

URBAN TRANSPORTATION IN MUMBAI

The need for an Integrated Hierarchy of Mass Transportation Systems

Introduction:

After the British East India Company moved their headquarters to Bom Baia, Bombay has been growing at an accelerated pace. It was the "Urbs Prima in Indis" of the British Empire, but its position as the First City in India, and the commercial capital of the county is being threatened, primarily because of its transportation problems.

Bombay - as it was earlier called, started as a cluster of 7 small islands, Colaba, Mazagaon, Old Woman's Island, Wadala, Mahim, Parel & Matunga-Sion. The intervening sea was gradually reclaimed to make it the consolidated land mass that we have today. Successive reclamations created the Backbay Reclamation and Nariman Point – the world's most expensive real estate.

Growth of Mumbai

The main reason for the growth and development of Bombay – now Mumbai – has been transportation. It was the fact that Bom Baia – as this port used to be called by the Portuguese – could be a better port that prompted the shift of the East India Company from Surat in Gujarat to Bom Baia. The trading pattern of the British was the export of raw material from India to their manufacturing units in England, and the import of finished products into India. However, their movement on land depended on slow animal drawn vehicles like bullock carts, and ferries. This was too slow for them, and so they laid the first railway track from Thane to the docks in 1853, and the Great Indian Peninsular Railway was born. Railway termini for both passengers and goods were located at a stone's throw from the port. As trade and commerce grew, it was logical for wholesale markets of all types to be located where trade was already taking place- in South Bombay.

Finally, as normally happens in the wake of prosperity, the tertiary sector- banking, offices, financial institutions, insurance houses, etc., also located themselves in the same area, induced by the economies of agglomeration. As this trend continued, the price of land began to go beyond the reach of the common man. Industrial and commercial uses therefore began to edge residential uses away from the Central Business District (CBD) in the south, along the railway tracks, and people began settling at increasing distances from the CBD, along the tracks. The growth was therefore along the tracks, and **because of** the tracks.

This resulted in a tidal pattern of commuting, where people catch the train southwards to their work centers in the morning, and then return to the residential areas in the evening. This tidal pattern was so marked that the directional ratio was 80:20 southbound in the mornings, And the reverse in the evenings.

Today, Bombay – re-christened Mumbai after the original Goddess Mumba, whose temple stands even today – is one of the world's largest, most crowded and most expensive cities in the world. Its 2001 population of 11.97 million is expected to increase to 22 million by the year 2011, at a growth rate of 1.9% per annum.



Source: UDRI

Bina C. Balakrishnan

Vehicular Growth:

Growth of cars:

The first automobile was brought to India in 1901, and the Age of the Automobile was born in India. Ownership of an automobile elevated one into a very elite club, and so it was but natural that those who could afford it, acquired one- with the result that registration of motor vehicles started in 1905. The first motor taxi was started in 1911.

Mumbai is a city that has grown organically, and its streets were born in an era of horse-drawn vehicles and palanquins. They were not designed to take the explosive advent of the automobile, and so, the streets of Mumbai very soon became a nightmare of honking, gas-belching automobiles.

Being the commercial capital of the country meant that the segment of population that could afford an automobile was very large, and so the population of private vehicles grew exponentially. In the '80s, with the launch of the common man's car – the Maruti – vehicle ownership increased. Easy finance from non-banking financial institutions put the car within easy reach of the common man. The increasing volumes of car sales attracted international car manufacturers to India. And higher personal incomes now increased vehicle ownership even further.

Today, we have over 12.94 lakh private vehicles registered, with over 250 new registrations per day, and the rate of growth is 7.92% per annum! The city also has a very high volume of floating population, and so the demand for taxis is also very high. Until a year ago, we had 55,000 taxis operating in Mumbai, but this figure has fortunately been drastically pruned by the mandatory clean fuel requirements, and now stands at 43,000 taxis. The demand for taxis however, continues to remain high.

Growth of trains:

With regard to the trains, which have served the city so well, and continue to do so despite daunting odds – their primary function was originally only long haul trips. However, the growth of residential areas along its alignment, and the demand for a commuter service for the working population, resulted in the start of the suburban train services. In the 1950s and '60s, they were already crowded but still extremely efficient.

Today, they carry over 5000 passengers per 9-car rake, when the design capacity is only 1800, and the maximum load is 3,600 persons per 9-car rake – a record of 16 persons per sq. meter. The suburban train services run 2046 trains per day, and carry 6.3 million passengers per day – more than the total population of some of the cities of the world!

Growth of Bus Services:

Buses were introduced as Omnibuses in 1926, and the first route was from Crawford Market to Afghan Church. This was a public transport, linking the rail head to the work center. By 1932, the Bombay Electric Supply and Tramway Company (BEST) owned 451 tramcars and 60 omnibuses. Today, we have over 9000 buses registered, which covers both the BEST fleet as well as contract carriages.

Modal Split:

Mumbai has always had the distinction of having over 80% of its commuters use mass transportation. Today this modal split stands at a phenomenal 88% trips by mass transportation. Of this, 46% use the train services, with an average trip length of 27 kms, and 42% use the bus services, and the average trip length by bus is 6 kms. The remaining 7% travel by private cars, and 5% by taxis and autorickshaws.

Planning For Transportation:

Since 1962, several studies have been made for the transportation system of Mumbai. Unfortunately, most of the studies did not realize the importance of the fact that the modal split of commuters in Bombay has always been over 80% in favour of mass transportation. Most of their recommendations focused only on the road infrastructure, and paid no attention to the mass transportation requirements of the city, except to make a mention in passing that the city should look to other forms of mass transportation to augment the existing train services. Scant attention was paid to the requirements of pedestrians either, although the volumes of commuters spilling out of the suburban stations all required pavement space, adequately designed at-grade or grade-separated crossings, and integration with other forms of road based transportation / mass transportation.

Since most of these recommendations remained on paper, conditions of congestion on the road worsened, and the very low journey speeds of buses prompted a shift of commuters from bus to trains. The traveling conditions in the trains then became almost sub-human, and this induced those who could afford it, to move onto 2-wheelers or back to cars. This in turn increased the congestion of the roadways, and the commuter was trapped in a vicious cycle.

The Situation Today

In the absence of a good, convenient and efficient public transport system, the trend has been towards more and more vehicular ownership and personalized modes tend to be used for commuting to work. In addition to being more energy intensive and polluting, this is also more expensive to the economy. Increasing levels of congestion has reduced rush hour traffic to a crawl, leading to higher oil consumption and vehicular emissions, and further pollution of the environment.

With the Indian economy opening up, we now have greater buying power, and international models of cars are within our grasp. We all aspire to own the best possible model, because it is also a very visible mark of the success of the individual. But we also need to be aware of our civic responsibilities, in how much we depend on this for our mobility.

The suburban trains today are so badly overloaded that they have gone down in the records as the world's most crowded trains, and the report a couple of years ago of a young boy suffocating to death in a crowded train tells its own story. Buses in the meanwhile, given our roadway conditions, have unfortunately come to be seen as agents of congestion, rather than the public facility that they are intended to be. A large part of the car users are captive users, because they do not at present have a viable choice. It is time we gave ourselves an option to the car.

Apart from a very few projects, the bulk of the recommendations of the above studies have not been implemented, simply because of paucity of funds. At the same time, with vehicular population growing by leaps and bounds, the urgency of the problem sees improvements to the transportation system as commensurate with engineering improvements. In a misguided attempt to improve conditions and relieve congestion, the authorities have resorted to road widening to the extent that they have cut away the footpaths of roads in areas where there is relatively heavy pedestrian activity.

Pedestrian activity in this city is so high that the pedestrian needs to be treated as an integral part of the transportation planning process, and not as an adjunct. Unfortunately, this has not been happening, and we continue to plan for improving speeds of the automobile, while the pedestrian is unceremoniously pushed to the fringes. The very large volumes of commuter traffic also translates into very high pedestrian volumes, as each commuter – especially a bus commuter – is a pedestrian at least at one end of his journey while making the end trips to and from their origins and destinations. Large volumes of pedestrians are therefore forced to mix and weave with the traffic stream. This in itself is a highly dangerous situation, as safety is greatly compromised, but additionally, vehicular speeds are reduced even further. Removal of footpaths is therefore a self-defeating exercise, as it certainly does not help in improving vehicular speeds.

Distribution of Transport Use

Class of Vehicles	Nos. of Vehicles (2003)
Motor Cycle including Scooters, Mopeds	527108
Motor Cars, Jeeps & Station Wagons	366805
Taxi cabs	54809
Autorickshaws	98527
Stage Carriages	5382
Contract carriages	4373
Trucks & Lorries including Delivery Vans, Private and Public Carriers	56130
Ambulances	1336
School Buses	563
Private Service Vehicles	1494
Trailors	1065
Tractors	1392
Others	4578

REGISTERED MOTOR VEHICLES

1,123,562

Includes two-wheelers, autorickshaws, taxis, school busses, tractors, trucks etc. as on March 31, 2003

BUS PASSENGER TRAFFIC

4,250,000

One way passenger trips originated daily BEST, 2002-03

SUBURBAN RAILWAY PASSENGER TRAFFIC

5,641,000

One way passenger trips originated daily Western & Central Railway, 2002-03

The Problem

An objective assessment of the situation will show us that the current problem stems from:
Uncontrolled and indiscriminate use of the private car. We use the car for the smallest of distances, and then proceed to use up the time saved in trying to find a parking space. Except for long distance commuters, inter-district distances in Mumbai are quite small, and given the "right walking environment," it is quite possible to walk to many of these destinations. Unfortunately, this "right walking environment," is simply not available anywhere in Mumbai, with the result that people have forgotten how to "think walking", and therefore how to walk on footpaths and pavements. The net result is that people look for some form of transport to cover even very short distances.

Very heavy parking demand, met by random, disorganized and illegal parking. Almost all parking in Mumbai is on-street parking, and this, along with parking maneuvers reduce the width of the roadway to a very large extent. With the absence of usable footpaths – those that are in place have been encroached upon – pedestrians have to weave between parked vehicles. Vehicles are also double and triple parked, with no consideration to the rest of the road users.

Very nominal parking charges. Parking charges were frozen at Rs. 5.00 per vehicle for the first hour, and at Rs. 3.00 for every additional hour since the mid seventies. These rates are uniformly applicable across the city, whether at high density commercial areas like Nariman Point, or low value areas like the slums of Dharavi. Cost of parking has therefore never been a deterrent to the use of the car for non-essential trips also.

A fixed land mass, and right of way constraints. Land values having always been high, the building contours follow the road line, so any expansion is not possible without large-scale acquisition & demolishing of buildings. Therefore any augmentation of roadway capacity can only be at an elevated level.

Very heavy pedestrian activity, and a near total absence of pedestrian facilities, or design for pedestrians in transportation plans.

A breakdown of enforcement, and consequent total lack of discipline on roads. Many a time, an entire traffic stream has ignored a red light, and the succeeding arm has lost its right of way, but the policeman on point duty does nothing about it. Very often, the signals are also switched off, and the traffic is controlled manually. This simply aggravates an already bad situation, as some streams are left waiting until another arm empties itself, and this makes waiting inordinately long, besides blocking the junction behind it.

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Mumbai has very heavy mixed land use, and a near total absence of service lanes, and therefore, there are entry points to buildings located all along the arterial roads. The high percentage of personal modes therefore keep entering and exiting the traffic stream, along the length of almost all arterials. This makes for slower vehicular speeds, as the entry and exit operations of the vehicles require the entire stream to slow down.

No attention has been paid to the fact that this city has always had over 80% of its commuters using mass transportation, and that this figure is now close to 88%. Considering that the population of the city has also been growing, the absolute figure that this means is staggering.

A) Supply side solutions

B) Demand Management

C) Changes in Land Use



There are a number of measures that can be taken to relieve / handle urban congestion. These can be broadly categorized into 3 groups:

A) Supply side solutions: Increase the supply of transportation facilities – which essentially means increasing the urban transport infrastructure capacity;

in Mumbai today, the increasing use of personalized modes of transport for daily commuting has increased the load on the road network of the city. The demand for parking lots and parking spaces has increased, and are a drain on our resources, especially given the fact that Mumbai has a limited land mass. Delays due to traffic congestion, higher rates of traffic accidents, and environmental degradation are discussed almost daily in the papers. Most city planners and decision makers of Mumbai see the solution to all of this in wider roads, construction of new links to improve the connectivity between locations, the construction of flyovers, and restrictions on pedestrians and slow-moving vehicles on major arterials and other connectors, in favour of vehicular traffic.

However, experiences in other parts of the world have shown that increasing the supply of transportation facilities only increases the demand for them, that is the growth of vehicles and the number of vehicle trips made increases, and the problems of congestion remain. The demand for the supply of these facilities increases, and the benefits of increased mobility therefore continue to be elusive.

Increasing the supply of transportation facilities is therefore no longer seen as a viable option to relieving urban congestion.

B) Demand Management: By encouraging a more efficient use of the existing transportation facilities, especially of road space in congested central areas, through some form of restraint on the use of motorized personal modes.

Solutions to Handling Urban Congestion

Until the present in Mumbai, we have made no attempts to control the demand for transportation facilities. There are several methods of demand management – both physical as well as fiscal, but I shall confine myself to suggesting space restraining measures like bus priority schemes, street-running rail systems, cycle lanes, wider footpaths and pedestrian areas or precincts to attempt to curb the demand for road space. These, when well-designed, implemented and managed, and appropriate for their context, can help to achieve a more efficient use of road space, in addition to improving the attractiveness of non-motorised modes and increasing the accessibility to specific locations. The additional benefits of such measures are improvement in environmental quality, enhanced street aesthetics and greater safety of road users. Demand management also helps in reducing pollution from vehicles by reducing the total number of kilometers traveled.

There are also other tougher, rather less democratic options such as Area Licensing Schemes, taxes on car ownership and usage, a Motor Vehicle Quota Scheme as is practiced in Singapore, a Weekend Car Scheme, Electronic Road Pricing, etc. to curb the use of the private automobile. But in India, we may not be very willing to impose, or accept the imposition of, restraints on the use of private automobiles. But within the freedom that democracy assures us, we need to examine the licenses that we have given ourselves. Are they justified in the larger interests of society – of which we are so very much a part?

C) Changes in Land Use

Urban Planning: Changing/ inducing changes in land use patterns, such that economic activities become more dispersed, and the integration between employment, housing and other urban amenities is improved.

In Mumbai, we are currently attempting to increase the supply of transportation facilities, while at the same time, changes have been induced in the travel pattern by introducing changes in the land use pattern. We have managed to change the highly tidal flow of commuters, by developing new CBDs in the Bandra-Kurla area, Andheri MIDC, and Mulund, while Ghatkopar is also on the fast track to becoming another major CBD in the northern suburbs. The mill lands that have recently become available will also become commercial hubs. The directional ratio of the traffic today, therefore, is about 60:40 or even 55:45.

But again, the experience in other cities have shown that merely depending on any one of the above aspects to improve urban traffic congestion has not produced the desired results. If the city is to function efficiently and provide an acceptable living and working environment, then urban planning, transport capacity building and traffic demand management, have to be integrated into one strategic package.

What needs to be done:

1. Shift in Focus of planning

The Transportation Planning process as in use today needs to be changed to a human-centric conceptualization of transport, and the focus needs to shift from design for the movement of vehicles to design for the movement of people. Our planning basis – like that all over the world – is a Passenger Car Unit. We count the number of vehicles moving from point to point and design the system to accommodate this. Vehicles other than cars are counted and reduced to equivalent Passenger Car Units. It is only if we are designing a mass transportation system that we count the number of people already moving by mass transportation, from point to point. Rarely is an opinion survey carried out to determine the likely shift of car/ 2-wheeler users to mass transportation, given that an efficient system will be put in place. Our vehicle occupancy is about 1.5 persons per vehicle, so that the total number of persons moved per unit of road space is very low.

2. Optimal Use of Existing Resources:

Given the fact that the major part of Mumbai is an island, we need to accept the fact that there is no space for endless road building, not to mention the use of funds that could more effectively be used elsewhere. An efficient transport system is central to the economic growth of any city, and we need to wake up to this fact. Our priority should be to efficiently meet the demand for movement of *people* and not just the efficient movement of cars.

We have an abundance of water as a natural resource, that is not being utilized, and we need to incorporate this into the transportation plans for the city. Studies have been made on Passenger Water Transportation for the city in the past, and it was found to be a very viable, cheap and environment friendly supplement to the transport requirements of the city.

With regard to the road network, we have four fairly strong North-South Corridors, whose capacity is being grossly under-utilised, because of encroachments, parking, and a few points of congestion along their length. The roads of Mumbai have developed organically over time, and therefore there are a few weak links and missing connectors, especially in the East West direction and in the suburbs – where growth has tended to be along the railway tracks – that need to be put in place. Proper planning of these few missing links will result in the formation of a fairly good grid of roads for the city. A few of these are being taken care of by the MUTP and the MUIP – and the rest will have to be put in place. Most of the footpaths have been taken over by encroachments – both legal and illegal – and very often this activity spills over onto the carriageway. There is heavy parking demand along almost all arterials, and the kerb-side lane is lost to meeting this demand. Additionally, since we have not provided for pedestrians, they are also forced to use the kerb-side lane for movement, and since most often this lane is taken up by parked vehicles, they end up walking

along the outer side of the parked vehicles, further eroding the roadway capacity, and compromising safety to a very large extent. Poor driver behaviour and driving habits further erode the roadway capacity. The railways are already the lifeline of the city's transportation system, carrying many times their capacity of passengers throughout the day. This service needs to be supported by complementary mass transportation services on the road and on water, so as to relieve the tremendous burden they carry.

3. Integrated Mass Transportation System:

We need to carry out an entirely new study targeted towards providing a network of mass transportation services in the city. This study should target the optimal use of all available resources – rail based, water based and road based. The emphasis should be on designing a mass transportation system on each of the above resources, and integrating them so that it functions as a composite, integrated, Metropolitan Transport Service.

If this is to fall in place properly, we need to

Integrate land use and transportation planning to minimise the need for travel;

Develop a comprehensive road network, while maximising its capacity-utilisation;

Manage the car population and the demand for road space to alleviate traffic congestion;

Optimise usage of rail, water and roadway resources already in place; and

Provide very good / high quality public transport choices, as an alternative to the car.

Since much of south Mumbai is mature development, the changes in the land use patterns can only be made in the suburbs, which are already being done. Commercial areas are being developed in the central suburbs, and integrated housing complexes are also coming up, with the objective of reducing the commute to work.

The study should focus on optimising and maximising the use of roadway facilities as existing in the city, through traffic and demand management and minimal engineering.

The existing main road network capacity should be optimized by more efficient use of the ROW, through control of parking, removal of encroachments, and junction improvement. The missing links will have to be introduced as early as possible. The pedestrian environment has to be well designed, and kept free of encroachments, so that pedestrians are induced to use these spaces rather than the carriageway for walking. Jay-walking needs to be curbed ruthlessly, while the current marketing strategy of engaging urchins to sell books and periodicals at junctions also needs to be stopped. It naturally follows that more sophisticated traffic control methods will also need to be introduced.

If the use of the resources currently available is to be maximized, then we need to put in place the demand management tools mentioned earlier, and reduce the roadway capacity available to cars in order to install an efficient system of road-based mass transportation, running in exclusive lanes. I firmly believe that if we use the technique of re-allocating the existing road space, giving preference to pedestrians and mass transportation, then we can induce the change in driver behaviour pattern, with resultant reduction in travel demand, that was experienced in other parts of the world.

At the same time, pedestrianisation of certain areas, and improvement of pedestrian facilities and the pedestrian environment will take care of a large number of short trips that today use the private car or taxi. Well designed and planned and well maintained pedestrian precincts can translate a large number of vehicular trips to walk trips, thus reducing the demand for road space. As mentioned earlier, inter-district distances in Mumbai are not very large, and given the right walking environment, a large number of short trips that today use the taxi can be changed to walk trips. The railways are already in the process of upgrading their services, but this will not be enough. We need to ensure that comfort and safety are also an assured part of the services provided, in addition to greater frequency and efficiency. Towards this, the coaches are being redesigned / re-engineered for more comfort, and air-conditioned coaches may need to be introduced, in order to wean away the upper middle class from their cars. This is in process, as part of the MUTP. But this will have to become the standard rather than the exception, if mass transportation is to become the mode of choice. There is a sort of “class definition” that is associated with the use of mass transportation in Mumbai, and this will need to be removed. This can only happen if the image of the mass transportation service as “Crowded and uncomfortable” and “Not quite my class” is changed.

We are probably the only island city that does not have passenger water transportation. Passenger Water Transportation (PWT) is an environment friendly mode that is also much cheaper than road or rail transport, (if speed is not of essence) especially in terms of infrastructure requirement. The island of Mumbai is wedge-shaped, pointing downwards, and the main corridor of movement will continue to be in the North-South direction for a long time. The linear form of the island can again be used to advantage, to run PWT services in the North- South direction, supplementing the rail services. PWT can also be run across the harbour to the mainland, reducing the load on the railways and the commuting time of passengers currently making the trip by a very circuitous rail route to South Mumbai. The mass transportation systems so designed should have a hierarchical structure, preferably with three levels, with low vehicle-capacity, high frequency feeder services operating at the lowest level, and interfacing with an

intermediate level of mass transportation service. The lowest level of the mass transportation system should provide a short haul feeder service from origins/ destinations to the next level of mass transportation at collection points, from where an intermediate level of mass transportation will provide the connection to the main corridors of travel. These 1st level feeder services could be provided by either shared taxis or low capacity mini buses, but would essentially be a road-based service. The intermediate level of mass transportation, ie, level 2, need not be only bus transportation – it could as well be street running rail systems, such as the LRT or mono-rail. The main long distance service should be provided by the suburban rail services and passenger water transport along the coast.

With the use of exclusive bus lanes, it will also be possible to operate High Capacity Bus Systems along the four main North-South arterial roads, further supplementing the other two main services- ie, rail and water transport. Mumbai is a linear city, and the north-south axis will always be the main corridor of transportation. Further auxiliary services, if required, can be provided by some other form of rail-based mass transportation. The east-west movement is not currently provided by the existing rail services, and here we need to design both feeder services as well as main line services.

Over 88 % of the commuters in Mumbai rely on public transport modes. It is therefore imperative that infrastructure planning and investments in public transport systems provide a comfortable and convenient option to city residents that can compete with the comforts provided by a private car. The idea that all public transport is inconvenient and crowded needs to be changed. The advantages of the private modes of transport in terms of levels of comfort, origin to destination movement, absence of transfer time losses, etc. need to be countered by lower stress levels, better operating characteristics and improved mobility of the mass transportation systems being offered, in addition to vast benefits to the environment.

4. Interfaces between modes:

The interfaces between the various modes, where a transfer is affected from one mode or level to another, would essentially be the points of weakness in such a system. The efficiency of the system would hinge on the efficiency of these transfers. These Intermodal Transfer Points need to be carefully designed, both for efficiency of transfers as well as levels of passenger comforts.

Information about the arrivals and departures of the various modes should be prominently displayed, and the timings of the modes interfacing at the point should be so synchronized that waiting times are minimized. Additional passenger comforts and services also need to be provided at such points, like well designed waiting areas, snack bars, wash rooms, communication facilities, ample circulation area, etc. These comforts and conveniences at Transfer Hubs should be the norm rather than the exception.

Mass transportation options

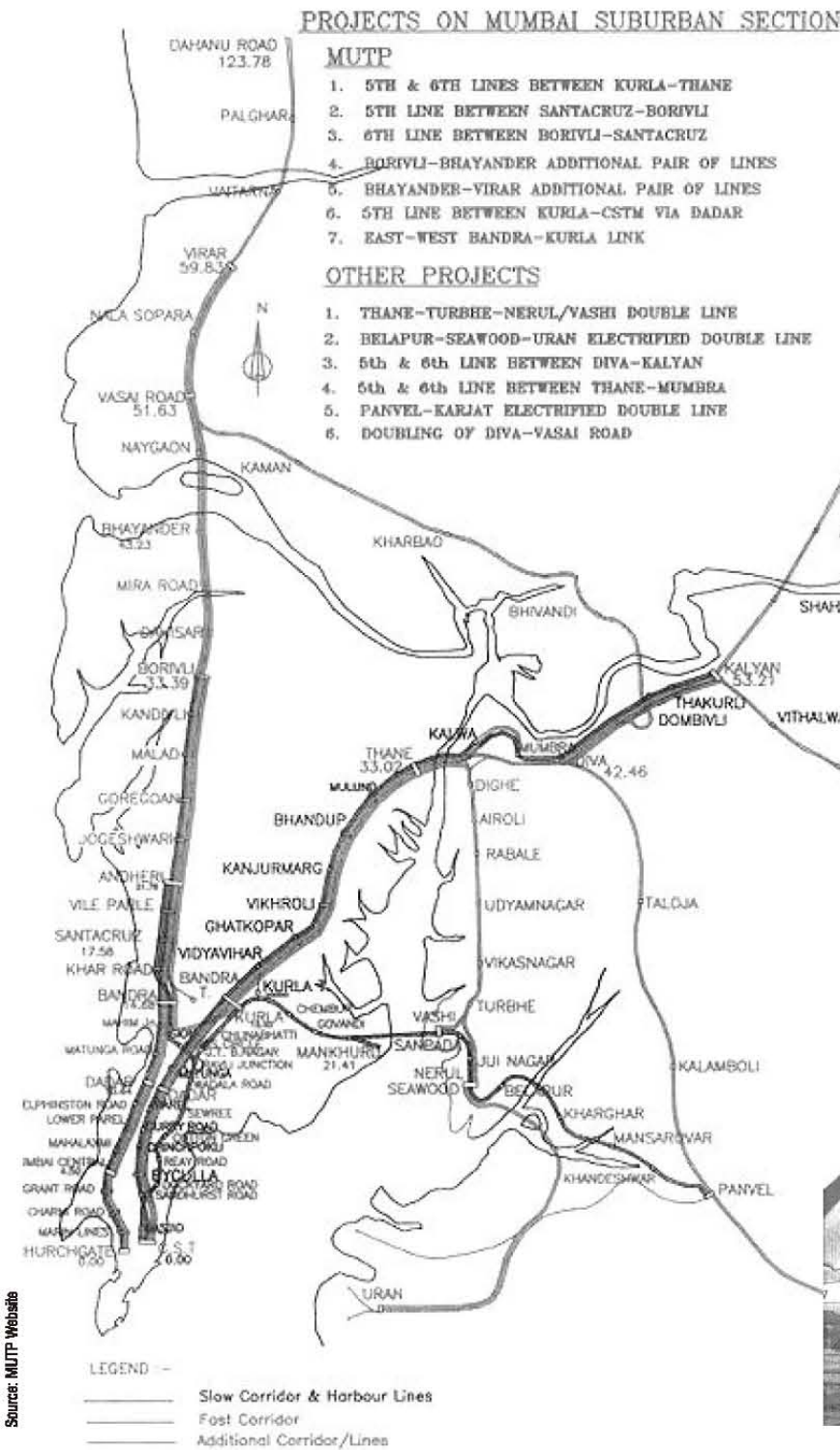
Mass transportation options that are currently available to Mumbai, and are being actively considered or are in the process of being implemented, are:

High Capacity Bus Systems - bus transportation systems that use available space on arterial roads of cities with dedicated bus ways. These systems utilize modern technologies for optimising flow, passenger movement, ticketing, bus scheduling, etc. The efficiency of the system and high capacity of passengers transported depends on the system as whole and not necessarily on the size of buses, though when necessary articulated buses could be used with ease. All new major arterial roads with a width greater than 30 meters that are being constructed in Mumbai as part of the MUTP and the MUIP are being designed with exclusive bus lanes. A total of 150 route kilometres have been identified for HCBS in the suburbs. The support infrastructure needs to be planned and put into place.

Heavy Metro- recommended to be run along the 7th corridor, Heavy Metro is an underground train service with high passenger handling capacity. The tenders for the construction of the Metro have been awarded, and construction is expected to start soon. Mumbai will be using the standard gauge, so that international technology can be used here.

Monorail- is being considered as a feeder service to both the suburban trains as well as the Metro, as also the internal service for the redevelopment of the mill lands. This is however, still at the discussion stage.

Water Transport- using high-speed high capacity vessels, along the East and West Coast, and also trans-harbour. Land for landing stages has been identified at various places along the West coast, and operations may start in a couple of years.



Conclusion

In conclusion, I would like to say that given our present transport scenario, our environmental concerns, and our financial constraints, it is imperative that we make dramatic changes in our travel behaviour. We tend to dismiss suggestions on demand management using road space reallocation as wishful thinking, and presume that they will be rejected by the public. However, if these schemes are well-designed and are supported by strong reasons of policy and the public is kept well informed of these measures, then they need not be rejected on the assumption that they will aggravate congestion. The key to successful implementation of such schemes is information and education of the public as to the genesis of the problem, the need for such measures, and the benefits that would accrue to them on their successful implementation.

Project Components and Costs		
No.	Component	Cost (inclusive of R&R) (Rs. In Millions)
A Road Transport Components		
1	Jogeshwari-Vikhroli link road	890
2	Santacruz-Chembur link road including an ROB at Kurla	2171
3	ROB at Jogeshwari (South)	901
4	ROB at Jogeshwari (North)	514
5	ROB at Vikhroli	173
6	Purchase of around 500 eco friendly buses	-
7	Pedestrian Grade Separation Schemes	-
8	Area Traffic Control System in the Island City	-
9	Station Area Traffic Improvement Schemes (SATIS) at 6 stations	-
10	Other Traffic Management and safety schemes including footpaths	-
11	Environment - Air quality monitoring	-
12	Different studies and Technical Assistance	-
Sub-total		4649
B Rail Transport Components		
1	5th line on Western Railway between Mahim and Borivli	515
2	5th and 6th lines between Kurla and Thane	
3	Borivli-Bhayandar additional pair of lines (including Virar car shed and Virar - Dahisar road track centre work)	
4	Optimisation on Western Railway	
5	Optimisation on Central Railway	
6	Optimisation on Harbour line	
7	DC/AC conversion	
8	Procurement of new EMUs (trains)	
9	EMU maintenance facilities	
10	Stabling lines	
11	Track machines	
12	Technical assistance and studies	
13	PPF reimbursement	
Sub-total		14479
Grand total		19128

Project Implementation Period : 2002 to 2008





ANATOMY OF A COLLAPSE

- Most of the older, dilapidated cesses buildings manage to hold on together after outliving their span. Interestingly, it is only when repairs start that they collapse.
- When buildings collapse, the column at the bottom first gives way until it finally implodes on itself. This, however, does not happen overnight. Tell-tale signs are visible; they range from massive water seepage to cracks in beams and false ceilings.
- The outdated Rent Act plays a significant role. Because rents are frozen, landlords have no incentive to maintain these structures. Minus repairs, buildings come down.
- Tenants change internal structures indiscriminately.

Lack of funds lay buildings low

**Rs 1.94 lakh per sq m.
Or Rs 18,100 per sq ft**

That's what Mukesh Ambani paid to build hotels, mall or multiplex in Bandra-Kurla Complex, along with a swank convention centre

KAVITHA IYER
JANUARY 17

EVEN the lowest bidder for this 7.5-hectare plot quoted well over twice the minimum reserve price expected by the Mumbai Metropolitan Region Development Authority (MMRDA).

But it was Mukesh Ambani's Reliance Industries Ltd (RIL) that latched the real estate tickler several notches further up with a bid of Rs 1,104 crore.

While Rs 130 crore was the fixed price for the plush convention and exhibition centre, RIL quoted Rs 1,94,800 per sq metre for the commercial component of 20,000 sq metres with a maximum built-up area of 50,000 sq metres.

In other words, Ambani paid Rs 18,104 for a square of land measuring 1 sq ft. "I wouldn't say I'm not surprised at all," said Pranay Vakil of real estate consultancy Knight Frank. "But well, the madness continues."

As Vakil pointed out, Jet Airways paid Rs 14,250 per sq ft for a commercial plot—also at Bandra-Kurla Complex, also on an 80-year lease from the MMRDA—just a fortnight ago.

And clearly, the MM-



RDA is cashing in on the spiralling prices of real estate in Mumbai, prices that some experts call unsustainable.

Five earlier bid invitations for the same convention centre plot had been unsuccessful. When the bids were announced on Tuesday, Noida-based DLF Universal was the second highest, having bid Rs 1,050 crore.

Anil Ambani's Reliance Communication and Infrastructure bid nearly Rs 100 crore less than elder brother Mukesh's RIL, at Rs 1,011.12 crore.

Anil's Reliance Energy, meanwhile, is one of two contenders to build Mumbai's Metro Rail, a multi-crore project that he will now want more keenly than ever.

Dubai's Emaar MGF quoted the lowest price—

Rs 911.07 crore—indicative anyway of global interest in land-starved Mumbai's pricey real-estate market. "With improved connectivity through the Mumbai Urban Transport Project and Mumbai Urban Infrastructure Project, Bandra-Kurla Complex is set to become an international business centre," said MMRDA Joint Commissioner T Chandrasekhar.

"And this will be an international convention centre in a global business hub." While RIL officials were unavailable for comment, sources said it was likely that an RIL corporate office building will be built on the commercial component of the plot.

Vakil agreed, citing a "new breed of entrepreneurs who want to put their signature on a building of their own, even if it comes

for builders to tenants of structures free of buildings. As an the developer to get 50% incen-construct a high- of the land hopping profits e. The more the tenants, the FSI the builder

scheme that was allenged by a tivist citizens in ty high court. in an interim it a cap on the 1 be used by the

ivate developers loped about 235 dings. Many of r controversial cas. There have l cases (recently the notice of court) where fraudulently ie number of that they get

famous case is 39-storey pencil-Apartments at dy.

the high court he petition filed sidents against it nevertheless at the developer l the number of et more FSI and ed the housing if its share of a in the recon- theme.

In convention

■ RIL will now develop, manage, operate, maintain and market a convention and exhibition centre.

■ Sprawled on 65,000 sq metres of built-up area and located behind the Bharat Diamond Bourse, the world-class convention centre will house five exhibition halls, an auditorium for 2,000 viewers, conference halls, boardrooms, lounges, special areas for back-office support during a convention—like offices for secretarial staff or a travel desk as well as a media centre.

■ There is also a commercial component—50,000 sq metres of commercial space to be developed into shops, offices, malls, restaurants, entertainment centres or a multiplex.

■ With Bandra-Kurla Complex becoming an integrated corporate hub—last fortnight a bevy of commercial and residential plots was leased, along with one for a star hotel—demand for recreational and commercial activities is on the rise. The convention centre, mall, multiplex etc will enhance the area's well-planned self-sufficiency.

at a premium" and the paucity of standalone corporate buildings in the city.

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HOUSE OF CARDS

Number of collapses (both major and minor) from 1986 to 2003: 4646

1986-87	:391
87-88	:346
88-89	:406
89-90	:274
90-91	:319
91-92	:254
92-93	:228
93-94	:236
94-95	:253
95-96	:224
96-97	:272
97-98	:259
98-99	:305
99-2000	:154
2000-01	:260
01-02	:273
02-03	:192

LIVING ON THE EDGE

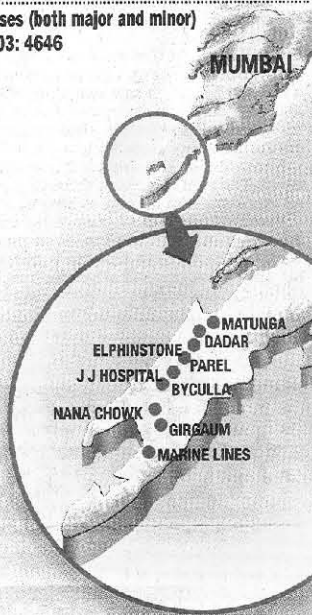
Number of buildings where residents have been issued notices this year: 27

Marine Lines/Girgaum:	7
Parel and Elphinstone:	6
Matunga and Dadar:	6
Nana Chowk:	5
Byculla:	2
J J Hospital:	1

Who issues the notice: Mumbai Building Repair and Reconstruction Board and BMC

Legal teeth: None; occupants can opt to disregard the public notice.

Number of dilapidated cesses buildings in island city: 19,642



There will be more Sadaf Manzils

Mumbai's 16,000 dilapidated buildings are worth little. But the real estate is among the world's most expensive, so what if it claims some lives. In a new series, *Newsline* visits South Mumbai's killer structures and finds an uncaring housing board tempting fate

'THE OWNERS WON'T FUND REPAIRS'

152/154 Bootwala building
Bimtinkar Road, Nagpada
Tenants pay: Rs 350 for 400 sq ft
Market rate: Rs 3,000

ATEEQ SHAIKH
AUGUST 25

BACK in February 2003, the fearful and frustrated tenants of Bootwala Building, Nagpada, signed on a letter they then despatched to the fire officer and the executive engineer of E-ward, the deputy chief engineer of the Mumbai Building Repairs and Reconstruction Board, the senior police inspector of Nagpada police station and to their landlords.

It said: "If any untoward incident or mishap or collapse happens, the landlord of the building is to be held responsible."

Three days after Sadaf Manzil collapsed, that black mood has returned to Bootwala Building on Dimtimkar Road, just a stone's throw away from Temkar Street. Its exterior looks fine, but inside Bootwala Building there are leakages, crumbling walls and peeling plaster. On the second floor, a shop's ceiling leaks continuously, the water swamping the footpath.

Repairs have been stalled for years—the last renovation took place in 1975-1980, at a cost of Rs 1.6 lakh—due to alleged disputes among its five owners. Shirin Bootwala, Iqbal Bootwala, Hozefa Bootwala, Karim Bootwala and Salim Bootwala have simply not reached an agreement on how to spend on repairs, say tenants. "One owner refuses to contribute to repairs," said Kalbe Abbas Shaikh (43), a shopkeeper.

Mateen Khan (58), the treasurer of the building society, says the owners shifted to safer homes long ago.

Five other families also vacated their



The exterior of the Bootwala b looks fine but one look inside at are leakages and the walls are c

homes; the others live in const Shabbir Bangliwala lives on floor, with his family. His ceiling leaks, the wooden beams have decayed.

Along the passage, some wooden propping has loosened, causing further fear. Of the four passages connecting various wings, only one remains, the others had to be pulled down.

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'I'LL REBUILD IT IN THE FUTURE'



GANESH SHIRSEKAR

Amid falling chunks of ceiling plaster, two families continue to live at Sushila Nivas

Sushila Nivas
216-218, Khadilkar Marg, Girgaum
Tenants pay: Rs 278 for 250 sq ft
Market rate: Rs 3,500-4,000

The market rate for that space in a newer building in the same area is Rs 3,500-Rs 4,000. And though she braves falling chunks

City's costliest flat?

Cuffe Parade apartment goes for Rs 35,220/sq ft

Gurbir Singh
Mumbai, November 28

A RECORD was set in the Indian property market when a residential apartment in the posh Cuffe Parade area got sold at a whopping rate of Rs 35,220 per square-foot in an auction.

Citibank sold the three-bedroom 2,050 sq-ft apartment in the prime residential Maker Towers 'B' to a senior executive of a stock-broking house.

The Rs 7.22 crore sale notched a record of sorts in the residential realty market, eclipsing previous big-ticket purchases like horse breeder Cyrus Poonawala's acquisition of a 4,200 sq-ft 'Swarna Lok' Society bungalow in Napean Sea Road at an effective rate of Rs 34,400 per sq ft. Earlier Vinay Maloo, chief promoter of Himachal Futuristic, had paid a little over Rs 30,000 per sq ft for a huge 3,500 sq-ft apartment in the Maker Towers complex.

In the commercial and retail segments of the property market, though, rates have touched higher levels than this. For instance, in the diamond merchant hub of Charni Road in south Mumbai,

THROUGH THE ROOF

Cost of high living

2,050 sq-ft flat in Maker Towers 'B' in south Mumbai sold for Rs 7.22 crore

The rate of Rs 35,220 per sq-ft, easily eclipsed recent residential sale highs

Real estate brokers say with many buyers but few available options, it is a seller's market in the high-end residential property market

Another deal in the same Maker Towers 'B'. If true, promise to create a new benchmark of over Rs 45,000 per sq ft

buildings like Prasad Chambers have seen sales at mind-boggling rates of Rs 60,000 per sq ft.

Sources in the property market said another deal in the same Maker Towers 'B' apartment block—

3,000 sq-ft flat—has been negotiated for Rs 14 crore. Though the deal could not be confirmed, if true it creates a new benchmark of over Rs 46,000 per sq-ft.

Prakash Kamga, a south Mumbai broker said buyers were willing to pay any asking rate for flats in prime buildings but there was little supply. "I have buyers at Rs 50,000 per sq-ft for another in-demand building, Beach Candy Apartments, but there are no sellers," he said.

Real estate watchers said money generated on the stock market was fuelling the price spiral, especially in high-end property. Paucity of spacious and quality residential quarters was adding to the price run. Sellers are calling the shots as buyers fall over each other to grab a piece of the prime property pie.

A few weeks ago, stock-broking firm India Bulls purchased a 3,000 sq-ft flat in Maker Towers 'B' for a little less than Rs 10 crore. This means within weeks the price had gone up 10 per cent, from Rs 33,000 per sq-ft to Rs 36,000 per sq-ft.

The Maker Towers complex has six high-rise residential buildings and two office blocks.