Transforming Habitats: - Case Study of Mumbai

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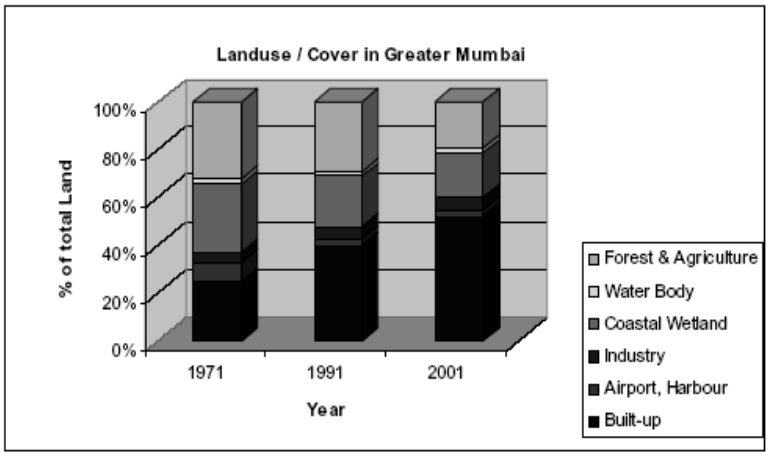
Introduction

Mumbai is one of the top six largest agglomerations in the world is situated on the western coast of India, in the state of Maharashtra. It is often referred to as the financial capital of India. It is a coastal city of around 18.1 million people with a deep natural bay.

Mumbai has its own ecological identity expressed through its natural landscape. Mumbai was an excellent example of unique natural beauty. Mumbai spans over 437.77 sq kms in area.Originally composed of seven small islands, land reclamation and infill carried out during the 18th and 19th century integrated these islands into a continuous peninsula (Deshpande and Arunachalam, 1981). Mumbai accounts for one-tenth of factory employment and value-added manufacturing, while the port handles more than one-third of the total value of foreign trade (Deshpande, 1996), making the Brihan Mumbai Municipal Corporation one of the richest, with a budget of more than USD 1.2 billion (Mohan, 2003), exceeding the budget of nine States and Territories in the Union of India. This economic growth is sustained by and in turn, drives the steady influx of migrants from rural and regional centers of the country. Consequently, the Mumbai Metropolitan Region (MMR) is one of the fastest growing regions of India. Its population increased from 7.7 million in 1971 to 18.3 million in 2001 (Census of India, 2001) and is projected to increase to 22.4 million by 2011(MMRDA, 1999). High population growth, inward migration and urbanization put stress on resources. Increasing economic activity and per capita income further stresses the resources and has resulted into changing land-uses pattern.



(Source: -Mumbai city development plan 2005-25)

This development process changed the character of the natural environment of the region. Land reclamation, vegetation clearances, changes in land use etc. created a new man-made environment. The ecology of the region also adapted to these changes. In the last four decades the population of Mumbai has been increasing rapidly. To cater this sudden rise in population, rapid and unplanned development took place, which has led to serious environmental degradation.

Impact on coastal ecosystem

In the past 10 years alone, built-up land in Mumbai has soared nearly 114 percent, in the same period, forest and wetland areas shrank by 35 percent (H.P.Sawant.2004).

Mangrove ecosystems which exist along the Mithi River and Mahim creek are being destroyed and replaced with construction. Hundreds of acres of swamps in Mahim creek have been reclaimed and put to use for construction by builders. It is estimated that Mumbai has lost about 40% of its mangroves between 1995 and 2005. Some to builders and some to builders and some to encroachment (slums). The Bandra-kurla complex was created by replacing such swamps. The systematic destruction of about 1,000 acres of the city's mangrove cover - what's left, about 5,000 acres, is under threat - has deprived Mumbai of its natural flood-barrier and silt trap. July 2005 flooding is a result of ecosystem change.

Mumbai is not a result of planned development but an incremental one .the building legislations and byelaws plays a decisive role in its making.

Impacts of legislations on the urban form of Mumbai

The in-migration combined with poor land supply due to some of the most extreme topography and excessive government interventions in the form of regulations are the main reasons for the existing urban form. Comparing Mumbai to other similar sized Asian cities, Bertaud (2004) found that within a radius of 25 km from the city centre, sea and water bodies occupy 66% of the total area for Mumbai while it was 22% in the case of Jakarta and 5% for Seoul. Cities with such extreme topography often compensate for the lack of land by allowing the height of buildings to be increased. In the case of Mumbai however, this is not the case. While the Floor Space Index (FSI) in most large cities varies from 5 to 15 in the Central Business District (CBD) to about 0.5 in the suburbs, in Mumbai the FSI remains uniformly fixed at 1.33 for the Island City and 1.00 in the suburbs (Alain Bertaud, 2004).

The primary reasons for this are government policies favoring distributed and equitable growth across geographies. This is affected by attempting to “restrict the growth of population in the larger urban conglomerates” (Planning Commission, 1978) and redirecting development to regional centers by extending tax benefits to industry. Furthermore, investments in urban centers such as Mumbai is restricted through urban planning policies like the Urban Land Ceiling Act (ULCA), that result in an undersupply of land and, stringent FSI regulations which monitor the intensity of land use (MMRDA, 1973). The ULCA caps the amount of land that can be accumulated by the private sector and transfers large urban land holdings to the public sector creating monopolies that have had a history of inefficient and corrupt distribution mechanisms. In doing so, it prevents the free trading of land thereby eliminating an important mechanism for discovering efficient land use. Mumbai also has stringent environmental regulations such as the Coastal Regulation Zone (CRZ) which restricts any development within 500meters of the high tide line Absence of planned development leading to fragmented development resulted in stagnation of water in undeveloped plots. Degradation of environmentally sensitive areas in the Salsette was due to lack of policies attributed to the politician-builder-owner nexus. Fundamentally opposite issues of economics and ecology leads to damage of ecological balance of the area. Chaotic growth along the coast- different government authorities (BMC, MMRDA, BPT,etc) has own land along the coast and each has at different times entered into lease agreement with private developers. Absence of definite control rules for the use of water front areas. Only 30% of the land is available to the public, rest of the 7o% is under private use. Clash between the development plan proposals of 1991 –2001 and the CRZ notification, which was enforced in Feb.1991.Profileration of slums in undeveloped environmentally sensitive areas in the name of recreation. E.g. Esselworld. The Rent Control Act (RCA) initially drafted to prevent high rents. However, the RCA eventually ended up empowering tenants more than the owners resulting in restricted investments in the housing sector that eventually killed the development of a rental housing market. The RCA is also the reason for the Mumbai CBD being crowded with old dilapidated structures that cannot be demolished due to occupants who refuse to vacate. The Maharashtra Regional and Town Planning Act of 1966, employs the Term Development Plan and indicate a variety of things, but is a mere land-use plan. It also contains the Development Control Rules (DC

Rules). Which regulate the Character of buildings and density of population allowed in a specified area.

The City's godfathers who approved the Draft plan perhaps sincerely believed that the Plan would improve the quality of life but some of the prescriptions of the Plan have had the opposite. The prescribed density ceiling for ordinary housing was 200 tenements per net hectare. The FSI concept was based on the land price level and the population potential as assessed by the planners in pursuit of the decongestion concept. The high prevailing FSI in the Island city was reduced in the late seventies to 1.33, while it was fixed at 1 for the suburbs, and 0.75 and 0.5 for certain areas in the M, N, P (North) and R wards. Now since the situation is changed the plan and provisions must the reviewed.

Study area

The central suburb of Bandra provides a fascinating montage of these varying periods and settlement patterns in varying stages of stagnation and transition. This paper documents the historic village settlement of Chuim relatively untouched by the manic development all around it, the squatter settlements of Dharavi and the new Central Business District or the Bandra–Kurla complex, all in close proximity to each other.

The increasing mismatch between demands for land and housing through in-migration and poor supply have resulted in Mumbai having some of the most expensive real estate prices in the world. Unable to afford such exorbitant prices, access formal financing and in the face of a reduced public housing scheme, a large number of the urban poor are forced to live in slums.

The best example of this is Dharavi. Initially it was located at the outskirts of the city, the cities steady expansion had transformed Dharavi into its geographic center, placing it adjacent to a new CBD, the Bandra Kurla Complex (BKC). Well connected by roads, seaways and public transport systems, the BKC is only a 30-minute drive away from the international and domestic airports. This makes Dharavi a low rent slum in a very high rent suburb and its real estate, a potential gold mine.

Dharavi is termed as the largest slum of Asia, city records from 1985 place its population at 300,000 within an area of 425 acres (Warning, 1995). Located at the edge of coastal mangroves and hemmed in by major roads at the periphery the slum was originally a swamp inhabited by the local *Koli* fishermen in the 1950s. Regular infilling and tipping of waste filled up the swamp depriving the *koli* of their livelihood, and consequently displacing them. Their place was quickly taken up by the migrant potter and leather tanning communities from Gujarat and Tamil Nadu, respectively. Today Dharavi is home to a number of small-scale businesses such as garment manufacturing, waste processing, pottery, furniture design, finished leather goods and foodstuffs. Consequently, there are mixed infrastructure and labor needs with some units requiring electricity, some skilled labor and others just the physical space. Such an agglomeration consequently results in land sub-division and/ or the sharing of space so as to maximize returns. Needless to say it results in very interesting and divergent typologies. Often the manufacturing process of a product is distributed into modular sub-assemblies with the output units forming the input for other business units. This process helps de-risk businesses and share costs by maximizing the utilization of space through the creation of complex tenures. Furthermore, streets are often treated as an extension of the dwelling. During the working day or at times of festivals, activities often spillover to the outside and the street becomes a shared space between the dwelling and the public, in general. Again, this inversion of space creates very interesting architectural typologies and a hierarchy in spaces.

Construction activity in the Bandra-Kurla complex has come in for some severe criticism in the study as it has severely damaged the ecological system in the area. Describing the Bandra-Kurla complex as a "big scam'', Dr Untawale observed, "Mangroves in Bandra-Kurla complex along the Mithi River, which were quite healthy once upon a time, are shrinking in area due to deforestation, reclamation and pollution. There is also a large-scale development of slums,'' he said. The impact of all this is evident on the shore front at Prabhadevi

where all the plastic material and garbage comes and settles. “After taking up large scale deforestation and reclamation of this area, MMRDA separated one small patch opposite the BEST Depot, and developed it into Mahim Nature Park,’’ the study observed.
Earlier, a combination of coastal ecosystems and topography, colonization under the Portuguese and the British many vernacular settlements patterns existed giving a regional identity .A very few of the remained and the rest transformed by the cities quest for development one such vernacular settlement in the Bandra suburbs popularly known as chuim has been found in transition .

CHUIM

Chuim (300 yrs.old), a beautiful settlement to the North of Khar finds its place in the commercial hub of this area. In the early twenties it was like a typical English village. The citizens of Chuim were all Catholics. Originally converted by the Portuguese, then under British rule for over a hundred years. Earlier , village consisted of about 50 cottages, today has a Catholic population of 8000.

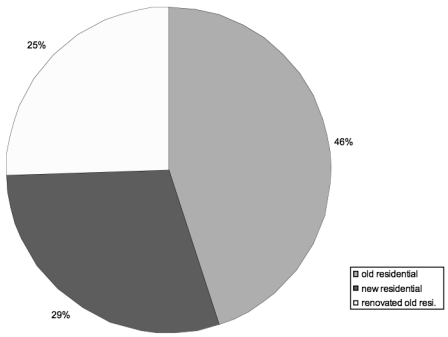
Existing settlement map and distribution of surface covers.
(Source: - Author)

The settlement
The general layout of the settlement is compact and located on a gentle slope oriented towards north –north east .Selection of this orientation indicated that a need for maximizing the air movement and effectively blocking the harsh monsoon winds from the south west. Summers are critical when heat as well as humidity is very high, adequate natural ventilation in buildings is essential. The settlement is characterized by narrow internal streets or lanes 1-1.5 Meters wide with broader main streets on the periphery. All major streets are oriented almost in the east –west direction .Compact settlement pattern generates a large thermal mass attenuating the external ambient conditions the street orientation and walls height to the width of a lane ensures the building facades are partially shaded by the overhangs or by the buildings opposite create shadow to the pedestrians and other social activities on the streets in hot seasons and acts to decrease the surrounding temperature.

The houses are built on existing topography characterized by linear plan form –axis corridor on one side and the habitable spaces on the other, pitched roof profile covered with terracotta tiles ,thick bearing masonry stone walls with mud plaster, timber works for railings and floors confines typical vernacular techniques of construction and defines the vernacular character. Many of them stand strong and good condition. This is the ideal way of building.

View of Chuim

A growing visual scenario in the settlement is that few houses suddenly seem out of place in their very own habitat. few houses are constructed new, and few renovated as per needs . Today ,there are 46% old, 24% renovated old and 30% new areas in the village.



The way in which the city of Mumbai and the adjoining areas are developed and transformed ,private developers executes tremendous pressure on this settlement for land, still the residents are trying to retain the inherited built form . It retains what has been lost by the city in its quest for development. There are beautiful 18th and 19th century structures, reminding of its glorious past. Till today, many of them stand tall and strong in spite of severe monsoons. But still the settlers have managed to keep it intact why?

The survey reveals that the major reasons are of rent control act and public participation.
The tenants pay rent of Rs. 40/- per month for a area of 1050 sq.ft. and enjoy all infrastructures at very low rates. Therefore are not interested to leave.

Residents of Chuim have formed their association to preserve and maintain the village neat and clean. In some cases the house is owned by the occupants. Their children are living in abroad and they want to maintain the character of the house. As per the need the house is renovated and maintained.

Impact of flooding

From the survey it is found that Settlement was not affected by 2005 flooding. Where as surrounding areas were worst affected. It shows that settlement has responded to the topography of the area.

CONLUSION

Vernacular settlements tends to evolve overtime to reflect the environmental,cultural and historical context in which it exists in contrast to planned architecture by architects and building knowledge , vernacular architecture is often transported by local traditions and is based on knowledge achieved by trail and error - handed down through the generations whereas planned development is a time bound process.

Vernacular architecture is a response to localized conditions, by changing the environment first we changed the architecture, then to fit the architecture we refit the environment and the circle goes on and on.

The policies should reduce inequity in society. Unfortunately, they don't. Instead, they increase or sustain the gap between the haves and the have-nots. Wrong policies lead to disastrous results. 60 percent population live in slums. Shouldn't they have a right over 60 per cent of the land in Mumbai?

Building regulations and an unresponsive urban government that constrained the supply of available land in the market and has contributed to urban form of Mumbai. Therefore, land allocation and the land use pattern in the urban areas have to be looked into.

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