

*Walkability in Mumbai -
A study on drawing a conceptual
framework at the neighbourhood level*

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The research tries to identify and understand the concept of Walkability in Mumbai. Walkability becomes an important parameter to understand the overall city form and development. Walkability has been discussed and conceptually defined by Organisations¹ working in the non-motorised transportation related issues. In the context of a city like Mumbai whose population is estimated to increase from 11.91 million (2001) and 12.86 million (2005) to 18 million (2031)² understanding and defining the parameters of walkability is important. The focus was to study the ground plane, pedestrian movement and interaction, nodes, at transit hubs, heavily pedestrianised precincts in the city.³

The city has a linear model of development with the Railways being the main modal transport agency in the city. By far the largest group of commuters in Greater Mumbai, about 55 per cent walk to work⁴, making Mumbai is one of the most pedestrian friendly cities in India and relies on public transport for its survival.⁵ The density

of the urban agglomeration of Mumbai is 24,000 people per sq.km. in the suburban city wards to 49,000 in the island city. According to urban theorists there seems to be a co-relation between urban densities and walkability for any city form.

Yet the problems faced by pedestrians in Mumbai are manifold⁶ Studies show that pedestrian infrastructure rather than aiding pedestrians is proving to be a menace itself. Pedestrian subways and footbridges are built to ensure that pedestrians do not obstruct the traffic & that roads are available only to motorised vehicles. The city of Mumbai is changing as new layers of infrastructure are being added with elevated rails, flyovers, monorails, skywalks. Mumbai shall have all the layers of infrastructure⁷ cluttered through its rich and dense urban fabric. This also means that the city & citizens will have to negotiate grades of separated infrastructure projects.

The right to own road space is contested by the pedestrians, motorists, property owners (abutting the roads\footpaths) and authorities like MMRDA. Road space in Mumbai is also shared by informal users of the city like the Chaiwala, panwala, hawkers, road side food vendors, cobblers. In this contestation for legitimate user ship of the road space, vulnerable users are the ones who suffer.⁸ Like hawking, the

building development typology also has changed. Post 2000, the city has seen a rise in the number of gated communities. The gated communities divide the public and the private realm and offer blank edges to the pedestrian who walks along it.

WALKABILITY In Mumbai -

In a national survey on urban walkability⁹ Mumbai scores at 0.85 doing worse than only the cities of Delhi at 0.87 and Chandgarh at 0.914. The national average in this table is indicated at 0.52. Comparing the size and the population and the spread of Mumbai this seems to be a good performance. A study carried out in India revealed that nearly 30-40 percent of all trips were undertaken on foot.¹⁰ Another statistic tells us that 57% of Mumbaikars live within 10 kilometres of their place of work.

Walkability has many aspects apart from Footpath length, width and surface. Walkability therefore becomes essential for the functioning of a city. However the only way planners look at improving the pedestrian's condition is by the provision of good footpaths. Academic research has found that the perceived presence of footpaths along neighbourhood streets and traffic safety has no association with walking.¹¹ The research tried to investigate into factors other than the provision of Footpaths.

Street Context in Mumbai–

The Street in the Indian cultural context is a place where interactions and conversations happen. Streets and other public spaces contribute to “place making”, the creation of unique locations that are compact, mixed-use and pedestrian- and transit-oriented and have created a strong civic character with lasting economic value. Cities are

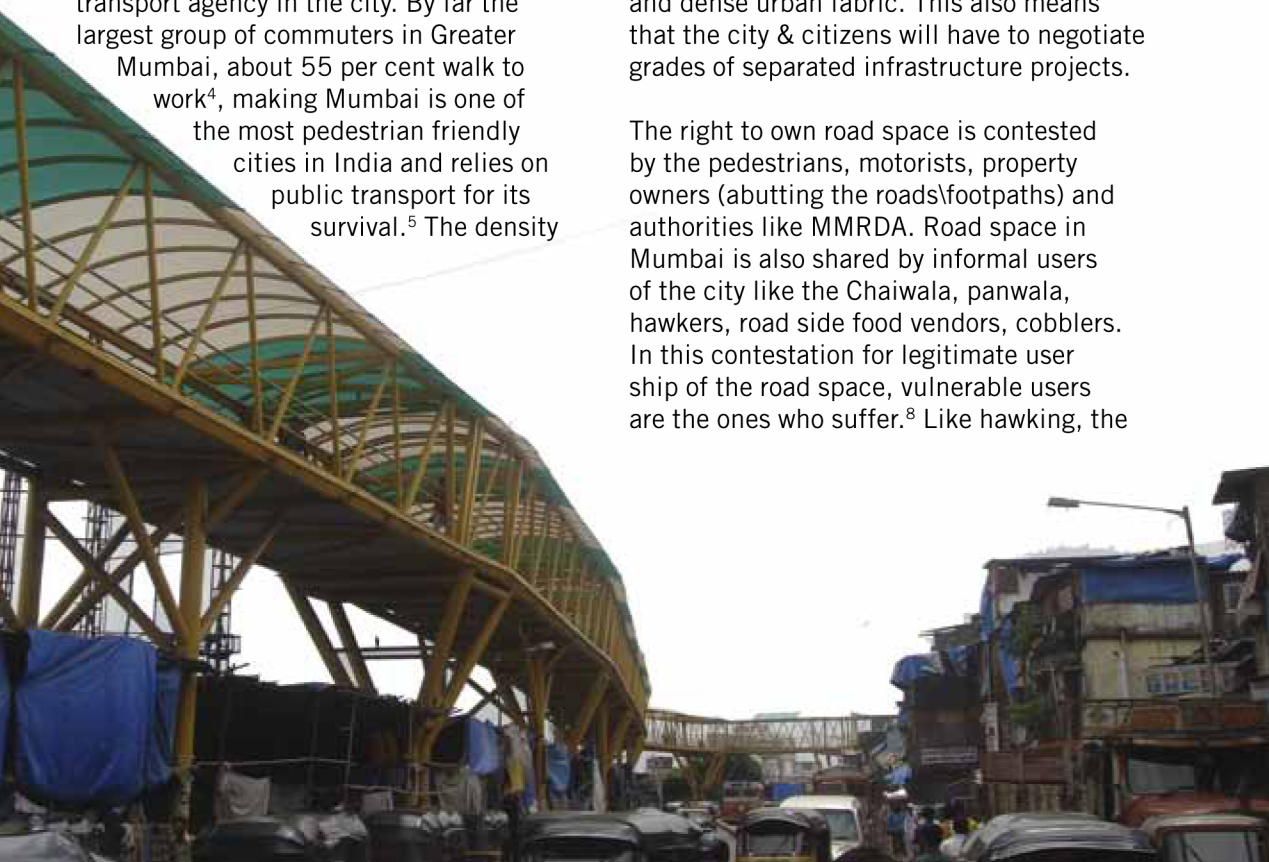
remembered because of their streets and street names too.¹² The experiences that the city offers to the pedestrian are the experiences that he forms associations of the city with. It is the sort of permeable boundary between the city and the streets that defines the city to the pedestrian. This natural character evolves out of land use building reaction at the ground level, number of enhancing or obstructing features offered by a building to the pedestrian. It is always not necessary for a building to have footpath for better response at pedestrians scale. Many areas of Mumbai have no space to accommodate a foot path. Yet they are perceived to be pedestrian friendly

Factors investigated in the study were -

1. Frequency of walking,
2. Safety of the Pedestrian,
3. Inclusivity of all stakeholders in planning and usage of pedestrian infrastructure and representation of different groups in making up the walkers,
4. Response of the urban form to pedestrians
5. Pedestrian ease like ease of way finding, presence of shaded paths or tree covers, ease of shopping,
6. Pedestrian experience,
7. Availability of public spaces on the route for pedestrians and their maintenance,
8. Neighbourhood sensitivity to the issue of ease of walkability

Although walkability involves many issues some of the questions that I chose to answer in the course of the study were ¹³

1. How does Mumbai or its policy makers ¹⁴ define walkability?
2. How does one define walkability in the context of an urban neighbourhood?
3. What can be the conceptual framework to define walkability in a small neighbourhood like Vile Parle?



VILE PARLE:

The precinct selected for the pedestrian documentation is in Vile Parle East (Between the station to the west and the highway on the east and between Nehru Rd. to the north and Hanuman Rd. to the south). The daily users of the station precinct are the neighbourhood population and a number of visitors. The impurity of the geometric forms in this small neighbourhood makes the pedestrian feel the station area lively and active mostly throughout the day. There is no specific order of orientation that it offers to the pedestrian, no inherent narrative, allowing the visitor to make his or her own choices and discoveries. There is a mix of different building typologies near the station. The pedestrian density increases in the station precinct from morning to the evening. Streets names have cultures and histories associated to them. The noted playwright P.L. Deshpande has described the streets and his association with these streets in his autobiography¹⁵. The land use is mainly residential. There is a well distributed network of shops and convenience stores distributed throughout all the smaller neighbourhood building clusters. This makes walking an attractive choice.

Defining walkability through mapping of *Pedestrian experiences*:

The experiences are pedestrian reactions to Building Experience-Urban form, building detailing, Experiences of stake holder's like women, children, Pedestrian narratives, Shopping-hawking. The idea was to document and map these pedestrian experiences and draw upon the experiential understanding of the city while proposing new developmental ideas for pedestrians.

Ingenious Pedestrian Routes: There are routes which the pedestrians take which include short cuts that make walking comfortable. To go to the station from Nehru Rd. in Vile Parle there is only one way. However pedestrians prefer not to take the main road but the internal pedestrian short cut through Kambliwadi. Similarly residents of Agarwal market area take the internal lanes crossing over Lokmanya Seva Sangh to go to Hanuman Rd. The internal unrecognised path in the grid shortens the distances and creates ingenious local paths.

School children and Safety: I interviewed primary school teachers from the Schools of Vile Parle; who agreed that there has been a drop in the number of students that come to

the school. This is not because parents don't want the kids to go to school. This comes out of their concern for the students' safety. Kids from this school come from the airport slums; they have to cross 2 major signals to reach the school building. In this scenario working parents feel that it is not safe for the kids to attend the schools regularly.

The girl child faces higher risk of the parents terminating her education because of the safety issues. Women who answered the survey felt that the main roads were safe to walk in the night. Multiple internal roads were not perceived to be as safe as the main roads to walk in the night by women.¹⁶

Public Space and Young people: "Young people are frequent users of public space; they use public space because they do not own or have access to more private spaces in which to congregate. They use public spaces to meet, socialise and form connections with their peers and their community."¹⁷

There are 3 colleges in Vile Parle (E) and 7 schools in Vile Parle (E). Road space in front of an educational institute doesn't belong only to the motorists. It belongs as much to the kids and teenagers who are studying in

these institutes. Students should have the right to own the street space surrounding the buildings of these educational institutes.

Building form Detailing and the Pedestrian:

The value of real estate in the city denies the right to affordable enterprise. Footpaths & streets of the city form the backbone of the flourishing hawking businesses. Hawking is rampant in the station area of Vile Parle (E) & the street hawkers here have faced forced evictions. The hawkers represent the vulnerable poor class of the society, repeated forced eviction drives denies their rights of citizenship. But hawking is one of the important reasons behind the vibrant street life near the station area. It baffles planners and city officials since such informalities of usages don't fit within the city's development control guidelines, and they refuse to accept that streets and building edges can be used in many unconventional ways.

Defining walkability through survey of people of Vile Parle: This survey was conducted over a time frame of 3 weeks. The survey was a subjective interview where respondents were asked for a qualitative evaluation of issues relating to walkability in Vile Parle.



Day and night study: A picture of the street near the station as it transforms in the evening into a shopping destination.

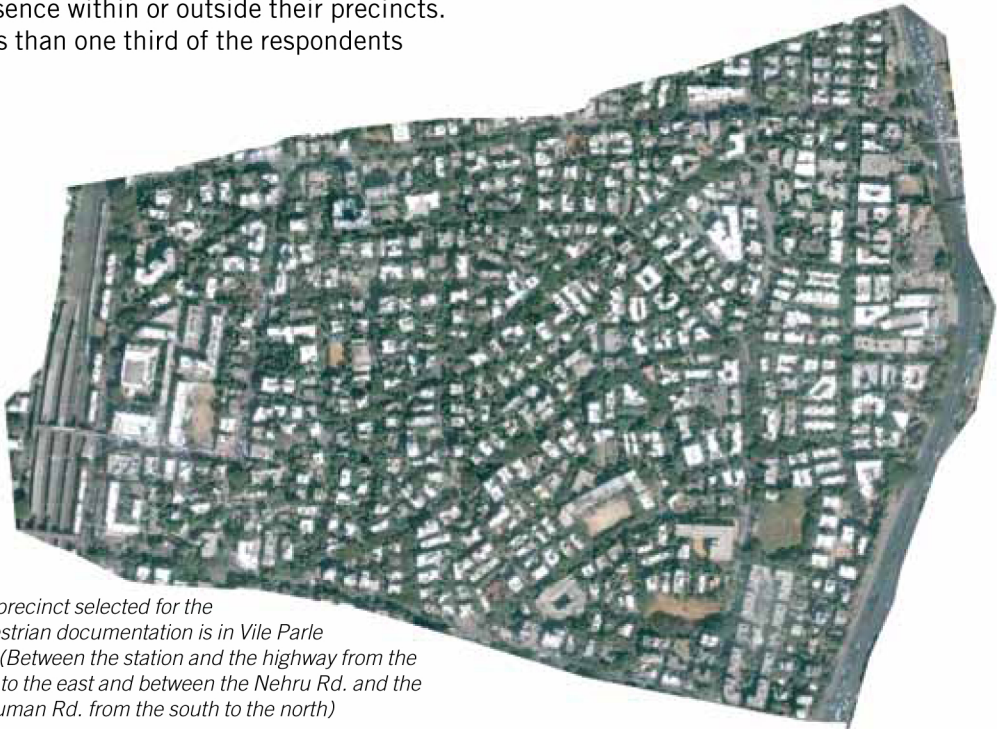


A view of the same area in the night.

The average age of the respondents was 41 years. The most frequent route taken by pedestrians who responded, was the walk from the house to the station. The other routes taken by the respondents were, Home Station-Office-Station-Home, Home-Shop, Home Bus-stop Office, Home-Market, Home Gym, Home College, School Walks between multiple destinations. In the interviews, people mentioned that most of their daily walkability was mostly in the vicinity of their houses. Many of the people identified the station precinct as a very walkable area, In spite of the fact that the station area is very crowded in the evenings and during the weekends and festivities.

Surprisingly very few people who stay in Vile Parle actually regularly use the small public spaces.¹⁸ Institutions like the Hanuman Mandir or the Ram Mandir has public spaces created due to their presence within or outside their precincts. Less than one third of the respondents

answered that they actually used such public spaces. The rest said they welcome the creation of such public spaces. It would be difficult to determine exactly how much do these spaces affects the overall walker friendliness of an area, but the activities generated and the positive community interaction does signal their importance in the layout of the neighbourhood. A general observation of these spaces like the newspaper stands, mandirs, kattas reveals that such spaces are used by only the young, old and children. The social classes using them also come from the economically weaker sections. Although these spaces do exist, their usage is not entirely democratic. Hence it is important to understand the user profile and the audience expectation before planning pedestrian amenities on a street in any neighbourhood.



The precinct selected for the pedestrian documentation is in Vile Parle East (Between the station and the highway from the west to the east and between the Nehru Rd. and the Hanuman Rd. from the south to the north)

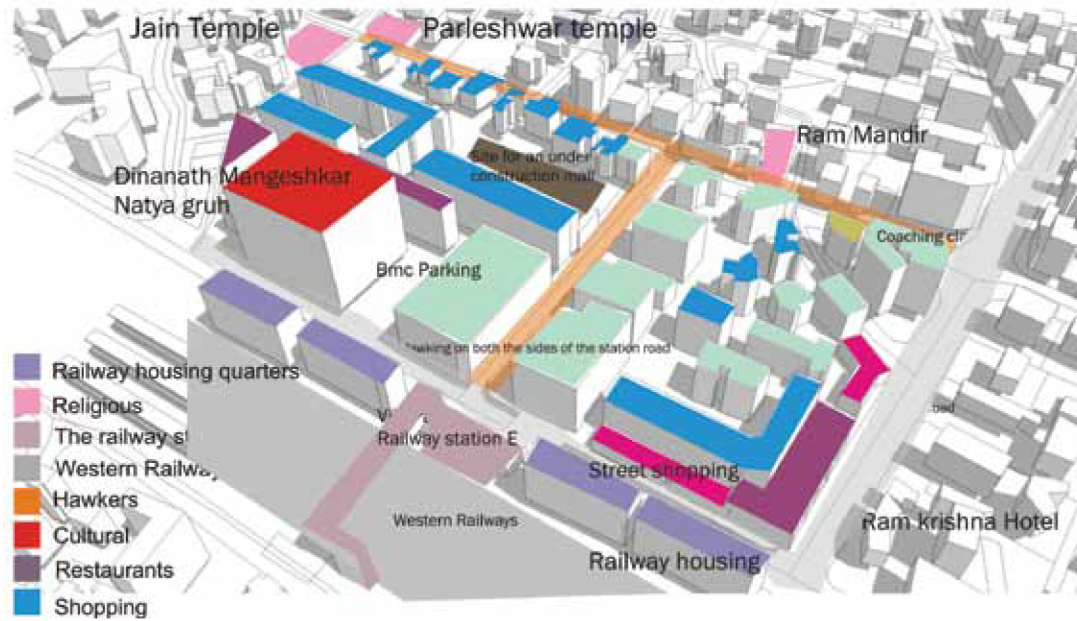
Half of the respondents didn't feel the need to own a car. All the respondents who don't own cars find the area very walkable, in fact even some of the car owners don't find it easy to drive and hence driving a car becomes a liability. Half of the people who do own cars prefer not to use it within the neighbourhood. But at the same time 50% of the respondents replied with a no to the idea of complete pedestrianisation, and some felt selective Pedestrianisation can be tried as an exercise. The remaining 40% said that streets should be pedestrianised. This can work in a neighbourhood like Vile Parle because multiple roads exist to get to any neighbourhood some of the streets can be made pedestrian. A loop might work in the favour of both motorised and non-motorised transport systems. In spite of issues of traffic safety less than 10% of the respondents felt that safety is an issue. Most of the people perceive the area to be relatively pedestrian friendly. Only the heavy vehicles like trucks and

BEST buses are perceived to be dangerous. Pedestrians feel safe because of the presence of residential and mix use clusters so there always are people who watch over the streets. Security is also guaranteed by the heavy traffic and the fast moving traffic getting distributed to the external roads (peripheral roads), thus reducing the traffic load on the internal streets. Most of the respondents feel that one of the biggest reasons for ease of walkability is the favourable walking distance.

Pedestrian analysis of Vile Parle based on the surveys and observations –

In the development pattern of Vile Parle, intensity and design conditions enforced due to the airport zone combines to make frequent walking an efficient choice for the people.

Vile Parle and Walkability: The neighbourhood is limited in size so that a majority of the population is



The diagram shows the 3d view of the station area with the various users

within a five-minute walking distance of its centre. The needs of daily life are theoretically available within this area. This encourages the creation of Walking and cycling conditions, and therefore increased non-motorised travel. There is increased traffic safety due to narrower streets, slower traffic and availability of many routes to a single destination.

The neighbourhood brings most of the activities of daily living into walking distances hence everyone has freedom of movement. The streets are laid out in a network, so that there are alternate routes to most destinations. This permits most streets to be smaller with slower traffic and to have parking, trees, footpaths, and buildings. They are equitable for both vehicles and pedestrians. Vile Parle has a good mixture of houses, small apartment buildings, shops, restaurants and offices. Open space is provided in the form of specialised squares, playgrounds and parks

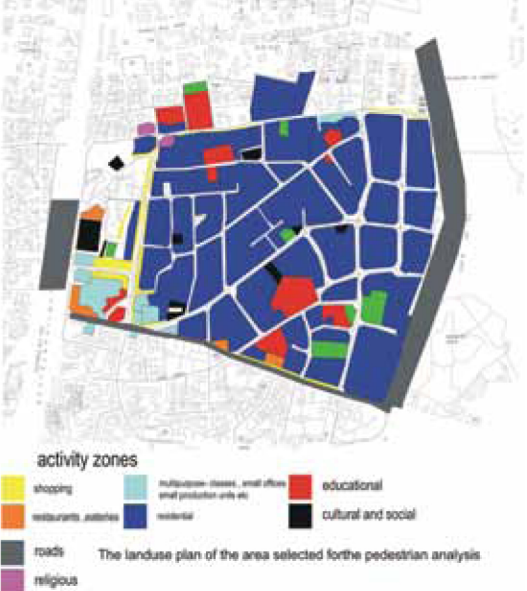
The qualities found in Vile Parle where development pattern, intensity and design character combine to make frequent walking and transit use attractive and efficient choices for many people.



Physical parameters: The blind junctions on the internal lanes are without signals. These can be dangerous with motorists coming from all the sides. The narrow roads are a problem even if there is parallel parking on one side of the street. Due to double parking these lead to traffic jams. Garbage containers on the road become a major reason for pedestrians to even take a longer detour to the destination. In the monsoons the low lying areas in the neighbourhood tend to get flooded by the overflowing waters from the drainage system. The unhygienic and unclean conditions at the station precinct due to the vegetable market are a hindrance and the conditions are worse during the monsoon.

Recommendations for Vile Parle: Marking of walking routes, the streets which become important urban pathways usually don't have adequate space to accommodate the pedestrian flow. Heavily used pedestrian corridors can be pedestrianised with the

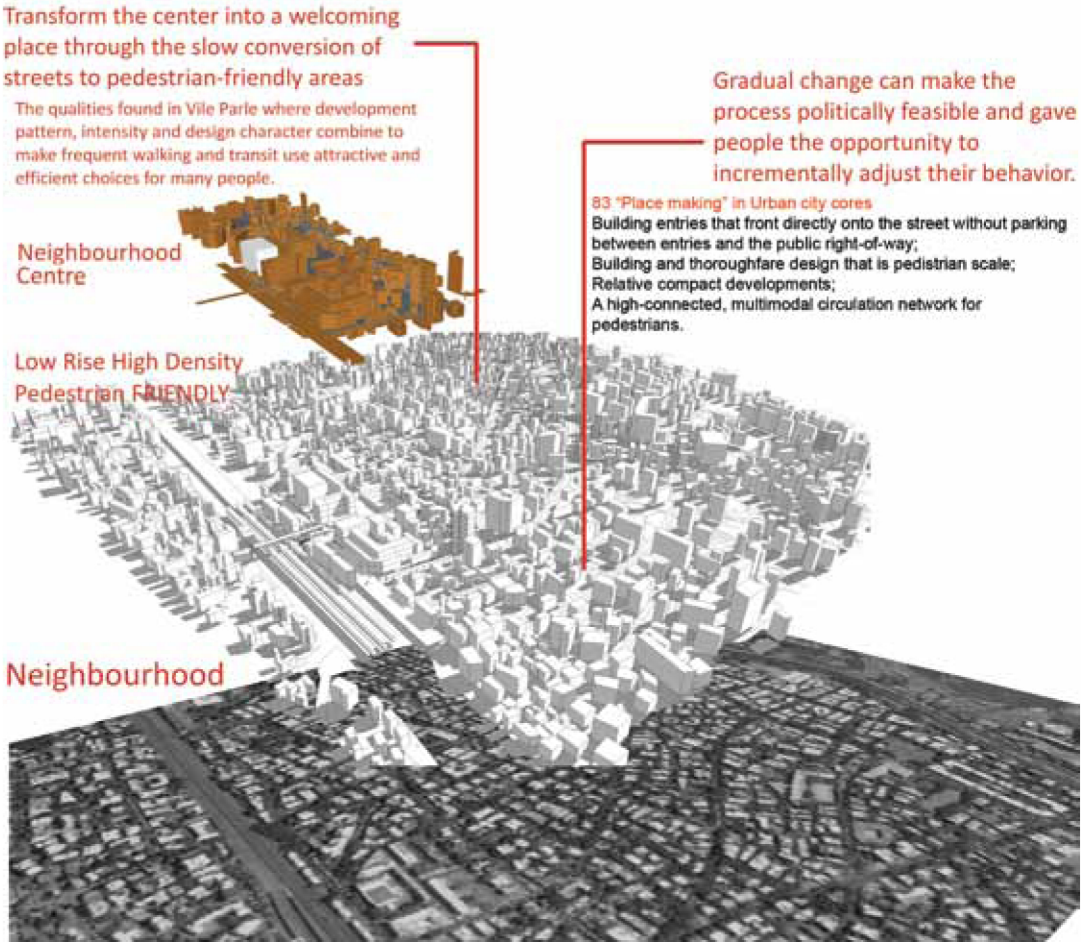
Zoning of the Area of Vile Parle which was surveyed.



creation and improvement of walking routes, walking and cycling circuits from the station to three common dispersal points. The complete absence of a continuous and dedicated footpath network makes it difficult to protect pedestrian space and offer dedicated corridors to pedestrian movement. The Development Control Regulations for building, landscape and thoroughfare design should consider the pedestrian's conditions, in other words, provide architectural and urban design detail with size and design appreciated by pedestrians. The highly-connected, multimodal circulation

network, created by relatively small blocks; creates pedestrian friendliness, and this character needs to be retained.

Measures can include speed restriction: This can be implemented by the conversion of streets as an aspect of speed management. Residential neighbourhoods can be marked as a series of one-way or two-way streets. These can be marked also as speed zones.¹⁹ Height barriers to restrict heavy vehicles in the internal parts of the neighbourhood can be created. These height markers will help in restricting entry of heavy vehicles



during all times of the day.¹⁹ Special routes for heavy vehicles can then be worked on. This possibility exists in the layout of the roads in the neighbourhood.

Public spaces on streets become the important urban spaces where the people meet. Presence of seating benches on the roads becomes a focal point on the street. Identification and maintenance of these spaces in the Master Plan of the area becomes important. Preservation of tree cover in the case of Vile Parle is important.

Drawing a conceptual frame work of Walkability at the neighbourhood level
Pedestrian plans are being developed at both national and city levels. The national framework is outlined by the National Urban Transport Policy of the Union ministry of urban development. The guidelines of the Jawaharlal Nehru National Urban Renewal Mission (JNNURM) do make explicit reference to pedestrian infrastructure.

The framework of the national urban transport policy and the investments for city development under the JNNURM²⁰ programme need to be linked with mandatory pedestrian plans in cities.

A frame work for walkability: Walkability differs from one part of the city to the other; it is a very local activity responding to the local urban fabric of the area. Walkability is very loosely understood and initiatives or solutions that are perceived actually to help walkability might end up otherwise.²¹

Road space in the city is not centrally controlled & maintained by one central authority. Multiple agencies are responsible for the roads & the footpaths. This leads to mismanagement of the road space.

What can be defined in this frame work?
Currently there is no clarity on what can be done to aid pedestrians. This concern is largely based on the current world view of providing increasing importance to non-motorised transportation initiatives. The policies that shall create an impact in the city for pedestrians and the public spaces cannot be directly drawn from the western models. The Indian context and understanding of street usage is very unique.

Recommendations and ideas from the study
Laws governing the usage of public space and for pedestrian rights should be formulated. This legal frame work should be through a series of executive orders governing the various aspects directly or indirectly related to Pedestrianisation.²² All public infrastructure projects should have a pedestrian audit for the project to get funding. Access to schools needs to be made safer for children who walk to school.

Dealing with urban centres: Transform the centre into a welcoming place through the slow conversion of streets to pedestrian-friendly areas. Work with the community as well as the police and municipal authorities to create a community-generated physical plan that is oriented toward local residents and other commuters. Gradual change can make the process politically feasible and gave people the opportunity to incrementally adjust their behaviour.

Create Pedestrian oriented community cores:
As the suburbs grow it is increasingly important to create compact community cores that are lively accessible centres of activity. Maximum comfortable distance for a pedestrian to walk in our hot & humid climate is 1 to 1.5 kms., meaning 10 to 15 mins. of walk.

Proportion the space of the public corridor:
Identify building edges and the response of the edges to the roads incorporate small public places into the urban fabric. Small public spaces provide the opportunity to expand the linear frontage on a street while creating a sense of place.

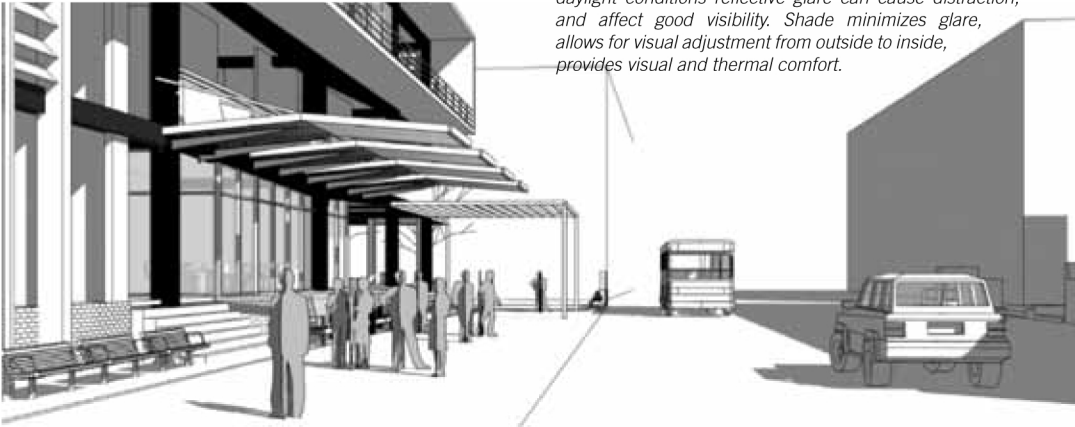
Looking forward:
The station areas and neighbourhoods around them in Mumbai metropolitan region have a specific pattern of development. Pedestrianisation around station precincts needs to be studied in the generation of activities and thereby creating a city centre. Pedestrian usage forms a very important of the city dynamics. Mapping of important

pedestrian routes originating to and from the station areas is important. One of the important pedestrian considerations that should be incorporated and understood well is the importance of multiple routes to a single destination. In the study that was conducted by me this was one issue that emerged, but this issue has not been elaborated upon in this study.

I hope the study and the data collected can help in framing a policy for pedestrian and other infrastructure projects in the city. The policy should clearly define pedestrian rights and lay frameworks for pedestrian infrastructure.

Encourage sidewalks that provide options
What can be thought about ?
Small public spaces provide the opportunity to expand the linear frontage on a street
Why ?
While creating a sense of place, a small square can accommodate a variety of casual and programmed activities. Small places should have a focal point such as a fountain or sculpture. Buildings that surround the public spaces should be designed as though they were on the street front

Shade the street-front
What can be thought about ?
-Discourage the use of reflective glass
-Provide continuous overhangs, canopies, awnings or other shading devices that are designed using proper sun angles for the time of the day
Why ?
The places that create the most effective settings for everyday between light and shadow enrich the sense of place and create a natural rhythm of movement through the space. Due to bright daylight conditions reflective glare can cause distraction, and affect good visibility. Shade minimizes glare, allows for visual adjustment from outside to inside, provides visual and thermal comfort.



1. Like the UN document on Pedestrian safety defines what walkability means. Many authors have defined walkability. Walkability has been further dealt with in the document. There are parameters which have been conceptualised by organisations across the world
2. Development Plan Document MMRDA Part 2, Chapter 11, Transportation: A Strategic Perspective n11
3. The study tried to look at design components (existing and new additions made like skywalks) contributing to the transit oriented pedestrian development near city hubs
4. As per the urban walkability done by Wilbur Smith Associates for the Union Ministry of Urban Development
5. Mumbai has the highest number of pedestrians compared to many other cities in India
6. The problems relating to pedestrians are periodically highlighted in the media: unusable footpaths, zebra crossings, poor street lighting, rash drunken driving, violation of traffic rules, digging on roads encroachments, debris and garbage on footpaths that force walkers onto roads; two-wheeler riders using footpaths to bypass traffic jams; and insufficient policing, at night. The obstacles on footpaths range from Electricity Transformers, Toilets, Parking Lots, Newly Designed Bus Shelters, Hawking, and Parking., Studies carried out by Sustran observed that "pedestrian subways and foot over bridges, far from being pedestrian traffic improvements are vehicular traffic improvements that cause inconvenience and difficulty for pedestrians.
7. As per the urban walkability done by Wilbur Smith Associates for the Union Ministry of Urban Development
8. Disconnecting Experience: Making World-Class Roads in Mumbai- Nikhil Anand- Department of Cultural and Social Anthropology Stanford University written for the CASA Graduate Seminar 'The Postcolonial City', Prof. Amita Baviskar, June 2005
9. "While walkability has emerged as a prominent feature of the ideal new urban form, the literature in this field provides ambiguous guidance. Rather, much of the walkability literature is concerned with comparing definitions and listing features hypothesised to contribute to an environment that supports walking. Currently, there is neither one precise way to describe walkable environments, nor a well-defined set of correlates of walking behaviour." -Walkable Environments and Walking Activity-Elizabeth Shay, Steven C. Spoon, and Asad J. Khattak- December 2003 Project Title: Walk, Don't Walk: A Resource for Planners and Engineers, As per the urban walkability done by Wilbur Smith Associates for the Union Ministry of Urban Development
10. Lea Associates south Asia international-TRANSFORM Report done as a part of the COMPREHENSIVE TRANSPORTATION STUDY FOR THE MUMBAI METROPOLITAN REGION
11. Kevin Lynch, Christopher Alexander 1987- Image of a City - University press, Walkable Environments and Walking Activity-Elizabeth Shay, Steven C. Spoon, and Asad J.
12. Allan Jacobs Great Streets 1994 University Press MIT , Kevin Lynch, Christopher Alexander 1987- Image of a City - University press
13. The surveys were conducted as a part of the study, questionnaires with specific question addressing the walkability of the area were asked, the survey and its findings and observation are limited to the area of Vile Parle
14. Policy makers include urban policy decision makers like the MMRDA, MCGM etc inserted note 2 - Recurring factors included pedestrians descriptions of the city built form and associations to take up certain routes compared to others ,Building experience and importance of short cuts for pedestrians, advantage of shopping options on the street.
15. P.L Deshpande Mazya Bal Panatle Parle- Vyakti ani Valli- Collection of short stories in Marathi Fountain Publications 1985
16. In my conversations with police officials in the Vile Parle police beat chowky about the crimes against pedestrians they mentioned that compared to some parts of the city Vile Parle has a good safety record
17. Walkable Environments and Walking Activity- Elizabeth Shay, Steven C. Spoon, and Asad J. Khattak- December 2003 Project Title: Walk, Don't Walk: A Resource for Planners and Engineers
18. By public spaces it was meant the social spaces around which people interact on the street
19. UK has Home Zones or 20 mph zones in residential areas, A Street making system modelled on the UK's street marking system could be implemented
20. Jawaharlal Nehru National Urban Renewal Mission calls for up-gradation of non motorised transportation in the urban areas .
21. Passive strategies (as have been widely used in the western countries serve as a very good example for the city)
22. Laws relating to pedestrian zones, improvement of pedestrian infrastructure, traffic calming, restriction of traffic flow and pedestrian safety, Area wise technically correct guidelines for footpaths and make them non negotiable. Revision of the guidelines and codes mentioned in the UDPFI and the IRC codes for public infrastructure like footpaths Conducting walkability audits for the city. These audits can be conducted by local volunteers from the area and be compiled into a city wide audit. Women, Children and all classes of societies including the handicapped should be doing the surveys of framing recommendation.