Human Settlements Planning

Lecture 7

Contribution of Le Corbusier

If you look at the main contributions of Corbusier, his main concept was; Let's not keep urban planning as a theory by itself, we need to include architecture as well as construction technology into that, to come up with a proper planning of any urban establishment. This concept resulted in the publication of three human establishments. The examination of working conditions in a mechanistic society led to the recognition of the utility and necessity of three unit establishments indispensable for human society: The Farming unit - the cooperative village : this is a unit for agricultural production. The Linear industrial city; The Radio Concentric City - same as the Radiant city for the exchange of goods and services. If you look at the background of ville contemporaine which is the philosophy of Corbusier, no matter how open and green, cities should be frankly urban. Urban surroundings are to be definitely contrasting with rural surroundings. Densities are in themselves not a problem. Conditions in slum conditions in the city are due to excessive coverage. Persistence of old street patterns and unrestricted land speculation. Slums exist because of the failure to provide a proper surrounding for high density living. He protests against strict functionalism : "Human creations that survive are those which produce emotions, and not those which are only useful.".

If you look at the concept of concentric city which was proposed in 1922, this was a city for 3 million people and was based on four principles. Decongestion of the centre of the cities, Augmentation of the density, Enlargement of the means of circulation, Increase in the number of parks and open spaces. So, even though Corbusier did not want the urban city to look like a rural city or a rural dwelling unit, he was very particular that there would be adequate green space, lung space, a lot of parks. But even the lung space that you provide has to be planned and constructed not something that is there in the rural environment, completely organic and wild. So, even though a green space was required, it was only on purposeful requirement which provided for a lung space or a break from the monotony.

These were the three zones that he created. You have the central city, the protected Green belt, as well as the factories and satellite towns. Even though he was very particular about an urban city, he was smart enough to know that the factories should be on the outskirts of the town as far as possible to ensure good quality of living and good quality of life within the residence and even to ensure that the industries would have more space to thrive in the outskirts of the city. So, he ensure that there would be adequate lung space as a break between the central city and the protected green belt would act like a buffer zone and plus, it will act like a lung space for the residential area, as well as the central city which is nothing but the commercial district. So, this is how it would be. This is the central city we see with skyscrapers,

here you have the green belt which is the buffer zone and the factories outside and there are the different residential complexes around. You have apartments, you have single unit family homes depending on different economic strata and there was green belt here and like you see, this green belt here was constructed with no other purpose than to provide for as in air purification system. This is the central city, a sketch of it, tall skyscrapers with a large open space to provide a flow of light and air and surrounded again by small shrubs sort of things, trees to provide for relief. Again, every thing that Corbusier had done in terms of a green space within his urban planning was all planned and thought for and not done just because greenery is good or reminds us of a rural dwelling. The buildings in the central area were raised on stilts, so as to leave panoramas of unbroken greenery at ground level. The general impression was more of a city in a park than of a parkland in the city. The city espoused space, speed, mass production, and efficient organisation, but also offered combination of natural and urban environments. The criticism for this concept was; Class based conception of life - different classes being separately housed. Doubts were expressed about the scale and degree of centralization. Like, he clearly demarcated tenement housing from single family housing to multiple family housing. So, when this classification was so stratified, it obviously creates a class difference in any city scenario and another thing is, when you think of tall skyscrapers; What are the offices that are going to be housed there? Are the commercial districts also going to be the same? So obviously there was a doubt with respect to the, how centralized is it going to be and about the scale of the centralization?

This Plan Voisin in 1925, he actually reworked on the plan of the Radiant city and he applied it to a section of paris. He decided that based on the criticisms and other things, that what changes he could make to make the radiant city a better one. 18 double cruciforms, 60 - storey skyscrapers. You can see the cruciform over here, it is laid out on a cross, they are placed in a orthogonal street like grid and a park like green space. Three clusters of luxury apartments, there you can see them. The street system, he gave a lot of importance to, because he knew that automobiles were basically the future and its not like easily to be said. If you want to have a large city, it is not possible to have it completely pedestrianized. Heavy traffic would proceed at the basement level, lighter traffic at the ground level. Fast traffic should flow along limited access arterial roads that supplied rapid and unobstructed cross city movement. Pedestrianised streets, wholly separate from vehicular traffic and are placed at a raised level, so as to ensure the safety of both the pedestrians and to ensure that vehicles don't have to go at a slower pace. The number of existing streets would be diminished by two thirds due to the new arrangements of housing, leisure facilities and workplaces with same-level crossing points eliminated wherever possible.

So critics attacked its focus on the central city while land values were highest and dislocations most difficult. The creation of vast empty spaces in place of close knit streets with their varied civic life. So, again here it was criticized that, by doing this, by having a completely centralized sector in the centre with skyscrapers, we are creating a steep difference in the land value. So, in the centre it would be very expensive, even the parking of vehicles, everything would be expensive. Even the commercial area there, to sustain that area would end up being more expensive and because of everything being on still on a higher area, they would end up being vast empty spaces instead of the socially feasible close knit streets. By having everything raised on stilts and raised platforms, a sense of connectivity was lost. Everybody was on their own plain doing their own things, so a kind of connectivity, a discussion or a dialogue between different players in the urban sector was not happening. Everything was so mechanical.

The next concept Le Corbusier suggested is the 'Linear Industrial city'. Leaving the evils of the sprawling town, the new industrial communities are located along the main arteries of transportation i.e water, rail and highway connecting the existing cities. Factories are placed along the main arteries, separated from the residential section by the highway and a green strip. The residential areas include the 'horizontal garden town' of single houses and vertical apartment buildings with civic center. Sports, entertainments, shopping and office facilities are distributed in this district and all community facilities are placed within an ample open space. So, again this city was created keeping the criticisms from the past two layouts that he had suggested.

Finally, the Radiant city. He rearranged the key features of the Ville Contemporaine. The basic ideas of free circulation and greenery were still present but the juxtaposition of different land-uses had changed. For example; the central area was now residential instead of a skyscraper office core. So, now the role was completely changed, because of having the skyscraper in the centre, everyone was worried about the land value and creating of empty spaces around. So, now he made the residences plank in the centre.

If you look at the elements of Corbusier's plan; Very high density - 1,200 people per acre in skyscrapers. Overcrowded sectors of Paris and London ranged from 169-213 per/acre at the time. Manhattan has only 81 people per acre. 120 people per acre in luxury houses, 6 to 10 times more denser than current luxury housing in the United States. Multilevel traffic systems to manage the intensity of traffic.

The Analogy of the city with the abstract image of a man. The skyscrapers or the business area of the Ville Contemporaine were rearranged away from the city centre at the head, the body was made up of acres of housing strips laid out in a stepping plan to generate semi-courts and harbours of greenery containing tennis courts, playing fields and paths. The traffic pattern is

basically an orthogonal system with superimposed diagonals and the civic centre is on the main axis. Light manufacturing, freight yards and heavy industries at the bottom.

So, his analogy with the body started at that point of time, for a city to work, for an urban fabric to work where man lived, it had to have some similarities with the anatomy of man. So, he decided that the commercial would be the head, the body would be the residential area set aside in different levels and the traffic pattern was going to be the nervous system and the light manufacturing, all of that would be the foot of the or the bottom of the body. These are the elements of Corbusier's plan, access to green space between 48% and 95% of the surface area was reserved as green space which was very high considering Le Corbusier's plan because he has never given importance to green space other than it's basic requirement as a cleaning tool in an urban fabric system. So, this green space was provided in different forms, in the form of gardens, squares, sports fields, restaurants, as well as theatres with no sprawl, access to the 'protected zone' i.e the greenbelt zone is quite quick and easy. So, this was a completely, this layout was suggested on a vertical basis. The logic of increasing urban density, the more dense the population of a city is the less are the area, the distances that have to be covered. Traffic is increased by; the number of people in a city, the degree to which private transportation is more appealing (clean, fast, convenient, cheap) than public transportation. The average distance people travel per trip. The number of trips people must make each week. Before public transportation became quite strong and solid and then the advent of the automobiles, that's when all the cars increased. The number of cars completely increased because it was buyable, doable and cheap maintaining it and at that point of time, even fuel was inexpensive. So, having a private transportation proved to be cheaper than using public transportation because the government had still not invested that kind of money to develop public transportation. The moral therefore is that, we must increase the density of the centres of our city, where business affairs are carried on.

Case Study of Chandigarh

We will go on to the case study of Chandigarh which was completely one of Corbusier's best attempts of urban planning and a successful model to the most extent for India, post-independence period where India wanted to project that we are still a superpower or we can be a super power even after the British left us and this was our way of showing that we are going to compete into the modern scenario. Since Punjab was divided into two parts, the capital was left in Pakistan therefore Punjab in India required a new capital. The first master plan for the new capital was assigned to American engineer and planner Albert Mayer, who was a friend of Clarence Stein of Radburn fame in New Jersey. He worked on the masterplan with his closest assistant Matthew Nowicki, until the latter died in a plane crash in 1950. His duties were to take the form of architectural control of the city. Mayer wasn't new to India. In

December 1949, when the Punjab government approached him for the Chandigarh project, he was already associated with a rural development project at Etawah (Uttar Pradesh), and preparation of master plans for Greater Bombay and Kanpur. Mayer was thrilled with the prospect of planning a brand-new city, and he accepted the assignment although it offered him a modest fee of 30,000 dollars for the entire project. His brief was to prepare a master plan for a city of half a million people, showing the location of major roads and areas for residences, businesses, industry, recreation and allied uses. He was also to prepare detailed building plans for the Capitol complex, city centre, and important government facilities and architectural controls for other areas. The master plan which Albert Mayer produced for Chandigarh assumes a fan-shaped outline, spreading gently to fill the site between the two river beds. At the head of the plan was the Capitol, the seat of the state government, and the city centre was located in the heart of the city.

Two linear park lands could also be noticed running continuously from the north east head of the plain, to the south western tip. A curving network of main roads surrounded the neighborhood units called Super blocks. First phase of the city was to be developed on the north-Eastern side to accommodate 1,50,000 residents and the second phase on the South-Western side for another 3,50,000 people.

So, this was the fan shaped layout that we were talking about and this was the centre, where it was considered to be city centre in the heart of the city and this was the super block where you had the green belt and in the centre you had a water body or stream like sort of a thing which was later converted to another green belt. So, this superblock was going to sit in different parts of the city to provide the residential layout of Chandigarh. Mayer liked the variation of Indian streets, offsetting and breaking from narrow into wider and back, and thought that, they were appropriate to a land of strong sunlight, at the narrow points, his house design involved an inner courtyard for ventilation with small openings on the street side to protect privacy. "We loved this little inner courtyard" Mayer wrote, "for it seemed to us to bring the advantages of coolness and dignity into a quite small house." Another element in planning was to place a group of houses around a not very large court with the ends somewhat narrowing, which could serve as a social unit- i.e a group of relatives or friends or people from the same locality might live there, with the central area for play, gossip, etc. The neighbourhood units were to contain schools and local shopping centres. The flatness of the site allowed almost complete freedom in creating street layout and it is of interest to note that the overall pattern deliberately avoids a geometric grid in favour of a loosely curving system. The death of nowicki necessitated the selection of a new architect for Chandigarh. When Mayer resigned, the Indian authorities put together a new, European planning team. The two appointed administrators, verma and thapar, decided on the renowned swiss architect, Le Corbusier, whose name was suggested by

the British architects Maxwell fry and his wife Jane drew. Till now, Mayer had pretty much put the plan across with the super block; how is he going to have the city centre, how he would have the residential belt and the green belt and how the streets would have a kind of a play of light happening with widening them and narrowing them at certain points and at the narrow points, houses planned by Nowicki were using the concept of courtyards, again from Indian architecture but now that Corbusier had come into the picture, he was actually not very interested on coming into India and working on this plan because it would take him away from all his other works in Europe. Corbusier loft visions and Ideals were in harmony with our Prime Minister of that time, Nehru's aspirations. Le Corbusier requested the assistance of his cousin Pierre Jeanneret. Jeanneret agreed to live on the site as his representative and chief architect. As the most economical and readily available material for building at Chandigarh was locally made brick. The flat roof was employed throughout in Chandigarh housing because of its usefulness as a sleeping area because there the weather would get quite hot in the summers and the terrace proved to be a soothing cool sleeping area during summers. 70% of the building would be private in all the sectors. Residential plots ranging in dimensions from 75 sq Yards to 5000 square yards. So, Corbusier actually planned to a miniscule detail of every dwelling unit to the city, to the very important buildings of the government like the parliament and the secretariat. Le Corbusier was responsible for the general outlines of the master plan and the creation of monumental buildings while Pierre Jeanneret, Maxwell Fry and Jane Drew were charged with the task of developing the neighbourhood sectors with their schools, shopping bazaars and the tracts of government housing. In the program presented to the architects, 13 categories of houses were specified each corresponding to a level of government employment. Small window openings have been consistently employed. The city of Chandigarh was the culmination of Corbusier's life, the city is like Corbusier himself. Not gentle, very hard and assertive. Not practical, riddled with mistakes made not in error but in arrogance. It is disliked by small minds, but not by big ones. It was an unforgettable experience and the city too is like that, the man who adored the Mediterranean has found fulfillment in the scorching heat of India. Once he started, even though he was not even initially interested in planning Chandigarh, once he started with the plan, he really got into it and made sure that this would be a true culmination of his career. Again, here he continued his analogy with the anatomy of man or the biological analogy. Le Corbusier liked to compare the city he planned to a biological entity. The head was the capital, the city centre was the heart, the Institutional area and the university were the limbs. Le Corbusier identified four basic functions of a city; Living, working, circulation and care of the body and spirit. Each sector was provided with its own shopping and community facilities, schools and places of worship. 'Circulation' was of great importance to Corbusier and it determined the other three basic functions of living and working and when you talk of taking care of body and spirit, it means nothing but culture and entertainment. By

creating a hierarchy of roads, Le Corbusier sought to make every place in the city swiftly and easily accessible and at the same time to ensure tranquility and safety of living spaces.

The Periphery control act - this act came about in 1952 and it created a wide green belt around the entire union territory of Chandigarh. It regulated all development within 16 kilometers of the city limit, prohibited the establishment of any other town or village and forbade commercial or industrial development. The idea was to guarantee that Chandigarh would always be surrounded by countryside. So, Le Corbusier was literally a very controlling planner, he knew that the future would change, the population would change the layout and he wanted to ensure that would not be the case. So, he made sure that the government would pass the periphery control act which would actually restrain any construction around the city of Chandigarh upto a level of 16 km and beyond this, any new establishment could come about.

The concept of the sector; Le Corbusier and his team replaced the superblocks which was Neo's concept with a geometric matrix of generic neighbourhood units called 'sectors'. The new city plan represented a general city that would, like a roman military settlement, be placed on any flat piece of land, Le Corbusier claimed that 'the first phase of existence is to occupy space' and the new plan allowed for such an expansion. However, the city was planned to house 1,50,000 people in the first phase and realize between 1951 - 1966 that 5,00,00 people in its 'final stage'. So, initially it was supposed to be only 3,50,000 in the final stage but by now, over a period of time, that population increased to 5 lakhs. The neighbourhood by itself is surrounded by fast traffic roads called V3, intersecting at the neighbourhood junctions called the sector with a dimension of 800 by 1200 meters. The entrance of cars into the sectors of 800 meters by 1200 meters which are exclusively reserved to family life, can take place on four points only; in the middle of the 1200 m, in the middle of the 800 meters. All stoppage of circulation shall be prohibited at the four circuses, at the angles of the sectors. The bus stops are provided each time at 200 meters from the circus, so as to serve the four pedestrian entrances into a sector. Thus, the transit traffic takes place out of the sectors: the sectors being surrounded by four wall-bound car roads without openings (the V3s). So, this was actually a novelty in town planning which was considered very decisive that was applied to Chandigarh. No house or building door opens on the thoroughfare of rapid traffic. Taking Chandigarh as an example, we may see at once the democratic idea which allows us to devote an equal care to housing all classes of society to seek new social groupings. Each sector is designated by number, the capital complex being number 1, with the remaining sectors numbered consecutively beginning at the north corner of the city. There are totally 30 sectors in Chandigarh, of which 24 are residential. The sectors at the upper edge of the city of abbreviated size.

If you look at some 800 Hectares are spread over approximately 114 square kilometers of the capital project area. Major open areas include Leisure Valley, Sukhna Lake, Rock Garden and

many other special gardens. In addition, the sectors are vertically integrated by green space oriented in the direction of the mountains. Landscaping again, was a very important concept but like we have discussed, his landscaping was supposed to have only functional needs. Aesthetic suitability was not given that much importance.

Housing - Lower category residential buildings are governed by a mechanism known as 'frame control' to control their facades. This actually fixes the building line and height and the use of building materials. The 7Vs establishes the hierarchy of traffic circulation ranging from: arterial roads (V1) being the major roads connecting Chandigarh to other cities; V2 are the major avenues of the city; V3 are the corridors, streets for vehicular traffic; V4 and through V7 are roads within the sectors. So, this is the basic plan of the city where you have the sectors and green belts running across. The main architectural features you can see are the; Parasol Roof forming arches; the use of a double roof to help with the weather; Coloured Massive Pillars and a full height entrance.

The Open Hand - this sculpture was made my Corbusier to show the outline of a bird and it is named as the pit of consideration to make sure that it's a part of the landscape as well as something like a bird which is ready to take flight, even Chandigarh was considered to ready to take flight.