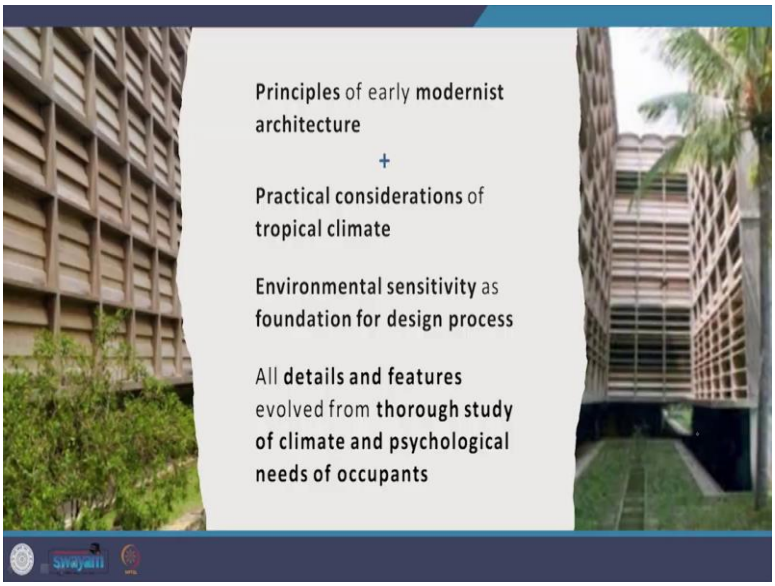

Now it was the first RCC building in India in the sense that it was completely made in RCC frame when I was talking about Walter George et cetera there was RCC being used but it was not a totally RCC building, it was not a totally reinforcement concrete building so that is one aspect which unfortunately we will not be able to cover in detail about the introduction and the use of RCC in the early years of the, in the what you might call in the the final years of the British Raj.

But here it is principles of early modernist architecture, practical considerations of tropical climate, environmental sensitivity as a foundation for the design process in Golconde and all details and features have evolved from the thorough study of climate and the psychological

need of the occupants, this is really looking much ahead into a truly modern approach to building design.

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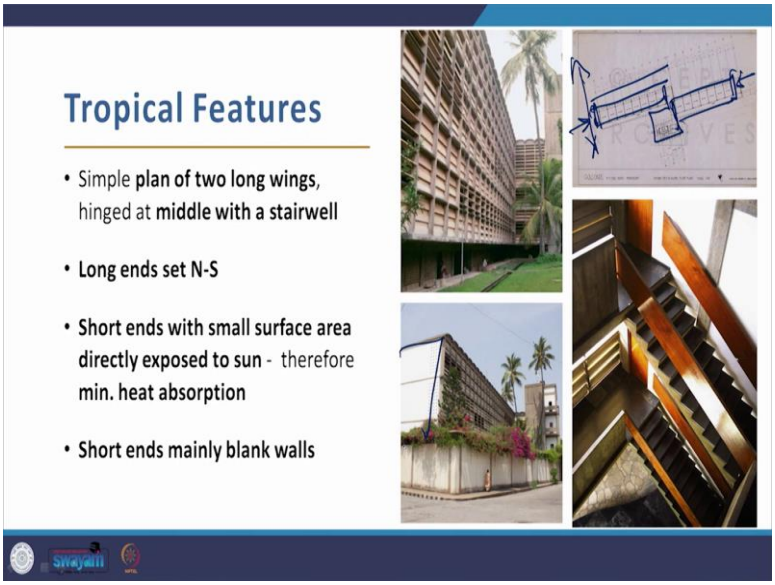

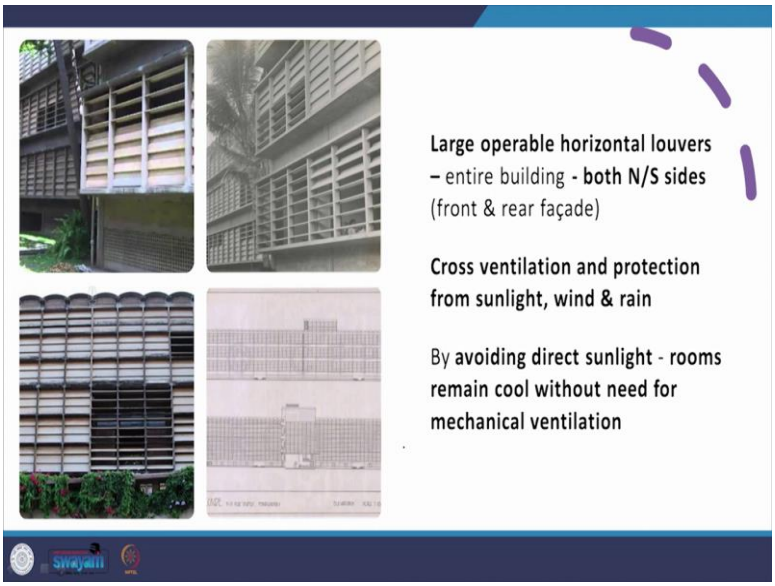

And the tropical features simple plan of two long wings that you have here, these two long wings which are joined together here at the center with the stairwell, so this is north south direction, the long axis, the long facade in the north south direction and the short ends these sides are having the small surface area which are directly exposed to the sun therefore there is minimum heat absorption plus if the shortest side whatever is remaining is more or less a blank wall.

So the maximum flow of wind through the building or breeze through the building, north south direction and the solar radiation at least on the north side completely diffused south side the sun is way up in the sky so the louvers, the horizontal louvers can cut them off as we find in these buildings, in this building, so these large operable horizontal louvers have been provided on the entire length of the building, on both the north and the south side at the front and the rear facade, cross ventilation and protection from sunlight, wind and rain and by avoiding direct sunlight through the louvers the rooms remain cool without the need for mechanical ventilation.

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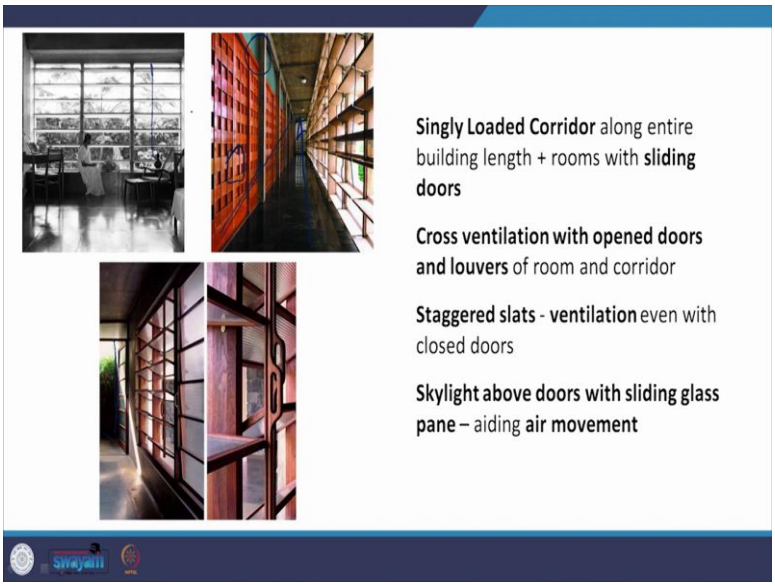

So what we have is inside the building it is a singly loaded corridor along the entire length of the buildings and these rooms on one side this singly loaded corridor the rooms on one side are having sliding doors, so cross ventilation takes place when the sliding doors are opened up these louvers in the corridor are opened up and the louvers in the room here or you can even identify them here they are opened up so literally the breeze or the wind flows from this side all the way to the back of the building, amazing cross ventilation takes place through the building.

Not only that, there are staggered slats within these sliding doors so that even when the door is closed ventilation continues to take place through the closed doors and there are skylights provided with glazing on top of the doors which aid in air movement, these are the small details that are responsible for making a building climatically responsive and comfortable.

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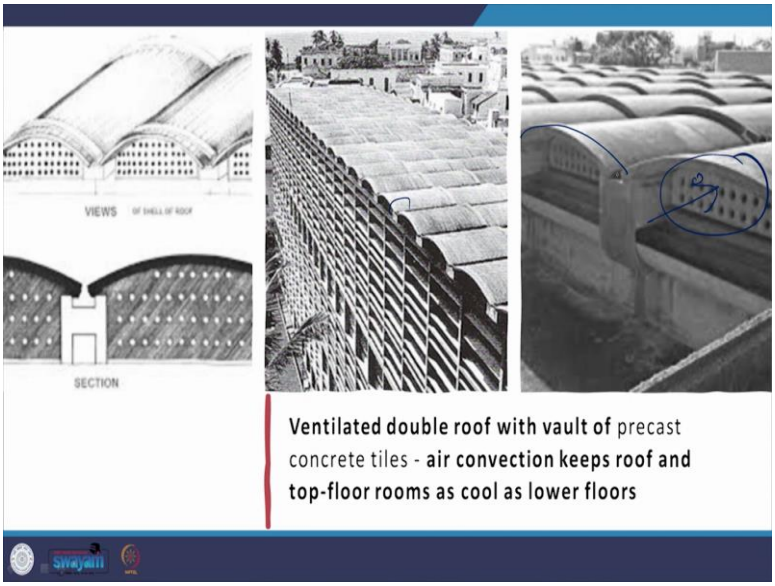

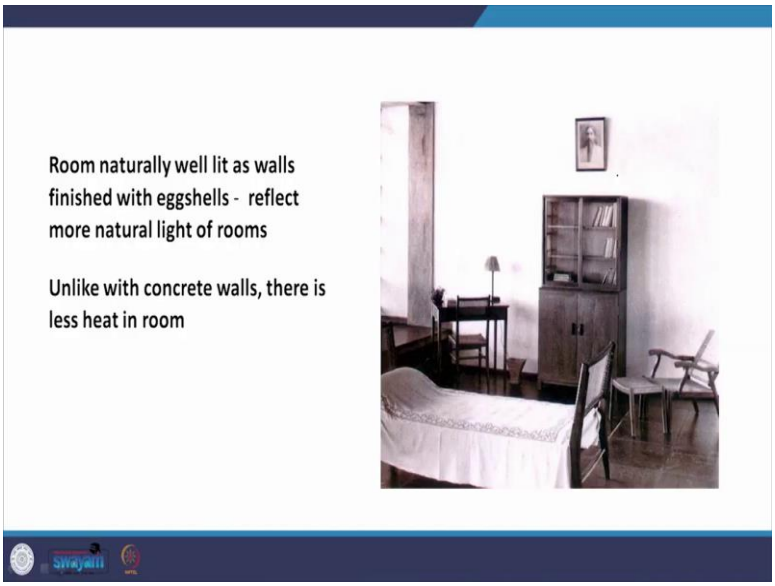

Then again when you go to the roof of the building its a ventilated double roof, here its ventilated double roof you got these, these openings in it, these cut outs in it and this ventilated double roof with the vault which is made of precast concrete tiles, air convection is generated which keeps the roof and the top floor rooms as cool as the lower floors, the rooms by themselves are naturally well lit because the walls have been finished using eggshells and they reflect most of the natural light coming into the room as a result of that artificial lighting is not required during the daytime, most of the time.

So amazingly this building functions without much use of mechanical ventilation, a mechanical lighting system because of the way ventilation has been created and lighting is

allowed to penetrate and get reflected by using these eggshells for example and unlike with concrete walls there is less heat in the room because the walls are not of concrete.

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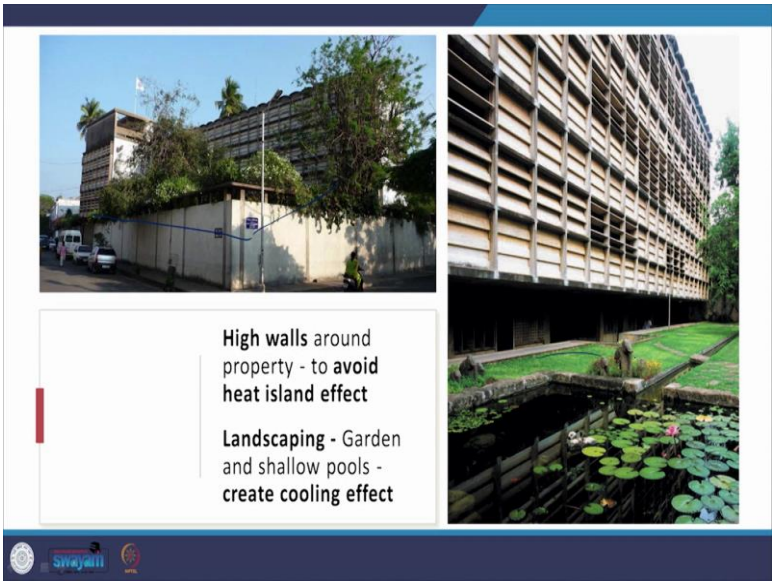

Then there are these high walls all around the compound to mitigate the impact of UHI (the urban heat island effect) of the city area outside the building site and landscaping within, garden and pools of water it help in creating a micro climate of cooling within the site of the building, so all these different elements play to make a modernist building suited for the tropical climate.

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Now coming to the interior itself now, we are not talking here about the philosophy of Ma Aurobindo or Auroville but I do believe that they speak of a simple lifestyle and whenever we think of a simple lifestyle we think of minimalism, less is more, the interiors of Golconde as you see here, here and here are done by a Japanese American woodworker George Nakashima and it is minimalist as in the very high end minimalism with very fine materials of Mies van der Rohe in the West or it is the aesthetic minimalism of Gandhi in the east as you see in the Sabarmati ashram.

So that kind of minimalism you find in this building, a western architect in the mould of more of Mies van der Rohe from the same continent coming to India and practicing a modernism which is more aesthetic like that of Gandhi.

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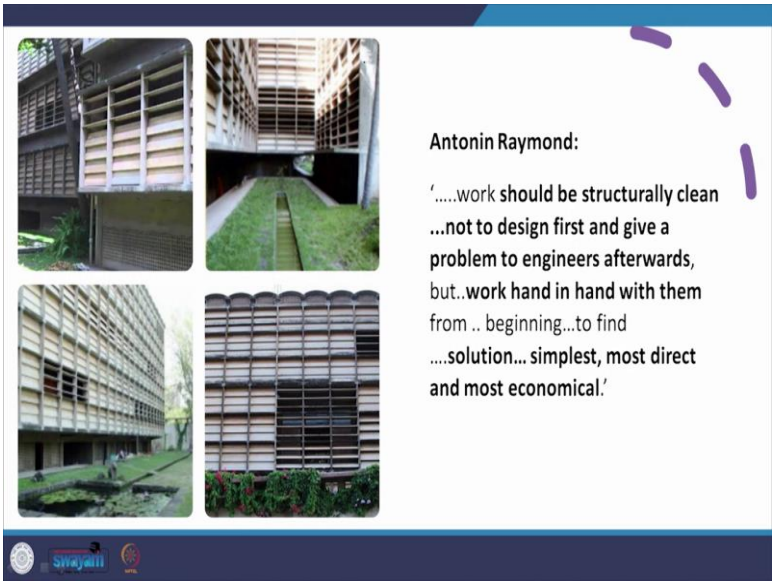

Antonin Raymond also said that what we do our work should be structurally clean, not to design first and give the problem to the engineers afterwards but work hand in hand with them from beginning to find the solution that is simplest, most direct and most economical again when I read words like this my hair stands on end because I see here very modern architectural concept or architectural language.

When architects work in bigger and bigger teams today with wide number of consultants working with them, it is not the job of the architect to impose his design on the team, it is the job of the architect to coordinate with the team and Raymond gives the idea here not to design first but and then give the problem to the engineer afterwards, this is my design now you do what you have to do, no, not that way but rather work parallelly with them so as to

evolve the best possible design climatically, structurally in so many other ways in which contemporary buildings are designed today.

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Now the impact of tropical architecture and contemporary buildings, while its possible to retain these vernacular tropical features in residential design we have generally found that offices and shopping centers do not generally adapt very well to these tropical features, the other side that we are learning is that modern tropical design is being aligned with available or existing technologies including software that is able to decide the angle of roof inclination.

There are long overhangs use of ventilation to reduce humidity and hot air temperatures and correct direction of building orientation, so much of it is being done through simulation

modeling so that you know the exact climate responsive behavior of the building even when, even before you even did the the first layer of foundation you know exactly how the building is going to behave pretty much, pretty much close to it as we, as our software's tools become better and better our post occupancy audits and the building built right in the beginning there is a much much closer co-relationship between them.

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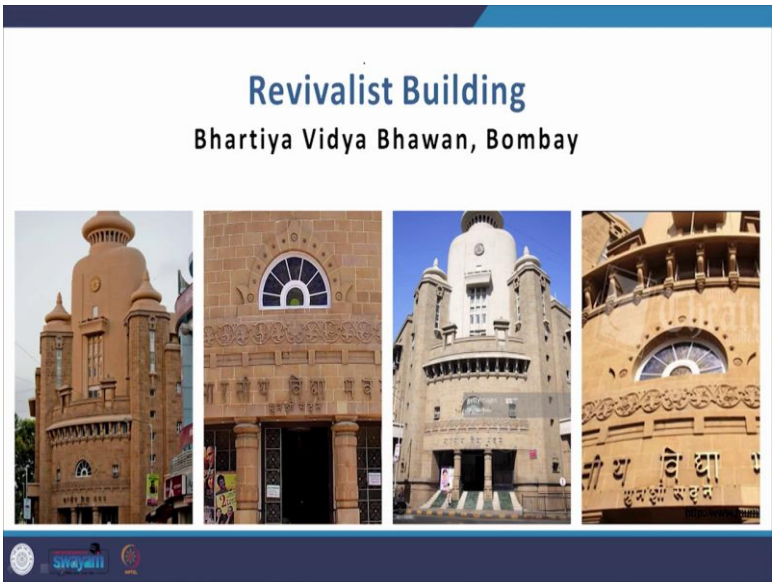

Let us come to revivalism and I will just give you a glimpse of it here then come back to talk about it in greater detail, during the 1920s some patriotic indians during the Indian struggle for independence initiated institution building activities an appropriate architecture for institutional buildings in India for example Banaras Hindu University and now it was their

turn to think of experiments with built form as a symbol for national identity, their turn to experiment with built form as a symbol for national identity.

Why am I emphasizing this because we have talked about it we have talked about it in context of the British they wanted to create that national identity through the built form for example through the Indo-Saracenic architecture trying to unite the building, trying to unite the nation under one architectural form.

So here it is these Indians, these nationalists wanted to create the same national identity by reflecting back on our traditional historical architecture like the Bhartiya Vidya Bhavan in Bombay.

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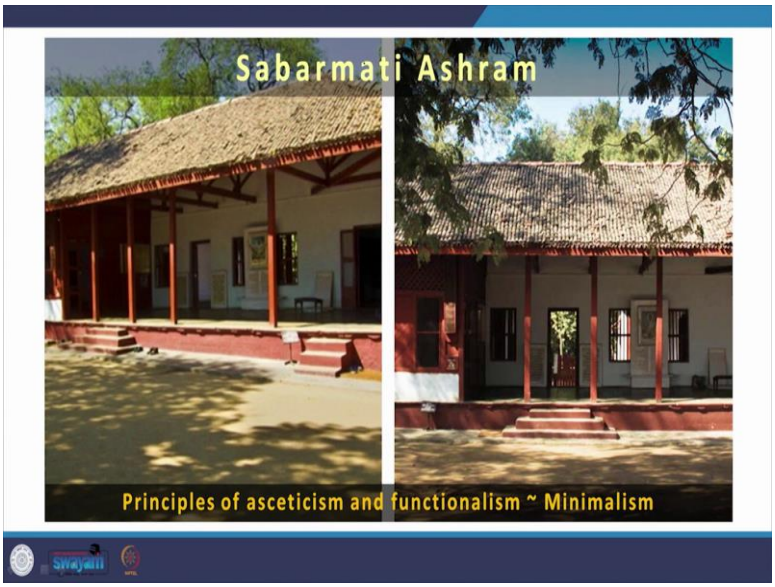

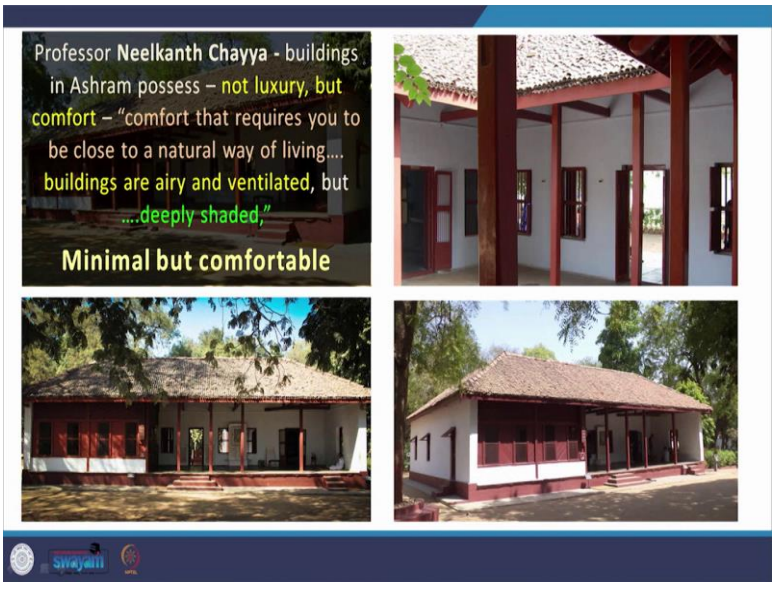

We will come back to revivalism again like I said in a little more detail but let us look at another one final aspect of this presentation that is the Sabarmati Ashram, now you would ask me what is the architecture here I mean it is a very simple building it is not been designed by an architect, it was designed by Gandhi and the people along with him, they put together a very simple set of buildings which was very aesthetic, very functional, neatly organized but nothing spectacular about them.

This entire principle of functionalism and schism is a direct connection with minimalism, less is more or less speaks more, Professor Nilkhant Chayya he says regarding the buildings of the ashram it is not luxury but comfort, comfort that requires you to be close to a natural way of living, buildings that are airy and ventilated but deeply shaded so it is minimal but comfortable.

Always there is going to be a trade-off in any architecture between function structure and form in fact I believe I did start by telling you about the vitruvian triangle that form function and structure are three fundamental principles any good building is something that balances all three out in a wonderful way, sometimes one dominates the other, for example in this building if you look at it the form per se is extremely simple, paired down to the bare minimum but the comfort level of the building climatically is really good.

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And modernist concept in Vernacular Indian architecture he says that inside should not be cut off from outside, every room of old buildings, the sense of extending outside to the trees and

to the birds, so here I am relating the Sabarmati Ashram buildings and interiors with that of the Barcelona Pavilion by Mies van der Rohe.

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So what we have studied thus far, we have looked at Indo-Saracenic architecture which is Islamic and Hindu elements with Gothic revival or neoclassical style, we looked at colonial architecture, western classical architecture and select traditional forms, this is an example of Indo-Saracenic, this is an example of colonial, classical style and modernist form Walter Geroge, Kashmir House or the art deco work of Mumbai.

We have also studied the movement from art deco to modernism as you find in the Lady Dufferin hospital, we have seen modernism modified to suit India's climatic conditions and

construction processes as in Antonin Raymond's Golconde, Revivalist architecture as in the Vidhana Soudha in Bangalore which we will see in the next presentation and the minimalism that is there in the vernacular form of Sabarmati Ashram that we see here. So these eight scenarios we have looked at up till, until today that is lectures that we have done till today.

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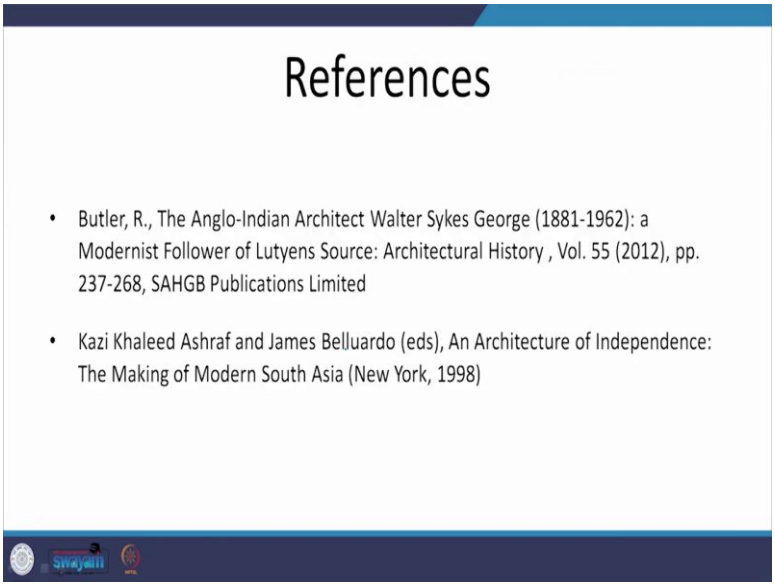

So I will stop here, thank you so much for joining me today and in the next session we will go to revivalism. Thank you so much.