B. Architecture

Structure and Architecture (AR6006)

History of Structural Design in the post Industrial Period

Lecture - 11

Renault Distribution Center, UK

The first look of the building, this is how the building looks, honestly when I looked at this building for the first time and when they called it Renault distribution center, I laughed such is the reaction, building that is going to be very important, with such an important building you look at what faster has done and this is what he produces. A very playful yellow colored portal frames series of portal frames and series of spaces. The Renault center has been described as the practices most playful structure. However its development owes much to earlier, perhaps more reticent schemes for clients such as Reliance controls and Fred Olsen, which delivered inexpensive, flexible buildings to tight schedules. The center was commissioned as the French car manufacturer's main UK distribution facility.

Take a look at the picture this is the Renault distribution center without the great impact on the ground and site or the volume, look at how micro surgery has been performed on the site, very minimal incision to produce the building more massive in size. In addition to warehousing, it includes a showroom, training school, workshops, offices and a staff restaurant. The notice that good design pays has almost become a clich, but in this case it is quantifiable on the strength of the design, supportive local planners increased their site development limit from 50 to 67 percent, allowing a floor area of 25000 square meters. This is housed within a single enclosure supported by brightly coloured tubular masts and arched steel beams, forming a striking silhourtte within its surrounding landscape. The structural system that repeats itself to form this external outline is based around a24 by 24 meter bay a much larger than usual planning module developed so as to maximize the planning flexibility of the internal spaces. This is the very

interesting picture that I was found on their website, the picture where they have captured the building along with yellow masts and tower structure with the beams and in the foreground there is a grassy field which supports yellow flowers I was amazed by seeing this picture and I found coincidence here. Look at how site helps us design buildings. The yellow colored masts structural beams are merely structural elements which supports the structure which has nothing to do with looks or aesthetics or splendor. Look at how clearly they personify the flower in foreground to form the flower in the background. This expansive horizontal span is combined with an internal clear height of 7.5 meters allowing the center to accommodate a range of uses from industrial warehouse racking to its subdivision into office floors. Enveloped by a continuous PVC membrane roof, pierced by glass panels at each mast, the building is also stepped at one end, narrowing to a single, open bay that forms a porte-cochere alongside a double height gallery.

A porte-cochere is nothing but a portal frame through which a vehicle can enter into the landscape of building. Primarily a show room as signified by suspended car body shells- the gallery was used by Renault as a popular venue for arts and social events, encouraging wider community involvement in the building. As much as its internal spaces, however it is the buildings almost festive Renault-yellow skeleton that gives the center such an identifiable character. This is the suspended car frames we were talking about earlier in the slide. Primarily a suspended car body shells that you see here, suspended from roof. This is the space allows the Renault to use it as a public demonstration and community participation area. Significantly, this crated such a memorable image that the building, alone among the company’s facilities, did not need to carry the Renault logo. In fact it is so closely associated with the brand that for many years Renault used it as a backdrop in its advertising campaigns. That is the kind of corporate famous branding architect can give. Imagine the Renault with its logo yellow placed in a setting with yellow flowers, so strikingly making the settle incision into the land scape at the same time creating something so dynamic, so powerful calling at the Renault yellow itself. It happens that Renault needs not to put the yellow for the very long time. This building is very closely associated with the company to they used it as the backdrop for almost all of its advertisement campaigns for many years. This is the sketch made by Renault Norman Foster. The structural system which they had designed to scale 24 by 24 meter scale, this is the entrance, this is the gallery space and here is a public space, useable for exhibitions, displays, local events; as well

as displaying Renault products and telling their story. This is explaining how we get the sunlight into the buildings.

Martin Pawley says that" the Renault project gave Foster Associates the opportunity to further refine the performance and utility of its log span steel-frame design by introducing mast-supported trusses to create even larger unobstructed floor spaces. The result is a building that consists largely of its own elaborate roofing system, which itself is an interesting precursor to the spectacular roof later designed for the passenger terminal at Stansted Airport. This is how the portal frames were designed very small ground space, that is required to keep the building up and extension on top to carry these frames shaped in format which gives the space utilization of the middle of the area, thus allowing to be expanded on size and in the front you see you put the beams and the finish it with wall as concrete wall.

Norman Foster says that in the course of resolving the umbrella structure we explored a broad range of solutions, form grid shells and suspension structures to a conventional truss and rafter's solutions. Pater Davey says Ad hoc Foster, Gothic Foster, playful Foster, jolly foster: these are not aspects of the architect we could have imagined before Renault. This completely change the ways the architect has being designing, he is not known to have designed playful spaces. And he is not known to have design jolly spaces. All his designs were no nonsense and straight forward buildings. This is one of the first and most of the playful design by the practices. This explains the structure. Here in this slide, we see the plan and the section of the building and the plan is very straight forward structure and we see those structural portal frames at the back ground. The building ends and the landscape begins the open becomes semi open and this becomes the closed environment. This is the brilliant transition which is being provided here.

Stansted Airport, UK

Next buildings which were going to look at in the section, called Stansted Airport terminal and this is in UK. Stansted Airport challenged all the rules of airport terminal design. It went back to the roots of modern air travel and literally stood conventional wisdom on its head. The earliest airport buildings were very simple: on one side there was a road, on the road the car came and drop the passenger and on the other a field where aircraft landed. The route from landside to airside involved a walk from your car through the terminal and out to your plane, which was always in view. This is the

traditional view of the airport of very old architect with parochial way of experiencing an airport and faster as try to bring in very essence to this project. Let's take a look at how he tries to bring that essence to that project. This is the famous opened roof that he had designed for the Stansted airport. This is how the building looks, this is large building framed for tubular process which separates the land side and the air side. Stansted airport attempted to recapture the clarity of those early airfields, together with some of the lost romance of air travel. From the traveler's point of view, movement through the building is straight forward and direct- there is none of the level changes and orientation problems that characterize most airports. That is the problem today, in modern day airports the people complained of the distance between the entrances of the terminal to their plane carrying their luggage most of the time. This is what the Foster try to break in this system, because when the level changes, the people has to move from one place to another when they had to change at multiple levels the people or travelers become disoriented. That is the problem which characterizes most of the airports today.

Passengers progress in a fluid movement from the set-down point through to the check-in area, passport control and departure lounges, where they can see the planes. This is one of the inside area of the Stansted airport, cleaned, flourished and very functional. From there, an automated tracked transit system takes them to satellite buildings to road their aircraft. This degree of clarity was achieved by turning the building upside down, banishing the heavy environmental services usually found at roof level to an undercroft that runs beneath the concourse. The undercroft also contains baggage handling and was able to accommodate a mainline railway station, which was integrated into the building late in the design process. This is the roof of the building. Service distribution systems are contained within the trunks of the structural trees that rise from the undercroft through the concourse floor. These trees support a roof canopy that is freed simply to keep out the rain and let in light. Entirely day lit on all but the most overcast of days, the constantly changing play of light gives the concourse a poetic dimension and also has significant energy and economic advantages, leading to running costs that are half those of any other British terminal. This is how the building looks. The undercroft which we talking about is beneath the building with somewhere here and these are the trunks that he was talking about, the branches of the tress that hold the roof. Energy efficient, environmentally discreet within its rural setting, technologically advanced

yet simple to use and experience, Stansted has become a model for airport planners and designers worldwide. Simply checked all the boxes that any airports must have. This is the undercroft that trunks and tree which is environmentally efficient because they are using very lesser energy discreet within its rural setting incorporates the highest of the technologies, very simple to use. Grid system of about 36 mts, this is the landside and this is the air side. The train system that goes on the under course and the passenger movement system on the top, clear distinction between both the systems. This is the trunk of the tree and these are the branches that they are talking about. The main advantage of using this kind of the system is very clean environment which we get on the upside and inside of the terminal, the inside of the terminal is very extremely clean because all the services and all the requirements are on beneath the ground or underground croft area. This is the plan of the overall building. This is the terminal building here in this area, this is the plane, this is the car or taxi parking and how you enter the airport terminal and this is the run way side. The sections of the buildings were the trunks of the tree provides spiral staircases which take you to the top, and very clean ground floor for all the people and all the passengers to move. This is the another view of the Stansted airport. It is such a famous building that Banister Fletcher, the history of architecture, one of the most famous book that every architect student would have definitely laid his or her hands upon. That book features this building, twentieth edition edited by Dan Cruickshank, 1996 there was a mention of Stansted airport. Stansted airport is a rational response to the requirements of air travel. But the structure transcends the merely functional. Indeed the structural tress which supports the roof and carry services create a powerful romantic space with their arms branching up within an interior bathed with diffused sunlight. This is the building and looks how Fosters trying to bring light inside the building through sky lights and these are the parking; this is how you enter the terminal. Under the terminal there is the railway line and this is the air side and the land side is in other side of the air side.

Norman Foster says that, For inspiration we went back to the early days if aviation, when life was very simple. You walked towards the aircraft, and when you returned you walked towards the road. You did not need complex signage systems. Would it be possible, we asked to rediscover that clarity, given the complexity that generally constitutes the airport as we know it today?. The question was simple as simple and it was ridiculously simple because in olden days, the airport was very simple, the people get down

from the cars then there is a terminal, through the terminal they can see the planes on the air sides. So they simply walk towards the plane and catch the plane. And while coming back from plane or while arriving, the ground for the terminal, they simply walk through the terminal, while they walk through the terminal they see the road. So they simply walk through the terminal towards the road take a cab and go to the city. This was very simple. But today's airport designs were very complex which is far more complicated than earlier airport designs. So many functions and so many things have come up in today's aviation industry. Is it still possible to get that feel of and see the road and go out and see the aircraft go out? That is what has driven the architecture into the project, and that is what the project is tried to achieve and here it this achieved to a very greater extent. Closer look at the tree trunks and closer look at the structural connections between the tubular trusses and we also see lighting from the top and this is the train station which they were talking about. This is the Stansted airport express has come to the Stansted airport and here is the way out to the airport. Through the escalator they go up and on top is the structure of the airport terminal, all these are happening on the underground. This is the another picture at the departure launch, large rows of seats that people wait and get in to their air craft. Again huge windows and openings and lights allows incredible amount of light into the building. So that this space practically doesn't need any light during the day. Everything can be taken care by the natural light provider at the far end at the same time at this end. Look at the visual connection that Foster is able to achieve here. He is able to open up at this side and this side same time.

Modern day airports terminals will not be able to come any closer to this kind of set, because modern day airports are far complex and look at how Foster has broken down the complexity in very simple terms. Jonathan glance a famous architect says that when you dive through the clouds in your charter jet and spot this silver machine, you will have no doubt that air travel has, for the first time I years, been rewarded with its own special breed of architecture. An air travel is special things and a special thing such as sir travel, its one type of architecture that is exactly what Jonathan glance thinks that Foster has given to the world. Norman Foster himself says the big jets are a dramatic part of the scenery and provide a primary information to beckon you towards the airside. The terminal is really one very large room and the arrival sequence is a simple reversal of the process on the same level. The roof is about light and water, the poetry of light and the

hydraulic engineering of water. Gone are the ducts, suspended ceilings, fluorescent light tubes, roof mounted machinery, extracts and drainage pipes that disfigure most airports. All of that has been transformed through the design process. Here is the long list of award that Stansted airport has received are, Finalist-BBC Design awards, Financial times Architecture Award- commendation, Benedicts Award, USA(for the innovative use of laminated glass), RIBA Architecture Award, Civic Award, AJ/Hilight Lighting Award Commendation 1992, Structural Steel Award, Royal Institute of Chartered Surveyors Award Energy Efficiency Award, RIBA Regional Architecture Award 1992, Concrete Society Award, Design Review' Minerva Award Commendation, Brunel Award Madrid, Commendation, English Tourist Board Car Park Special Award, Rural Category, British Association of Landscape Industries for landscaping, British Gas Energy Management Award, National Childcare Facilities Award, Business and industry panel for the Environment Award, Royal town planning institute Silver Jubilee planning Award for Achievement, British Construction Industry Supreme Award, Colourcoat Building Award.