Urban Housing
Lecture 3

Impact of Traditional Lifestyle

The concept of traditional living was based on living in groups when societies were initially formed. This housing typology evolution was based on few different parameters such as; climate, topography, morphology, availability of local workmanship, availability of building materials and construction technologies. So let's take a look at one impact of traditional lifestyle with respect to the case of Tamilnadu.

Tamil Nadu has always been rich in cultural heritage, especially in the natural forms. It has long sandy sea coast which houses few mangroves, it has few rivers such as Vaigai, Kaveri etc which in turn enrich paddy cultivation. Tamil Nadu is also endowed with abundant forest resources. The only exception is their lack in fine quality of wood. Tamil Nadu is also rich in several mountain ranges which separates Tamil Nadu from several other states, like how Tamilnadu is separated via mountains from Kerala. These are the possible settlements for the indigenous people in Tamilnadu.

Life was very difficult with regard to the scarcity of water. They started building a 'community well' so as to save water. However, this concept mediated people to settle around this community well, this gave birth to the concept of clustering. This caused people to come together in order to form groups that shared water amongst themselves and other amenities as well.

A state like Tamil Nadu with scarce building resources, end up using the naturally available building resources such as mud. Mud architecture was found to be feasible, especially when accompanied with the rice husk that acts as a binder, proved to be a cheap and inexpensive building method at that time. Few rich families, used to use decorated sun dried bricks for the purpose of a luxurious appearance.

Since wood was not available in abundance, only the wooden beams and columns that supported the roof were made of wood and the remaining reapers on the roof were made of bamboo structures.

In the style of Tamilnadu, the entrance became a sense of auspiciousness and a composition of welcoming the guests. This eventually led to a lifestyle of co-existence. For instance, a carpenter who does work related to all ploughing, bull carts and other related activities, he inturn is accompanied by a blacksmith who does iron nails, special fixtures for building as well as bullocks and who is inturn accompanied by a potter who does pottery work through wooden moulds for the roofing structures. So, this entire co-existence is related in housing typologies, where you can find a potter's house, a weaver's house, a carpenter's house and different ranges of houses exhibited.

Mud flooring along with mixing cow dung became a very innovative aspect as seen in the above image. Cow dung slurry was mixed and refurbished everyday, keeping in mind it's antiseptic values. Most of the roofing system were thatch, as seen on the left top corner of the image above. This was inexpensive and helped keep the house cool. Back then, only the rich could afford a roof over their heads, the roofs designed needed approval. Palmera and Bamboo were abundant as well, the people started to induce a micro economy. They started taking these palmera and bamboo plants and began to weave them into mats. This also became an essential micro economic factor. The spaces of houses internally, depended on the type of occupation that was being practised by the people of the household. Lime plaster also became a decorative agent that was used for both small and big houses. This proves that in traditional impact of lifestyle there is no spectrum like LIG, MIG, HIG i.e what we find in urban societies today. This spectrum of lime plaster was used in all the sectors of the society but in a different scale. For instance, a potter or a weaver's house would have just the plinth of the house with lime plaster while the mansions would be decorated with lime plaster.

Eg: Chettinad house, Potters' house, weaver's house, Agraharam etc

Such houses have an 'entrance thinai', for welcoming the guests, an internal courtyard which is also to control the climate factors, kitchen storage areas etc. Such typologies are derivative of rural lifestyle. Any housing typology that is to evolve should the basic need of the housing or the occupant and the housing typology should match it's need.

SLUMS IN INDIA

A compact settlement of at least 20 households with a collection of poorly built tenements, mostly of temporary nature, crowded together usually with inadequate sanitary and drinking water facilities in unhygienic conditions.

Source : Government of India. (2010), Report of the committee on slum statistics/ census.

So we will get through or rush through slides which will exactly tell you the scenario of urban housing or slum housing in India. So here, you see a train track that divides the slum area into two. You can actually envision slums as different cities that work on their own. So in an urban context, this could be a street or a road with rows or lines of row houses. An internal community, cluster courtyard where to 2 or 3 units share a common space and that space is especially for storing water or other utilities. One difference according to the urban condition is that, the level of the floor is raised from the level from the level of the house, which means that there is a possibility of water getting inside the house. These would be termed as, modern colonies or historical colonies. They have a verandah before their houses. Any version of urban housing context could actually be put back to the concept of slums. The only thing is, the way we look at slums.

Here are some facts that depict that, slum population has increased from 73 million in 2001 to 93 million in 2011, which only goes to show that, almost half the population of mumbai are living in slums when compared to the other cities that possess a marginal number of people living in

slums. But over the years if the planning policies are not going to be innovative in addressing these housing situations, this going to rise more than 50, 60, 70 percentage.

WHY DO SLUMS PROLIFERATE IN INDIA ?

So the first reason being, migration i.e when more people come in. When more people come in there is a lack of economic growth which means that these become stagnant in terms of economy. They don't have any job or a place to live. This also leads to income equality. When a person of HIG can afford a high rise, this person can only afford a shack. This marginalization leads to social inequality. This in turn leads to Poverty and Lack of affordable housing, which finally concludes with Slum formation.

With all of these, when there are obsolete and excessive regulations, this also leads to slum formation. When the policies aren't right and do not deal with the problem of lack of affordable housing, it leads to slum formation.

WHY ARE SLUMS PROBLEMATIC?

> Detrimental to health, the unhygienic conditions, the unsanitary conditions prove to be causing more infant mortality rate within the particular neighborhood.
> Locking land for infrastructure/open spaces or especially breathing spaces within a slum community.
> Insecure tenure
> Discrimination. So when people are marginalized that eventually leads to discrimination.

Can we say that Slums are?

> Slum of hope
> Solutions to government failure
> Community
> Eco-friendly/sustainable.

We cannot define slums on any of the above mentioned factors. It depends on the way we look at slums, you can define them to be as ways of hope or failure of governmental policies or it can be a community as well.

SLUM REHABILITATION SCHEME, MUMBAI

Slum Rehabilitation is as simple as rehabilitating the population to another site so that they create building blocks to give a decent standard of living and they put them back. There are two

types, Insitu rehabilitation and General rehabilitation. Where, in Insitu rehabilitation, people are rehabilitated in the same side and in the external rehabilitation, people are moved to different sites.

This map reveals that Mumbai has grown wide enough, this state has many pockets of slums located all throughout. So, to address such a situation where 50% are living in dilapidated conditions.

HOW DOES THE SLUM REHABILITATION SCHEME WORK?

> Interestingly, the first to get agreement from at least 70% of slum workers. which means that the entire slum community has to be asked that first on whether they are going to accept this rehabilitation scheme or not.

> Next, Shift slum dwellers into transit accommodation and demolish the slum.

> Build new tenements for slum dwellers, which means that you need to construct new housing components for the slum dwellers.

> Build (and sell) sale components as many as the FSI the land allows. So always, FSI would be given as an incentive in this scheme. So that, when there is an increase in FSI, you can build sale components where you can sell it to the middle income or the high income or any other way of proposing. If you cannot or you don't want to weld on your own site, there is another option which tells that you can transfer you development rights or your additional FSI to another site which is to the north of the plot and you can sell it in a market a higher price. So that the profits gained over here can actually move into building these rehabilitated components i.e,

> Sell the rest of the incentives FSI or use it in other project sites to the north of this site = Transfer of developmental rights
These are some of the rehabilitation schemes by the rehabilitation authorities of Mumbai
All you can see the from the image above is that they have successfully incorporated some micro economic transactions that actually work within the site. Generating employment and operating opportunities, also form an important part of slum rehabilitation scheme.
A regenerated housing with a proper flooring and decent housing unit.

SLUM UPGRADATION

Slum upgrading consists of physical, social, economic, organizational and environmental improvements to slums undertaken cooperatively and locally among citizens, community groups, businesses and local authorities. which means that they are not going to be taken from one site

and put onto another site or any complete rebuilding process is going to happen. It is just that, whatever repairs or renovations or any smaller scale of upgrading works is going to be done is taken care in this scheme. The main objective of slum upgrading is to alleviate the poor living standards of slum dwellers.

REASONS FOR GROWTH OF SLUMS

> Unwanted products of urbanization
> Rapid urbanization
> Lack of planning

FORMATION OF SLUMS

> Population growth due to migration
> Breakdown in housing
> Encroachment on unused land owned by local body
> Occupied by casual workers

CONDITIONS IN A SLUM is basically;

> Lack of proper lighting and ventilation
> Unsanitary and filthy environment
> Lack of water facilities which eventually results in;
> Results in malpractices affecting the stability of the city

So because of these malpractices few people in the slum are again seen to be marginalized from the society which eventually leads to social stratification.

SOLVING PROBLEMS IN A SLUM

Are there any solving problems of a slum? If there, there is no particular way to solve a problem in a slum. Again slum housing is also a process, but one major you could do is; Decentralization. When there is a city, people move from the outskirts and villages to get into the city searching for jobs, the urban core, there is no place for them and hence they settle down in small clusters in and around the city. To avoid this problem, create different urban cores so that population actually moves to these different urban cores, this process is known as Decentralization as depicted in this image.

> Control of migration- So this decentralization could actually control migration to a particular level.
> Lack of political pressure

> Slum clearance - There are a lot of areas available in India, which are in the focus of builders so that to realize profits.
> Redevelopment program
> Finance for clearance and rehabilitation
> Low cost techniques
> Target population - where you could provide housing.
> Control of rents
> More land, finances and power to redevelopment boards

When it becomes a top down approach which means that the power of the redevelopment boards is very less. Now, when the power is given more, the action could be taken accordingly at the lowermost level of the state itself.

Sites and Services

Moving to the third scheme of **Sites and Services.** This is quite a difference from what we have seen before, The realization that providing a "complete" serviced house by government agencies is not possible. So when the finances within in the govt or the capital inflows are very less to provide a complete house. In that case, the only solution is provide a service core. So here, a shift in focus from supplying a fully serviced house to that of providing only services land. So here the government and other housing agencies, instead of providing housing, they provide serviced land. So let us look at how do they provide the serviced land; Sites and services scheme allows people to buy a plot with sewer, electricity and water connections provided at a minimal cost which means that a wall which has the provision of all the sanitary features; sewage facilities, water facilities and sanitary core is being provided around which the houses can be built. Next is Latrine, waste disposal becomes very important in this wear. A core which is a sanitary core where a bathroom or a toilet is provided and the house is built around it.

Roof frame or a Core house which means that these can be different parts, so either one room of the housing unit is built with a bathroom where the walls need not be built. So roof is a difficult task for any building activity which means that it requires skilled labour. So only the roof and the concrete structure which is being provided where the in between walls have to be constructed by the occupant himself. In simple terms, Sites and services means you give the occupants/ beneficiaries a site or a serviced plot with a utility core or you can also give a single room and in due course of time the occupant through his income levels, generate more income or more revenue to develop further his own house.

SITES AND SERVICES: THE BASIC PRINCIPLE

The key components of a housing scheme are; the plot of land, the infrastructure (like roads, water supply, drainage, electricity, or a sanitary network) and the house itself. Various inputs that go into them include finance, building materials/ technology and labour.

Thus, the sites and services approach advocated the role of government agencies only in the preparation of land parcels or plots with certain basic infrastructure, which was to be sold or leased to the intended beneficiaries.

SHORTCOMINGS OF THE SITES AND SERVICES APPROACH include;

> Location - means that from the city center the sites and schemes are located at a distance away which means that in the peripheral condition there is low cost land available, which means that when the beneficiaries are put in this, the transport required to move into the cities compensate which means that it is not beneficial for the occupants.

> Bureaucratic Procedures : Take a long time to establish a particular scheme. So the delay of those processes and bureaucratic procedures and pitfalls are also shortcomings for the Sites and Services approach.

> Standards : they provide a decent standard of living which means that there is an increase in cost and this cost has to be borne by the occupant himself which becomes difficult in this case.

> Cost recovery : This takes a long period of time. The cost recovery over a period of time is also less.

> Delay in provision of services

Let us take a look at an example which might be considered to be a successful example by designer AR.B.V.Doshi.

ARANYA LOW - COST HOUSING INDORE

Aranya housing project which is located 6 km from the center of Indore which is in Madhya Pradesh.

> Client - Indore Development Authority

> Principal Architect - Balkrishna Doshi

> Total Built up area - 1,00,000 metre square

> Project Cost - Rs. 100 million

> Year of completion - 1989, this was completely high density and low rise housing.

> Award - Aga Khan award for architecture in 1996

So the main **objectives** for it **:**

> To improve and upgrade the existing slum area

> To provide serviced sites for new housing developments instead of building complete houses

> To provide for 6,500 residential plots ranging in size from 35msquare for EWS to 475 msquare for high income groups

So now, the first plus point in this project is that, they cater to the different spectrums of society, ranging from 35 meter square plot to 475. Bringing the communities together inside a particular plot, providing serviced plots becomes the first advantage of this project and the financial aspects of this project, is taken care by the public funding itself. Out of which 50% are international sources and the remaining are shared between the local and the natural resources.

FINANCIAL ASPECTS:

> The idea was to mix some middle income plots with EWS plots to use the profits to raise capital towards development of local trades.

> Funding - 100% public sources

The **general objectives** of this housing is to provide;

> A sense of continuity, in terms of establishing a township.

> To give the community a particular character, especially when in relation to the built environment and the people.

> To give a balanced sense of community by mixing different social income groups together, in a particular compound.

> To promote good living environment.

> and to give fundamental values of security to the occupants themselves.

The evolution of master plan in stages suggest that;
Initially the plan was developed by the Indore development authority, where they simply clone stamped different open spaces in a grid way which is a replication of nothing. However, when this plan was transferred into the hands of architect Toshi, the plan began to take shape of a spline with different hierarchies of streets and open spaces. Slowly, this master plan was redesigned according to the orientation; climatic factors. This was done to reduce the heat gain and increase the shading.

The final stage of proposal is the Master plan which includes a Central Spine, different formation of sectors, different hierarchies of open spaces, building blocks and commercial blocks in and around the site.

With regard to the amenities, it was basically divided into four stages. Initially the community was planned into 4 sub centers, which was a formal organization of planning. This was grouped into local sub centers.

Eventually, this started dispersing into smaller random ordered which was distributed evenly, informally created and improved with regard to accessibility from the center. This was the second stage of layout.

Finally, the layout which incorporated a few principles of planning possessed a central spine which had a few green spaces and the community facilities that belonged to the lower level were scattered among these green spaces, so that the pedestrian linkage is more toward the central spine.

The accessibility to the open spaces over here, reveal that; take the simplest possible house, so in one minute radius, these are different radius of 1, 2, 3, 5, 7 and 10. The concept of neighbourhood has been defined through the walking distances. At a distance of 1 meter, you can find small public squares were people conglomerate. At a radius of 3 minutes, you can see a health center and few green spaces for this entire community to share. At a radius of 5 min, you can see a secondary primary school. At a radius of 7 to 10 min, you would notice central facilities, and other clusters. At a radius of 10 min, you can see a commercial spine, a sports field and different hierarchies of open spaces at a bigger scale which is about 10 - 15 minutes walking distance from any house.

THE NEIGHBOURHOOD CONCEPT :

We were talking about this in the first chapter, where the neighbourhood is; this is mostly for the slum people.

Concept :

So people moving from a slum have been, eventually focussed on informal way of planning, a community which is organized in clusters. They have different defined principles where they have been living. So now, to get them into a township project of about 85 acres is the key challenge for the architect. So now here, the inspiration was from existing slum settlements in Indore

Characteristics :

The pattern of the plan what you looked at, in the last slide, was basically based on the organizational patterns of slums and the characteristics which it possess has Mixed and multiple land use as you would see in slums, small neighbourhoods and houses extending to the outdoors. The reason for not going into a high rise is to create neighbourhood clusters. Small shops operating within congested areas, trees planted in public places, to promote environmental sustainability and streets accommodating social, economic and domestic activities in and around, also form a conglomeration space within the society. So all these characteristics constitute what we call as; neighbourhood concept. It also gives a certain identity for the neighbourhood to be.

SITE ANALYSIS

Basically based on criteria of selecting the site which is based on the Delhi- Mumbai industrial corridor. Any housing, township site would be selected on the basis of the developments happening on the corridor. So here, the major highway was the Delhi - Mumbai highway running through the city in the north south direction, so it was developing industrial area. So the primary reason for the housing settlement to be located at six kilometers from the industrial site, areas and the indore city and the residents of this township could have an employment generation through access to these industries.

At the Township level :

The aim was to create a central spine because the master plan was informal in nature and at a sector level this enabled segregation of pedestrian and vehicular movement which we will be looking at in future slides. So, the basic or the conceptual zoning of the entire site was to place six different housing neighbourhoods with a central cluster which is commercial district.

The placement of housing facilities was in such a way that, the EWS and LIG were uniformly distributed and it constitutes about 75% of the housing. So this disperses almost throughout the site where the remaining 20 % of the MIG and HIG are close to the main Arterial road and in the Arterial road itself. So, when all these combined together, this becomes the social hub for all the

people to come in. So, in terms of breaking the barriers or to have a township which is more permeable in nature so that the social stratification is avoided, this proves to be an effective planning technique.

So here, let us take a look at the **HIERARCHY OF ROADS** that have been used; So the sixty meter wide road is nothing but the Arterial road, then you go on with the thirty meter wide road which surrounds the entire site. Next you go on with twelve meter wide road which forms the sector level roads connecting to the major spine. Eventually this marks the central spine which is connected to all the sectorial roads. Next you connect into the sector, from the sectorial roads. From the sectorial roads you go into the clusters with this 9.5 meter road, within the clusters you again, have 4.5m road which establishes the connection between different row houses and finally you come back with a smaller scale of housing where you get these 12D sacks or backyards which are 1.5m wide.

So this hierarchical planning of the street widths also mention the planning principles dictated by different housing units.

CIRCULATION AND LINKAGES

To improve pedestrian access and to segregate the vehicular and pedestrian access, the site proved to do much more than what was expected. So the internal roads that end up in a square or community space, draws people in and out. So, from the major Arterial road and the sectorial road, there were few spaces which actually get accommodated in a central square. So, that becomes the accessible space for the community in terms of usage of social activities.

CLIMATE RESPONSIVE FEATURES that are incorporated in the site are;

To maximize the light gain and to reduce the heat gain, the buildings were oriented mostly facing north-south. So that, there is minimum amount of radiation entering in and the planning principle was based that the sun angle, provides the shading capacity for the entire street. The street and the entire houses were organized in terms of two principles; *To reduce heat gain and to provide self shading.* These were the two climate responsive features, that was incorporated in this building and the Planning layout is flexible.

SITE AND SERVICE SCHEME OF DESIGN

It has a core house with a toilet and the first permutation was to have an open verandah. This eventually can develop into different typologies; where you can have an entrance verandah, a single common multi functional room with a toilet core, a community or a courtyard in between two units. The only thing is house grows in size, vertically as well, in different typologies. This flexibility in housing, makes Aranya housing a process rather than simply being a product.

SITE AND SERVICE APPROACH :

Where you can see, the serviced plots are being given to the residents with the building of the service core. In this case, the toilets and the bathrooms were build around which the houses can easily be built in service lots. So this becomes the living room and the kitchen where you can access this. So every unit is being provided with such a service facility and here is one example of a constructed house. So for easy access, houses were clustered in groups of 10 and a septic tank was provided for every two clusters and to economize, twenty toilets are connected to one manhole. So all these services at a street level and a more higher scale, prove to be more efficient. Finally, the analyis of the Topography, tells that there is a slope towards North West. So, the orientation of the plan was also in such a way that, higher income groups who use maximum amount of water or who uses more water were located at the higher ground level to generate large flows and the lower income groups who use comparitively less water, were placed at the lower level of the ground. This analysis of the slopes and the placement of the buildings resulted in 10 - 15% of water usage savings.

The remaining aspects that also have to be considered when housing becomes a process;

TREATMENT SYSTEM :

> For conveyance system, a wet well and lift station was constructed near the final manhole.

> Oxidation : pond, located on the NW corner of the site, removes biological oxygen, simple in operation, effluent suitable for disposal

STORM WATER DRAINAGE SYSTEM :

> Very efficient and facilities healthy and clean living

> Combination of underground and surface drainage system

> Underground used for wider roads

> Surface drainage used for internal roads

ELECTRICITY:

> High income and middle - income groups were provided with overhead cables.

> Economically weaker sections were provided with underground cables.

The above three, have also been effectively managed by the architect at the planning stage itself.

FOUNDATION : The common materials that were used resemble the local, indoor architecture which means that the finishes were bright in color in the facade, railing and grills, were actually seen in the old houses at Indore. So, when taking a housing project, especially for a slum rehabilitation or an upgradation or a sites and services scheme, the provision of houses should be dictated by the character of your neighborhood or the city as well. The foundation and the structure was basically reinforced in concrete and the foundation was piles in concrete. **Structural members** were plinth beams and the walls finished in bricks. Residents were free to use any material like brick or stone that were locally available, so that it matches the rustic character of Indore city.

Few other **LANDSCAPE FEATURES** were also provided; especially in terms of working courtyard clusters, a public pathway to walk, internal common courtyards, a bigger playground. Different hierarchies of spaces were also provided with different landscape features after a proper analysis of topography.
So finally, to conclude this housing of Aranya proves to be kind of a successful model of Sites and services scheme, especially being consistent in terms of replicating the architecture of a city. Aranya has established itself in different scales, especially through the scales, from the city level to the smallest level and also in provision of services and a decent standard of living, the occupants built themselves proper houses, matching the character of a city. It is also proved to be Cost - effective construction materials and techniques have been adopted. The major point which one has to note in housing is that, the Planning is "whole to part" and part to whole, where all the scales are multiple scales which have been established within the city itself, i.e from township level to dwelling unit level. Staggered roads, prevents thorough traffic, reduced speed of vehicles and it has also taken care of Climate responsive and site responsive design.

So the totality of the design has made Aranya a very good example of Sites and Services scheme and a successful model to learn from.