

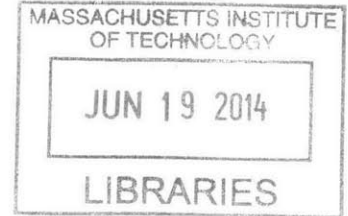
Designing Indian Streets as Social Public Spaces –
Contextual design and planning in Bangalore

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ABSTRACT:

Streets in India have traditionally been the public spaces around which social life has revolved. They constitute the urban public realm where people congregate, celebrate and interact. The hypothesis that forms the basis of this thesis is that there is a need to understand and design these urban streets as living corridors through which one perceives and understands the city, and the places where one has daily social encounters.

Using Bangalore as a case study, this thesis analyzes spatial and social forces that shape street experience and culture at the scale of the city, the locality, and the street itself. By performing a reconnaissance study and an analysis of the street patterns in fifteen localities within the city, along with a detailed spatial analysis and interpretation of four different types of streets, I shed new light on the social life of different types of streets, and suggest ways in which the stimuli for these social lives can be understood and used to formulate design guidelines for streets in Indian cities that are currently undergoing similar transitions in their development.

Through this process, I propose a method to identify urban typologies that relate to the physical and social conditions that occupy the city, along with a set of criteria that can be used to assess, plan and design streets that are more contextual in nature.

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TABLE OF CONTENTS:

	CHAPTER 1: INTRODUCTION AND PROBLEM STATEMENT	7
1.1	Background – Inspiration and Problem	7
1.2	Streets as Public Spaces in India	9
1.3	The need for contextual design and planning of streets in Bangalore – Suppositions, Research Questions, Significance and Proposal	15
1.4	Bangalore as a case study – Past to Present	18
1.5	Structure of the thesis	26
	CHAPTER 2: CONCEPTUAL APPROACH AND METHODOLOGY	27
2.1	Conceptual Approach	27
2.2	Research Design, Methods and Definitions	28
2.3	Strengths and Limitations	30
	CHAPTER 3: PERCEIVING THE CITY – A RECONNAISSANCE STUDY	33
3.1	Introduction – Urban Scale Reconnaissance	34
3.2	Travel paths, sequences and spaces	36
3.3	Comparisons between perceived and actual conditions in the city – An analysis	37
3.4	Findings and Implications	48
	CHAPTER 4: STREET PATTERNS AND NETWORKS – ANALYSIS AND COMPARISON	51
4.1	Introduction – Cues found in street patterns	52
4.2	The issue of nomenclature, structure and hierarchies	55
4.3	Pattern analyses and comparisons	59
4.4	Findings and Implications	126
	CHAPTER 5: THE SOCIAL LIFE OF STREETS – A DETAILED SPATIAL ANALYSIS	129
5.1	Introduction – The culture of streets	130
5.2	Selection of streets	133
5.3	Detailed spatial analyses of cases	134
5.4	Findings and Implications – Qualities that define ‘great’ streets in Bangalore	190
	CHAPTER 6: CONCLUSION	204
	REFERENCES	208

"Expelling thoughts of 'who is my own', 'who is an outsider', 'where would this person have come from', and 'how do I fare in relation to him', he is occasioning new relationships and, so, moulding this place.

Separations and divisions abound in every street, but everyone can still find ones routes and corners through and in them. Is this just how streets are, or is this something continuously renewed and refreshed?"

-from Cybermohalla Ensemble, *"Eleven streets"*

CHAPTER 1: INTRODUCTION

1.1 Background – Inspiration and Problem

Historically, India has primarily been an agrarian society, with the daily lifestyles of people closely attached to the land that they live on and work with. Due to this, and other environmental factors like hot summers, perhaps, most social customs have revolved around open space. Open space that most people understand to be parks, plazas, courtyards, playgrounds and *maidans*. However, one of the most important, and yet often taken for granted, open public space within Indian cities, towns and villages, has always been the street – the place where people interact, celebrate and congregate¹. Even though streets have been the corridors of infrastructure, they have always occupied an essential space within the public life of cities in India. In the words of Arjun Appadurai, "Streets, and their culture, lie at the heart of public life in contemporary India. Especially in those many cities where urban housing is crowded and uncomfortable, and where the weather is never too cold, streets are where much of life is lived."²

India has the second largest population in the world with 1.3 billion people as per the 2011 Population Census. It is also one of the most rapidly urbanizing countries in the world with a rise in urban population from 286 million (27.81%) in 2001 to 377 million (31.16%) in 2011. With the pressures of urbanization³ and increase in population densities within urban regions, comes a major demand for land. In this context, the first set of spaces within the city that are re-zoned to be developed are open spaces. This results in a change in the urban form and physical configurations of space within the city. Due to this, the amount of open space accessible to the general public reduces⁴.

¹ Nicholas R Fyfe, ed., *Images of the Street: Planning, Identity, and Control in Public Space* (London; New York: Routledge, 1998).

² Arjun Appadurai, "Street Culture," *The India Magazine* 8(1), December 1987.

³ Shahab Fazal, "Urban Expansion and Loss of Agricultural Land - a GIS Based Study of Saharanpur City, India," *Environment and Urbanization* 12, no. 2 (October 1, 2000): 133–49.

⁴ "In Mumbai, Open Spaces Are Rare, and Rarely Open," *India Ink*, accessed December 10, 2013, <http://india.blogs.nytimes.com/2012/09/03/in-mumbai-open-spaces-are-rare-and-rarely-open/>.

In 1991, India launched its New Economic Policy which reflected the principles of neo-liberalism, including the focus on 'market solutions' and 'market processes' being given preference over Government regulations. "In neo-liberal India, the state has strongly encouraged the flow of foreign investment into India enabling multinational companies to more easily operate within the country." This has resulted not only in the boom of the technology sectors in most cities in India, but also in the growth of the new Indian urban elite due to a rise in the average salaries of the population employed by these corporations.⁵ These factors have severely affected the way in which cities are being designed and planned. Private investors are increasingly having a major voice in the planning process with Special Economic Zones becoming popular throughout the cities of India. The concept of the 'global city' including "tearing away of the "context" or the "surrounding" and its replacement with the fact of the global"⁶ along with a worldview of the 'ideal city' and modernization as the epitome of urban development has resulted in a complete de-contextualization of urbanism in the country. Lata Mani in her article "Urban Triptych" also mentions "Any conception of the 'the global city' that is at odds with the prevailing nature of Indian urbanism is equally at odds with its cultural substructure, a fact of far greater consequence."⁷ However, politicians all over the country are pushing for models of Singapore, Tokyo, London and Paris to be developed in India, epitomizing them as the 'ideal'.⁸ This has contributed to contemporary streets being less reflective of the earlier customs and culture of the local context within which they are located. Government regulations have revolved around zoning and FARs, and streetscapes are modeled on standard sections inspired from the Western context by the city municipal corporations, or on sections drawn up for vehicular traffic by transportation engineers⁹. Due to this, the character and identity that most traditional streets in the country have is not becoming a part of the contemporary urban design dialogue. The same holds true for the process of laying out street grids and networks. Streets in the older parts of

⁵ Pratyusha Basu et al., "Global Economy Case Study: How Can Geographic Interpretation of Streetscapes Provide Local and Global Perspectives on Transportation and Manufacturing?," n.d., http://cgge.aag.org/GlobalEconomy1e/CaseStudy5_Bangalore_Aug12/CaseStudy5_Bangalore_Aug12_print.html.

⁶ Saskia Sassen, "The Global City: Introducing a Concept," *Brown Journal of World Affairs* XI, no. 2 (Winter/Spring 2005): 27–43.

⁷ Lata Mani, *Integral Nature of Things: Critical Reflections on the Present* (London; New York: Routledge, 2013).

⁸ Janaki Nair, *The Promise of the Metropolis: Bangalore's Twentieth Century* (New Delhi: Oxford University Press, 2005).

⁹ "Tender SURE Volume 1: Design Standards, Nov 2011 | Jana Urban Space Foundation (Formerly India Urban Space Foundation)," accessed April 24, 2014, http://portfolio.janausp.org/?page_id=483.

many cities in India followed the flow of water and the topography of land. However, since the colonial times, geometric grids have been inscribed onto the ground without much consideration for the existing natural conditions.

Due to the pressures of development, streets are the biggest asset in terms of public open space that is available in urban regions in India today. In order to maximize the potential usage of these streets as public spaces for congregation, interaction and celebration, and not merely as mobility corridors where people 'go through' but don't 'go to', it is essential to look at traditional streets and networks to understand the various forces and qualities – political, ecological, economic, social, cultural, infrastructural, and historical – that have shaped and re-shaped the streets of India. There is a need to understand how those streets were initially designed and planned and how they have evolved and adapted to the changing ways in which people use them. This will help designers gain an understanding of the elements of street design and planning that work and those that don't work, within the Indian social and cultural context, to create active streets within cities.

1.2 Streets as Public Spaces in India

"Streets are many things: thoroughfares, bazaars, theatres, exhibitions, restaurants. They encompass a huge range of activities from worship and business, to political protests and funeral and marriage processions...On its streets, India eats, works, sleeps, moves, celebrates and worships."¹⁰

Streets in India have a tradition of being the in-between space that negotiates between the private and the public. Women, traditionally, would spend the day gossiping, sorting pulses, cutting vegetables, and washing clothes out on the verandahs of their houses, while conversing with the neighbors and the street vendors that would pass by with vegetables, fruits, flowers and other household commodities. Today, with the change in lifestyles and the preference given to

¹⁰ Appadurai, "Street Culture."

vehicular traffic resulting in widening of most urban roads, a lot of these activities generated by street frontage have disappeared and the predominant image is the boundary wall forming the street edge.

India's streets have a history of being shared spaces, by pedestrians, rickshaw pullers, *thela waalas*, stray animals, horse-drawn carriages, bullock carts, bicycles, motorized two-wheelers, cars, buses, trucks and tractors. However in most of the regulatory literature, the term 'road' is always used instead of the term 'street'. These two terms, often used interchangeably, carry different interpretations especially in the local colloquial urban sensibility. Roads (सड़क) are mobility corridors that connect people – "metalled, unmetalled, raised, sunken, potholed, mud-packed, gravel-laden thoroughfares." Streets (रास्ता) are 'cohabited spaces', 'life worlds'. "The street is a theatre of contiguity, chance, conflict and conviviality."¹¹ They consist of not only people on their way to work or home, but also of those that are just there to watch – "the occasionally employed, the under employed and the unemployed, as well as those wealthy or idle enough to afford not to be in a hurry."¹² The Oxford English Dictionary mentions that in early use a road was "frequently distinguished from a street in passing from one place to another, rather than being situated within a city, town, or village." It defines a road to be "a path or way between different places, or leading to some place"; and a street to be "a road in a city, town, or village, typically comparatively wide, and usually running between two lines of houses or other buildings; such a road along with the pavements and buildings on either side."

¹¹ Mani, *Integral Nature of Things*.

¹² Appadurai, "Street Culture."



Streets also serve as canvases for public expression against political regimes, for social issues and religious beliefs. Political speeches and rallies on the street corner and marches in protest of social issues, both happen in the streets – the only open space in the city that effectively belongs to the people. Religious festivals like Durga Puja, Ganesh Chaturthi, Makar Sankranti, Eid Milad-ul-Nabi, are characterized by religious processions on the streets with fireworks, carrying of idols on trucks with music blaring from loud-speakers, and people dancing. During these political and

religious expressions, the streets which are normally the 'neutral' spaces within cities, become "marked by the claims of various communities and interest groups."¹³

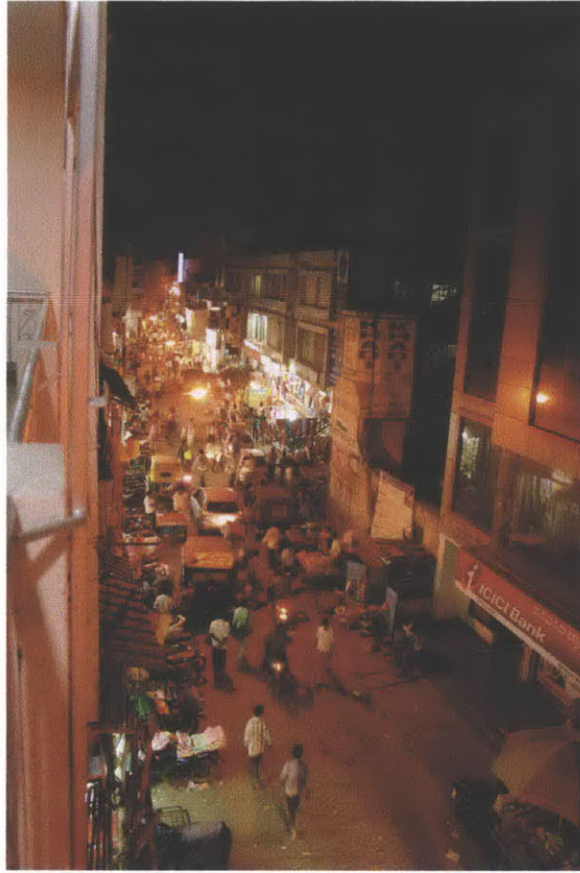


These public spaces become the stage for daily activities, almost like rituals, where vendors of fruits, vegetables, flowers, food and household items assemble their carts at strategic locations

¹³ Ibid.

along the streets and organize their goods in the most efficient and appealing way possible. They then continue to add to the hustle bustle of the street by singing out a list of the items that can be found on their cart every time a potential buyer walks by. The same is done by shopkeepers who lay out their best goods on the street in order to capture the attention of any passer-by. Street vendors and shop extensions are often criticized for being unregulated and creating chaos on the sidewalks by encroaching upon the space 'assigned' for pedestrians. However, they have historically always been a part of the social experience of streets in India, and even though they hinder pedestrian flows, but still they add a lot to the vibrancy of streets and provide easy accessibility to basic goods and services just around the corner. Other than these local social customs and activities that form an integral part of the Indian street, circulation and infrastructure provisions are also important functions of the streets within the city. Streets are the paths along which people move through a city and see, observe, experience and perceive, whether it be from the comfort of one's personal car or on foot.





There is a multitude of factors that go into the creation of these social spaces. Each of these forces have in some way been commented upon through various lenses of study. The current literature on streets in India can be grouped into three categories. The first includes writings that describe the street as 'a space of difference'. These are characterized by descriptions of Indian streets that are 'deviations from modern ideals.' (Kidambi 2007, Bose 1965). The second includes writings that characterize streets as "manifestations of power, arenas on which forces of global capital and ideologies of neo-liberalism unfold (Rajagopal 2002, Whitehead and More 2007)."¹⁴ The third includes writings on the culture of Indian streets with descriptions of their sensory and chaotic efficiency and their place within the Indian urban context (Appadurai 1987, Srivatsa 1997, Edensor 1998). Currently, however, the literary space that connects these aspects of Indian streets, which will help urban designers and planners understand the complexity of Indian streets, is relatively unexplored.

¹⁴ Jonathan Shapiro Anjaria, "Is There a Culture of the Indian Street?," *Seminar India*, no. 636 (August 2012).

1.3 The need for contextual design and planning of streets in Bangalore

Bangalore is one of the first cities in the countries where multinational corporations, especially those in the technology and bio-technology sector, have set up office campuses. This trend has followed in other cities like Pune and Hyderabad. It has resulted in a major shift in the urban form due to increasing influence on the planning process by private stakeholders. This de-contextualizing of urban planning and design is visible not only through the changing physical form of the city, but also through the planning guidelines being published by the city and consultant agencies. Thus, Bangalore provides a good case study for this thesis.

Janaagraha is a non-profit organization which is an initiative of the Bangalore Agenda Task Force. It was set up in 2001, and aims to "improve the quality of life in Indian cities and towns"¹⁵. A part of the Janaagraha family, the Jana Urban Space Foundation (JanaUSP) established in 2007 aims to "catalyse a more thoughtful transition for a rapidly urbanizing India, through three streams of activities involving practice and policy: Urban Planning; Urban Design; Policies for Planning and Design."¹⁶ JanaUSP, along with the Bangalore City Connect Foundation are responsible for the development and the publishing of the Tender S.U.R.E. (Specifications for Urban Road Execution) guidelines for the 'urban roads' of Bangalore. Told to me by a senior Urban Designer at the JanaUSP, as a part of an ongoing project (started in 2011) by the City to improve the design and condition of urban roads in Bangalore, an amount of 200 crores has been assigned for the improvement of 45 streets in the city. Out of these, 12 streets are being redesigned, as per the specifications in the Tender S.U.R.E. guidelines, by the JanaUSP.

In terms of implementation, there are certain processes behind the development of these design proposals that can be good examples to learn from in the field of urban planning in the Indian context. The processes include community engagement through an online and on-the-street campaign called 'I Change my City', collaboration with agencies like the Bangalore Water Supply and Sewerage Board (BWSSB) and Bangalore Electricity Supply Company (BESCOM) to

¹⁵ "About Us," accessed April 29, 2014, <http://www.janaagraha.org/content/pages/about-us>.

¹⁶ "About Us," accessed April 29, 2014, <http://www.janausp.org/aboutus.php>.

consolidate underground utilities along streets and to ensure that the streets that are redesigned and redeveloped will not be excavated for a period of ten years after the construction work is complete. They have also experimented with an 'Adopt a Road' program aimed at Real Estate companies and other private sector companies to increase accountability and create a model for better maintenance of urban roads in the city.

However, even though these guidelines are well-intentioned, the designs put forward for roads like Brigade Road and Cunningham Road, seem to be inspired by the Western street model, with provisions for fountains and plazas along the streets; elements of a streetscape which have never been a part of Indian streets traditionally. These can be seen in the images below which are screen shots from a proposal video published online by the foundation. This is a continuing issue in several Indian cities that are witnessing rapid urban growth. It brings forward the need for context-specific planning and design, which forms the underlying argument for this thesis.



Stills from the video of the proposed design for Brigade Road by the Jana Urban Space Foundation
<http://portfolio.janausp.org/?page_id=2656>

Research Questions:

In order to support my claim developed through life experience, field research and a literature review, the following are the questions that I have tried to address through my thesis:

How can Indian street design be understood, analyzed and categorized comprehensively with all its complexity at multiple scales of urban experience?

How can that local knowledge be used to better design and plan context-specific contemporary streets as public spaces, with a strong social life, while accommodating the needs for the emerging uses of these places, and without disrupting the functions of connectivity and access?

Proposal

Using a neo-traditionalist approach as a theoretical starting point (e.g. Centre for Science and Environment's *Dying Wisdom* in India; New Urbanism in the United States), I aim to study the spatial design and planning aspects of existing Indian streets in order to understand their contribution to perception, historic memory and authentic culture which make them public spaces in addition to infrastructural corridors. I aim to situate these streets in their macro and meso scale contexts and understand the forces--spatial, social, cultural, ecological and economic--that contribute to the imageability of streets in the urban public realm in Bangalore. I also aim to understand the micro-scale physical elements that contribute to the social life of these streets. The overall result will be a comparison of the conceived and perceived image of the city of Bangalore using specific areas in the city as examples of development during the various stages of its urban history (1930s to present), along with an analysis of the street patterns, and an analysis of street usage and design of various cases. I also aim to synthesize the knowledge gained through these studies into a set of criteria, based on certain physical qualities that can be used to assess and propose contextual street designs and layouts for the city.

Significance

The August 2012 issue of the journal *Seminar India* was based on Indian Streetscapes. As an introduction to the issue, Curt Gambetta and Ritajyoti Bandyopadhyay ask the question “What is the future of the street?”¹⁷. They go on to say “In both the popular and critical imagination, the question is coloured by a sense of impending obsolescence, as though the importance of the street as a conduit of social life may well be a thing of the past.” In order to be able to preserve, restore and renew this identity of Indian streets, it is essential to understand the complexity of these urban spaces and the processes that shape them. Most of the literature on Indian streets until now has been silo-ed into physical, economic, social, cultural or anthropological aspects of the streets. My thesis attempts to connect these factors with an exploratory spatial analysis of streets and patterns in order to understand the existing paradigms prevalent in urban planning in India today and in the past. Currently, most cities in India do not have a set of street design guidelines to direct urban street planning and design. The guidelines that exist are primarily for national and state highways with very little emphasis on urban roads or streets. Street design as its own separate challenge is only beginning to be addressed by a few cities like Delhi, Ahmedabad, and to some extent Bangalore.¹⁸ There is a need to think outside of the box and create this set of guidelines for urban areas in India which set out specific criteria for the definition of Indian streets and design ideas that combine the best characteristic elements of traditional streets and contemporary streets.

1.4 Bangalore as a case study – Past to Present

Bangalore has experienced a major explosion of population since the 1960s and thus a major change in its urban form and design, especially that of the public realm in the city. The city's recent street design guidelines published in 2011 by the Jana Urban Space Foundation and the Bangalore City Connect Foundation mention the need for interventions that are more reflective of local context, but their design standards and the designs that have been developed by the Jana

¹⁷ Curt Gambetta and Ritajyoti Bandyopadhyay, “The Problem,” *Seminar India*, no. 636 (August 2012).

¹⁸ “Tender SURE Volume 1.”

Urban Space Foundation based on these standards stop short of being specific to the city's history and culture. This is similar to a lot of other cities like Pune and Hyderabad which are now experiencing these major influxes of technology related companies and the population employed by these companies. These, along with the fact that I have lived and worked in Bangalore for a period of one and a half years, are the reasons that contribute to the city being a great case for this study,

Bangalore is the capital of the state of Karnataka in India covering an area of 2196 square kilometers (as per ML InfoMap) and a population of 9,621,551 as per the 2011 Census. It is located in the southern part of the country at an elevation of approximately 3000 feet (900 meters) on a ridge top running through the middle of the Mysore plateau from west to east. This ridge serves as the major watershed boundary of the state. The urban history of the city dates back to first half of the 16th century but it has experienced significant growth since 1991, and continues to stretch its boundaries by developing campuses for companies in the technology sector along its outskirts. The presence of the technology sector started relatively early in Bangalore in the 1990s and has continued to become a major force in the development of the city. Other cities in India like Pune and Hyderabad have also followed suit by becoming major hubs for various technology companies. Presently, most Information Technology companies have offices and call centers in Indian cities, primarily cities like Bangalore, Pune and Hyderabad. These private sector companies are a major driver of the urban economy and hence a major influence in the way that these cities develop. Their offices also tend to have a very similar urban form of introverted, gated complexes with multistory steel and glass structures that provide all kinds of amenities and highly controlled environments within them. Due to this form of development, the resultant space in the city like the streets and other public spaces, become highly neglected.

Like most other Indian cities, there is a range of authorities at the city and state level that are responsible for various roles in the urban development process. At the Karnataka state level, the Karnataka Public Works Department is responsible for the construction and maintenance of State Highways and Major District Roads, including flyovers and bridges. The Bruhat Bengaluru

Mahanagar Palike (BBMP), translated as the Greater Bangalore City Municipality, is the administrative body at the city-level that is responsible for the civic and infrastructural assets of the Greater Bangalore Metropolitan area. This includes the construction and the maintenance of roads in the city. Other agencies like the Bangalore Water Supply and sewerage Board (B.W.S.S.B.) and the Bangalore Electricity Supply Company (B.E.S.C.O.M.) work with the BBMP to provide essential services to the population. Additionally, the Bangalore Development Authority (BDA) is responsible for the management of land and properties within the 'Bangalore Urban' area, while the Bangalore Metropolitan Region Development Authority (BMRDA), is responsible for the management of land and properties in the 'Bangalore Rural' areas.

Historically, several accounts tell of kings and conquests in the area that Bangalore city lives in today dating back to 350 A.D. However, most of these are speculative. As per R.L. Singh (1964), Bangalore owes its origins to the Hoysala kings, namely Vira Ballala (1172-1219 A.D.) However, the settlement did not attain any importance until 1537 when Kempegowda I built a mud fort and made it his capital. This area was known as Pettah and comprises the areas of Chickpete and Nagarathpete today. The Mughal ruler Khasim Khan defeated Kempegowda II and leased the land in the area to Chikkadeva Raya Wodeyar. In 1704, Hyder Ali usurped the throne with his son Tipu Sultan. Hyder Ali was responsible for the development of a large garden called Lalbagh in the city, which, although reorganized, is still existent today. The next major influence on the city's physical form was when the British settled in Bangalore in 1791. They built the Cantonment area in the city. Due to their presence, the availability of trade and employment opportunities in the city increased and thus attracted people from other parts of the region. Due to this inflow of people, the area of the Civil and Military Station (C.M.S.) was formed next to the Cantonment area. This area is now Shivaji Nagar and is one of the most densely populated areas within the city. The predominant market in the C.M.S. at that time was called Blackpally which was located on the same site as Russel Market today. Most of the civilians who lived in this area were employed or otherwise associated with the Mysore Government. In 1862, the City Municipality of Bangalore was formed. At this time the city was divided into eight wards, namely Palace, Balepete, Manavartepete, Halsupete, Nagarathpete, Lal Bagh and the Fort. The laying of a railway line in 1964 and subsequently in 1882 and 1884 connected Bangalore to Madras (Chennai),

Mysore and Harihar respectively. This resulted in the growth of the city. A committee was set up for the improvement of the city in 1889, following which in 1892 the first residential localities of Chamarajpete and Seshadripuram were laid out north and south of the Pettah area.

In 1898, the city suffered from a plague epidemic which revealed the perils of dense and unhygienic living conditions within the Pettah and the C.M.S. areas. Following this, other residential layouts like Basavangudi, Malleswaram, Sankarapuram were developed. These areas were to cater primarily to the high middle class population and were represented by wide, tree-lined streets and large plot sizes. In 1908, the City Improvement Committee was reconstituted to improve the conditions of the densely populated areas. This body developed into the City Improvement Trust Board which had greater statutory powers and was entrusted with the job of the improvement and extension of the city. In 1949, after India got independence from the British colonial power, the twin municipalities of the old city and the Cantonment were combined to form the Bangalore City Corporation. Despite this, the two areas continued to develop in very different ways. Following this, the early 1950s saw the establishment of several large public-sector industries, especially in the textile and manufacturing sector. This included Binny Mills, Minerva Mills, Kirloskars, Hindustan Aircraft Factory, Indian Telephone Industries and Hindustan Machine Tools. These were located on the outskirts of the city, primarily to the north and west of the city, separated from the core of the city by a large agricultural belt. These industries brought with them a large inflow of workers from all over the region. Following this, a few industrial layouts like the Rajaji Industrial Layout were developed on the outskirts of the city which housed the factories and residential quarters for the workers of the city.¹⁹ This was the beginning of a major population growth in the city. This trend of the migration of industries into Bangalore city has continued since then, though the nature of the industries has changed over time. In the 1950s and 1960s, all of the industries set up belonged to the public sector with a major portion of them being textile manufacturing units. Following this, between the 1970s and 1990s, several other manufacturing units, were set up. Up until this time Bangalore was known as the industrial hub for public sector companies. Following India's neo-liberalist policies in 1991, several

¹⁹ R. L. Singh and Geographical Society of India National, *Bangalore; an Urban Survey*, 1st ed. (Varanasi: Published by Tara Publications on behalf of [sic] the National Geographical Society of India, 1964).

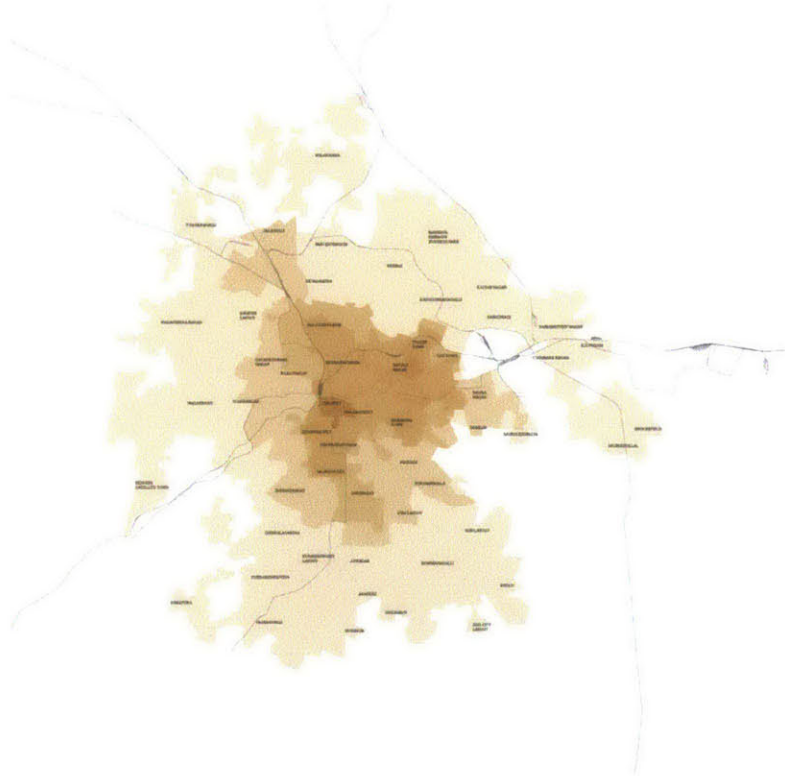
Informational Technology and Bio-technology companies have set up large campuses within the city. In the mid-nineties, Bangalore had 109 firms, including multinationals primarily in the computer software field. By the late 1990s, this number escalated to 1,400 and was responsible for 60,000 jobs in the city. In 2000, the IT and IT-enabled service industry including call centers, medical transcription, and back office operation jobs dominated the city with over 3000 firms.²⁰ This trend has continued until today and has majorly influenced the way in which the city is perceived by the outsider, the resident, and the law-makers. This is reflected in the ideals of the politicians leading the development of the city. As mentioned by Janaki Nair, "there has been a futuristic vision of the metropolis as conforming to international standards, for which Singapore has been the single most important model. This received its most forceful articulation in the actions of S.M.Krishna, chief minister of Karnataka from 1999 (to 2004), who insisted not only on a vision of Bangalore that physically mirrors the island nation, but one in which 'the value systems adopted by the citizens of Singapore like accountability, civic sense and respect for law gets spread to Bangalore and other cities of Karnataka.'²¹ To realize this dream, the chief minister set up the Bangalore Agenda Task Force (B.A.T.F.) headed by Nandan Nilekani, the former CEO of Infosys Technologies, and several other 'nominated' members primarily from the corporate world.

²⁰ Nair, *The Promise of the Metropolis*.

²¹ Ibid.



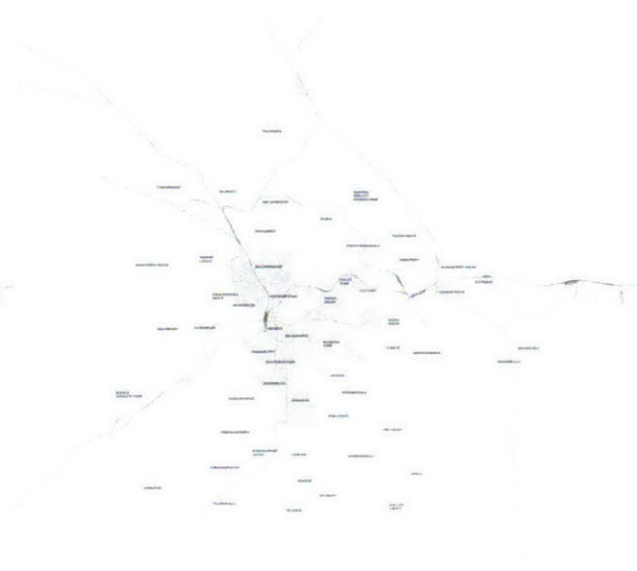
Map showing the growth of the street network from 1937 to 2012



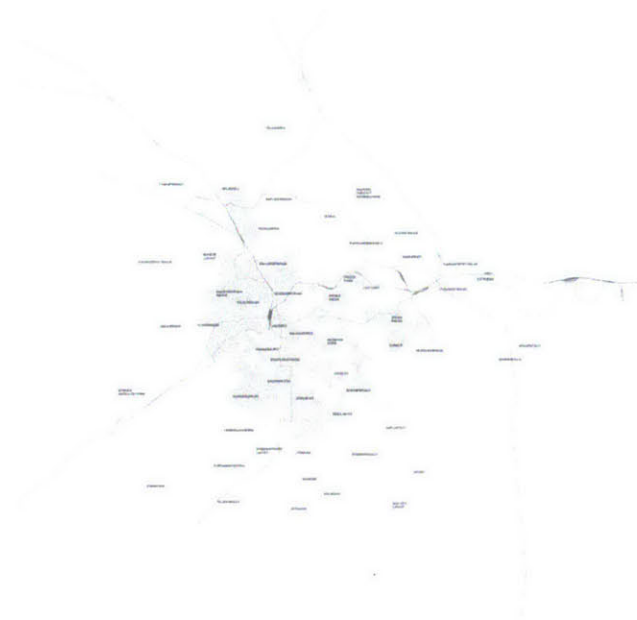
Map showing the growth of the city area from 1937 to 2012



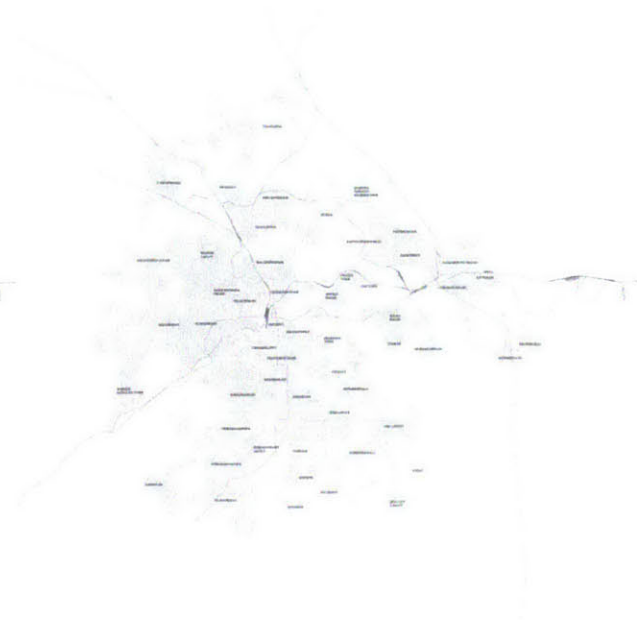
1937



1960



1980



2012

Maps drawn on a base map from Open Street Maps using references from:

- Jayapal, Maya. Bangalore: The Story of a City. Chennai (Madras); Calcutta: Eastwest Books (Madras); Distributors, Rupa & Co., 1997.
- Mathur, Anuradha, and Dilip da Cunha. Deccan Traverses: The Making of Bangalore's Terrain. New Delhi: Rupa, 2006.

- Nair, Janaki. The Promise of the Metropolis: Bangalore's Twentieth Century. New Delhi: Oxford University Press, 2005.
- Singh, R. L., and Geographical Society of India National. Bangalore; an Urban Survey. 1st ed. Varanasi: Published by Tara Publications on behalf of [sic] the National Geographical Society of India, 1964.



Map above shows the evolution of the city from 1914 to 2012 (1914, 1937, 1960, 1980, 2012) based off of historic maps from various sources. As can be seen, the area of Chickpete is the oldest part of the city and there was a gradual growth observed in the city up until 1980. Following this, starting in the early 1990s several industries were set up in the outskirts of the city, thus stimulating an influx of population resulting in the growth of the city outwards in all directions.

1.5 Structure of the thesis

The study is divided into three parts corresponding to three different scales of study. Chapter three includes an urban scale reconnaissance study that aims to understand the ways in which the city is perceived through passage along its streets. It includes comparisons between perception and actual conditions based on various characteristics of the city. It also identifies fifteen localities within the city with a variety of urban spatial and ethnographic characteristics for further study. The fourth chapter includes a qualitative analysis of the street patterns in those fifteen selected localities in order to understand the urban form within each of those localities and how each compares with other localities developed within the same time period. The fifth chapter comprises of a detailed field research analysis of five selected cases with an emphasis on their experiential and social life. These cases are also assessed based on criteria for the design of 'great' streets developed through an iterative process and based on the criteria listed by Allan B. Jacobs in his book 'Great Streets'. Each chapter includes an introduction which puts forth the underlying argument and a short review of the literature that the study is based on, the core analysis, and a section on the findings and implications which draws upon the larger themes that come through the study. The three scales feed into each other and contribute to the comprehensiveness of the study, and should not be looked at in isolation. Other than these, the second chapter describes the conceptual approach and methods adopted for the study, and the sixth chapter, the conclusion, establishes common themes and ideas on how this study can form the base for further studies in order to formulate a more comprehensive design guideline document for the Indian city. All the images included in this thesis are accompanied by critical or descriptive commentary that focuses the reader's attention on specific aspects of those images. These images are mainly cartographic in chapter three, a combination of cartographic and photographic in chapter four, and a combination of photographic and hand drawings in chapter five. These methods are elaborated in the next chapter.

CHAPTER 2: CONCEPTUAL APPROACH AND METHODS

2.1 Conceptual Approach

The Tender S.U.R.E. guidelines for Bangalore city mention “A look back in history of India’s urban settlements shows that traditional patterns of road networks responded to the use of that time – roads and lanes were used as networks for localized movement, community interaction, and thriving markets. These patterns created compact city forms and mixed-use neighborhoods where work and home were closely located. With the advent of automobiles and the far-flung growth of the major cities, these patterns have been replaced with an equally far-flung and haphazard road network. Walking and cycling as a means of mobility, have been sidelined at an alarming rate. Individualised modes of motor transport have responded to the aspirations of an economically empowered middle class, and the failure to provide public transport alternatives.”²² This shows the recognition among the urban change makers in India about the fact that there is a need to create design guidelines that respond to the needs of the pedestrians and the traffic flows in order to create a balance between the mobility and the active public realm aspects of the streets.

In order to support my claim, I intend to study the urban fabric of Bangalore at three scales using three sets of theoretical bases for supporting my argument.

- At the macro scale, I aim to look at the city in terms of its urban neighborhood? imageability, both formalized and perceived, using literature by Kevin Lynch on *The Image of the City* as well as my perceptions and observations during field research in Bangalore. The purpose of this reconnaissance study will be to understand the context of Bangalore in terms of its ethnography and urban typologies, to compare the formalized parameters and statistics of the city with its perceived experience along streets, and to understand the aspects of urban form that are responsible for the way in which we perceive a city.

²² “Tender SURE Volume 1.”

- At the meso scale, I aim to use selected cases of localities in Bangalore to analyze street patterns and block types. This will be based off of my observations during field research and supported by the theoretical framework of urban morphology by Michael Conzen, J.W.R.Whitehand and E.Ehlers, along with Stephen Marshall's Streets and Patterns. The purpose of this study will be to compare and understand the similarities and dissimilarities between the sample areas in terms of urban form and context.
- At the micro scale, I will use the parameters and criteria defined by Allan B. Jacobs in Great Streets as a starting point to add and subtract criteria contextually, based on my detailed analysis of specific cases during field research, in order to generate criteria suitable for defining 'great streets' in the context of Bangalore. The focus of this analysis will be to understand the spatial parameters of the street by identifying ad-hoc uses, activities and interactions that take place on the streets.
- The resulting analysis will be a combination of the study of streets and patterns in Bangalore at the various scales in order to establish a better structure for classification in specific contexts within the city, a set of base criteria for assessing streets and designing great streets in Indian cities

To supplement this specific literature at the various scales of study, I will also be using literature on the historical development of Bangalore by Janaki Nair and R.L.Singh, along with writings on the culture of Indian streets by Arjun Appadurai and Tim Edensor.

2.2 Research Design, Methods and Definitions

I seek a better understanding of the spatial design of Indian streets in terms of specific parameters by using Bangalore city as a case study and picking specific traditional and contemporary streets in Bangalore as samples. I aim to build my argument inductively through qualitative research, from details about various parameters that contributed to the design and evolution of these streets to bigger themes about spatial and social design of streets as public spaces.

Methods:

Case Selection:

I have selected Bangalore as my primary case study because I am familiar with the city and it provides a good case study for this thesis due to its urban form and character. The city is one of the oldest cities in the country, dating back to 350 AD, and has experienced a major transformation through different periods of time, including development during the British colonial period, and especially in the recent years. Since the late 1900s the IT sector companies have set up large offices in the city which has been the main driver for urban development in the city and continues to do so even today. This is similar to several other cities in India which are developing at a rapid pace due to the incoming multinational corporate sector into the country. Bangalore also provides a great case for my hypothesis because in 2011, a set of road design guidelines were developed for the city by collaboration between several non-governmental organizations with public participation. These guidelines provide complete details for road construction but are missing the social aspects of street design. My thesis will aim to use those guidelines as a base and develop a set of design criteria that, when added to the existing road design guidelines, will provide a comprehensive tool for street design and planning in the city.

Selection of localities within the city:

In order to understand streets and make comparisons between traditional and contemporary streets in Bangalore city, it is essential to select streets that are in a similar context and have similar properties. In order to do this I have divided the historic development of the city into specific time periods based on the political influences on the planning of the city. Following this, I have selected specific localities within each of these groups, and carried out field research within each of these. This information has been synthesized into analysis at two scales: a macro-scale analysis of perception and imageability of the city, and a meso-scale qualitative street pattern analysis and comparison of street layouts within each of the localities. Following this, a detailed spatial analysis was carried out for a small sample of streets that were found to be unique during the reconnaissance study, and further analysis done at the micro-scale based on the findings of this study.

The localities selected were as follows:

Pre-colonial areas (16th century to early 19th century)

- Chickpete
- Shivaji Nagar
- Ulsoor (Halsuru)

Colonial areas (late 19th century to mid-20th century)

- Malleswaram
- Chamarajpete
- Basavangudi
- Jayanagar
- Hebbala

Post-colonial (mid-20th century to present)

- Indiranagar
- Banashankari
- Koramangala
- B.T.M. Layout
- J.P. Nagar
- Yelahanka Satellite Town
- Whitefield

Definitions

For the purpose of this thesis, a street is defined as a public thoroughfare within a city that is shared by pedestrians and vehicles and lined by buildings. It is different from a road which primarily accommodates vehicular traffic.

2.3 Strengths and Limitations

My thesis is an exploratory study of the various factors at multiple scales that contribute to the social life of streets in the Indian context, using Bangalore as a case study. There are several factors that have been considered in subtle ways without them becoming the focus of this study. In some cases these are major contributors to the life of streets but due to the limitation of time I

have focused mainly on the physical and to some extent the socio-economic aspects of these places. My thesis is primarily qualitative in nature and focuses on the study of streets through the social life lens only. Although a limitation in some ways, this is the major strength and contribution of the thesis.

CHAPTER 3: PERCEIVING THE CITY – A RECONNAISSANCE STUDY

"A road is not an open book, neither is it a thought that can be pushed away or brought close through comment. Road is ink. It can be wet, it can be thick, it can be light, bright or faint. In it one can find new languages for ones own predicaments and flexibilities. When you return, you won't be the same as you were when you started. When we are in search, when we build, we create surprises for ourselves, and for others."

from Cybermohalla Ensemble, "*Eleven streets*"

3.1 Introduction – Urban Scale Reconnaissance

The reconnaissance study aims to explore the factors within the urban form and sensory realm that contribute to the perception of Bangalore through passages along its streets. It also aims to contrast these perceptions with the formalized or actual parameters of the city that contribute to that perception. Using these, it aims to understand which spatial and physical factors of the urban realm contribute to creating specific kinds of perceptions and images based on the five elements defined by Kevin Lynch in his book 'The Image of the City'. It also aims to use these parameters to define urban typologies within the city that are based not only on the spatial aspects, but also the interpretations of those physical properties into a socio-economic understanding of the urban areas.

A city is defined by the combination of formalized titles like the names of Municipal wards and localities, Postal codes, and Street names, known to those who inhabit the city and deal with these on a daily basis; and perceived zones characterized by urban forms, edges and boundaries, making the urban experience personal and comprehensible. Janaki Nair in her book about Bangalore, mentions 'The Production of Space', the monumental work of Henri Lefebvre in which he says that "The space of the city is eventually produced by far more than the plans and drawings of the technocrat, and extends beyond the physical-material to include the mental-imaginative aspects of the production of and claim on city space." Talking about Bangalore she writes that "for a settlement that has been in existence for over four and half centuries, the city of Bengaluru boasts of few physical markers or monumental sites as visible signs of its antiquity. The topography of the region to which Bengaluru belongs is unremarkable and there are few signs of an archaic temple town, a commercial centre, or a tract energized by a river or other water source."²³

Expanding on this observation from a social historian who has spent most of her life in Bangalore, to build off of other examples in the Indian context, it is often urban landmarks like

²³ Nair, *The Promise of the Metropolis*.

Government buildings, statues, temples or even institutions that can symbolize a city. The India Gate in New Delhi, Red Fort in Old Delhi, Victoria Memorial and the Ghats of Calcutta (Kolkata), among others, are examples of these. Historically this space was occupied by the tanks or the lakes and the large parks like Lalbagh that were the landmarks that Bangalore was identified with. However, due to the rapid growth of the city as an important economic hub since the 1950s there has been little or no scope to allow for a gradual planning process to take place. This has resulted in building around and on a lot of the older tanks within the city, and a shrinking of the public parks. It has also led to emergence of a dichotomous urban form in the city – the first one characterized by the low heighted (upto 4 floors) city with colonial and post-colonial forms of architecture interspersed with tanks (lakes) and public parks; and the second characterized by the more recent steel and glass towers surrounded by sprawling lawns and bounded by high boundary walls.²⁴

Within these two broadly defined categories, there is a much finer grain of fabric within the city that contributes to its image or lack thereof. This image not only defines our perception of the city, but also helps us orient ourselves within a large urban metropolis. Using the five elements of city image defined by Kevin Lynch²⁵ – paths, edges, districts, landmarks and nodes – one can begin to formulate their perceptions and imaginations of the city itself.

Streets are the public urban paths along which one moves, observes, waits, eats, and interacts. They form the lines along which one perceives and thus defines and identifies their locations within a city. Hence, they are the urban places which facilitate and, in some cases, define the imageability of a city. Pre-neoliberalism Indian streets were highly imageable. “Going by Kevin Lynch’s theory of imageability the Indian city had a strong edge differentiating it from the country side, had paths in the form of streets as external rooms, which opened up into squares as nodes

²⁴ Ibid.

²⁵ Kevin Lynch, *The Image of the City* (MIT Press, 1960).

with a landmark overlooking it like a temple or a market. The city itself was divided into districts based on trade and caste."²⁶

The urban form today is governed primarily by the economic forces at play in a city. The architecture, the plot sizes, the proximity to community amenities, connectivity, availability of basic infrastructural services – these are all factors that determine and are determined by the real estate market forces; forces that are primarily controlled by the state and the private investors who set up their headquarters in the city and thus 'buy' a voice that directs urban planning. The B.A.T.F., set up in 1999, is a classic example. These authorities aim to mirror cities like Singapore with wide, tree-lined streets accommodating smooth traffic flow, while in the process creating streets that are generic, lack a local image and do not provide a sense of orientation within their urban context. In doing so, they often compromise the social and cultural aspects of those streets, which in Indian cities form a major part of the street image.

3.2 Travel paths, sequences and spaces

In order to understand this dichotomy of formal vs. perceived zones within a city, I selected a few areas within each of the development periods in the history of the city, and used these as a base to conduct a reconnaissance study as a part of my field research. I mapped out these areas on a city map and used proximity as a starting point to conduct a daily trip to one, two or three of these areas per day. My trip to these areas included a journey from my starting point in R.T.Nagar or Jayanagar to a main commercial corridor in the chosen area by auto-rickshaw or bus, followed by a walk through the neighborhoods in the area along a random route, while continuously taking photographs, recording observations, and sketching street sections and views.

My visual mapping of the areas within the urban context included observing street widths, street elements like benches, trees, dustbins etc., ground floor uses of buildings with street frontages,

²⁶ Uday Kumar Vagale, "BANGALORE-FUTURE TRENDS IN PUBLIC OPEN SPACE USAGE. CASE STUDY: MAHATMA GANDHI ROAD, BANGALORE," May 28, 2004, <http://scholar.lib.vt.edu/theses/available/etd-05172004-231956/>.

traffic flows, pedestrian flows, presence of institutional buildings (including religious structures), plot sizes, building setbacks and open spaces. These perceptions were then formulated into specific categories and mapped. These were then compared with mappings of the same zones in the same categories but using formalized data. These comparisons were then used to understand the formal image of the city versus its perceived image and formulate conclusions.

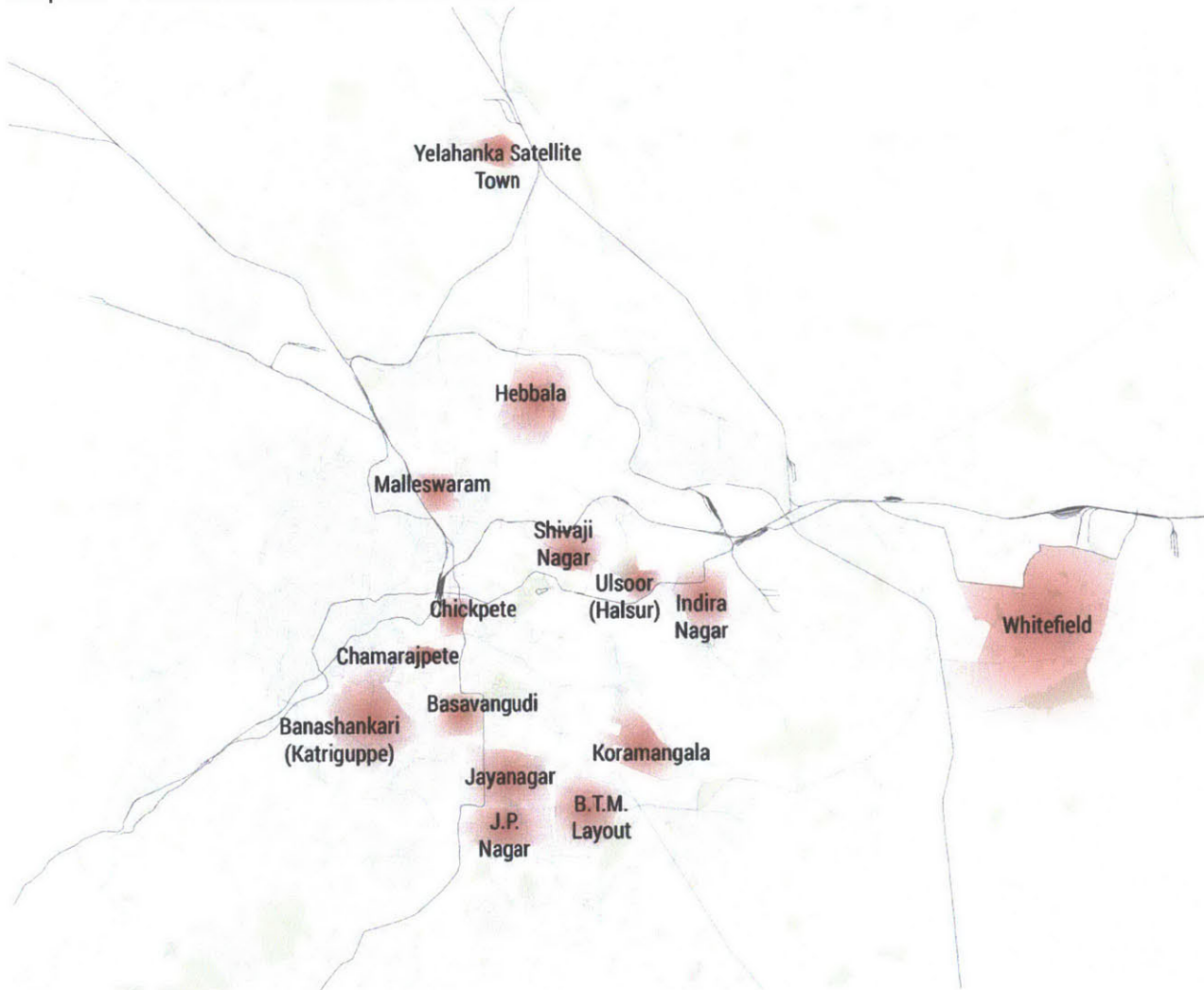
3.3 Comparisons between perceived and actual conditions in the city – An analysis

In each comparison between the perceived and the formal or the actual condition, I present one map showing the perceived condition and a second showing the formalized or the actual condition based on various sources. Each map is followed by extended captions that articulate its content and significance, along with a comparison between the perceived and actual conditions. The maps are typically in pairs. Each pair represents the comparison between the perception and actual condition of a different parameter – boundaries, distances, levels of disposable income, and population characteristics (religion) - and the combination of all of these parameters and their physical mapping contributes to the final conclusions.

Boundaries:

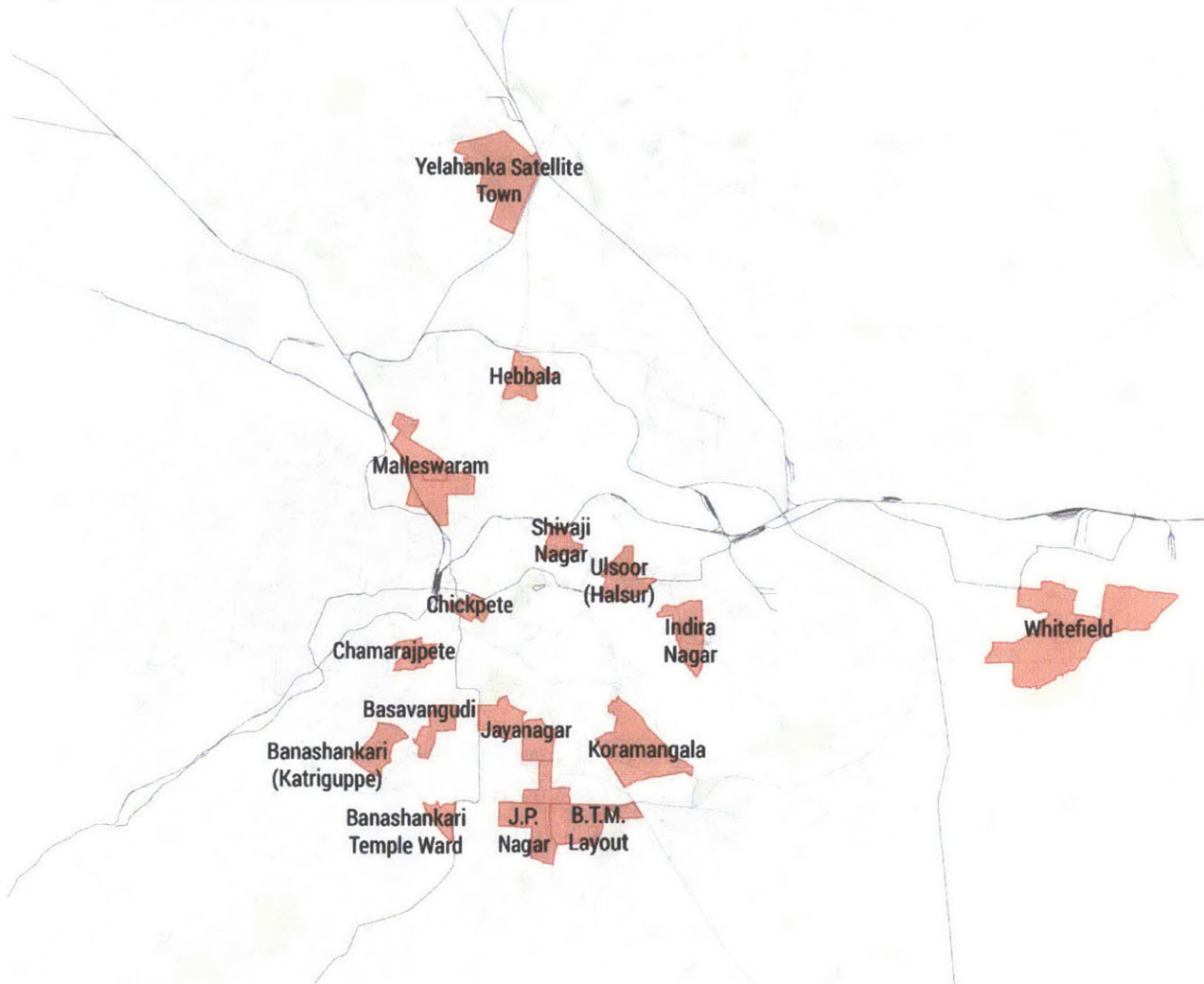
In a city exist several kinds of boundaries that mark the territoriality of the districts associated with some governing authority. However, these boundaries tend to be invisible and often do not correspond with the edges or the transition points between localities as defined by urban form. To a visitor or an inhabitant, the boundaries within the city are those that they see and experience while moving through the city, or ones that they know through their life experience within the city. Through the following set of maps I aim to visualize the disparities in the administrative boundaries within the city, the perceived boundaries, and a mental map of the perceived distances between the localities.

Map 3.1 - Perceived boundaries of localities



Within cities, nodes mark the points of focus while edges and boundaries define the extents of the districts, as per Kevin Lynch's 'Image of the City'. Thus, using my observations, along with interviews with *auto rickshaw-waalas*, the perceived boundaries of each of the districts or areas were mapped out. Mostly large roads or highways, railway lines, large parks or lakes, or change in terrain marked the boundary for an area. As shown in map 3.1, a lot of these boundary transitions were at a gradient, with the urban form and fabric changing gradually along the edges, as compared to the administrative edges of wards that are laid out for jurisdictional purposes by the city municipality shown in map 3.2.

Map 3.2 - Administrative boundaries of wards



City Municipalities map out wards within the city for jurisdictional and management purposes. Often, these wards contain various types of urban fabric and are not bounded by any physical features. Thus, it often becomes difficult for visitors to orient themselves based on these formalized wards within the city. The wards usually also have several smaller localities within them. These are oftentimes older villages that were encompassed into the Bangalore urban area due to the pressures of development around them. These formalized wards when compared with the perceived areas start to show that often in a city formalized structures of nomenclature and organization are completely disparate from the physical form of the city fabric which forms the basis of perception and experience.

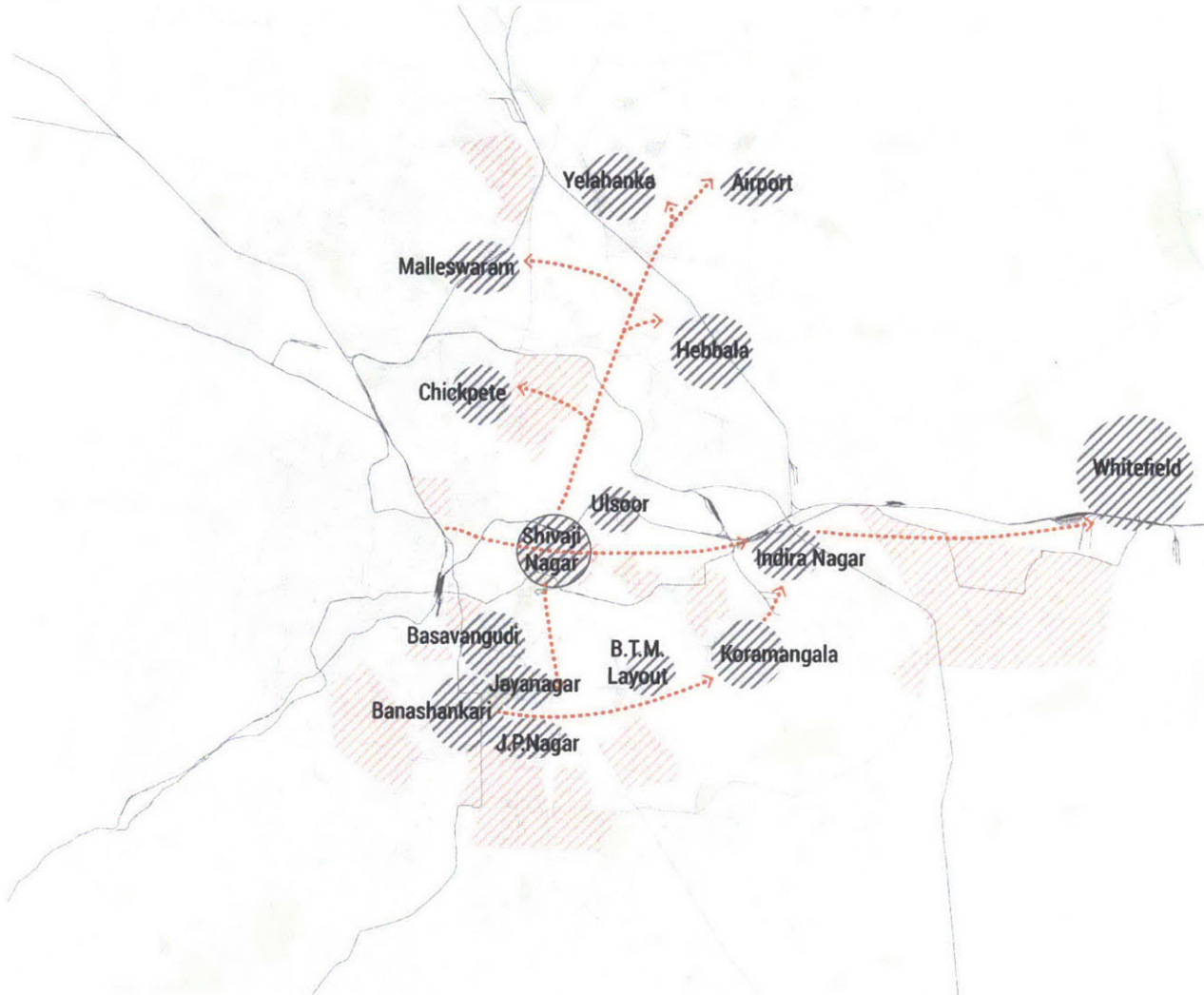
Map 3.3 – Boundaries of localities used for the study



For the purpose of my study, the perceived boundaries of the selected areas were compared with the formalized ward boundaries and refined to define areas within the city for the purpose of my analysis that corresponded to the physical form and natural features while being relatively closer to the ward boundaries in some cases. These were used to carry out further comparisons between perception and actual condition based on specific parameters.

The localities chosen include Chickpete, Shivaji Nagar and Ulsoor in the center of the city, Yelahanka Satellite Town, Hebbala and Malleshwaram to the north, Chamarajapete, Basavangudi, Jayanagar, J.P. Nagar and BTM Layout to the south, Basavangudi to the south-west, Koramangala to the south-east, and Indiranagar and Whitefield on the east.

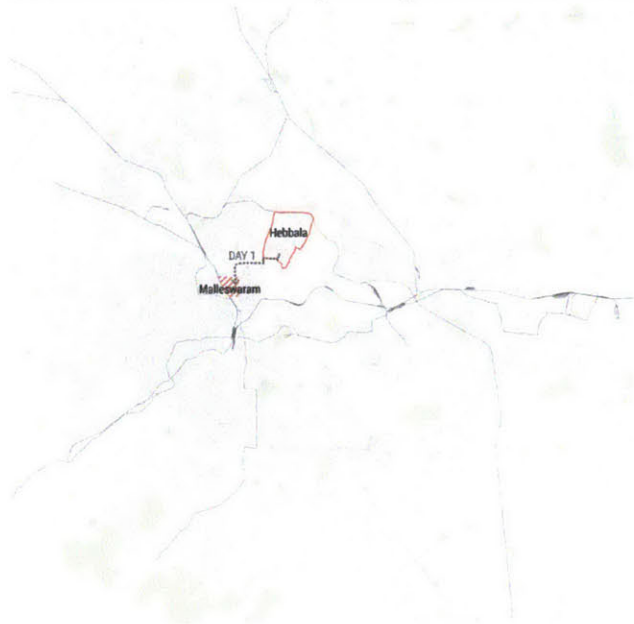
Map 3.4 – Perceived distances before research



Having lived in Bangalore for a period of 1.5 years a couple of years prior to conducting field research for this thesis, I had preconceived ideas about the distances (in terms of time taken to travel) between where I lived (J.P.Nagar), where I worked (Jayanagar), and other parts of the city. I also always perceived Shivaji Nagar to be the center of the city. Map 3.4 shows a mental map of the way in which I perceived distances within the city prior to having conducted this research. The circles correspond to my perception of the relative size of these localities with the arrows marking relative distances between them and the directionality. The underlay of the base map shows the actual locations of these areas. A few of the possible reasons for these differences between the perceived distances and the actual distances are traffic flows, bus networks and frequencies, presence of large parks or lakes, and disparities in urban form.

Reconnaissance Study – Routes

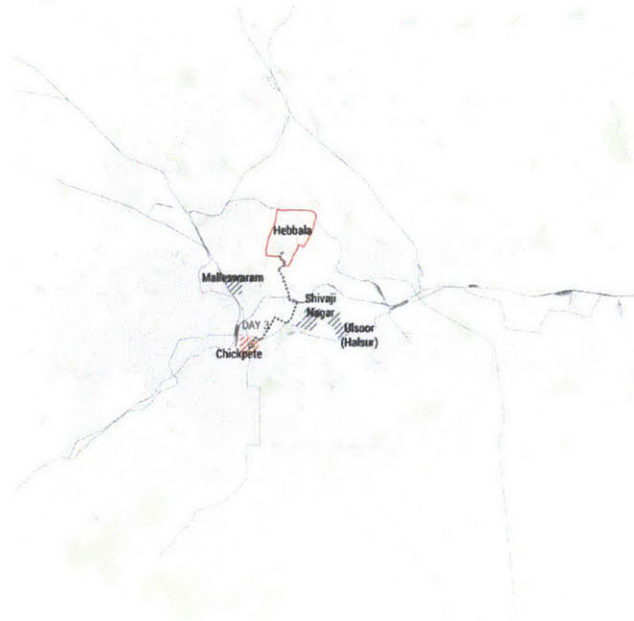
My field research conducted over a period of 3 weeks included a reconnaissance study of selected localities within the city in the first half while the second half consisted of a detailed street analysis of selected cases within those localities. One to three areas were grouped according to proximity to each other and each group was explored on separate weekdays. The weekends included a brief visit to each of the areas. Clues in the urban form that pointed to specific socio-economic characteristics of those areas were observed and recorded. Compared to the perceived distances before the field research shown in map 3.4, it can be observed that even though the distances were perceived differently, the relative proximity of areas perceived was relatively more accurate. This also gave me an opportunity to perform comparative observations incrementally through visits to areas that were located closer to each other in the city.



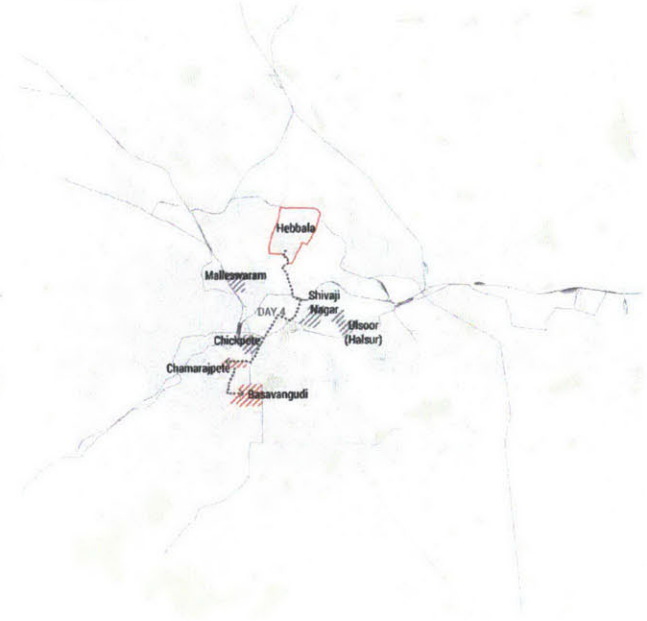
Day 1



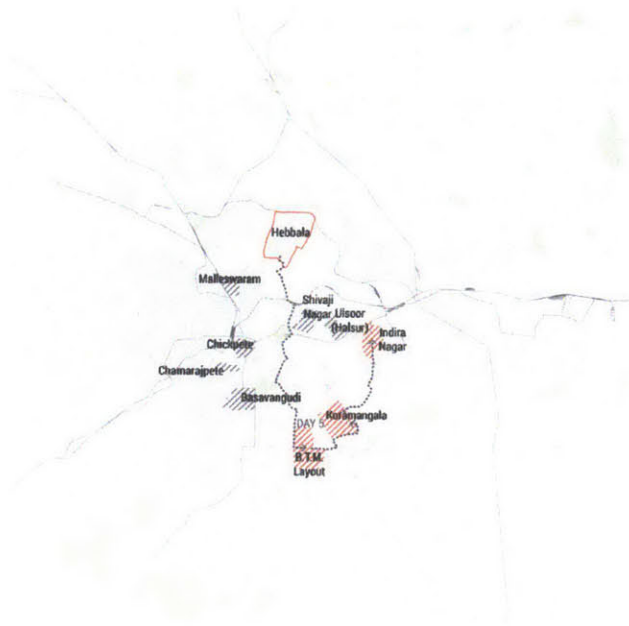
Day 2



Day 3



Day 4



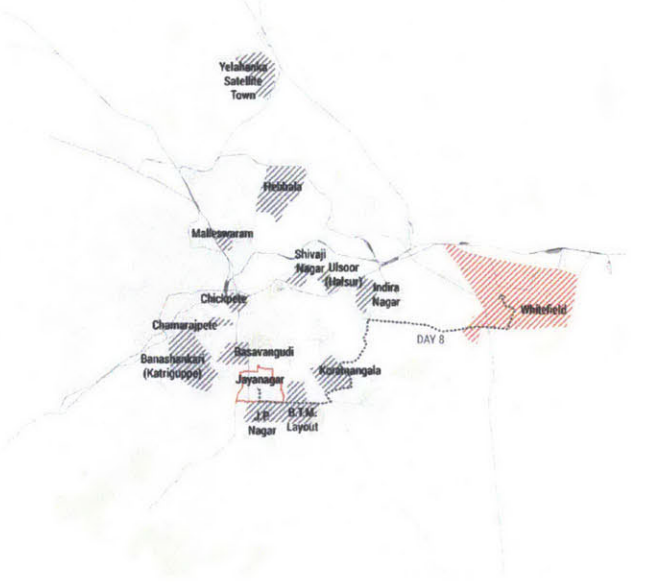
Day 5



Day 6



Day 7

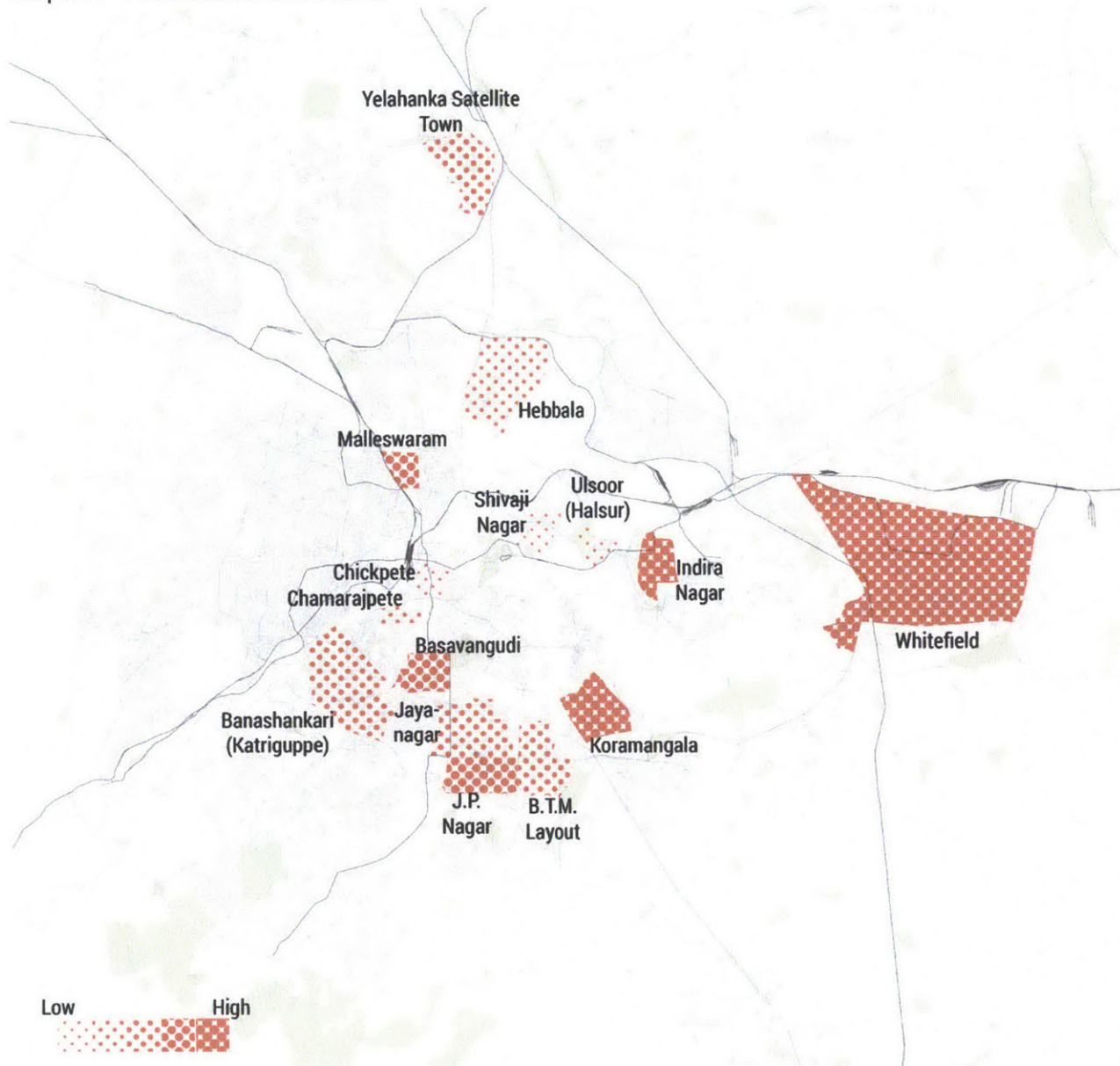


Day 8

Levels of income of the population living within localities:

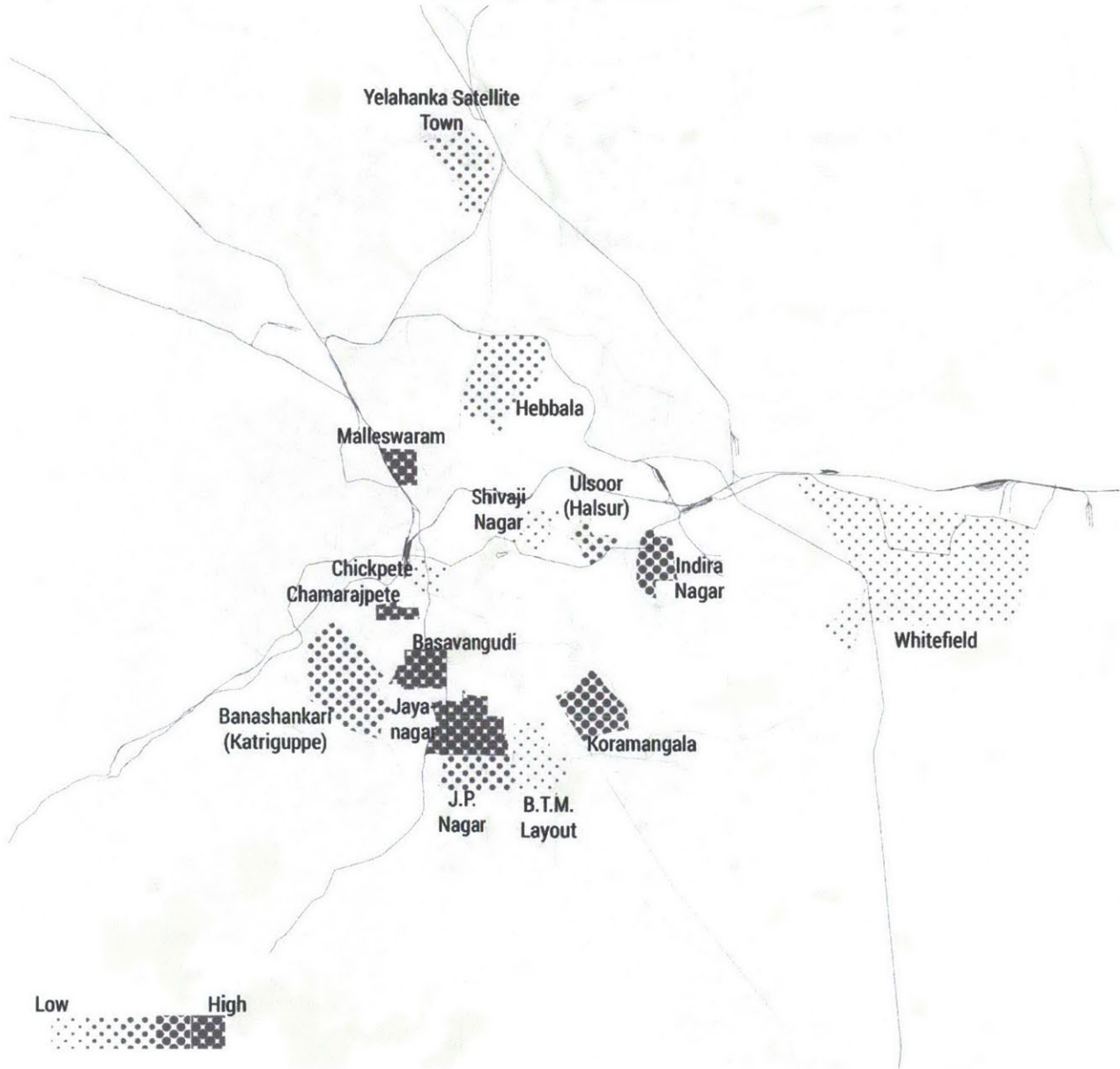
One of the first noticeable characteristics of the physical form of a locality along a street is its openness or closeness in terms of widths of streets, heights of street walls, setback of buildings from street edges, and size of buildings. These, coupled with the population characteristics, types of vehicles and commercial establishments in the area, provide cues about the 'richness' of the locality.

Map 3.5 - Perceived income level



Based on characteristics such as plot sizes, sizes of houses, types of stores and eateries within the area, widths of streets, quality of personal vehicles, and community amenities, certain areas were perceived as richer, i.e. inhabited by population with more disposable income. These areas characteristically had a less dense urban fabric with large houses with wide setbacks and high boundary walls, wider tree-lined streets, expensive (and often multiple per house) cars, several large international chain stores, and a number of community-run or privately owned club houses for recreational use.

Map 3.6 - Income level based on residential property value

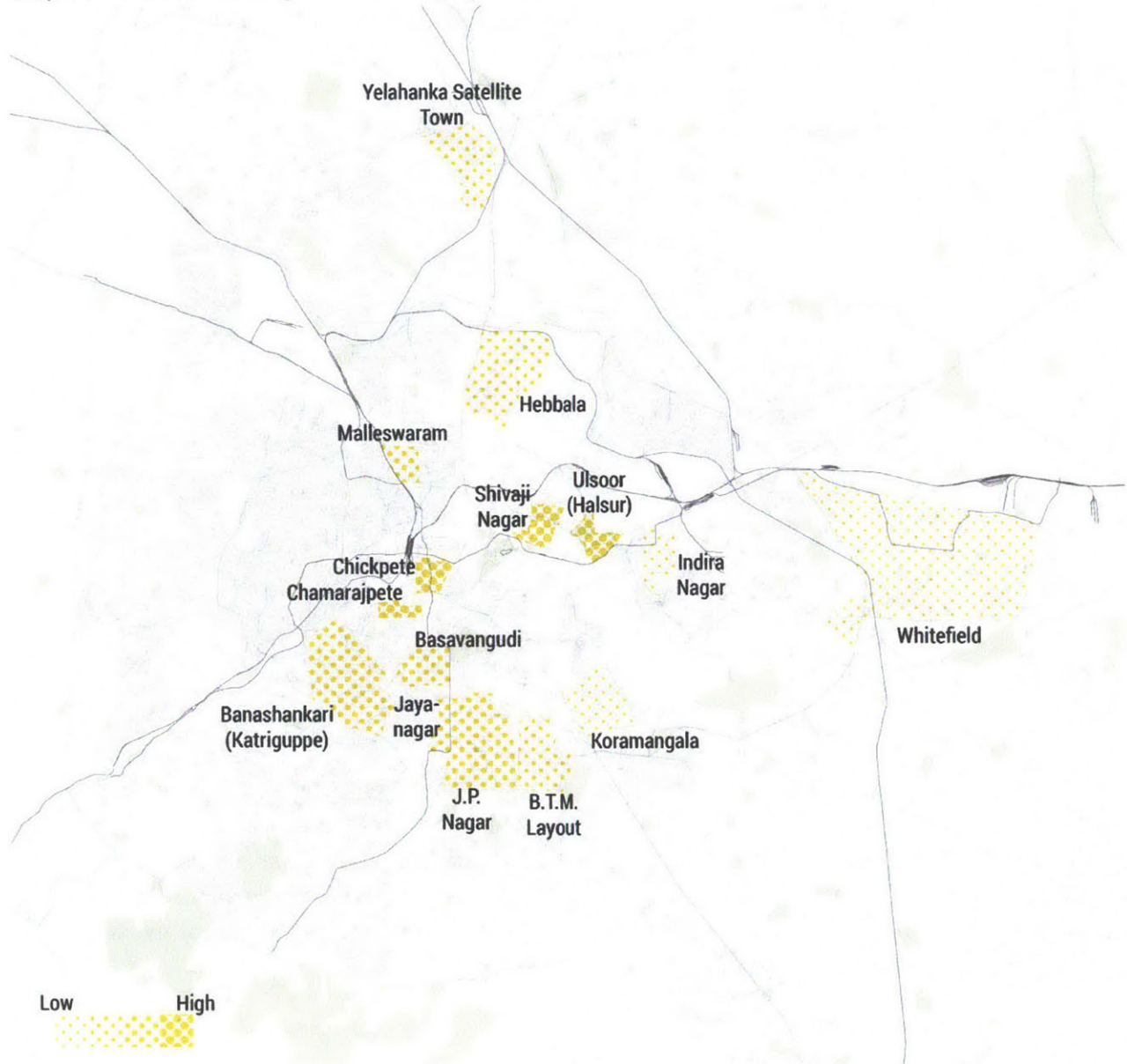


The perceived income levels were plotted against property value data drawn from a popular Indian website called sulekha.com using residential properties as the search parameter. These values point towards the affordability of property within each of the localities and are often dependent on variables like proximity to the city center and community amenities, size of plot, etc. The comparison of the perceived income level map with the one above based on land value data yield some differences between the mid and high income level areas and several similarities between the low income level area

Characteristics of Population – religion, age and localness

Bangalore has a highly diverse population and this is visible in the presence of a large variety of religious institutions in the city. This physical presence can often provide clues about the characteristics of the population and thus their lifestyles, needs and preferences. Through these maps I aim to compare my perception of localness and religiosity of the population, observed through elements of the landscape like religious institutions, small religious shrines along streets, and smaller elements along the street like flags of the moon and the star of Islam, the images of idols on trees or walls, or garlands hung on trees, with a map of densities of religious structures found within each locality.

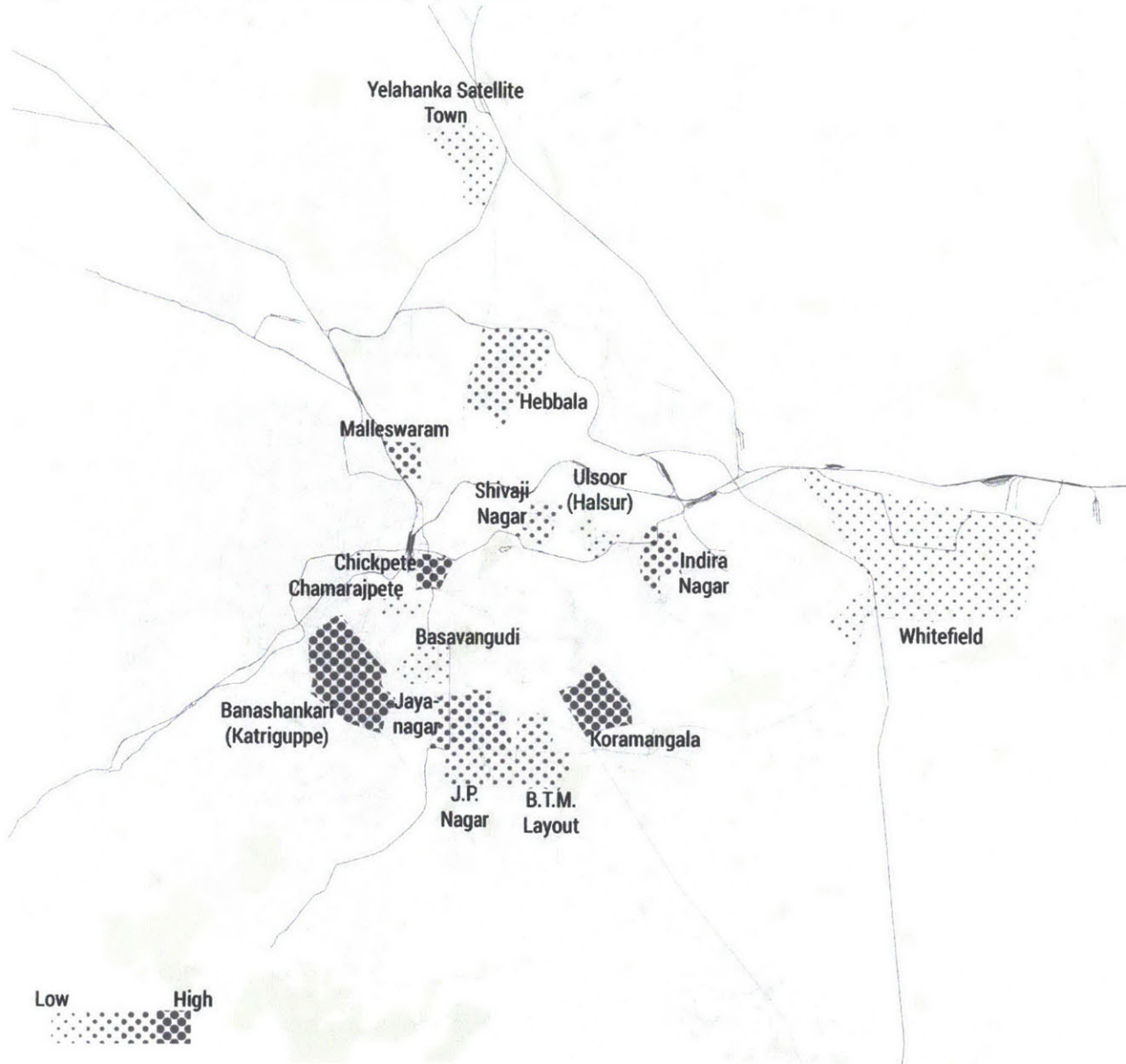
Map 3.7 - Perceived 'religiousness' of population



Some localities were observed to have a higher concentration of religious structures in terms of their densities and varieties, while other areas have a relatively scattered distribution of these institutions. Traditionally, Indian cities have developed with religious institutions at their cores, hence often older parts

of cities tend to have a higher frequency of these buildings. Thus, oftentimes the perceived religiousness of an area can give clues about the age and the localness of the population within an area. Observations of the frequency of religious structures encountered during walks within the selected areas, along with the availability of religious idols and other items used for prayer, perceptions of relative 'religiousness' were mapped for the various areas as shown in the map above.

Map 3.8 - Actual 'religiousness' of population



The actual locations of temples, churches and mosques were also mapped out for each of the selected areas and compared with the perceived relative 'religiousness'. These were normalized by the density of population within each of those wards as per Census 2011 data. Through the maps above, it is visible that the perceptions and the actual 'religiousness' of the areas are relatively similar for the mid-low level areas. These point to larger ethnographic interpretations within the areas.

3.4 Findings and Implications

The physical aspects of a city greatly contribute to its perception by visitors and inhabitants alike. When moving through a city through its streets – be it on foot or in a car – elements of the urban landscape stand out in different ways to different people, and that is what creates a mental ‘image’ in our minds that stays with us. For an inhabitant who knows the city, or a visitor who is new there, the perceived image is a combination of the physical qualities and the socio-economic indicators of those qualities. Kevin Lynch defines the elements which contribute to the image of any city – paths, edges, districts, landmarks, and nodes. Even though these elements are relatively flexible in terms of use and scale within the urban context, often elements within the city cannot strictly be separated into any one of these prescribed set of elements. Paths can often act as edges, and landmarks and nodes can often be one even though the definition of those two terms is distinctly different. These also tend to be a part of the planning vocabulary and does not correspond to the way in which a layman sees and perceives their living environments, whether it be the locality or the city.

Even though the list of observations of the physical environment of the city along its streets is endless, through this reconnaissance study I have tried to put forward examples in which the passage through streets in urban areas can lead to interpretations of the characteristics of the population in terms of religion, economic status etc. These interpretations can then be used to define specific typologies within the city that can start to form a basis for standardization by the city government in order to be able to formulate design guidelines for streets and other elements of the urban landscape.

The locality studies were initially chosen based on the time period during which they were developed. However, during the reconnaissance study, I used only my perception of the physical elements of streetscapes along with my interpretations of the socio-economic forces at play within each of the localities in order to categorize them into urban typologies. These are as below:

- **Higher end residential localities housing local population** – These localities contained wide residential streets with medium to large houses, and peripheral main commercial streets with *Upahars* (local stand-up restaurants), cafes, showrooms and street-side shopping interspersed with religious buildings, often with a rectilinear grid network. This typology included Malleshwaram, J.P. Nagar, Jayanagar and Basavangudi. The houses were either individual bungalows with medium to large plot sizes, or three to four story high apartment buildings. The streets often had one-street parking, raised sidewalks and tree-lined streets. From my observation of the population in the area, along with an analysis of the built fabric and uses within the locality, it seemed like the predominant inhabitant population belonged to the upper middle class and were mostly local *Kannadigas* or *Tamilians*.
- **Newer, richer localities housing non-local working population** – These localities were characterized by more low-rise apartment buildings, amenities like gymnasiums, cafes, expensive sit down restaurants, fast food restaurants, and stores selling merchandise from international brands. The localities had less religious structures and the streets were seen to be bustling with activity during the evenings on week days and all day and late into the night on weekends. This typology includes Yelahanka Satellite Town, Koramangala and Indiranagar. Relatively less-rich variations of this typology include B.T.M. Layout.
- **Older commercial parts of the city catering primarily to local population** – Areas like Chickpete and Shivaji Nagar which are defined by curvilinear streets, frequent alley-ways, small plots with buildings sharing common walls or separated by minimum setbacks, and older buildings. A lot of the population that lives in the areas has lived there for several years and generations and owns a commercial establishment in the area.
- **Urban Villages** – Some parts of the city were originally villages and were surrounded by development which resulted in them becoming a part of the urban agglomeration of Bangalore. These areas, like Ulsoor, still have very distinct characteristics of villages, with *jaglis* in front of houses, small low-heighted houses, and layouts following the natural topography of the land. The population within these areas is primarily local *Kannadiga*.

They are often observed to be located close to a major historic landmark in the city like a tank, a public garden or a temple.

- **Middle-class residential layouts** – Areas like Chamarajpete, Hebbala, and Banashankari that have smaller plots and block sizes and generally house a mix of local *Kannadigas* and non-local worker population. The localities house primarily middle-class population and smaller local shops, religious institutions, and local *Upahars*.
- **New Technology Sector driven development** – Localities like Whitefield that have been developed with major influences from the private sector companies have a specific typology in that they have large gated communities or campuses with multistory towers and high boundary walls along the streets. The streets in these areas are wide, catering to vehicles, and fairly linear and opaque along the edges. With the increase in the technology sector in the city, these types of developments are becoming more and more popular.

By no means is this list of urban areas exhaustive for the city of Bangalore. However, these typologies and the localities within each of them, derived from the reconnaissance study, provide a starting point for identifying and characterizing urban landscapes within the city that contribute to the city's image. These characterizations can help provide a basic structure for the organization of planning and design principles and guidelines defined through the perceived image and experience of the city. A part of the reconnaissance study was also to identify case studies of specific streets within the localities studied in order to carry out a detailed spatial analysis. One street was selected per typology listed above and studied in detail. These cases were then short-listed and a few of them were included in chapter 5 of this thesis.

This reconnaissance study was the first step of my field research and analysis in the city as a past resident and a visitor. The study focused solely on the sense of perception of the physical characteristics of the selected localities while walking through them. However, in order to really understand each of the localities and especially their street layouts, it is essential to understand the form of development in terms of street patterns and urban morphological properties that contribute to the character of the streets at the scale of the locality. This analysis forms the next chapter of the thesis.

CHAPTER 4: STREET PATTERNS AND NETWORKS – ANALYSIS AND COMPARISON

"The one who created the sky didn't first make a count of the wings that would glide in it. Some paths are made, some stumbled upon, some stolen. They have their own routes, turns and crowds. Some have many storytellers. There is a storyteller for the path that never grows, the path that seldom flows, the path that appeared and then lost its way, the path that remains a secret to this day, the path that stands before others like a stage, the path that must be crossed at least once in a lifetime, the path that has been forgotten, the path that stayed hungry, the path joining the thresholds of homes, the path that is called a dark alley, the path dressed up for the first time, and the path about to breathe its last."

-from Cybermohalla Ensemble, *"Eleven streets"*

4.1 Introduction – Cues found in street patterns

The pattern analysis aims to use the selected localities to understand and compare the street layouts and urban form including the street hierarchies, relative widths, frequency of intersections, street usage, and the open space and built fabric. It uses this analysis to draw comparisons based on Stephen Marshall's book 'Streets and Patterns'. It also aims to focus on sample blocks within the areas in order to understand and compare block sizes and the relative built vs. open area within plots and blocks inspired by the work of Michael Conzen and J.W.R.Whitehand in the field of urban morphology. This, combined with the typologies identified in the reconnaissance study, will help identify a better structure for the classification and nomenclature of streets in Bangalore and other Indian cities.

The comparisons are done within groups of localities that were developed in a similar time period. These include:

Pre-colonial (16th century to early 19th century)

- Chickpete
- Shivaji Nagar
- Ulsoor (Halsuru)

Colonial (late 19th century to mid-20th century)

- Malleswaram
- Chamarajpete
- Basavangudi
- Jayanagar
- Hebbala

Post-colonial (mid 20th century to present)

- Indiranagar
- Banashankari
- Koramangala
- B.T.M. Layout
- J.P. Nagar

- Yelahanka Satellite Town
- Whitefield

The patterns of streets indicate networks, flows, movements and moments. They define the urban grain, the options for detours and the sizes of blocks, neighborhoods, and localities. This chapter aims to analyze and compare the street patterns and urban fabric of the localities and define categories within which localities can be placed as a way to structure the planning process by the city.

In his book 'Streets and Patterns', Stephen Marshall quotes Kevin Lynch's writing about desired patterns – "I would give each path an identifiable character and make the network memorable as a system of clear and coherent sequences...Each road could be given a coherent form, and the intersections with other paths made clear."²⁷ In his book *Great Streets*, Allan B. Jacobs writes "streets and block patterns reflect differences among cities beyond those of scale, complexity, available choices, and the nature of spaces. They relate to the time period when the city was built, to geography, to differing cultures, to city functions or purposes, to design or political philosophies, and to technological demands, to name some of the more obvious. They are, as well, the settings within which great and not so great streets are to be found."²⁸

Street patterns also help us compare and contrast cities nationally and internationally. Stephen Marshall identifies that "distinguishing patterns typically involves discerning regularity in their component parts."²⁹ He also goes on to explain how there is a quantitative aspect to the comparison of these components in a street pattern: "the distinction between triangle and rectangle, or T and X, being essentially based on the numbers 3 and 4."³⁰ He further defines parameters used to characterize street patterns that are features of "blocks, crossroads and cul-de-sac" which are representative of 'conventional suburban' and 'neo-traditional' layouts. These

²⁷ Stephen Marshall, *Streets & Patterns* (London; New York: Spon, 2005).

²⁸ Allan B Jacobs, *Great Streets* (Cambridge, Mass.: MIT Press, 1995).

²⁹ Marshall, *Streets & Patterns*.

³⁰ *Ibid.*

parameters include 'test configurations', 'T ratio and X ratio', 'cell ratio and cul ratio' and the 'combined plot', each of which are inter-related and are eventually used to develop the 'nodegram' which places different patterns onto a single comparative graph. Similar to this process, but simplified, Allan B. Jacobs quantifies the number of intersections, the block sizes and the mean and median distances between the intersections. He then uses these along with figure ground maps in order to compare and contrast differences and similarities, the influence of topography, city structure and ordering, scale in terms of complexity and time-distance relationships, scale in terms of compactness, density and intensity, dimensioning, and changes over time.³¹ Even though the terminology and the quantitative process adopted by Stephen Marshall and Allan B. Jacobs varies, the basic ideas of using a combination of qualitative and quantitative methods in order to identify street patterns and draw out relationships between the urban form and the socio-economic and ethnographic characteristics of those urban areas remains constant.

Thus, street network diagrams help us identify patterns, processes and hierarchies within the existing city fabric, which also provides further indications of non-physical characteristics of the areas which are being studied. For example, narrow meandering streets with smaller blocks are typically found in the older parts of the city, in this case Chickpete and Shivaji Nagar, which grew organically except for the main streets in the area that were laid out when the first settlers moved in. In contrast, the newest parts of the city like Whitefield boast of relatively straighter, wide and long roads amidst large sprawling campuses of apartment buildings or office complexes. This information can also lead to discussions about the lifestyles and the preferences of the population that inhabits these various spaces. This is also reflected in ancient puranic texts of architecture and planning in the sub-continent including the Mayamata which mentions thirteen street widths and sixteen different types of cities based on the numbers and layouts of streets within each.³²

³¹ Jacobs, *Great Streets*, 1995.

³² Mayamuni and Bruno Degens, *Mayamata: An Indian Treatise on Housing, Architecture, and Iconography* (New Delhi, India; Delhi: Sitaram Bhartia Institute of Scientific Research; Distributed by Indian Books Centre, 1985).

This also corresponds with the field of urban morphology by geographers beginning in the nineteenth century in Germany by Schluter and continuing in the mid and later twentieth century by M.R.G.Conzen, both of who were geographers and pioneers in the study of urban form and urban landscapes. Conzen put forward a “tripartite division of urban form into first, the town plan, or ground plan (comprising the site, streets, plots and block plans of the buildings); secondly, building fabric (the 3-dimensional form); and thirdly , land and building utilization.”³³ He also used these divisions to develop concepts that looked at the development of the city over time and the urban processes that were at play.

4.2 The issue of nomenclature, structure and hierarchies

Streets form the structure along which cities are planned and organized. They are the first lines that are drawn on a plan and laid on the ground when urban areas are developed. In order to understand the ways in which cities are laid out, it is essential to understand the underlying street hierarchy that has been prescribed. These classifications of street types also transfer into design guidelines where templates are designed for various widths within each category or type. This results in an engineering standard being laid out for streets based solely on one particular theme or underlying principle, like width or functions of connectivity or access, which is one of the main contributing factors to contemporary streets becoming non-contextual and generic.

Stephen Marshall in his book ‘Streets and Patterns’ explores the various ways in which cities all over the world have adopted different ways of structuring and categorizing streets and roads. While emphasizing the existence of these hierarchies, he also questions the way in which these have developed over time, saying that “nowadays we often associate hierarchy with something apparently engineering-dominated, traffic-oriented and anti-urban”.

Streets have always had a hierarchy in terms of connectivity and access. However, the ways in which the hierarchies are defined have been a point of debate throughout the history of urban

³³ Jeremy W. R. Whitehand, “Conzenian Urban Morphology and Urban Landscapes,” *Proceedings* 6 (2007).

planning. Le Corbusier, an architect and planner who believed that roads were meant for cars only, used a hierarchy (from V1 to V7), to define roads which ranged from major roads to pedestrian access roads. Historically, as mentioned by Buchanan, “there are only two kinds of roads-distributors designed for movement, and access roads to serve the buildings”, and so streets are put into categories based on their position within this spectrum between connectivity and access, with each being exclusive in terms of their function³⁴. These definitions have been successful in early planning efforts where there were developed urban areas that contain access roads, and distributors that connect these pockets of developments. However, “while these may reflect the extreme of the motorway and the precinct, this leaves no place for the traditional mixed function urban street which serves both as a circulation artery and as an urban ‘place’ in its own right.”³⁵

Using examples from various cities and countries throughout the world, Stephen Marshall defines themes of categories on which street structures and hierarchies are based. The themes include form, use, relation and designation³⁶. He also goes on to explain the shortcomings of each of these themes as bases for classification of streets. Using form as a theme may be problematic due to the changing physical properties of streets along their lengths. Using function may be difficult as functions are often temporal properties. Using designation is often the easiest for authorities, however is often also the most problematic for cities because often “changes of designation can be unrelated to circumstances on the ground.”³⁷ Relation is mostly used in terms of the function of streets in terms of traffic flows instead of network function. This often results in the segregation of traffic and pedestrians as users of the street.

The only thread that weaves through all of these classification themes in some way is the understanding of the role of the streets in the larger network or connective fabric of the urban realm. This property of ‘arteriality’ is defined by the cartographer Alastair Morrison as that by which the “pattern of arterial roads is the only one which necessarily forms a complete

³⁴ Marshall, *Streets & Patterns*.

³⁵ Ibid.

³⁶ Ibid.

³⁷ Ibid.

network.”³⁸ It can be understood as a hierarchy in terms of connectivity of fabric where “each route must connect to either a route of the same status or higher status. The result is that the highest status routes all form a single contiguous system, but sets of lower level elements are not necessarily contiguous. For any given level, the set of all elements from the top down to that level will form a single contiguous system.”³⁹ Using this system of hierarchy, it can be possible to define streets based on their position within the larger context of the country and the city, as well as its local context.

The Ministry of Road Transport and Highways (MoRTH) in India, classify roads at a national level into National Highways, State Highways, Major District Roads, Other District Roads, and Village Roads. At a smaller scale, the Urban Development Plan Formulation and Implementation (U.D.P.F.I.) guidelines by the Ministry of Urban Development classify roads into arterials (50 to 60 m. wide), sub-arterials (30 to 40 m. wide), collector streets (20 to 30 m. wide) and local streets (10 to 20 m. wide).⁴⁰ Even though these classifications do follow the same principle of arteriability in terms of their basis for classification, they stop short in terms of the micro scale of definition and classification that is needed for urban roads.

Using these as a starting point, the Tender S.U.R.E. guidelines that were developed for Bangalore in 2011 classify the roads as follows:

- Arterial roads – High trip density corridors that have significant intra-urban travel and are spaced 1.5 km. apart in Central Business Districts and 8 km. in sparsely developed outskirts
- Sub-arterial roads – Medium density traffic corridors with lower speeds compared to arterials, and are spaced at 1 to 2 m. with spacing of intersections at 500 m. distance
- Collector roads – Those that aggregate traffic from local roads network within residential neighborhoods, commercial areas, and industrial areas, and link this traffic to sub-arterial roads

³⁸ Ibid.

³⁹ Ibid.

⁴⁰ “Tender SURE Volume 1.”

- Local roads – Primarily access networks for individual dwellings and residential developments which must allow for streamlined parking and safe and comfortable cyclist and pedestrian movement
- Sub-local roads – 2 to 5 m wide right of way, with shared access to pedestrians, bicycle and vehicular access to two and three wheeler traffic

The guidelines mention that “urban roads have been neglected thus far” and that “no specific standards have been devised for building, space allocation, or a hierarchical classification”⁴¹ and the classification used mentions shared usage of streets and also uses the principle of arteriability as an underlying mechanism for defining the hierarchy. However, the separate descriptions for each of the categories define properties pertaining to either connectivity or access as the governing principle. They also stop short of identifying the intricacy and complexity of sub-local and local road networks. Another difference is in the usage of the word ‘road’ versus ‘street’ in this classification as compared to that defined by the U.D.P.F.I., with road pertaining to corridors of vehicular mobility and streets pertaining to spaces shared by vehicles and pedestrians.

The introduction to the guidelines also mentions that “the road network in all new urban extensions must be designed to achieve mobility, access and standardization” and that “the resulting network of streets integrates public transport, non-motorized transport and private transport”. These are clear indicators that the guidelines were developed with the sole aim of creating a standardized set of rules in the form of templates for various widths within each of the categories listed above. In doing this, they ignore the social life and culture of the streets and the micro-scale and meso-scale properties of these streets, in terms of their spatial design and place within the local hierarchy of arteriability, that contribute to their vibrance and vitality.

In Bangalore, the terminology used by the local *Kannadigas* when referring to various streets is highly personalized. The term *Oni* refers to a gully or an alley way that is a part of one’s private space and is often the minimum setback between two properties. *Beedhi* refers to the frontage of

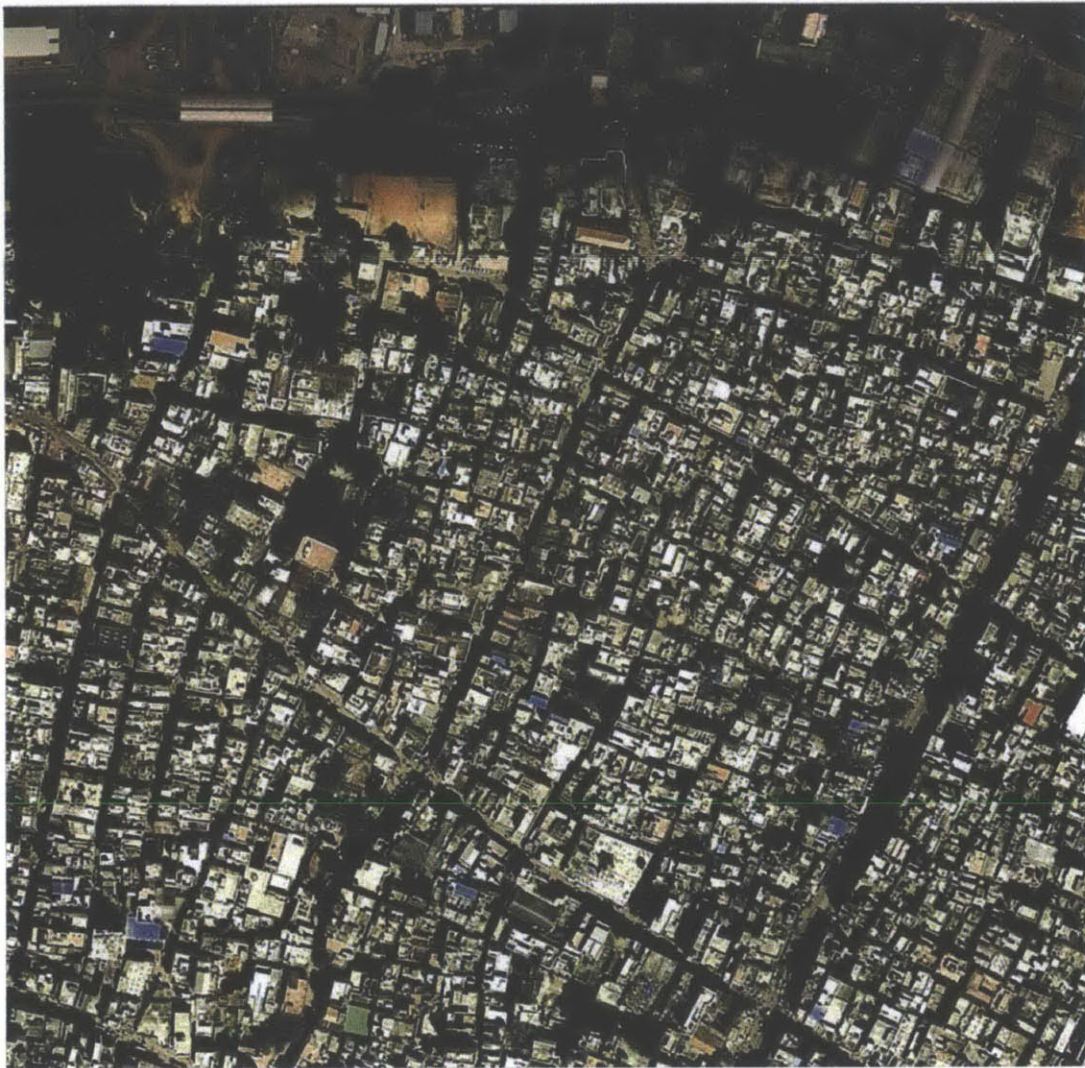
⁴¹ Ibid.

the house on the street, or the extension of the private quarters of the house onto the street, and is also a personal reference. On the other hand, other terms like *Raste* (road), *Daari* (way or path), and *Heddogai* (big road or highway) very distinctly refer to paths that are away from the private and the personal. This terminology reflects the importance of streets in the private and public lives of the local population where even the language used to refer to them is in the context of proximity to the private home. These smaller nuances of streets and their importance in the daily lives of the urban population is often ignored and not designed for. The result is standardized streets that lack the specific local character that is what makes streets an integral part of the urban realm in a city.

4.3 Pattern Analyses and Comparison

There are two parts to this study – the individual pattern analysis for each layout, and a comparative analysis for groups of layouts based on the time period when they were developed. The individual pattern analysis for each locality consists of two maps at the same scale of a square block of 800 m. by 800 m. (at an approximate metric scale of 1:5000) – one that is a satellite image showing the built character, open space, tree canopy and urban form, and a second that is a figure ground map showing the street structure and hierarchy in the area along with the route taken by me during field research. These maps are placed within their larger context of the city and the locality in order to understand the relative size of the locality based on the unit of the 800 m. by 800 m. square. The figure ground maps are then used, along with basic maps of a sample block type within each locality, in order to compare and contrast the various layouts developed within a similar time period. These analyses and comparisons are used to draw conclusions that try to articulate the relationship between the urban form and street patterns and relate them to the cultural and social aspects of streets.

Chickpete

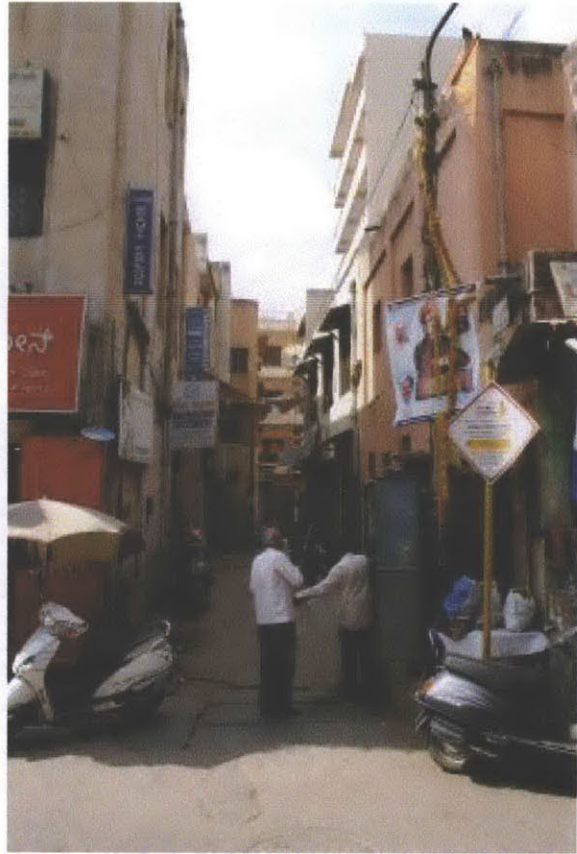


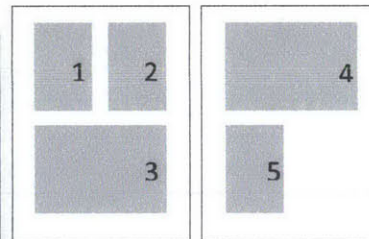
Chickpete (or Pettah) is the oldest part of Bangalore dating back to the early 1500s. It was the walled city built by Kempegowda I and was surrounded by a mud wall which was converted into a stone wall and later demolished by the British. It is located on the western side of the central east-west axis of the city, close to the Kempegowda bus and train station. Today it is one of the most-crowded market areas for clothing and other household items. The City Market (K.R.Market) which is where a lot of locals get their vegetables, fruits and flowers, is also a part of Chickpete. This area also has some of the oldest temples in the city and is the site of the processions and celebrations associated with the traditional Karaga festival of Bangalore. The area is categorized by small plots with buildings up to 4 floors in height. Several buildings share common side walls and the amount of open space and vegetation in the area is very less.



The two major thoroughfares, B.V.K. Iyengar Road and Chickpete Main Road were laid out by Kempegowda I in 1537. The remaining streets developed haphazardly and are till today a myriad of wider commercial streets and narrower residential streets. The commercial streets are shared by pedestrians, rickshaws, cars and *thelas* that are mostly for the loading and unloading of goods serving the shops along the streets. *Thela-waalas* selling fruits, nuts and other paraphernalia are found lining the edges of the commercial streets. These streets also get a lot of foot traffic, especially during the weekends. The narrow residential streets are mostly shared by motorized 2-wheelers, bicycles and pedestrians and are less crowded. Several buildings have a minimum setback of 1 m between them which has resulted in the formation of several very narrow alleyways weaving through the entire area. These are mostly used by local pedestrians and occasionally by 2-wheelers.







1: Chickpete Circle which is a major landmark in the area. Several such intersections in the area receive very high amounts of foot traffic with vehicular traffic predominantly catering to the stores (for deliveries), and the residents (autorickshaws or personal vehicles).

2: A typical narrow residential street off a main commercial street.

3: Chickpete Main Road - A typical commercial street in Chickpete on any day of the week with high pedestrian volumes and colorful banners covering every inch of the street wall.

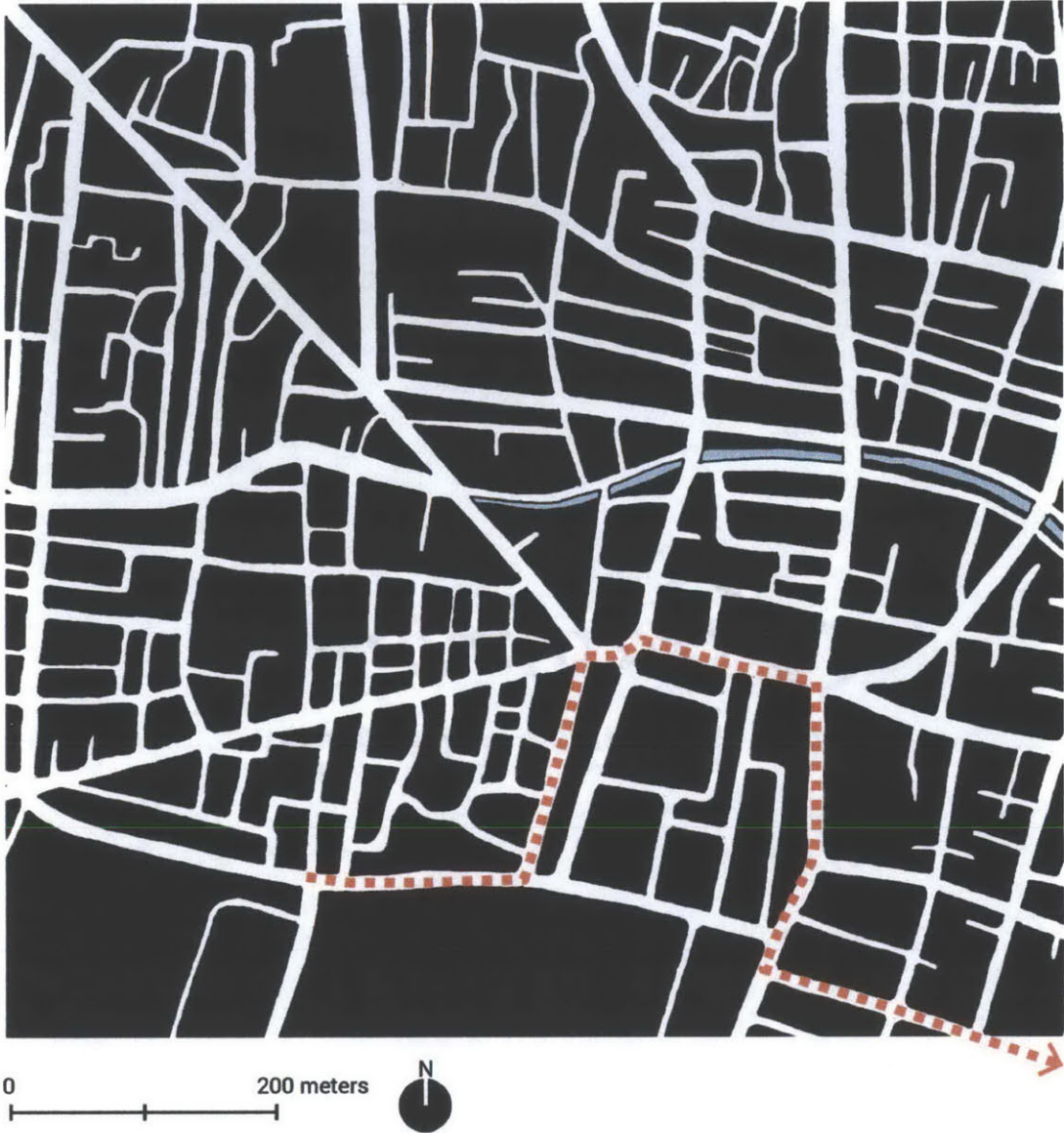
4: Avenue Road which is one of the four planned commercial streets in the area and leads to the City Market. On any day of the week it is crowded with pedestrians and vendors with some amount of traffic during the mornings and evenings.

5: Chickpete Main Road – During the evening.

Shivaji Nagar



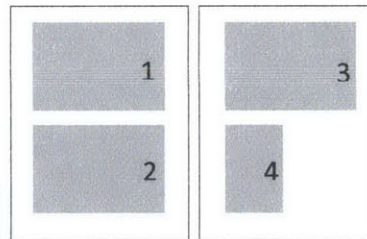
Shivaji Nagar was known as Blackpally when it was developed as a part of the Civil and Military Station during the 1800s after the British colonized the city. The workers who came from other parts of the region in search of work settled in the area which is located next to the Cantonment. Shivaji Nagar has one of the two major bus stations in the city and is located on the east end of the central east-west axis of the city very close to Mahatma Gandhi road which is often defined as the center of the city. It is also one of the major street shopping areas in the city and houses both affordable, smaller, local shops and larger chain stores. It also houses several temples, mosques and churches. Russel Market which is one of the oldest markets in the city and is a major local market for fruits, vegetables and flowers is located in this area. The area has smaller plot sizes with buildings upto 4 floors. Most buildings share common walls. The area is dense with certain institutions like the bus station and St.Mary's Basilica having open space within the larger plots. Vegetation is sparse.



The area consists of several wider, main streets which predominantly run east-west, with narrower, secondary streets running north-south. Even though there was no specific grid laid out in the area, the general axes of the streets follow the cardinal directions. Shops selling clothes, personal accessories, shoes, jewellery, tailoring items, household items and cane furniture, line the ground floors and basements of the main streets, with the upper floors being dedicated to residences. Street vendors sell clothing and other items along the pavement, and on *thelas* lining the edges of the main streets that house the local stores. There is one lane of car parking on either side of most main streets. Several of the shop owners have been in the area for multiple generations. Most streets are unidirectional for vehicles and are shared by cars, motorcycles, bicycles and pedestrians. Due to the presence of the bus station within the area and the commercial uses, the area tends to get very crowded, especially during the weekends.







1: Meenakshi Koil Street near the Bus Station - The main street that is used for access to the Bus Station by buses. The street receives high volumes of traffic and is lined by restaurants and bars.

2: Meenakshi Koil Street - The street connects a major temple and cathedral and is lined by small local clothing, cane furniture and household item shops occupying the basement, ground and first floors of the buildings. The upper floors are residential. The street receives high pedestrian volumes and is lined by street vendors. It connects the Bus Station to the rest of the commercial area in Shivaji Nagar.

3: Jumma Masjid Road – One of the commercial streets lining a mosque with high pedestrian volumes at all times of the day.

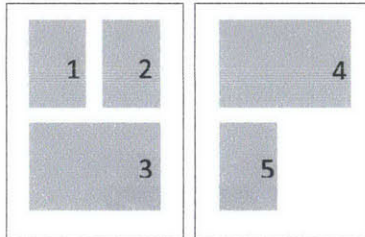
4: Smaller alleyway next to Russel Market – The vendors spill out of the market frequented by a large local population.

Ulsoor (Halsur)



Ulsoor or Halsuru is one of the oldest parts of Bangalore and is also one of the urban villages in the city. The area developed on the eastern side of the Halsur tank (or lake) as a village. The development to the west of the tank is relatively newer. It lies to the north of the Mahatma Gandhi Road and just east of Shivaji Nagar. The Gurudwara located just east of the narrow southern tip of the lake is a major landmark. It is home to mostly local population and also houses some of the oldest temples in the city. There is a major difference in the urban fabric between Ulsoor on the east and the development towards the west. The eastern part has smaller plot sizes with buildings upto 3 floors. The western part has much larger plot sizes with buildings upto 10 floors. Closer to M.G.Road, the area also has a large shopping mall and a large film multiplex. The area is dense with most vegetation located around the edges of the tank.





1: One of the main residential streets with parking outside residences on either side of the street and low pedestrian volumes. Political banners hang from cables suspended from the trees lining the streets which are usually within the residential plots.

2: Children playing cricket in the afternoon after school in a smaller residential street. There is no raised sidewalk along the street and a few houses have a small *jagali* in the front which acts as the semi-private buffer from the public street to the private house.

3: A main residential street with a religious procession underway.

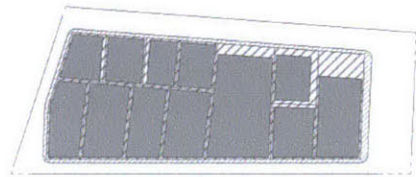
4: A street with one commercial edge and one residential edge. These streets tend to have raised sidewalks and higher traffic volumes than the internal streets.

5: A residential alley.

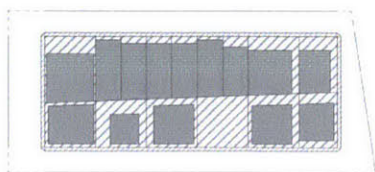
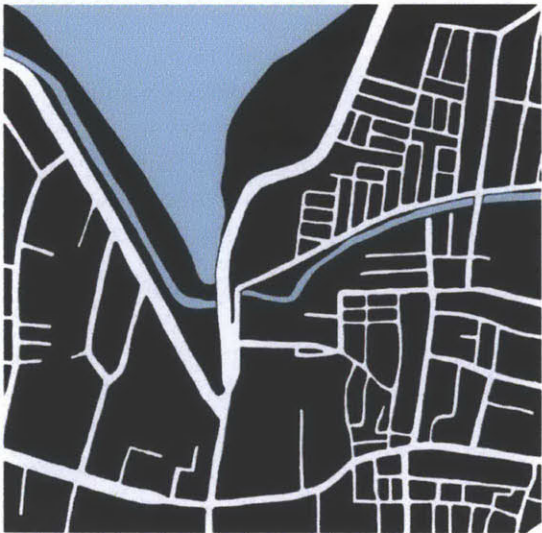
Chickpete



Shivaji Nagar



Ulsoor (Halsur)

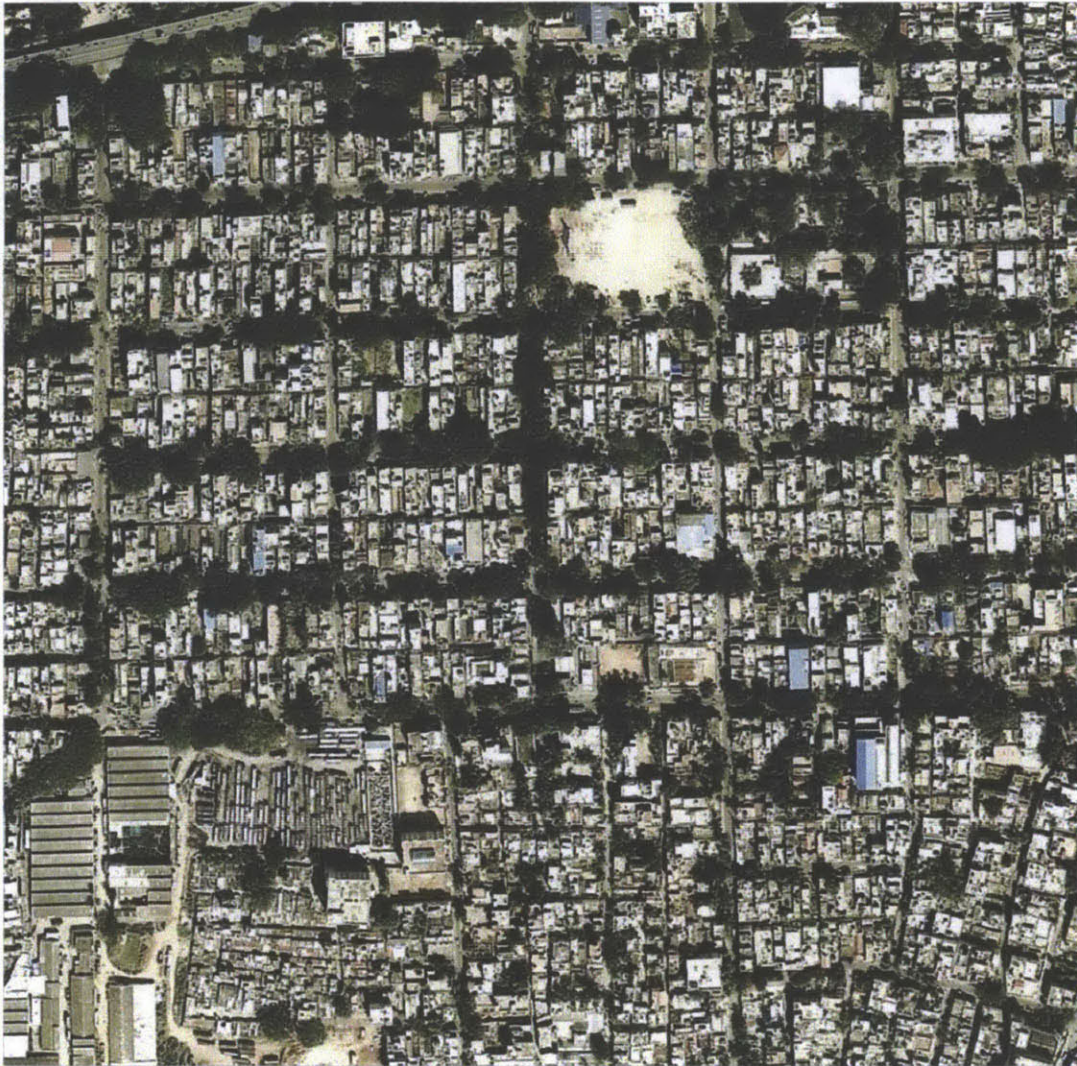




Figures on opposite page: Chickpete, Shivaji Nagar and Ulsoor, located along the central east-west axis of the city, were all developed without the influence of any colonial planning efforts and thus express similar street patterns in terms of the lack of a rectilinear grid, perhaps a response to natural features, street frontage by buildings and a dense urban fabric.

Although there is no typical block in these areas due to the lack of a regular grid, taking samples of blocks in the areas (that are often formed by narrow gullies instead of main grids), the sizes of the blocks are seen to be relatively similar in terms of size and density, with a slightly higher proportion of unbuilt area in Ulsoor.

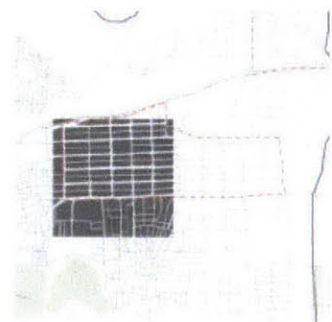
Chamarajpete



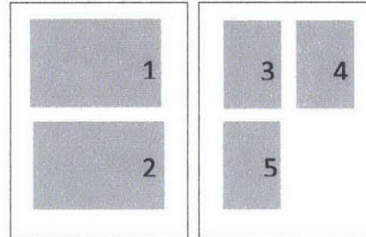
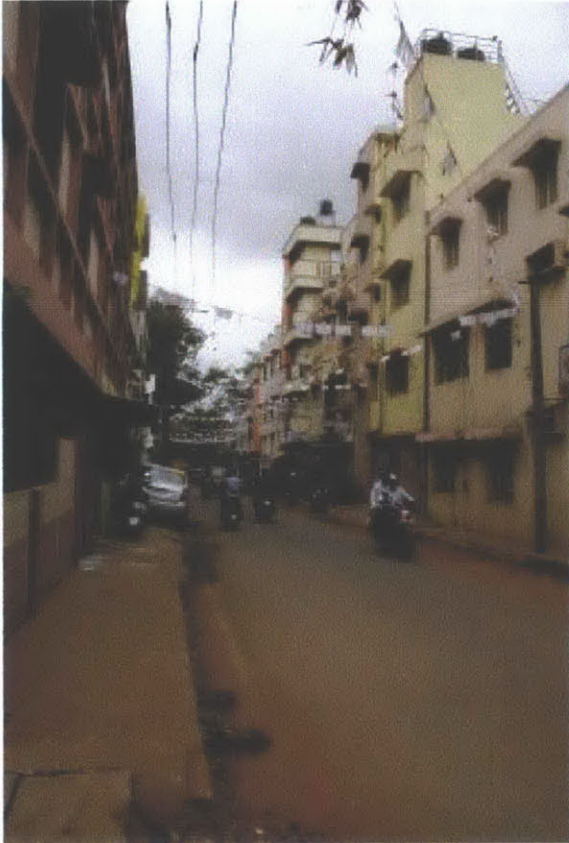
Chamarajpete was laid out in 1892, just prior to the plague epidemic, by the committee formed for the improvement of the city by the city municipality due to the influx of population to the city. It is located just south of Chickpete, separated by Mysore Road which is a relatively large highway cutting across the city, and is the oldest area in the city with a rectilinear grid layout. It has a few large temples and several small temples, and a predominantly local population. The built fabric is relatively dense with long narrow plots with some open space in the front of buildings but minimum or no setbacks along the sides or rears of the buildings. The buildings are upto 5 floors high. The tree cover is high and the area has a large open ground in the middle of the grid layout. The southern part of Chamarajpete was developed later on and therefore has a different urban fabric without a rectilinear grid and smaller irregular sized blocks.



The street layout in Chamarajpete is very regular and rectilinear with the streets running north-south and east-west, dividing the area into narrow and long blocks. The east-west streets are the 'main' streets with the numbering increasing southwards, and the north-south streets are the 'cross' streets with the numbering increasing westwards. Most of the streets are residential with occasional ground floor commercial use with buildings and boundary walls interspersed along the street edges. The grid of this area is unique because each 'main' forms the front street and the back street alternatively for the residences which span the length of each block. The streets are shared by buses, cars, rickshaws, 2-wheelers and pedestrians. Since the area is relatively less crowded due to the absence of any major commercial activity, it is relatively easier to walk on most streets despite the number of intersections.







1: A major commercial street on the southern edge of the grid layout with very narrow raised sidewalks and medium to high traffic volumes.

2: An intersection of a main street (front) and a cross street where the corner is an auto-rickshaw stand and the sign poles are colored in the Karnataka state colors. A religious idol sits next to the tree on the street with flowers garlanded around it.

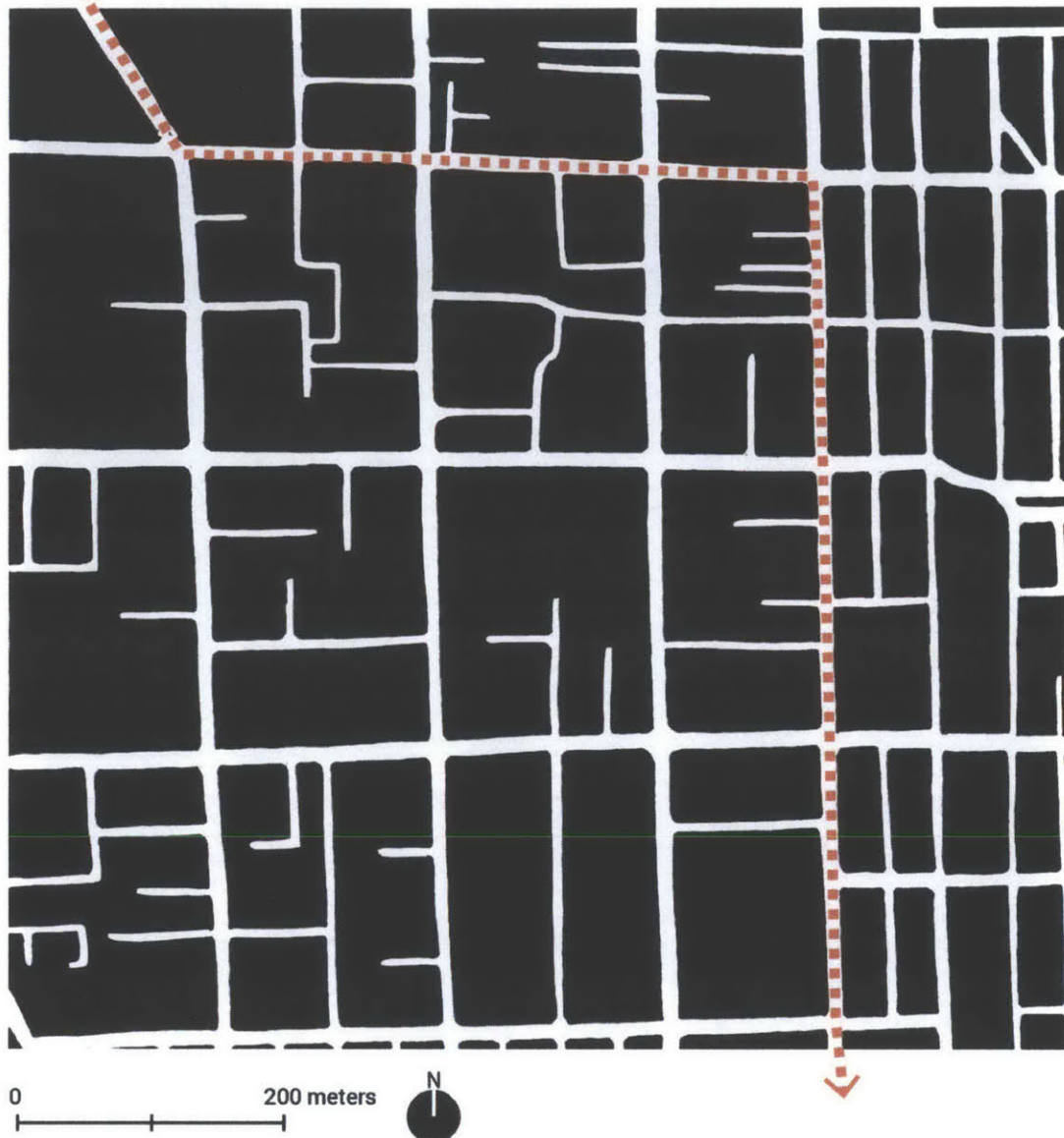
3 and 4: Typical main streets (back) that have minimum setbacks, narrow sidewalks and less vegetation lining them and are easier to walk on.

5: A typical alleyway that is formed by minimum setbacks between houses. Many houses have their private entrances from these and they are also used for a lot of the local interaction with neighbors and household activities.

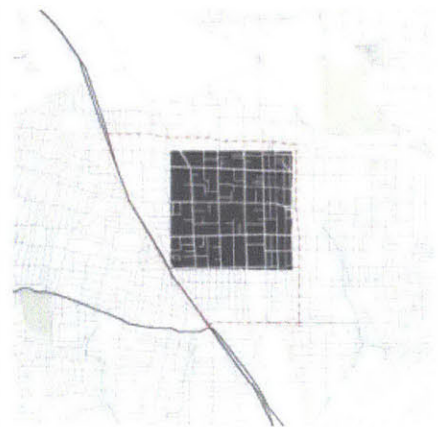
Malleswaram

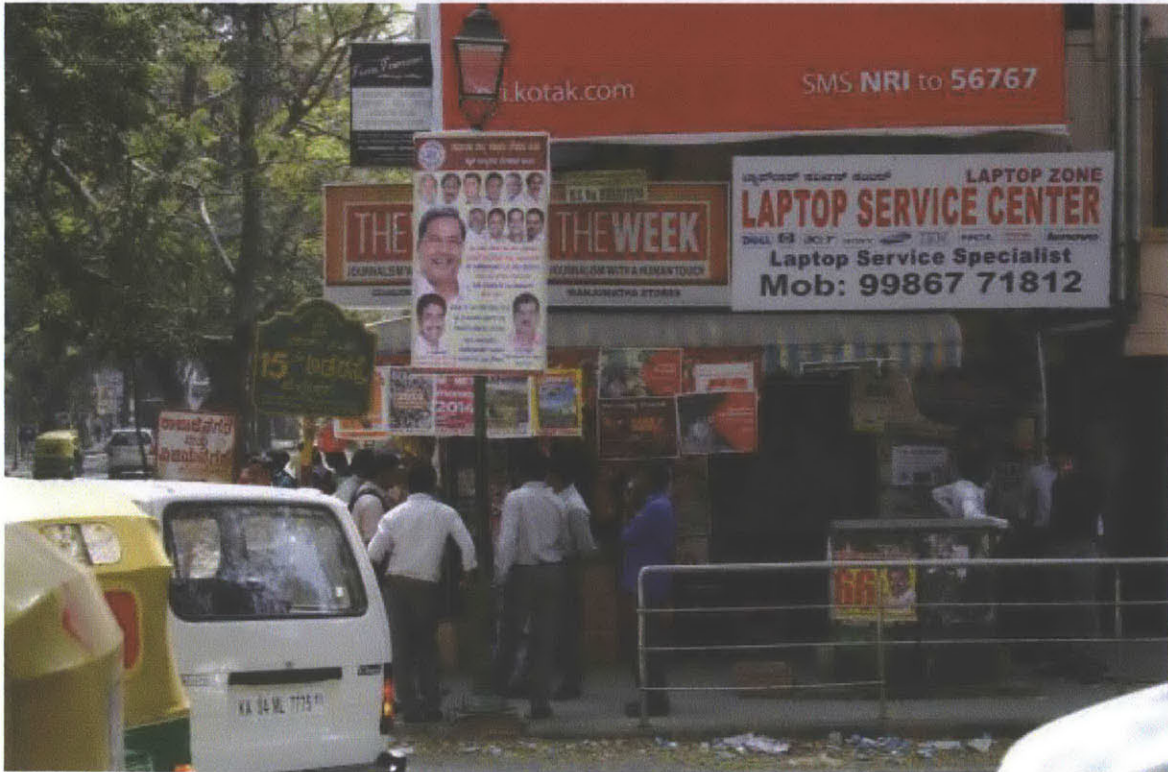


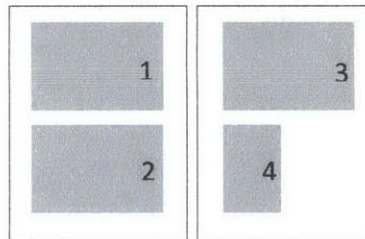
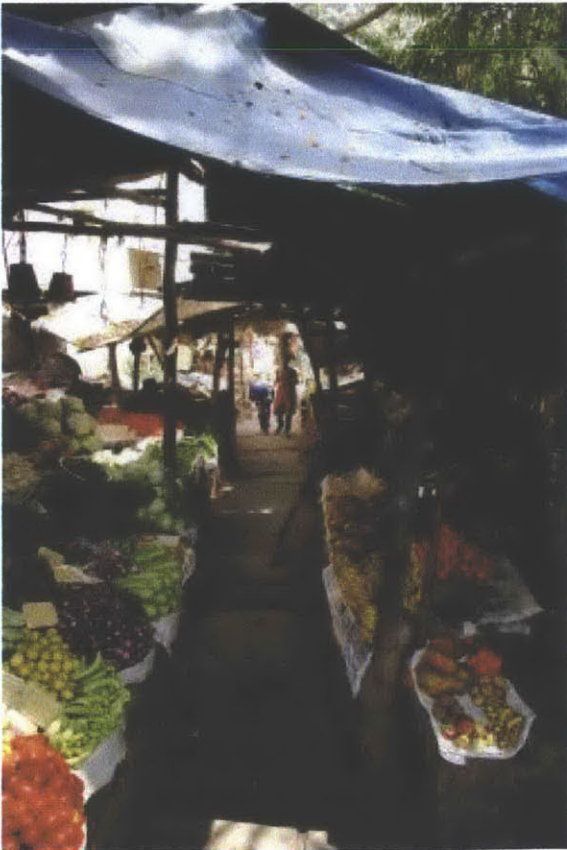
Malleswaram was one of the earlier formally developed residential layouts within the city after the plague of 1898. It was developed for the upper middle class population as a hygienic settlement away from the crowded areas of Chickpete and Shivaji Nagar. It is located to the north of the Chickpete area. It has larger plot sizes with a mix of individual bungalows and apartment buildings upto 5 floors high. The plots have wider setbacks (upto 4 meters) which are vegetated in some cases and used as parking in others. The area is relatively crowded and houses some of the largest temples in the city, however it is less dense in terms of built fabric. Makar Sankranti is widely celebrated here. Small parks and playgrounds can be found in the area.



Since the area was formally developed, it has a rectilinear grid with streets laid out in the north-south and east-west directions. The north-south streets are named 'crosses' with the numbering increasing northwards, while the east-west streets are named 'mains' with the numbering increasing westwards. The wider main streets form relatively regular sized blocks and are a mix of commercial, where the ground floor of buildings fronting the street have local shops, and residential, where the predominant street frontage is of 1.2-1.8 m high boundary walls. Most corners of the intersections of commercial streets have tea-stalls where people can be found gathered in the morning, after lunch and in the evenings. Most streets are tree-lined and most residential streets have one lane of parking along one side of the street. Smaller alleyways lined with vendors can be found, especially grouped around the temples. The number of intersections, several of which do not have traffic lights, is relatively high in the area.







1: One of the major commercial 'main' streets with a temple forming a part of the street edge. Street vendors line the street which receives medium volumes of slow speed traffic.

2: A typical corner at the intersection of a 'main' and a 'cross' street with a newspaper and tea stall where people gather for quick breaks throughout the day, with maximum usage during the morning, after-lunch and evening. The typical street signage in Kannada can also be seen in the corner with the typical green background and yellow text. Several parts of the sidewalks are fenced off. The lamp posts and electrical transmitter boxes are used to lean on while sipping on tea or engaging in informal conversation.

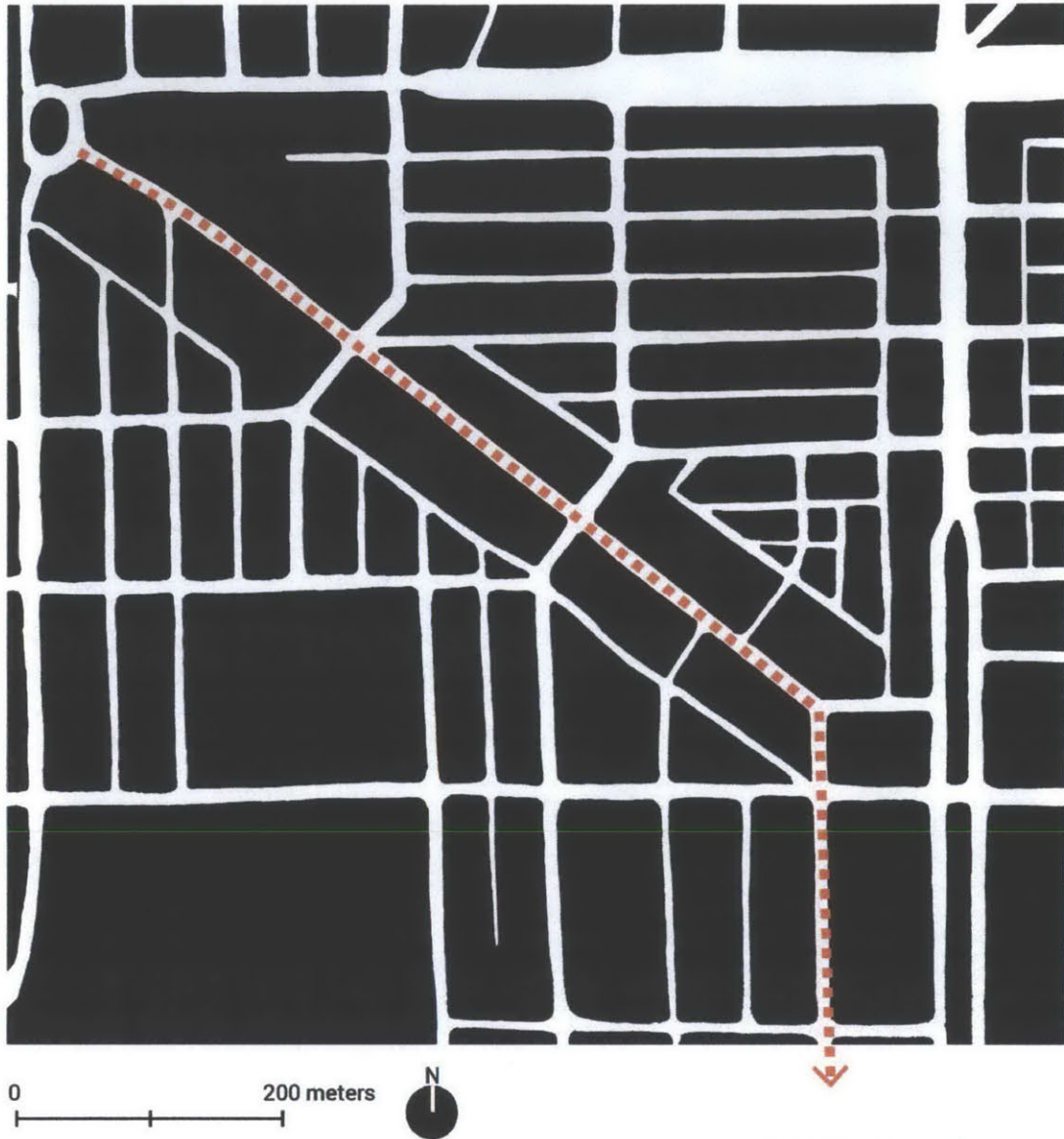
3: A typical quiet residential street lined by trees and fronted by boundary walls.

4: A narrow alleyway lined by vegetable stalls near the main Ganapathi temple in Malleswaram.

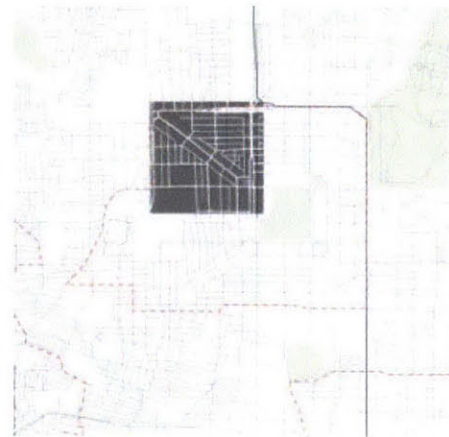
Basavangudi



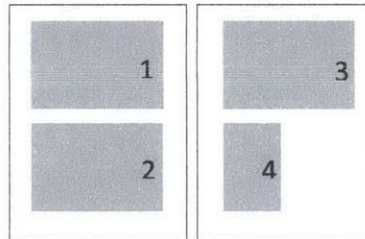
Basavangudi was laid out in the same time period as Malleswaram, as a part of the 'hygienic' residential development for the upper middle class population post the plague epidemic in 1898. It is located south of Chamarajpete and is predominantly residential with the commercial activities focused along the diagonal streets. The older plans of the area show housing allocated in the area by the Bangalore City Improvement Trust based on castes and occupations. The central area in Basavangudi is a large park and smaller parks dot the internal blocks within the grids as well. The area is relatively less dense with larger plot sizes and a predominance of large individual bungalows upto 3 floors high with wide vegetated setbacks along the front, rear and sides. Several large temples like the Dodda Ganapati and the Bull Temple are located in this area. The population is mostly local.



Basavangudi is laid out on a rectilinear grid with diagonal streets cutting through the grids along all four corners. The streets run from north-south and east-west and unlike most other grid layouts in the city, it does not use the nomenclature of 'main' and 'cross'. The diagonal streets are wider, bi-directional streets with higher traffic volumes. They have wide, fenced off sidewalks lined by vendors selling fruits, vegetables and flowers. They are lined with old trees with large tree covers and have car and 2-wheeler parking along both edges with 3 lanes of traffic in either direction. They are used by buses, cars, 2-wheelers and pedestrians. The streets on the periphery and one north-south street to the west of the park and one east-west street to the north of the park carry high volumes of high speed traffic. The internal streets are narrower with less traffic volumes. They are fronted by the boundary walls of the residential properties along them and have one lane of parking on either side. rickshaws and 2-wheelers.







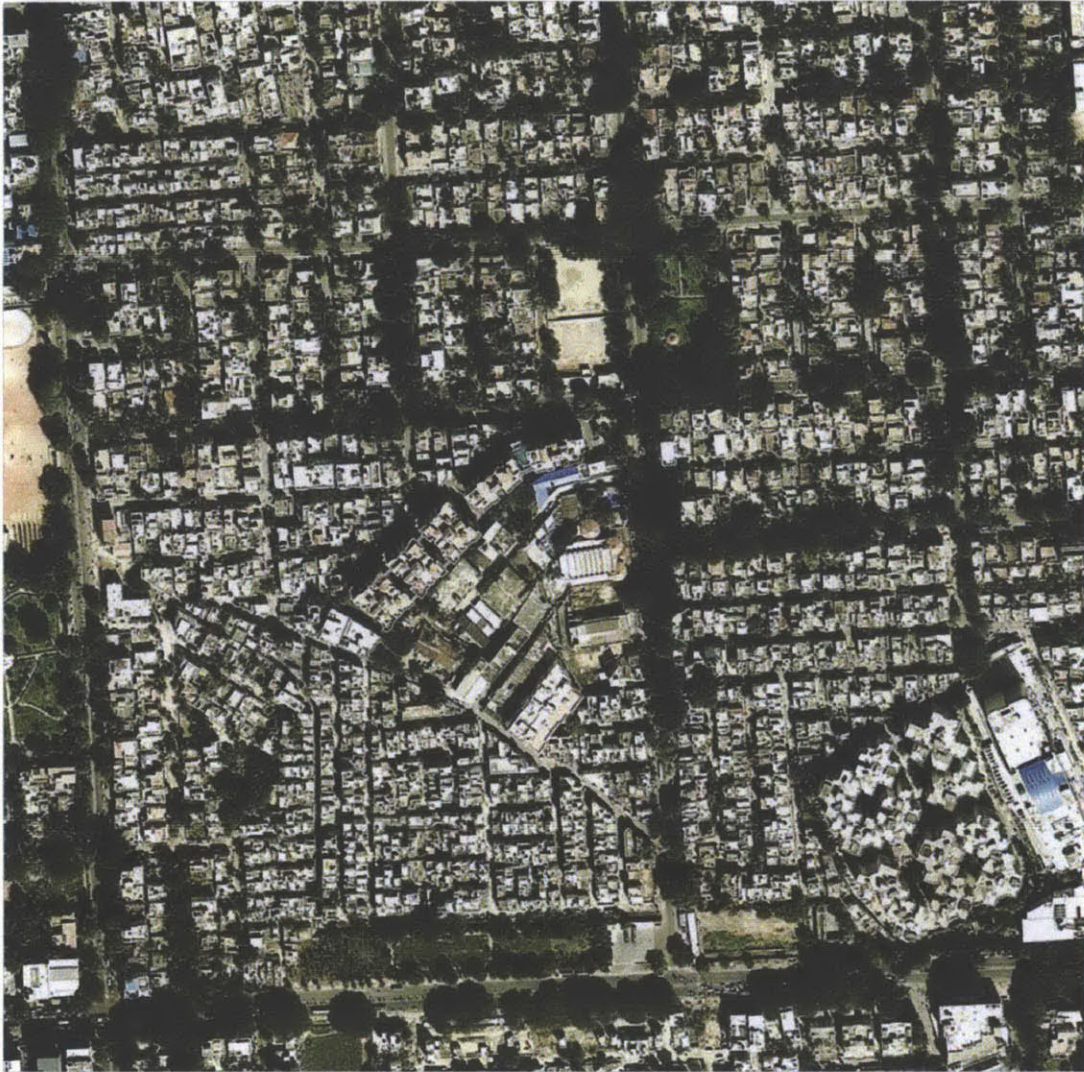
1: Gandhi Bazar Road – A typical commercial street which has wide, fenced-off sidewalks, a lane of parking, and two lanes of traffic in each direction. It receives high traffic volumes throughout the day. The trees are mostly a part of the tarred road area with wide canopies.

2: Gandhi Bazar Road – A quasi-street along the sidewalks which are fenced off and are fronted by store fronts on one side and vendor stalls selling fruits, vegetables and flowers on the other side.

3: A typical residential street in the area with trees lining the street and one lane of informal parking along both sides. These streets receive low traffic volumes and are relatively wide.

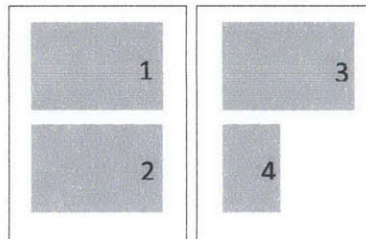
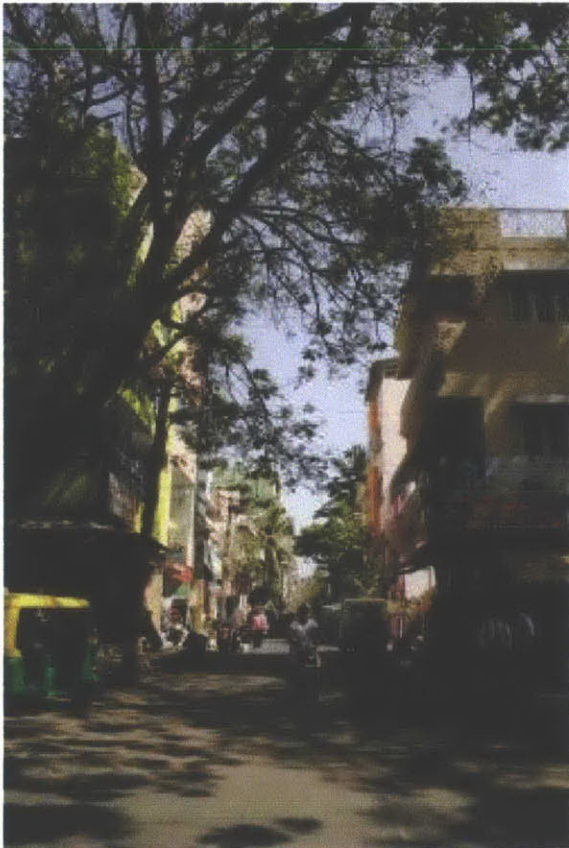
4: A narrower residential street that runs along the back of a lane of houses.

Jayanagar



Jayanagar was also one of the residential developments laid out by the Bangalore City Improvement Trust after the plague epidemic. However, compared to the other localities in this group, Jayanagar has grown substantially since then and now composes two municipal wards – Jayanagar and Jayanagar East. It is located to the south of Basavangudi and is predominantly residential with a rapidly changing use to commercial – showrooms and offices – especially along the main streets. The bus stand in the 4th block of Jayanagar is a major node in the public transportation system of the city especially in terms of connecting the north and the south of the city. The locality has several community parks interspersed throughout its fabric. It is medium dense with buildings upto 5 floors high with medium sized setbacks. Since it is such a large locality in itself, it is difficult to generalize characteristics for the area in terms of built and open space. The locality has a large local population base, several temples, and institutional and community facilities.





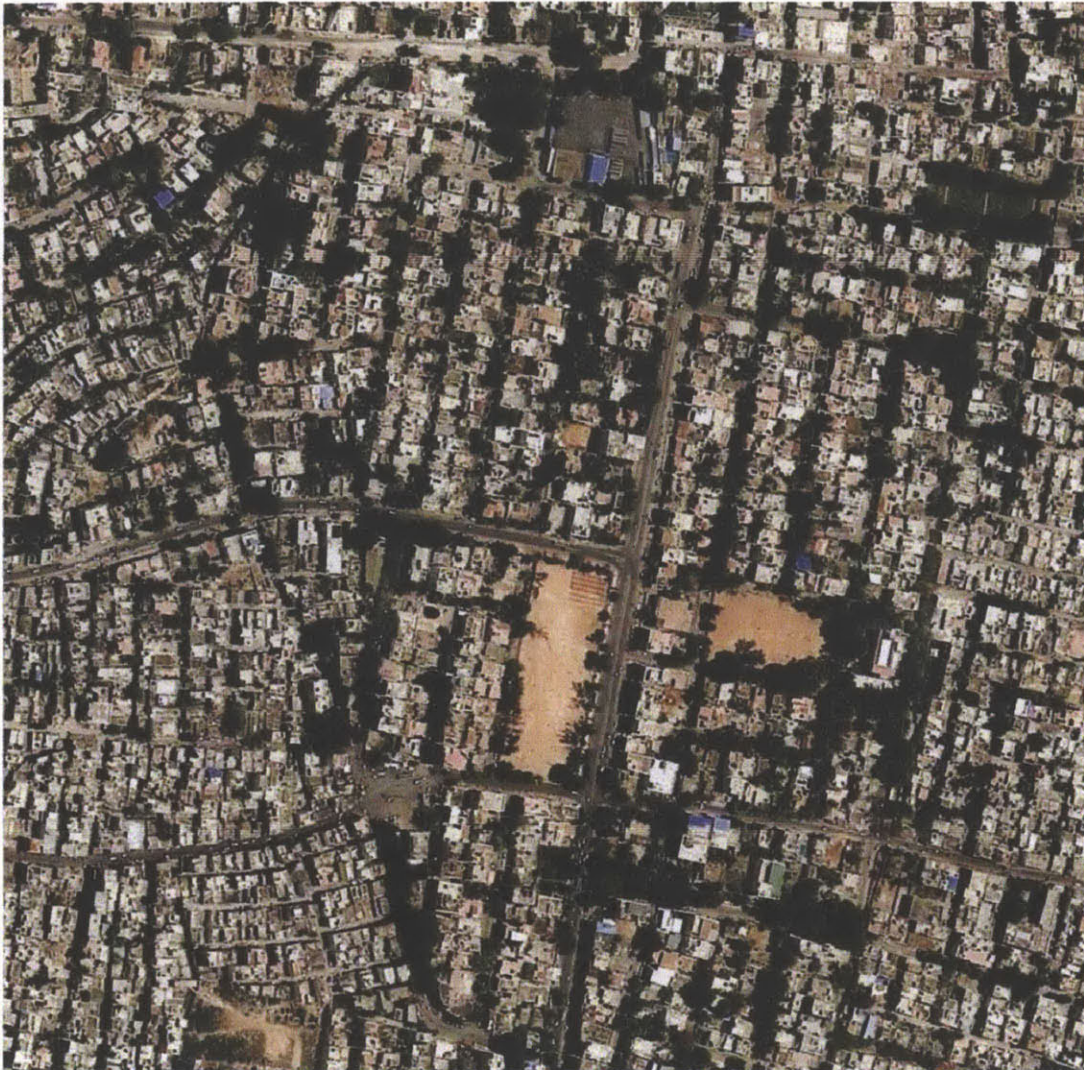
1: A typical residential cum commercial street with low to medium traffic volumes and one lane of parking on each side. Large trees line the street with a wide raised sidewalk on either side.

2: A watermelon vendor on the sidewalk on a commercial street in front of a small tobacco-paan stall. The streets receive medium traffic volumes at slow speeds due to the number of intersections in the area.

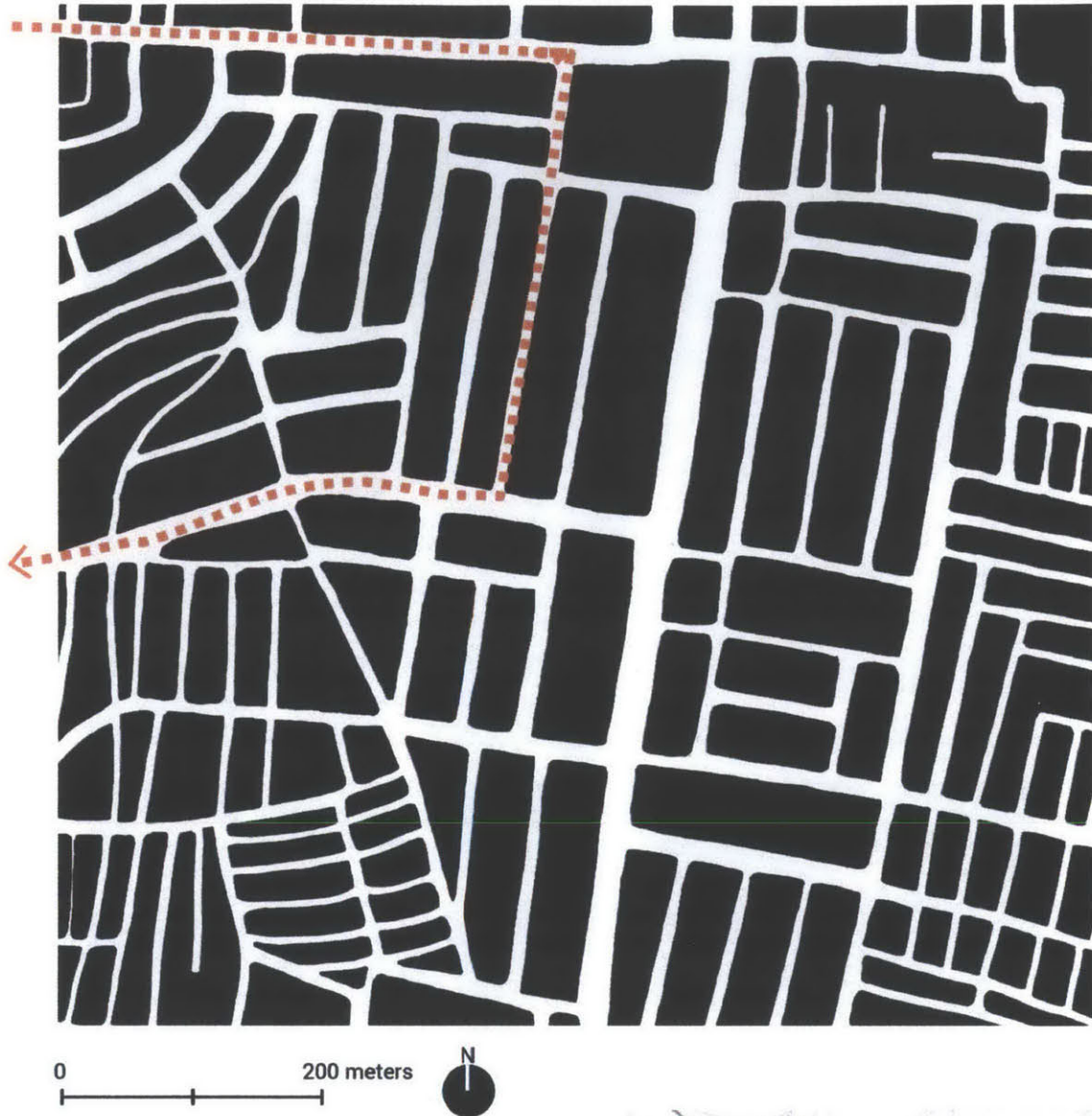
3: The market street outside the main market complex in the 4th Block in Jayanagar. The complex houses shops selling clothes and household items while the vegetable, fruit and flower stalls spill into the streets leading out of the complex.

4: A typical 'cross' street that is narrower and accommodates uni-directional traffic.

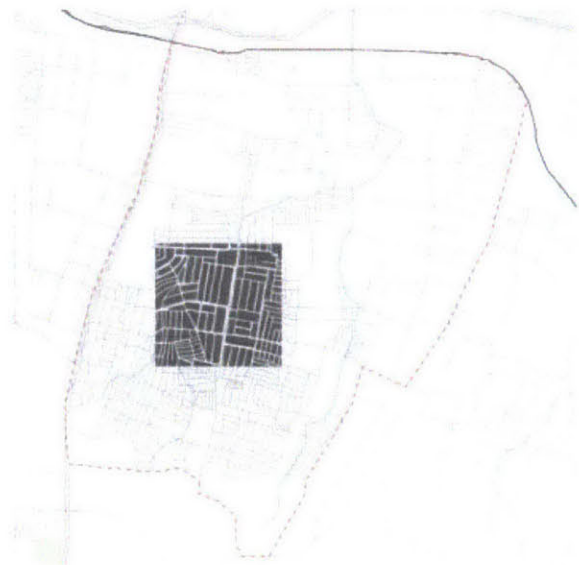
Hebbala



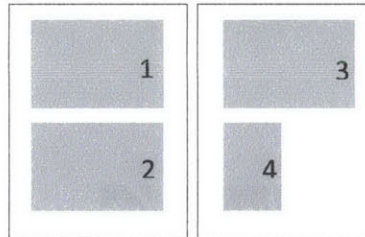
Hebbala is located much further to the north of Shivaji Nagar and was initially laid out in the early 1900s around the Hebbala tank/lake. It is located on the main highway that goes from the center of the city towards the International airport. It is predominantly residential with a few institutional campuses interspersed. It is relatively densely populated with small plot sizes, less open space and buildings upto 3 floors high. The area has a major Sai Baba temple and a few smaller temples, and a mix of local and student population.



Hebbala is also laid out on a rectilinear grid, however it is not a very regular grid and is not exactly aligned to the cardinal directions. The blocks are relatively narrow and long. The streets are primarily residential with a few wide commercial streets along the peripheries that have a higher vehicular flow. The residential streets are relatively narrow, have bi-directional traffic with one lane for each direction, parking along only a few of the internal streets, and tree cover along the streets. The streets are fronted by short 1-1.5 meter high boundary walls and vegetated front gardens. There are a few buses that pass through some of the internal streets, however since it is a residential area there is no high speed traffic. It is relatively easy for the streets to be used as shared spaces by pedestrians, cars, rickshaws, and 2-wheelers.







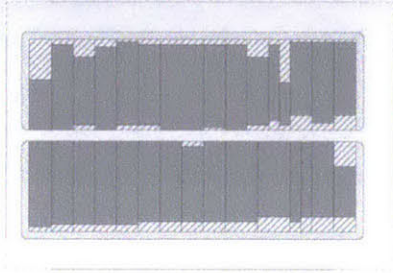
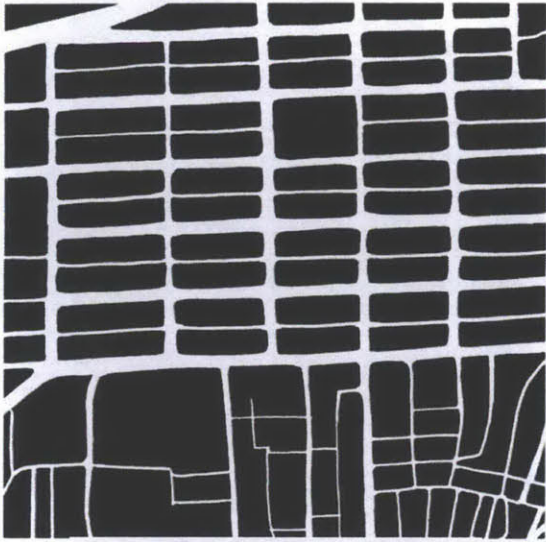
1: A typical 'main' street in the area with a quiet, residential character. Tree canopies spill out from the residential plots which have low boundary walls fronting the street. Cars are informally parked along the sidewalks.

2: A typical intersection looking towards a 'cross' street with two types of newer street signage in English and Kannada with the typical green and yellow colors. Traffic volumes are low to medium on these streets which are lined with very narrow raised sidewalks and boundary walls.

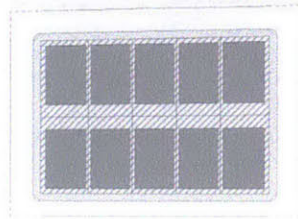
3: One of the major commercial streets along the periphery of the area with wide sidewalks, high volumes of low speed traffic. The women sit outside a local wholesale vegetable and lentil store sorting through the produce.

4: The street fronting the Sai Baba temple which is currently under construction.

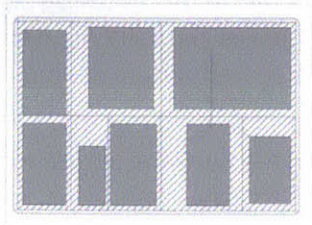
Chamarajpete



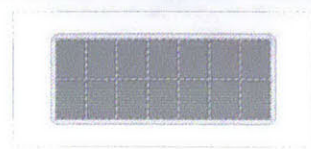
Malleswaram



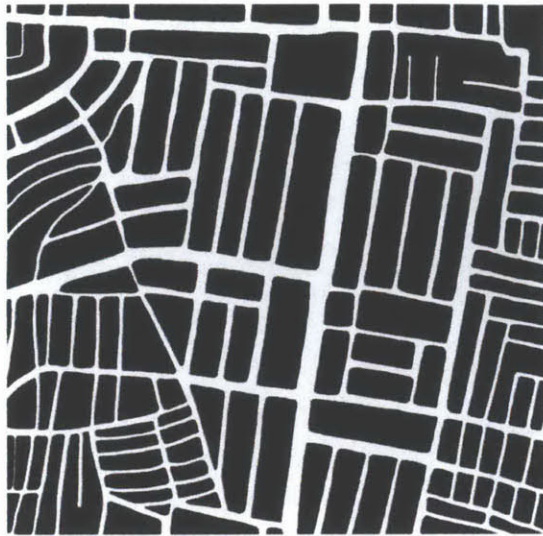
Basavangudi



Jayanagar

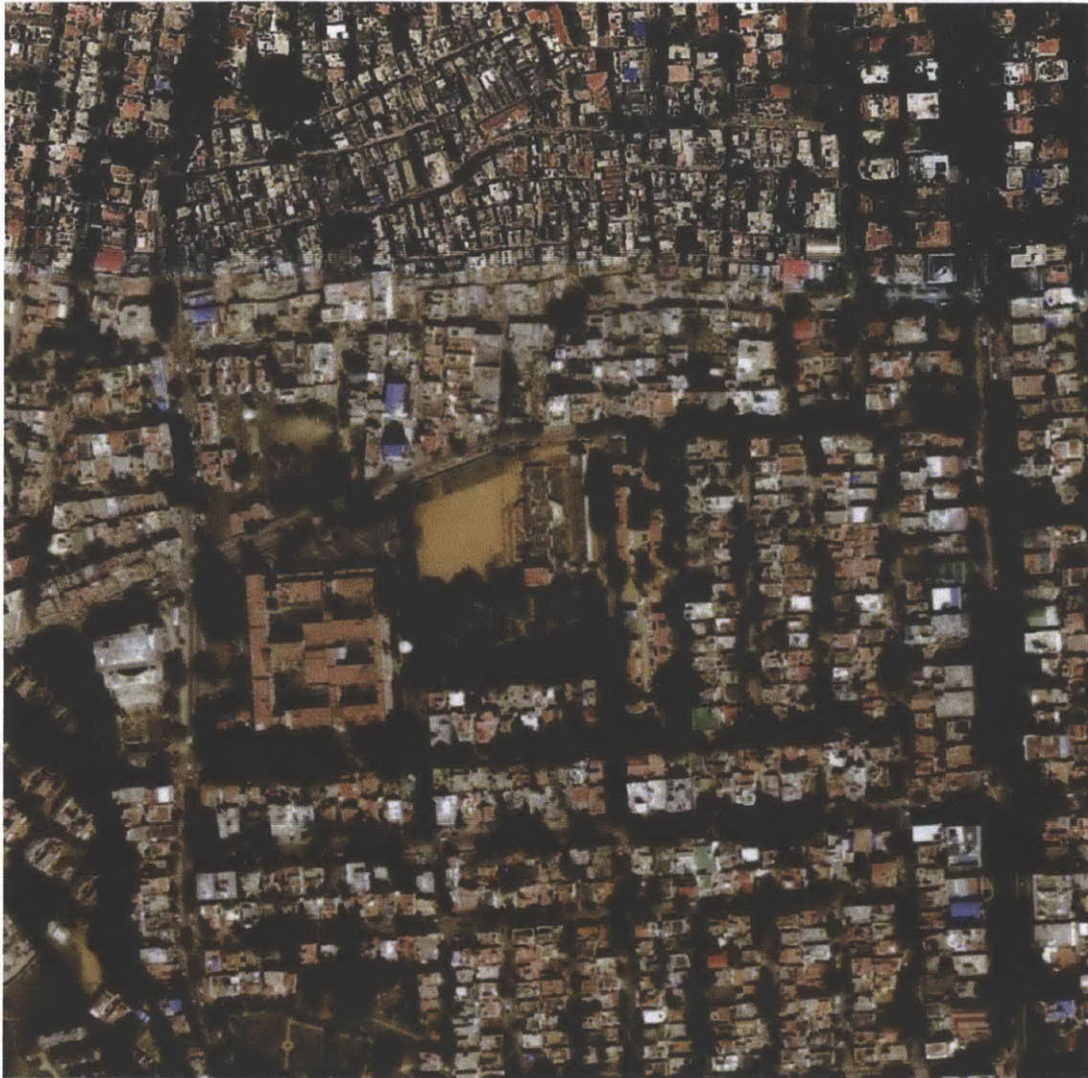


Hebbala



Figures above: The areas developed with the influence of the colonial power were quite different in terms of their layout as compared to the older parts of the city. They all had rectilinear layouts with multiple cross-intersections, regular block patterns and relatively less dense urban fabric than their older counterparts. They all were also predominantly residential areas and remain so till today. However, there was a difference in the sizes of the blocks and proportions of built vs. unbuilt areas within each of these areas. Malleswaram and Basavangudi, which were designed exclusively for the upper middle class, had larger plots and less built up area per plot. The streets in these areas were also wider and more tree-lined. The other areas – Chamarajpete, Jayanagar and Hebbala – had smaller block sizes and denser built fabric. They also had relatively narrower streets.

Indiranagar



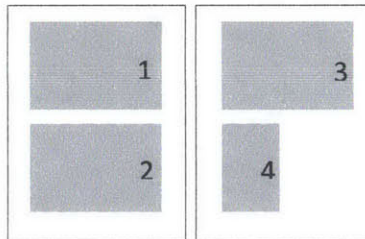
Indiranagar is one of the relatively newer developments in Bangalore. It is located to the east of Ulsoor and has a predominantly residential character with one main commercial street. The layout is relatively less dense towards the southern area and gets denser moving northwards. It has larger plot sizes with a combination of apartment buildings upto 4 floors high and individual bungalows upto 3 floors high. It also has smaller institutions and recreational facilities on larger plots that have buildings upto 5 floors high. The plots have wide vegetated setbacks. Indiranagar is known to be one of the 'richer' parts of the city with a mix of local and non-local younger population.



The street pattern is relatively rectilinear but not very regular. The block sizes vary and change orientation frequently. The main commercial street, which is also the main thoroughfare in the area, runs north-south and has large chain stores along the edges with 3 lanes of traffic in each direction. It is tree-lined and cuts through the center of the area. The north-south streets are the 'mains' with the numbering increasing southwards. The east-west streets are 'crosses' with numbering increasing westwards. The residential streets are relatively narrower and are shared by cars, 2-wheelers, rickshaws and pedestrians. Relatively less street vendors are seen in the area. The area also has several 'hole-in-the-wall' kind of smaller but expensive restaurants tucked away on the ground floors of residential buildings. The residential streets are tree-lined and pleasant to walk on







1: The main central commercial street with wide, fenced-off sidewalks that are lined with trees, and two lanes of traffic for each direction. The street receives high traffic volumes at medium speeds. Large chain stores line the street with several cars and 2-wheelers parked on the sidewalk outside of the stores.

2: A typical 'main' street with a combination of residential buildings interspersed with stores. The streets are tree-lined and often have one lane of parking along both sides. They receive medium volumes of low speed traffic.

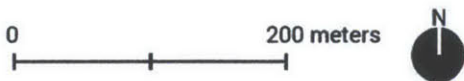
3: A typical residential street with a school on one of the corner plots.

4: A typical residential 'cross' street fronted by boundary walls with no raised sidewalks. Each neighborhood typically has, along one of these streets, a small stall with a person steam-ironing clothes for the residents in the neighborhood for a minimal fee.

Banashankari (Katriguppe)



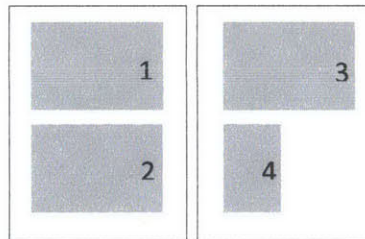
Basavangudi is divided into three stages and a temple ward. It also includes the Katriguppe ward which is what a lot of people know the area as. The major landmarks in the area include the Banashankari temple and the Banashankari bus stand. It is located on the south-west corner of the city currently which is also one of the highest points in the city in terms of elevation. The development is relatively dense and has a very mixed urban form that is a combination of older 1-3 story small houses that often share walls and are located on plots with minimum setbacks, mid-to-large sized bungalows with medium sized setbacks which are usually located on the plots with the nicer views of the city, and newer 5-8 story apartment buildings. The locality is mostly residential with commercial activity along the main streets.



The street pattern in this area is responsive to the topography of the hillock that it is located upon. Several streets do not connect all the way through and most streets are not straight. The streets are often undulating with some trees and boundary walls lining the streets. Pedestrians, cars, two-wheelers, cows and bicyclists share the low-speed curvilinear residential streets with buses been an addition along the main commercial streets. The inner residential streets often do not have sidewalks but the curvilinear and undulating nature of the streets make them less conducive to high speed traffic and safe and comfortable to walk on. The streets running roughly north-south are the cross streets while the east-west ones are the main streets. There is not much of a variation in terms of physical character between the mains and crosses in this locality.







1: A main commercial street along the periphery of the area with vendors lining the street intermittently along with one lane of parking outside of larger establishments like banks. The streets receive medium traffic volumes at low to medium speeds.

2: A typical residential street on a downhill slope with minimal setbacks and narrow sidewalks often used as parking spaces.

3: A relatively wider residential street on a downhill slope looking towards the city. Construction of apartment buildings is going on along this street.

4: The same street as image 3 but looking uphill with a typical concrete marker in yellow and red on the left showing the name of the area along with its postal code. Stepped boundary walls line the street with towering apartment buildings threatening to cut off visual access to the city from the top of the hillock that Banashankari is developed upon.

Koramangala



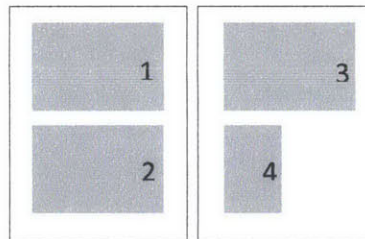
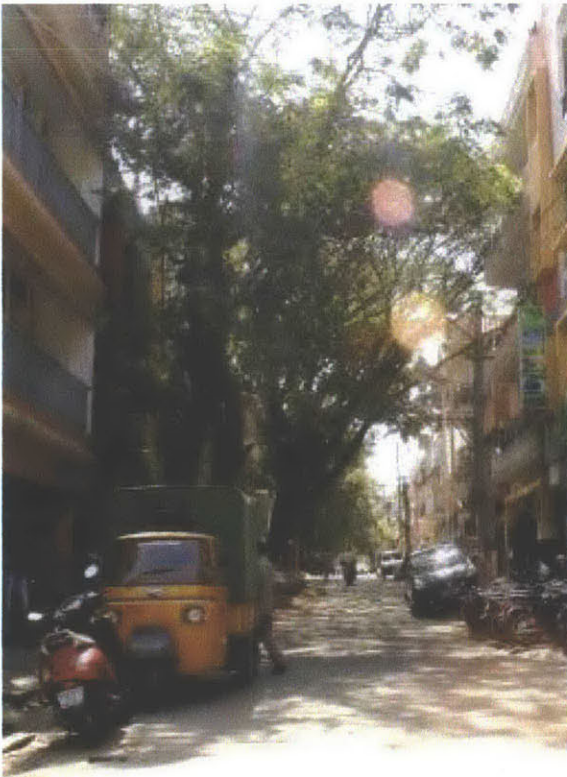
Koramangala is a mixture of residential and commercial developments. It is divided into six blocks. The National Games Village Campus is also a part of the area. It is located to the south of Ulsoor. It houses a lot of the younger population of the city that works in the I.T. and Biotech sector. The area also houses educational and medical institutions, along with several restaurants, chain stores and boutique stores. The plots are medium-sized with commercial buildings with upto 5 floors, apartment buildings with upto 4 floors, and individual bungalows with upto 2 floors. The setbacks are relatively wide and greened. Parks and playgrounds are found in most of the blocks. The area also houses a couple of large malls, and a proposed bus station. Currently it is not very well connected to the city by the public transport system. The area also has a few old and large temples.



The street layout is fairly rectilinear but not regular and not aligned along the north-south and east-west axes. The grid layout is interspersed with several larger plots that form the voids within the street grid. The streets running along the south-west to north-east directions are the 'mains' with the numbering increasing towards the north-west. The perpendicular streets are the 'crosses' with the numbering increasing towards the north-east. However due to most streets being smaller branches that do not run through and through the whole blocks, many of the 'mains' and 'crosses' are numbered with alphabetical subtexts instead of numbers. The main commercial streets run along the peripheries of the various blocks. They are fronted by commercial activity on the ground floor. Since they are not very straight, the traffic speeds are less which makes them more pedestrian friendly. The inner residential streets are relatively narrow and tree-lined, with single-lane parking and 1.2-1.8 m high boundary walls fronting the street.







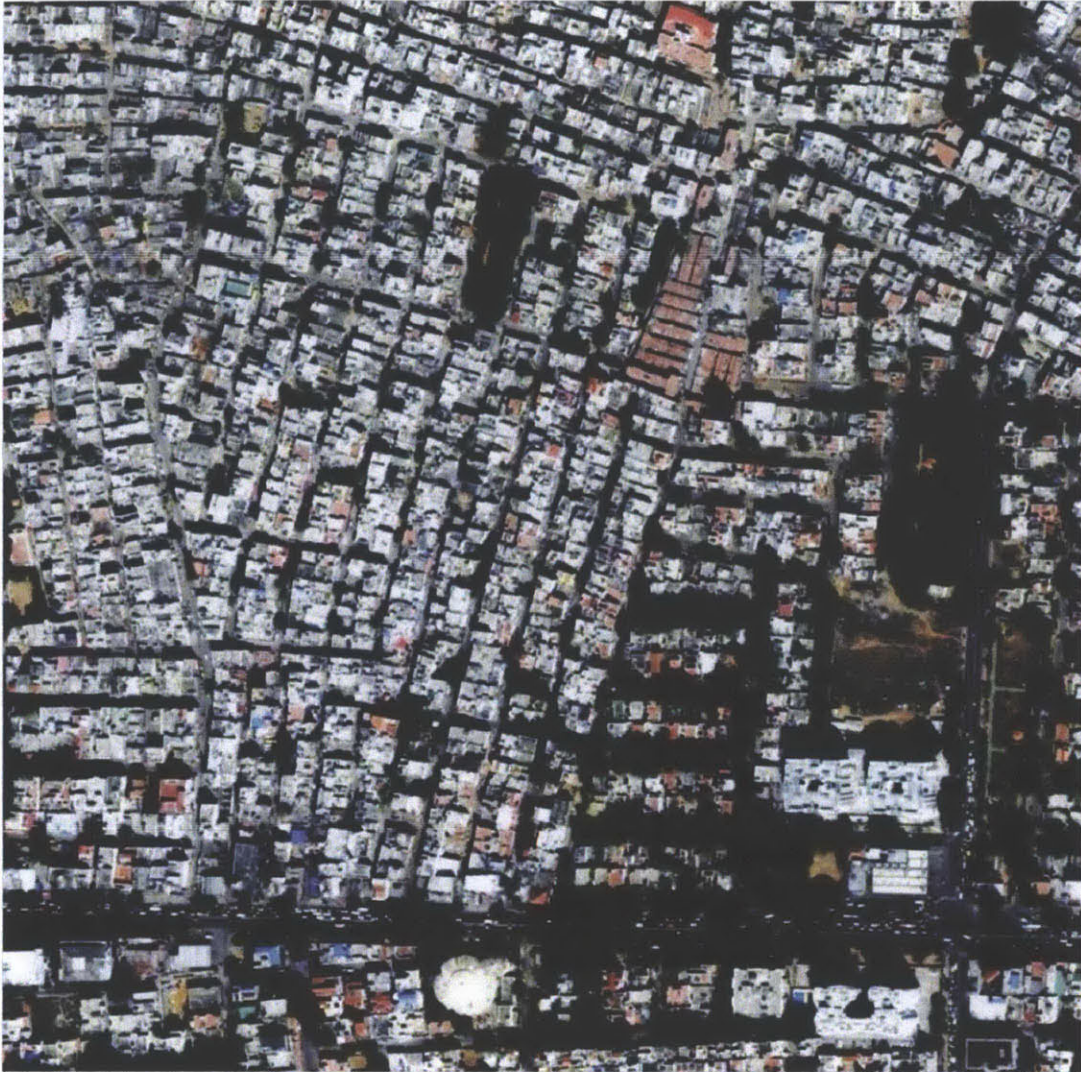
1: One of the main commercial streets along the periphery of 5th block in Koramangala. The street is lined with shops and restaurants on the ground floor with some restaurants and gyms along the upper floors of the commercial buildings along the street. There is one lane of parking along one of the street edges. The street receives medium to high volumes of medium speed traffic. The pedestrian volumes are high on this street in the evenings and all day on weekends.

2: A typical residential street with an occasional restaurant on the ground floor. The streets have wide sidewalks with trees. They receive medium levels of medium speed traffic through the day and high volumes during the mornings and evenings.

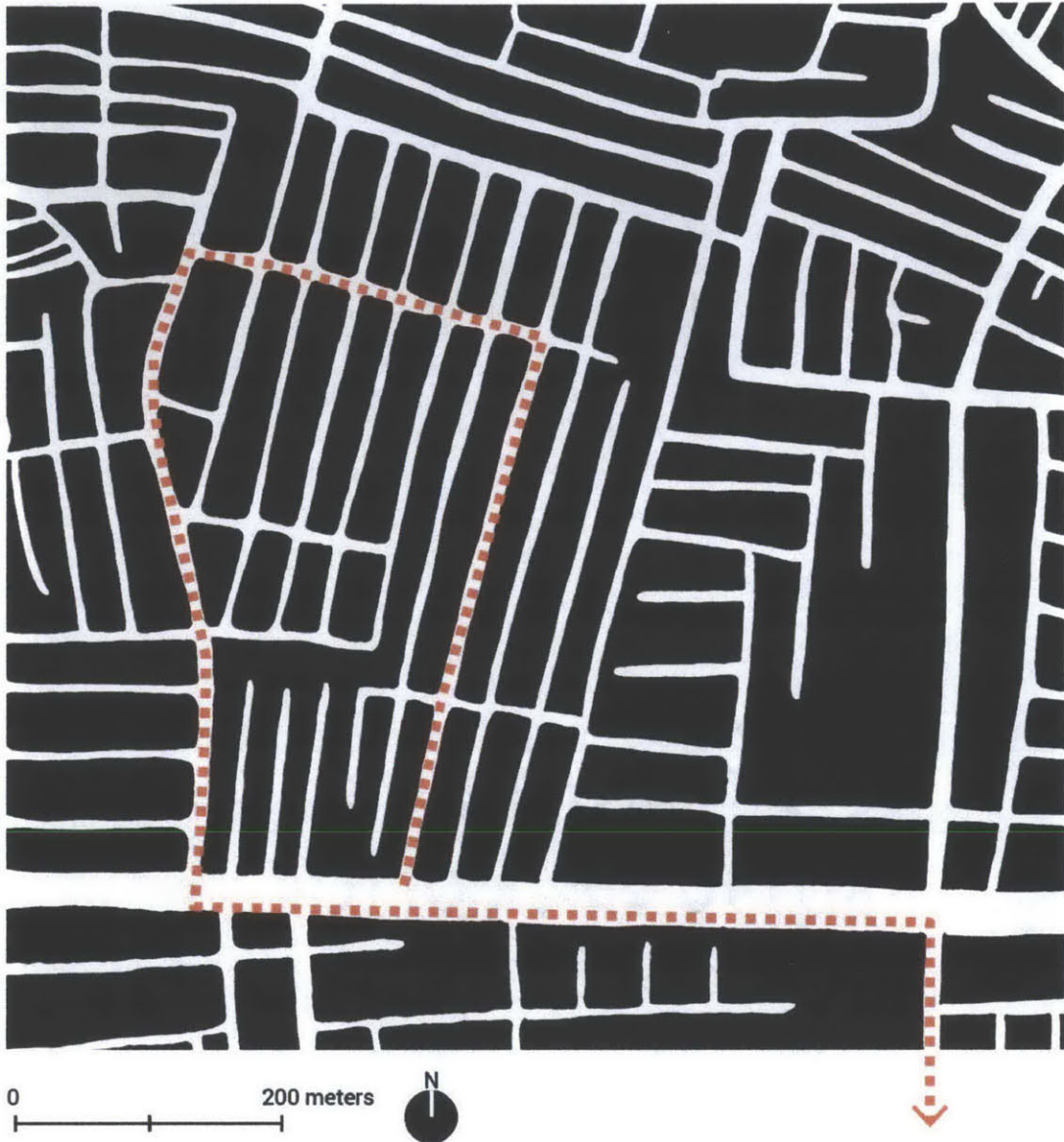
3: A narrower secondary residential street with a street vendor on the street corner.

4: A typical residential cum commercial street lined with trees.

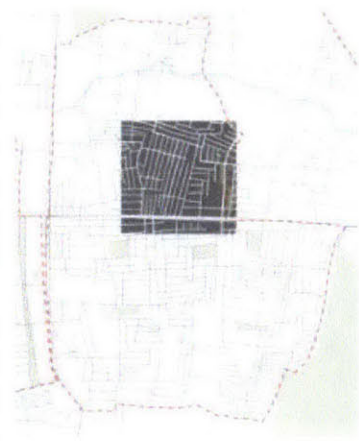
B.T.M. Layout



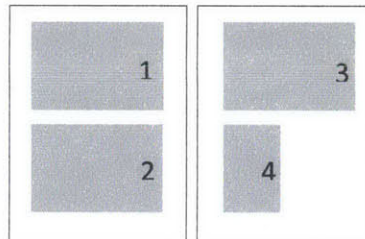
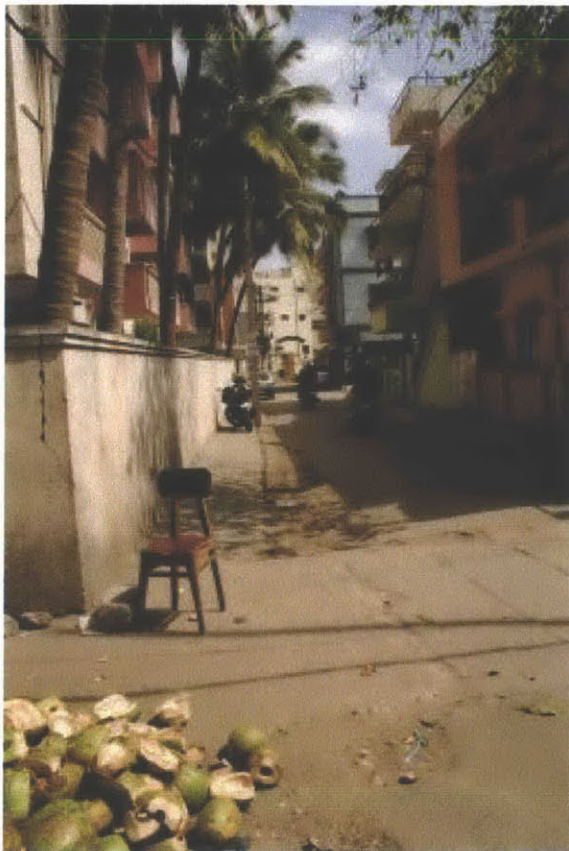
B.T.M. Layout is one of the newest developments within the city. It is primarily residential with some institutional and commercial plots along the periphery. It is divided into two blocks or 'stages'. It has a dense built fabric with small plot sizes and little or no setbacks. The amount of open space is relatively less. The area houses a lot of the younger non-local population that works in the I.T. and Biotechnology sector in the city. It is located just slightly south of Koramangala. The area is one of the lowest parts of the city in terms of topography and often gets flooded during the rainy season.



The area is divided into two stages by a major commercial corridor running east-west. This street receives very high traffic volumes, especially during the mornings and evenings. This street is part of a major bus route and is often jammed by traffic. The street pattern is rectilinear but irregular and not completely aligned with the cardinal directions. The streets that run roughly from north-south are the 'mains' with numbering increasing towards the east. Several of these are named with alphabetical subtext instead of individual numbers since they do not connect through. The perpendicular streets are called crosses with numbering increasing northwards in the first stage north of the main outer ring road, and southwards in the second stage south of the main outer ring road that divides the two stages (blocks). The inner streets are primarily residential, narrow, sometimes with one lane of parking along one side. There are relatively less *thela-waalas* seen in this area. The street grid is intermittently broken by larger institutions and a few parks.







1: One of the commercial streets in the first stage of the layout with wide sidewalks, one lane of parking along each edge and one lane of traffic in each direction. Shops, small restaurants and banks line the streets.

2: Street corners along the commercial street leading into a residential street with the younger population having a smoke and sharing informal conversation.

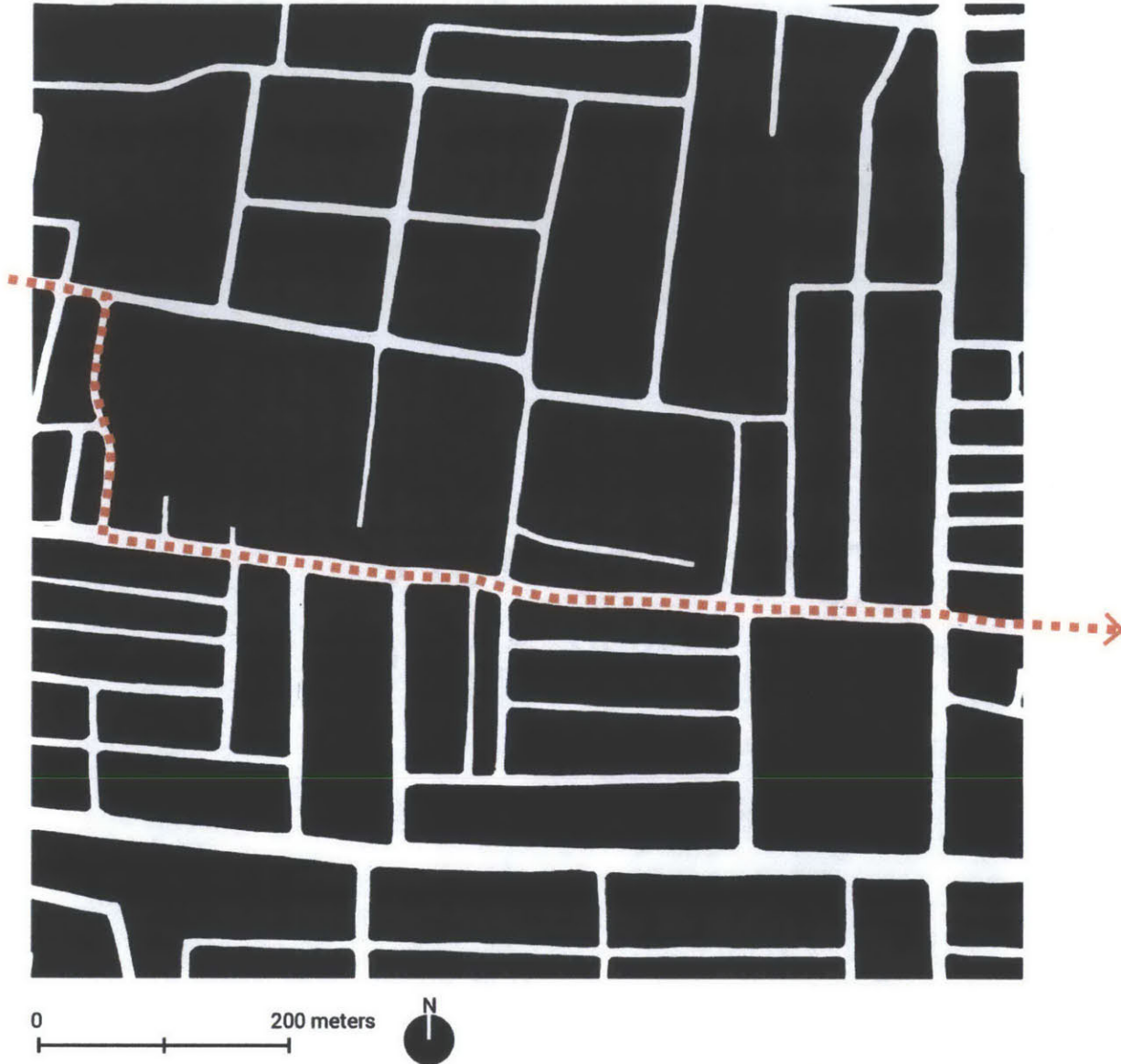
3: A fruit vendor along a residential street close to the street corner in order to get customers from the residences and the visitors to the commercial establishments.

4: A coconut vendor along a typical residential street that is narrow with trees spilling out from the setbacks of the properties fronting it. Boundary walls with minimal setbacks and narrow raised sidewalks line the streets. The streets receive low traffic volumes with low speeds.

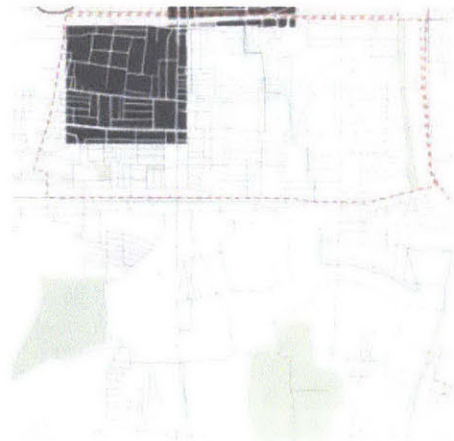
J.P.Nagar



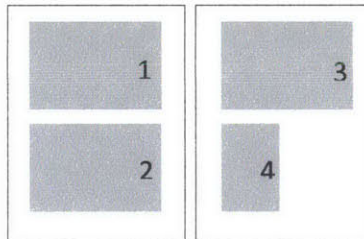
J.P.Nagar is one of the southern-most developments in the city and is primarily a residential development. It is divided into 6 blocks or 'phases'. It has a predominantly local population with some students and young workers renting in the area. The plots differ in size from medium to large and have setbacks proportional to the sizes of the plots. Other than individual bungalows, J.P.Nagar also has a few gated communities developed by large real estate companies. There are a lot of parks and playgrounds in the area. It also houses several small temples and the large Ragi Gudda Temple, along with a few institutions and community amenities like schools, recreation clubs and a theater. The area is relatively less dense due to the variety of plot sizes and presence of large open spaces.



The street pattern is similar to the other areas developed within this time period with rectilinear streets that are irregular in spacing. The blocks sizes vary with a basic long and narrow shape. In several areas the grid is broken to create space for large institutions or community amenities. The streets are mostly aligned along the cardinal directions. The streets running roughly north-south are the 'mains' with the numbering increasing westwards, while the perpendicular streets are the 'crosses' with numbering increasing southwards. There are some major commercial streets on the periphery of the various 'phases' that accommodate heavy bus and car traffic. They are lined with trees and street vendors and have fenced off sidewalks in some areas. The internal residential streets are relatively narrower, tree-lined with informal parking along the sides of the streets. Occasional thela-waalas can be found selling fruits, vegetables and flowers.







1: Marenahalli Road – One of the major commercial streets that forms the edge of J.P.Nagar. Large trees line the wide sidewalks with sugarcane juice vendors, tyre puncture fixers, and informal parking along them.

2: A typical residential street with informal parking along the edges, one lane of traffic with low traffic volumes at low speeds and trees lining the street.

3: A vegetable vendor pushes her *thela* along a residential street with narrow sidewalks and low traffic volumes.

4: A residential street overlooking a radio tower in the area.

Yelahanka New Town/Satellite Town



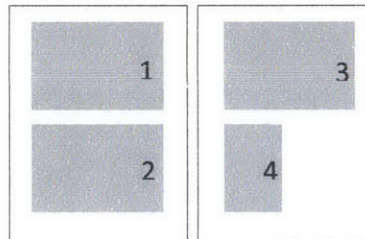
Yelahanka Satellite Town is the newest case among the pool being studied in this thesis. It is on the northern outskirts of the city on the main highway connecting the city to the International Airport. It is a predominantly residential layout and has large plot sizes with a combination of apartment buildings and individual bungalows having upto 4 floors. The setbacks are minimal and vegetated.



The layout is unique because of its radial street pattern. The main traffic thoroughfares lie on the radial peripheries of the layout. The blocks are atypical and the layout of the internal streets is fairly irregular. The concentrically curved streets are the 'crosses' with the numbering increasing with distance from the center of the circle. The radial streets, several of which are shorter and discontinuous, are 'mains' with the numbering increasing moving from north-west to south-east. Third cross is the main commercial street for the layout and is also the frontage of a few large schools and recreational facilities in the layout. It is wide, tree-lined, with one lane of traffic in each direction, and shared by buses, cars, rickshaws, 2-wheelers and pedestrians. Shops, banks and smaller restaurants front the street with one land of parking along the commercial edge. The other edge is mostly fronted by 1.2-1.8 m high boundary walls. The internal streets are relatively narrow, without raised sidewalks.





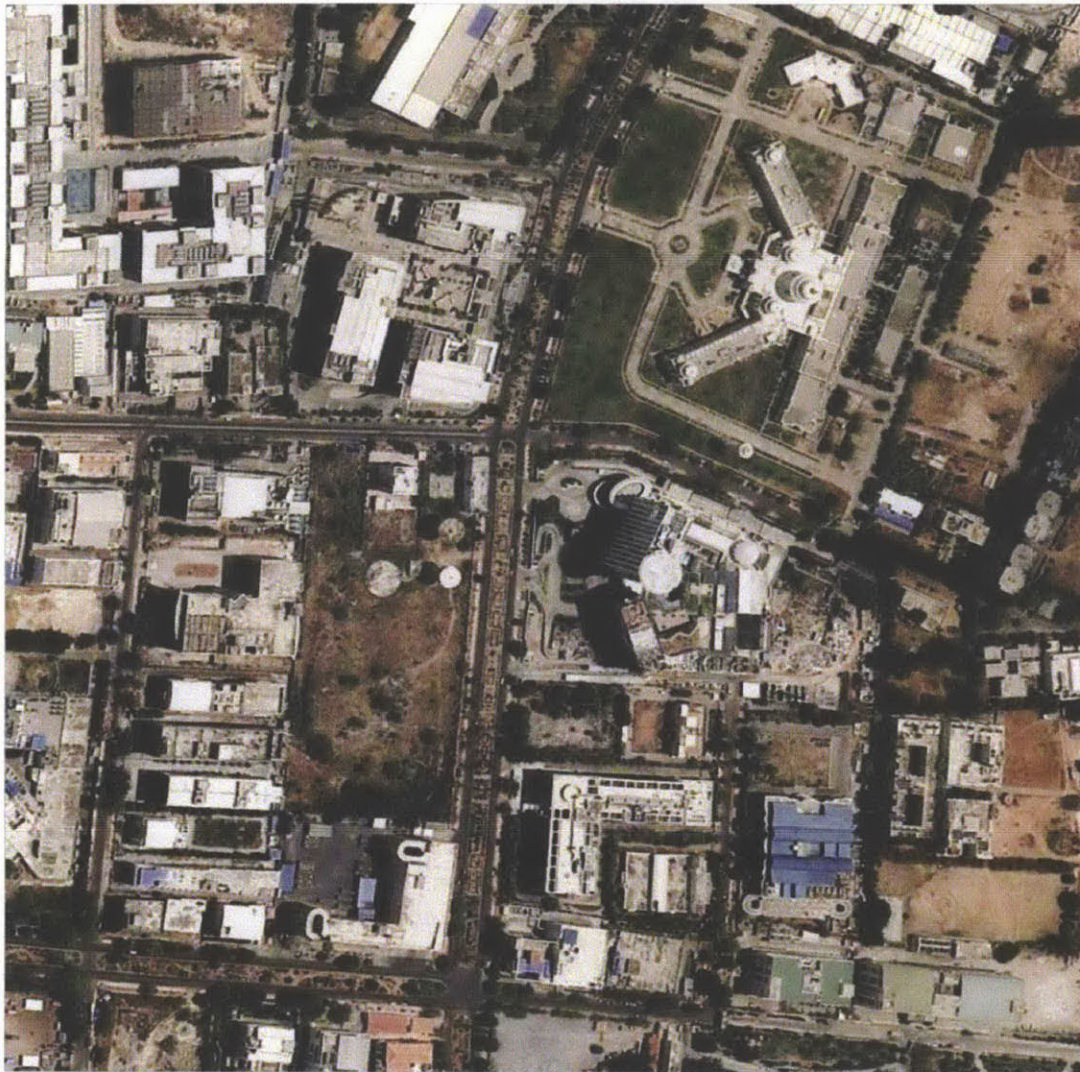


1: 3rd Cross which is the main commercial street in the area with institutional usage on the left side lined by a wide sidewalk and one lane of parking, and commercial on the right side with a wide sidewalk and one lane of parking. The street accommodates one lane of traffic in each direction and receives medium to high traffic volumes at low speeds due to the high pedestrian volumes. The tree canopy from the institutional plots spills out onto the street.

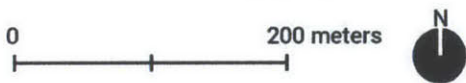
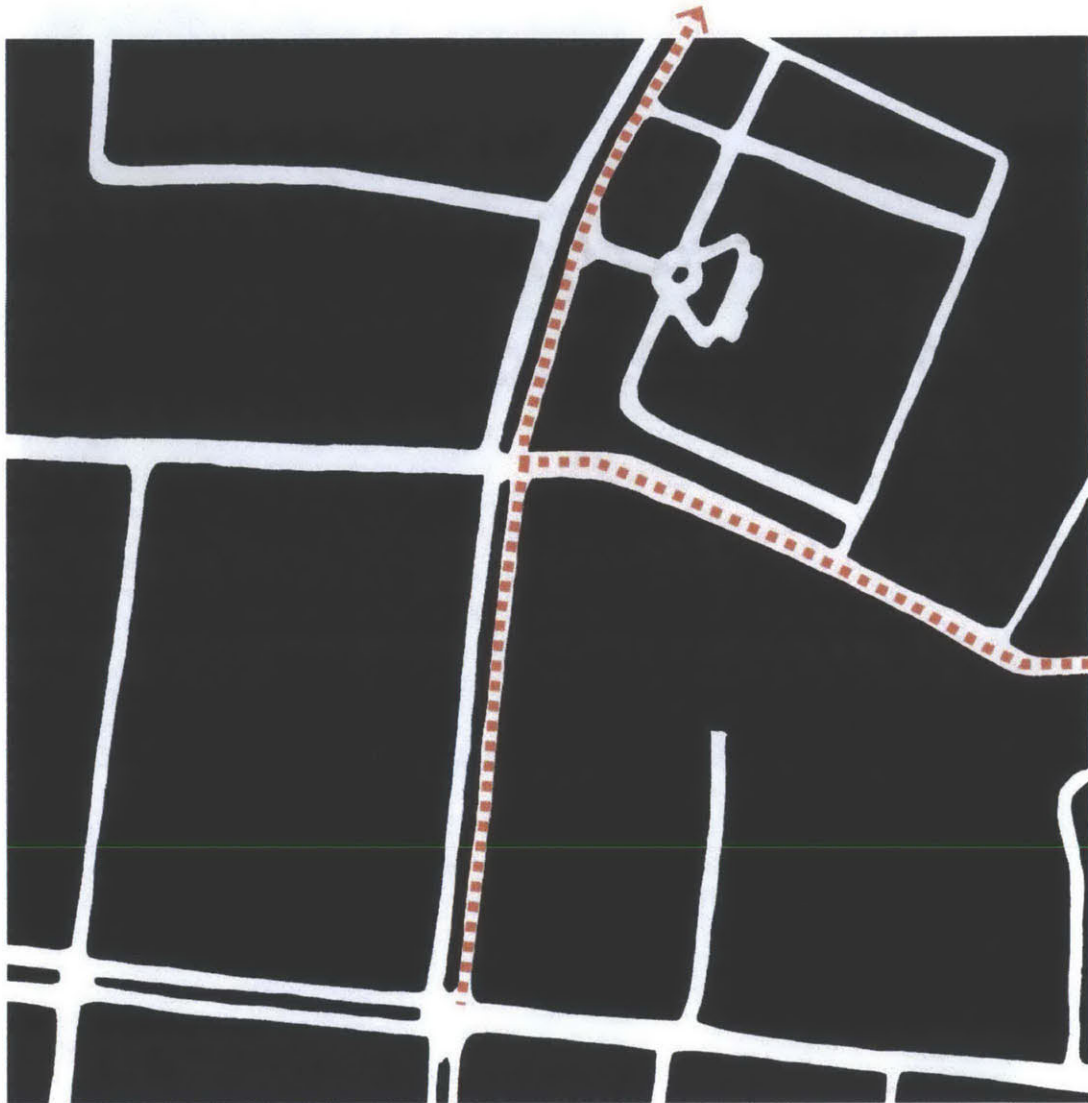
2: One of the wider residential cross streets with boundary walls fronting the streets and trees lining the sidewalk.

3 and 4: Typical corners at intersections of residential cross and main streets with boundary walls fronting the street, vehicles parked along the side of the street and drain covers acting as the narrow sidewalk.

Whitefield / I.T.P.L.



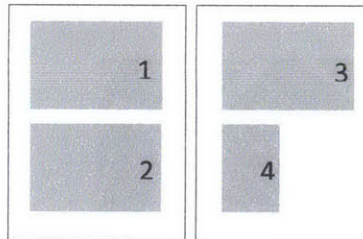
Whitefield is a newer development on the outskirts of the city towards the west. The development includes several of the older villages in the area. Whitefield spans a very large area of the city and houses a mix of residential, commercial, industrial, and institutional campuses. Since most of the campuses are owned by private developers, there is not much of a cohesive character or urban form. The buildings range from 1 to 15 stories in height with varying amounts of green space. Most of the development within this area is introverted in nature with all facilities available to the users within the campuses themselves.



There is a major lack of streets in this area. The landscape is majorly dominated by high speed roads with wide sidewalks lined with trees and high, solid boundary walls. There is hardly any ground floor activity along the streets which, coupled with the high speed of traffic and lack of parking lanes or any other buffers between the carriage-way and the sidewalks, result in a lack of pedestrian activity on the sidewalks. The road is mostly used by cars, buses, two-wheelers, some auto-rickshaws and occasional tractors. The width of the roads and the height of the buildings and boundary walls along the edges of the sidewalks makes the spaces very monumental in nature.







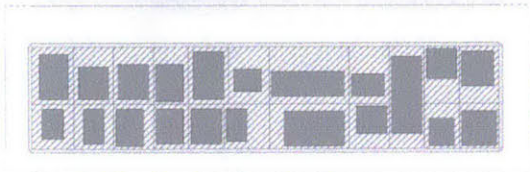
1: A major intersection in the area with very high boundary walls fronting the street and high traffic volumes at high speeds. The roads are shared predominantly by heavy vehicles, cars, and 2 wheelers with a few pedestrians and auto-rickshaws.

2: An electrical transmission line forms the median of the street with two lanes of heavy traffic for each direction and wide sidewalks lining the commercial establishments on each side. The low density of the buildings reduces the amount of activity on the streets.

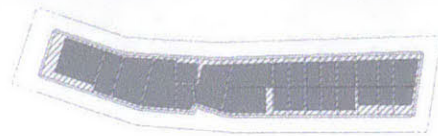
3: A typical side street along the edge of a gated residential community and a commercial building.

4: A wide median formed due to the presence of the electrical power line running along the middle of the street. The large scale of the power line makes the street a completely different experience and often intimidates pedestrians.

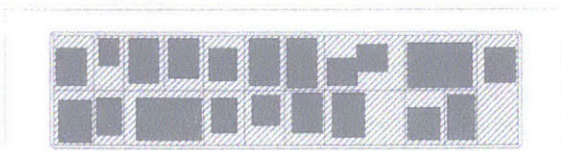
Indiranagar



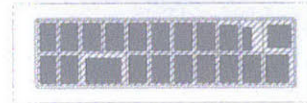
Banashankari



Koramangala

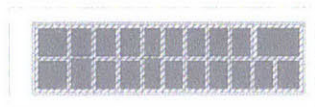
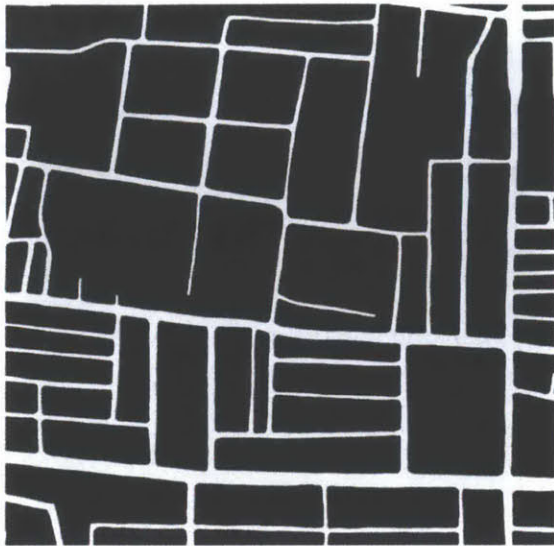


B.T.M. Layout

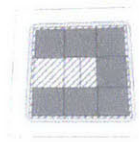


Figures above: The areas of the city that were developed in the 1990s can be divided into two groups. The first group, including Indiranagar, Koramangala, B.T.M. Layout, Banashankari, and J.P.Nagar, consists of residential layouts that were developed closer to the center of the city while the second consists of residential layouts that were developed towards the outskirts, including Yelahanka Satellite Town and Whitefield.

J.P.Nagar



Yelahanka New Town/Satellite Town



Whitefield / I.T.P.L.



Figures above: In most of the layouts in the first group, the street layouts are relatively similar in their irregularity and slight deviations from the north-south and east-west orientation of the streets. They are also similar in the way that many of them are relatively large layouts which are divided into multiple parts and the commercial streets form the divisive edges or the defining periphery of the layouts. The blocks are relatively similar in proportions but vary in size with Koramangala and Indiranagar having larger plots and blocks. The two layouts in the second category are very different with Yelahanka satellite town catering to a more local population with low rise developments and smaller plots and blocks. Whitefield on the other hand is planned with a major influence by the private sector including large real estate developers and I.T. sector companies, resulting in very large introverted campuses.

4.4 Findings and Implications

Urban form is governed to a large extent by the layout of streets and an understanding of the street pattern, block sizes and built fabric leads to a better understanding of the characteristics of the localities within a city. These also provide clues about the forces that influenced the planning of these localities and those that have changed them since they were initially constructed. These also then contribute to the image of each specific locality.

Using the pattern analysis and block maps in this chapter, combining it with the typologies defined at the end of the reconnaissance study, it is possible to further the categorization of spatial contexts based on their characteristics – both built and socio-economic. In today's world of standardization, these categories can be helpful to the city authorities to understand the various types of localities that are present within the city and the specific characteristics of each of them. Within each of the categories, detailed analyses of street patterns and built fabric can be used for each of the localities to compare and contrast them with other localities within the same category. Using this comparison, a set of planning criteria can be devised for each of the categories that can be used as a tool for planning of extensions of new developments in the city. These categories can also be helpful in providing the larger scale unit for the arteriability of street networks within the city.

As per the reconnaissance study in the previous chapter and the findings from this chapter, the street patterns in localities studied can be grouped into the following categories:

- **Street Patterns in Residential localities catering to upper-middle class local population –**
These localities, being the older layouts of the cities, usually have rectilinear grid layouts with streets active throughout the day, several religious institutions, active commercial streets within and around the locality, wide tree-lined residential streets, large number of street vendors and larger plot sizes with wide front setbacks. This category includes Basavangudi and Malleshwaram. There are newer layouts that also reflect several of

these qualities. This includes the Yelahanka Satellite town that is radial in its layout but has the same regularity found in the older localities in this category.

- **Street Patterns in Residential localities catering to upper-middle class non-local population** – These localities have rectilinear but irregular street grids with several streets being discontinuous, several academic institutions and office buildings, commercial streets within and around the locality that house large showrooms, restaurants and cafes, wide tree-lined residential streets with large plot sizes containing higher apartment buildings and less street vendors. This category includes Koramangala and Indiranagar.
- **Street Patterns in Residential localities catering to middle and lower-middle class mixed population** – This category is perhaps the most varied in terms of street patterns and can be broken down into three sub-categories based on the localness of the population. Areas like Chamarajpete, Jayanagar, Hebbala, Banashankari, B.T.M. Layout and J.P.Nagar can all fall into these category but all have distinctly different street patterns and block types. Some areas like Chamarajpete have predominantly local population and a strictly regular and rectilinear street grid with a unique block type. Areas like Jayanagar, Hebbala, Banashankari and J.P.Nagar have relatively less regular rectilinear grid patterns and house both local and non-local population. In part a reason for this is the proximity of these areas to the I.T. campuses where a large part of the non-local population works. Areas like B.T.M. layout are newer and have an irregular rectilinear grid with a much smaller block size. It caters primarily to the non-local population.
- **Street Patterns in Commercial cores of the city** – The central areas of the city, which are also the oldest parts of the city, Chickpete and Shivaji Nagar, form a unique category. They both have major bus stations within or close to them which brings in a variety of people to the areas. They also have the city's two oldest markets – City Market and Russel Market - that are highly frequented. The areas have several religious institutions and boast primarily of having a strong local commercial presence in the city. The areas have several alleyways and narrow, curvilinear streets, lined by taller buildings on both sides. Due to the irregular street network, owing perhaps to the informal way in which they were developed, there are no typical blocks within the area.

- **Street Patterns in Urban Villages** – Areas like Ulsoor have their own distinct characteristics like low-rise buildings, less frequented and primarily pedestrian streets, and smaller local commercial establishments. They are often small pockets of development surrounded by larger plots and buildings and function almost in a silo, disconnected from the adjoining newer localities. The lifestyles of the people in several of these urban villages is still similar to a rural lifestyle.
- **Street Patterns in Gated communities and campuses** – Newer localities like Whitefield, located along the frequently expanding periphery of the city are unique because they are much larger, have exclusive closed-off communities or campuses with restricted entry, and have very irregular street grids and much larger plots owned by large corporations. The main roads are laid out by the city and cater to high volumes of traffic, while the internal streets are laid out internally within each of the campuses without any relation to the city grid.

These categories can form a starting point for the city to carry out an in-depth research of the city, its constituent localities, and street fabrics. Using this research of the specific contexts, the list can then be edited accordingly and used as a tool for standardizing yet providing for context-specific planning and design. Currently the parameters underlying the categorization are the urban form and the localness of the population. These are very basic parameters when understanding a specific context and need to be further developed to include environmental, cultural and political factors in order to create a more intricate set of categories and increase the contextuality of the planning process while still allowing for some level of optimization.

At a micro-scale, it is essential to understand the specific physical qualities that accommodate or hinder the various activities going on a street. This includes the basic purposes of connectivity, access and infrastructure provision, and the social aspects of interacting, congregating and celebrating, that is what makes Indian streets important places in the public life of the city. This micro-scale analysis forms the next chapter.

CHAPTER 5: THE SOCIAL LIFE OF STREETS – A DETAILED SPATIAL ANALYSIS

"It is evening. Some shops are on the brink of closing for the day. There are people here – who show the way to someone who is lost, find an address for someone here for the first time, direct someone to the right shop, protect the lane from a danger that may appear from outside – but there is fear too. Ambiguity brings with it a helplessness in thought, a powerlessness that comes from not being able to think clearly. To wish for streets to vanish because of our fear of ambiguity is inappropriate."

-from *Eleven Streets, Cybermohalla Ensemble*

5.1 Introduction – The culture of streets

The detailed spatial analysis of the street aims to understand the micro-scale elements that contribute to making a street a social space. Through this chapter I will be studying the physical and spatial elements of chosen cases, as well as the way in which humans interact with them, in order to understand the character and essence of the selected streets. This, combined with the criteria developed using Allan B. Jacobs' work on 'Great Streets', will help to understand the smaller design elements that need to be included in the guidelines for promoting the social life of urban streets in order to make them 'great' within the local context. These analyses are based on the field research conducted for each street which included two visits during different times of day (on the same or the next day) in the month of January.

As mentioned by Arjun Appadurai and Tim Edensor in their writings on Indian street culture, the street is a mix of uses, one that poses a 'conceptual challenge to urban analysis'⁴² as compared to the 'strictly demarcated streetscape' in the West. The streets of the West are "constructed out of an aesthetics and rationale which fears mixing of function and the disintegration of boundaries."⁴³ Compared to this, the Indian street is a heterogeneous mix of sensory experiences, public spectacles, jostling of bodies, objects and practices.⁴⁴ To Edensor, this seemingly chaotic experience with the mixed use, the intermingling of the private and the public, and the rich sensory experiences are "less circumscribed and framed by the power of capital and bureaucracy."⁴⁵

In many ways, the monumentality of Western streets with hard, straight edges, lined trees and rigid regularity of street elements, is absent in many Indian streets where street vendors, stray animals, street performers etc. occupy the space in different ways at different times of day and during various times of the year. Indian streets offer people a more personal experience to its users with a "characteristic inherent in the culture of the Orient, to personalize a public domain,

⁴² Shapiro Anjaria, "Is There a Culture of the Indian Street?"

⁴³ Tim Edensor, "The Culture of the Indian Street," in *Images of the Street: Planning, Identity, and Control in Public Space* (Psychology Press, 1998).

⁴⁴ Shapiro Anjaria, "Is There a Culture of the Indian Street?"

⁴⁵ Edensor, "The Culture of the Indian Street."

so that the demarcation between the private and the public was loose and nebulous, unlike in the West."⁴⁶ These streets also serve multiple purposes. Throughout India, streets have become the stages for discussion of urban issues like transport, eviction and displacement, economic policies, and emerging forms of public life. "Moreover, streets in Indian cities have historically hosted a range of socio-political and cultural uses that are integral to urban democracy."⁴⁷ In the words of Henri Lefebvre, "The street is a place to play and learn. The street is disorder...This disorder is alive. It informs. It surprises...The urban space of the street is a place for talk, given over as much to the exchange of words and signs as it is to the exchange of things. A place where speech can become 'savage' and, by escaping rules and institutions, inscribe itself on walls."⁴⁸

The Indian street boasts of vibrancy and culture and exhilaration of the senses, but the contributors to these experiences are a mix of public and private, and permanent and temporary. The shops along the street edges, the trees lining the streets, the mixture of vehicles using the streets, stray animals, street vendors, the neighborhoods within which the streets are located, all of these factors and more, holistically come together to make the streets the experiences that they are. However, in order to understand this complexity of the Indian street, it is essential not only to look at its users and activities, but also the spatial design of these and how they contribute to or take away from their functions.

In her book 'Where the Streets Lead', architect Sarayu Ahuja (now Sarayu Srivatsa) mentions that "what made the cities different was their image. What formed the image? Character and essence." According to her the character of the street was formed by its physical and spatial features "which were more definite and could be seen in its site, form, architecture, and the manner in which the parts were organized." She describes the essence as being all about the "traditions, rituals, myths and the way in which people used the street. It included attitudes, ideas, philosophies, religious and social sensibilities, and the ways of living." She also compares

⁴⁶ Sarayu Srivatsa, *Where the Streets Lead* (New Delhi, India; New York, NY, USA: Penguin Books, 1997).

⁴⁷ Gambetta and Bandyopadhyay, "The Problem."

⁴⁸ Henri Lefebvre, *The urban revolution* (Minneapolis: University of Minnesota Press, 2003).

'planned' and 'natural' streets and in comparing them she writes that "the planned street was different because it was ordered by economics, climate, material and technology, but not culture." This relates to my underlying argument that newer streets being developed under the influence of the economic powers in the city are devoid of a social life and a culture. In order to be able to bring back the socialness of streets in the city, it is essential to identify the properties of streets, both in terms of their character and essence that make them the kinds of spaces that they are.

Allan B. Jacobs, in his book, outlines the requirements for great streets as being "directly related to social and economic criteria having to do with building good cities: accessibility, bringing people together, publicness, livability, safety, comfort, participation, and responsibility."⁴⁹ The criteria for judging the 'greatness of streets', as mentioned by him, include the capacity to walk with leisure, physical comfort, definition, visual engagement, transparency, complementarity, maintenance, and quality of construction and design. The physical qualities that contribute to streets placing on a particular point of the spectrum defined by the above criteria include trees, beginnings and endings, diversity of buildings, special design features, places, accessibility, density, diversity, length, slope, parking, contrast and time. Using these parameters as bases for analysis, coupled with the social features that constitute each of the criteria mentioned above, it is possible to "provide knowledge as a basis for designs of future great streets."⁵⁰ However, these criteria and parameters have been developed by him for the context of several American and European streets. In order to contextualize the analysis and place it in the context of India, and more specifically Bangalore, it is essential to review them and append, subtract, reorder and redefine. The detailed spatial analysis of streets carried out during my field research included in this chapter is used to critically assess the appropriateness of the criteria outlined by Allan B. Jacobs for the city of Bangalore, and the results are formulated at the end of the chapter.

⁴⁹ Allan B Jacobs, *Great Streets* (Cambridge, Mass.: MIT Press, 1995).

⁵⁰ *Ibid.*

5.2 Selection of streets

Each street is unique, not necessarily in its physical constructed characteristics, but in the way that people respond to it and use it. In order to understand a few of the spatial configurations and physical elements and the ways in which people interact with them, and in turn how they contribute to or subtract from the vibrancy of streets, a detailed analysis was carried out for selected cases. A total of five examples were used as cases, one from a locality developed in the pre-colonial period, two from localities developed under the colonial influence and two from localities developed during the post-colonial time period. Four out of the five streets used are examples of public spaces with strong social lives and unique spatial and temporal properties.

During the reconnaissance study, four out of the five selected streets – Meenakshi Koil Street, Gandhi Bazar Road, 10th Main Jayanagar 4th Block, 1A Main Koramangala 5th Block - stood out to me particularly for three reasons – their location within the locality and their subsequent function as an anchor for that locality and in some cases also the neighboring localities; their unique spatial design characteristics in terms of street section design, street furniture, and the architecture of the vertical planes along the street; and most importantly the ‘rituals’ which seems to play out on the streets on a daily basis, with the meaning of ritual changing for each case. The fifth case was included just to put forth an example that illustrates my argument of newer streets having little to no social life. These streets are major anchors for the locality within which they are located. In most localities in the city, there are either one or a few more of such anchor streets, which is why even though my sample size is very small compared to the number of cases of such streets in the city, they are representative of a certain method of selection that can be used to carry out an extensive study of such streets.

A few of the properties which are common between all of the four ‘social’ cases, in order to achieve some sense of standardization for comparison, are as follows:

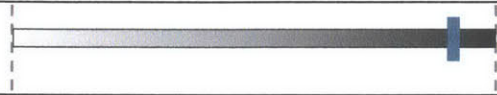

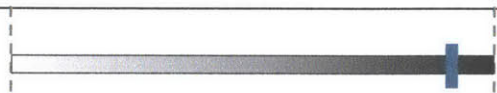




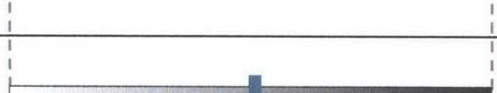





- The street must have buildings with residential and commercial uses
- The street must have atleast two lanes of traffic carriageway
- The street must have on-street parking

- The street must have some form of a pedestrian sidewalk/pathway

5.3 Detailed spatial analyses of cases

In order to understand the specific streets that were selected for this study, this section includes descriptive text for each street that articulates the reasons behind its selection, physical and experiential as well as the human or social aspects of what it is like to walk or spend time on the street. These do not include any kind of analysis of other aspects of the streets like their vehicular connectivity, ecological impact etc. The descriptions are followed by maps showing the location of the streets within their larger context of the city and the locality. This is followed by a combination of typical plans, sections and photographs accompanied by descriptive and critical commentary that aims at understanding the contribution of those micro-scale elements to the vitality and vibrance of the streets. Following the detailed spatial analysis of the street, using the criteria for the assessment of streets set out by me, I performed an assessment for each case based on my subjective judgement during my field research. This included a basic qualitative placement of the street on a spectrum of low to high (0 to 10) for each of the criteria developed for assessment, which are elaborated upon in the conclusion of the chapter, with the criteria ordered from high to low by their importance for the social and cultural life of that street. The criteria were also given Hindi transliterations which do not directly translate into the same words in English but hint at the same definition in terms of street character. In many ways the Hindi transliterations are richer because they allow for a more local and wider interpretation of characteristics as compared to the English criteria. A brief explanation of the contributing factors was also included for each criteria. This method of assessment can be used as a metric for qualitative assessment of streets throughout the city and for design proposals for future streets throughout the city. These qualitative assessments were also used as a basic metric for reordering of the criteria for the conclusion. These findings are used to formulate implications that feed into the final conclusion of the thesis.

An example of the format of the criteria assessment is below.

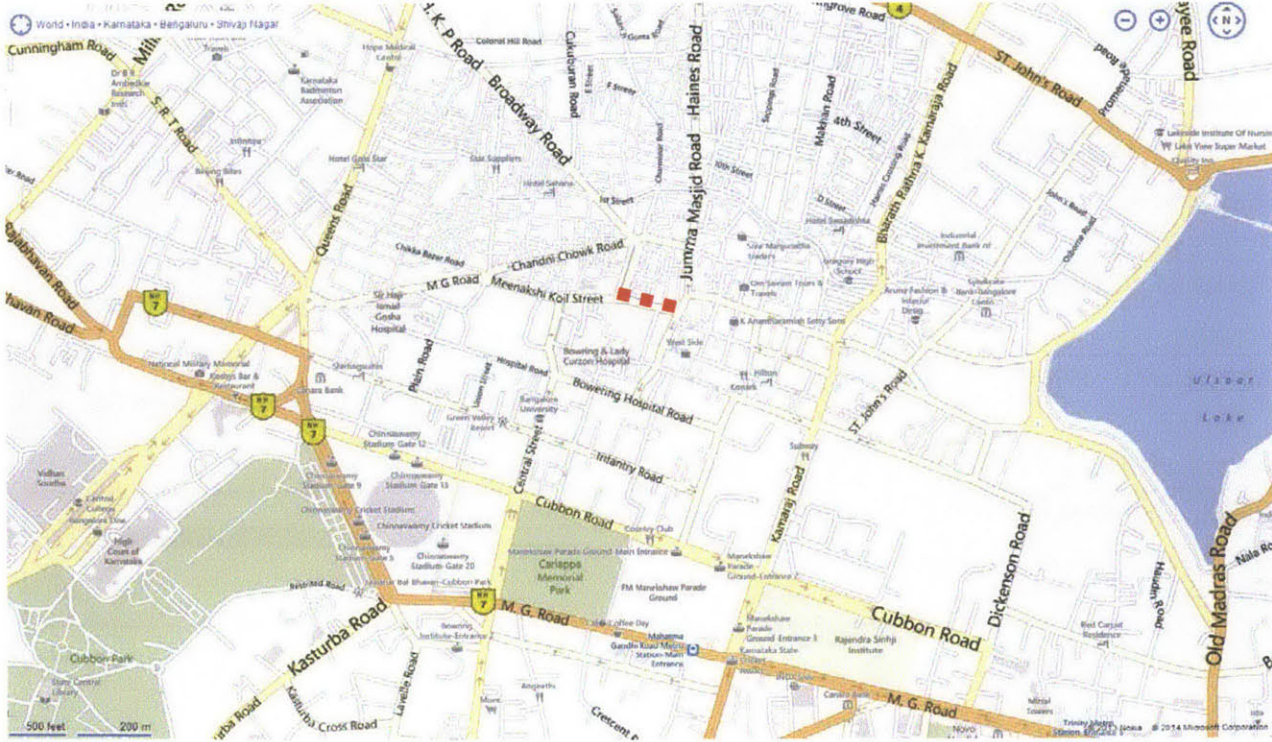
Definition - मायना (mayana – meaning) <explanation>	
Complementarity (of uses) - क्रिया (kriya – action) <explanation>	
Sensory qualities – sight, sound, smells - अनुभव (anubhav – experience) <explanation>	
Relation to the Human Scale - आकार (Akar – form) <explanation>	
Linearity/Punctuation - अन्तराल (antarAl – interval) <explanation>	
Perception of Safety - सुरक्षा (surakSha – safety) <explanation>	
Transparency - पारदर्शिता (paradarshita – transparency) <explanation>	
Places for people to linger/shop/wait/interact - अवसर (avasar – occasion) <explanation>	
Physical comfort - आराम (Aram – comfort) <explanation>	
Flexibility - अनुकूलनीयता (anukUlniyata – adaptability) <explanation>	
Places for people to walk - रास्ता (raasta – path) <explanation>	
Maintenance - अनुरक्षण (anurakShaN – maintenance) <explanation>6	
Quality of construction - गुणवत्ता (guNavatta – quality) <explanation>	

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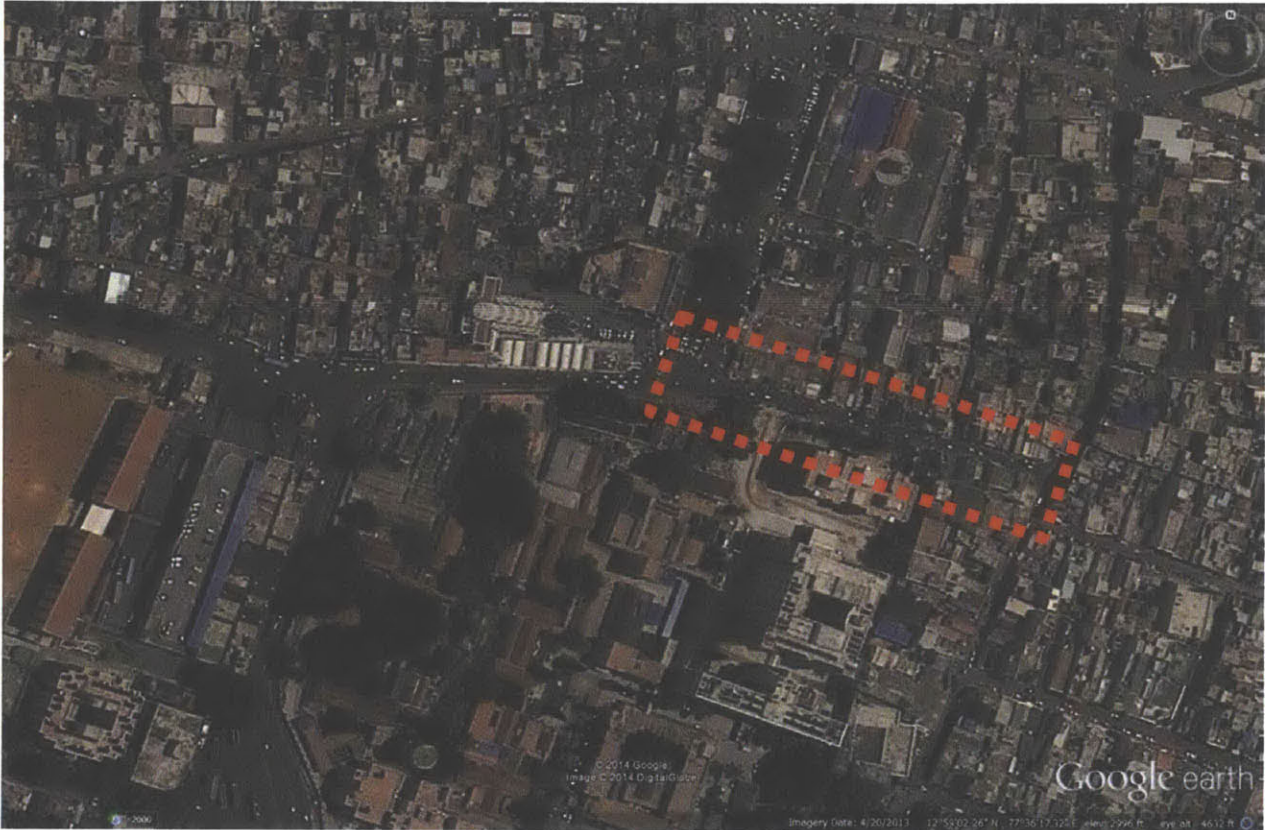
Meenakshi Koil Street, Shivajinagar – The secular 'prayer' street

Why this street? - Meenakshi Koil Street runs along a temple between a basilica and a mosque. It is a stage for religious processions not only during festivals but also on a day-to-day basis where people fulfill their daily ritual of prayer on their way to work and home. The street leads from the Shivaji Nagar Bus Station to Russel Market, which is one of the oldest and major local markets for fruits, vegetables and flowers, and to Commercial street which is famous for shops of clothing, and personal and household accessories. This street offers a unique mix of religion, shopping, living and connecting in a way that is flexible and creates a place that changes throughout the day and the year.



Street experience - The street is usually crowded throughout the day with the users changing throughout the day and the week. Mornings and evenings on weekdays, and all day on weekends, see a high volume of pedestrians that move through the street and stop to pray at the basilica, the temple or the mosque, shop, eat, or linger. The buildings fronting the street are primarily mixed use with shops on the ground floor, in some cases split into the lower and upper ground floors, and residential or office use on the upper floors. Shops display their merchandise on the narrow raised sidewalk which pushes the pedestrians to walk along the carriage-way. That in turn makes it very hard for vehicles to pass through. Vendors line the sidewalk in certain areas selling clothing and household items. Food vendors walk around with their *thelas*. Occasionally a lost cow finds its way onto the street in search of food that often leads it through the street to Russel Market. Auto-rickshaws and two-wheelers are the primary vehicles found on the street with occasional car traffic.

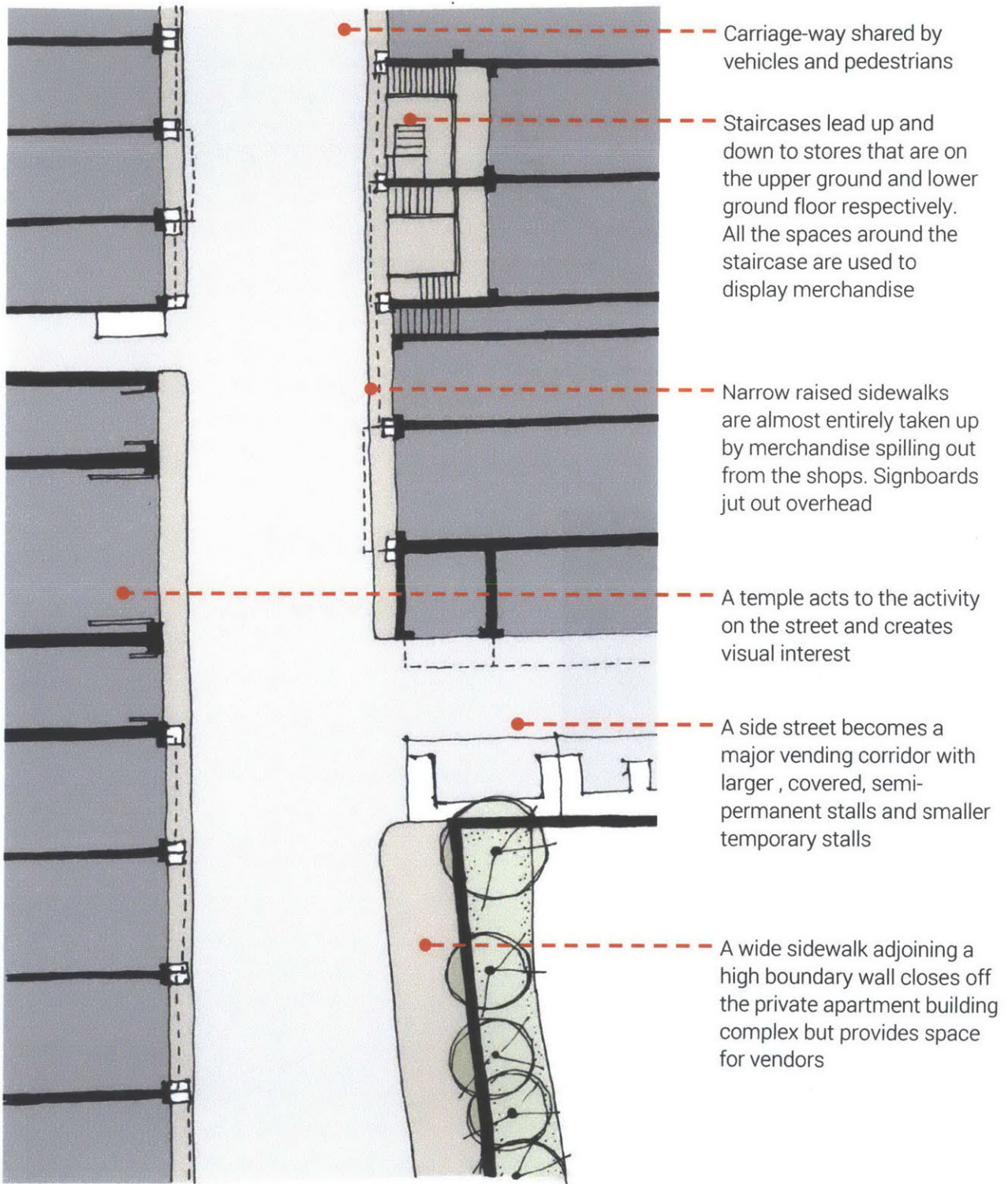
Shops have overwhelmingly large sign boards that often create visual discordance along the street. A walk on the street usually encompasses having to be honked at by vehicles trying to pass through the throng of pedestrians and a few invitations by vendors to buy their goods. Walking through the street during peak hours is often very unpleasant as one has to weave their way carefully among the pedestrians and the vehicles on the street. The street stays open and vibrant from early in the morning to late into the night, owing especially to being the main connecting corridor between the bus station and Commercial Street. This results in the street being perceived as relatively safe.

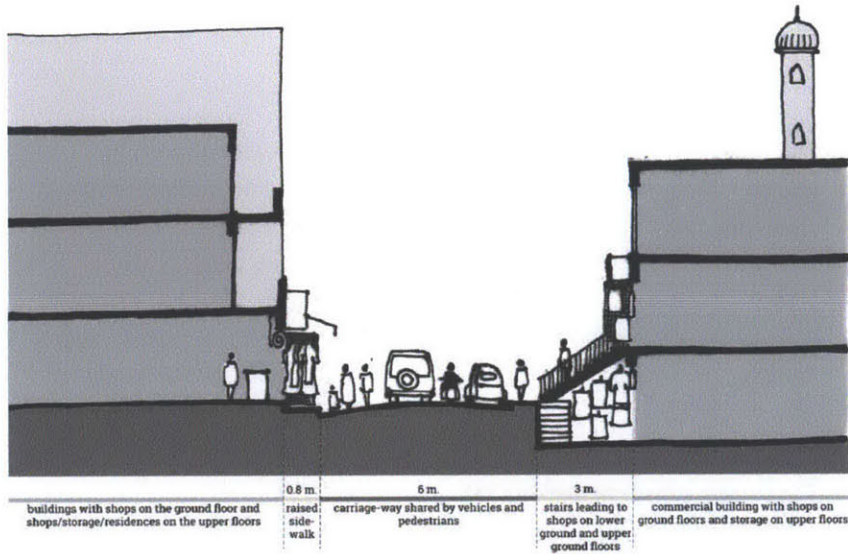


Social life - This street seemed particularly unique to me because its social life is symbolic of the (often aspirational) secular nature of the city and the country. It allows for different parts of the population to not only respectfully co-exist, but also become a part of a larger culture – one that allows you to not only retain your identity and offer your prayers to whichever God you believe in, but also interact and mingle with humanity as a whole by making them a part of your daily life and becoming a part of theirs.

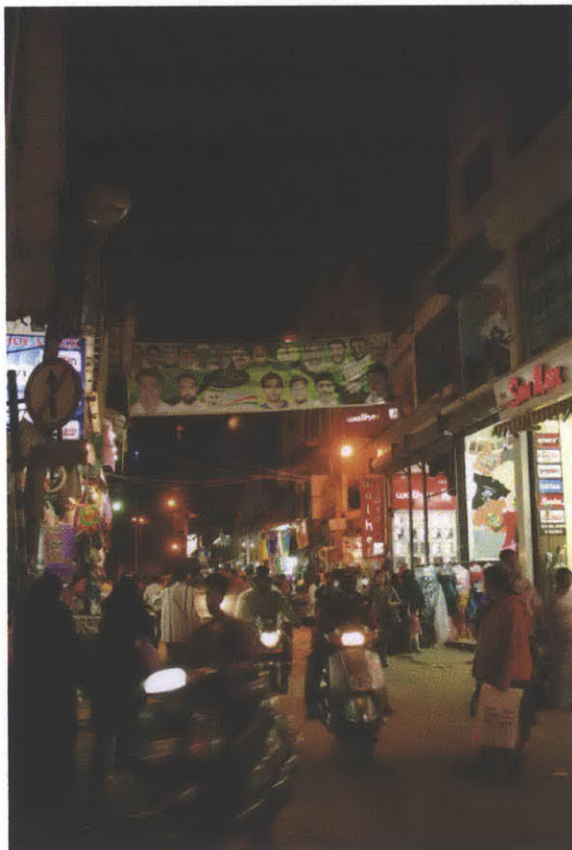
The next section uses visual material to analyze the physical and spatial aspects of the street by using a plan of a part of the length of the street, followed by sections with photographs that add a level of dynamic to the static sections, and finally independent photographs that show other properties of the street that have not been shown in any of the drawings. Each of the visuals have extended captions and labels with subjective criticism on the appropriateness or inappropriateness of the various spatial properties of that street.

Visual analysis and interpretation





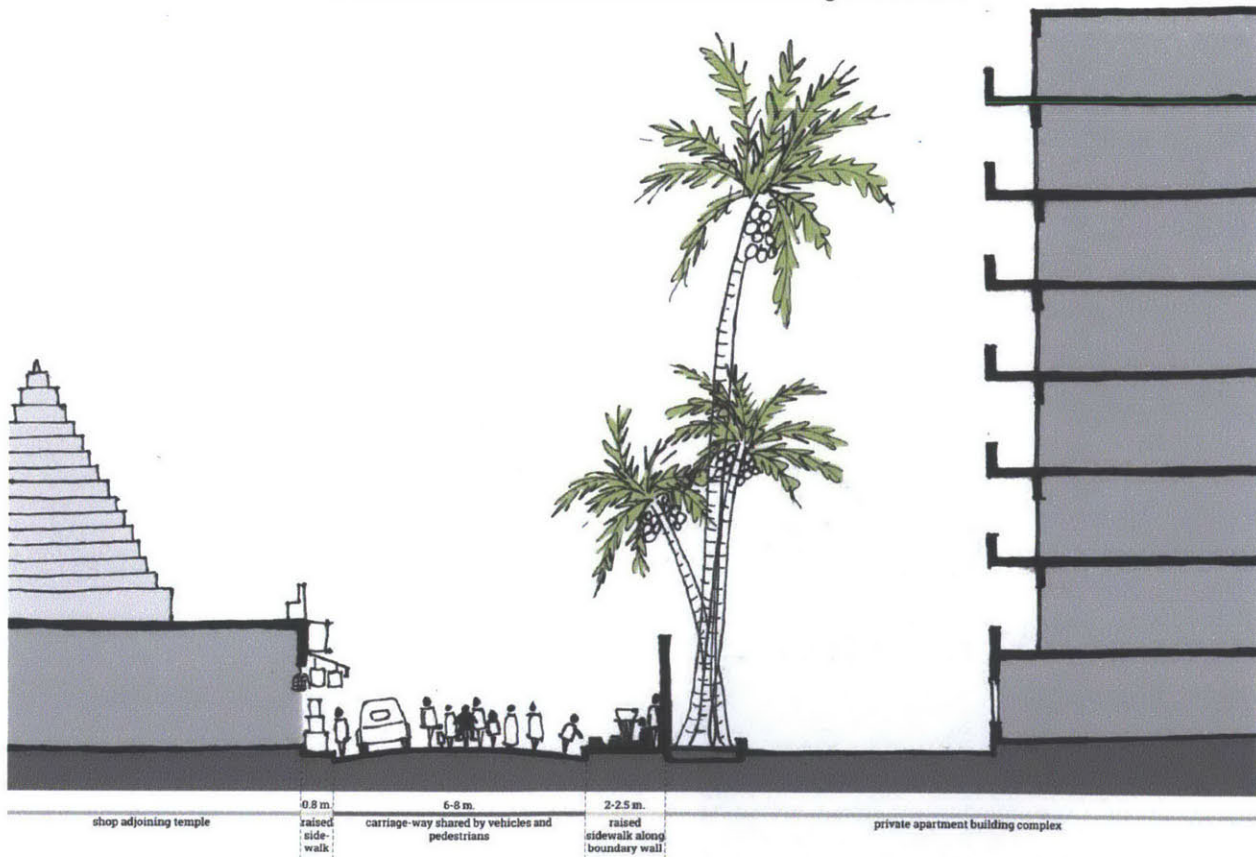
The street is shared by vehicles and pedestrians and is lined by small local shops. The merchandise on display outside the shops block the sidewalk forcing people to walk on the carriage-way. This results in blocking traffic during peak-hours.



The street is busy throughout the day, especially in the evenings when people returning home by bus walk through the street on their way to the bus station while stopping to shop.



The temple and basilica, being local landmarks, define the street by providing visual definition and acting as destinations. The signage, awnings, and colorful merchandise create visual discordance along the street.



The boundary wall of the apartment complex towards the western side of the street near the basilica creates an opaque edge which forms the backdrop to the wide sidewalk used by street vendors to spread out their wares. It also helps to visually break down the scale of the tall apartment building.



The street widens westwards. Large sign boards and colorful merchandise lines the street walls on one side while a high boundary wall lines the other wise of the street that is shared by pedestrians and vehicles.



Vendors stand along the wide sidewalk in front of the boundary wall inviting passers-by to stop and buy their merchandise. This, along with honking by vehicles creates a collective loud and muffled noise.



As the evening progresses, the pedestrian population on the street reduces and cars start using the street more. The lit up cross of the basilica can be seen even at night and acts as a wayfinding tool.



The side street that branches out from Meenakshi Koil street is lined by larger semi-temporary stalls along the boundary wall of the apartment complex. This street is more dominated by pedestrians and thus a significant width is occupied by the merchandise spilling out of the shops along the other edge.



The nature of the street changes through the day in terms of vehicular use and types of vendors. It is more vibrant during the evenings and weekends.

The secular 'prayer' street – Interpretation

One of the strongest features of this street, as visible from the visual analysis in the previous section and the qualitative metric assessment shown in table 5.1 below, is the sense of definition along it that is provided by the presence of religious institutions along it. The spaces that punctuate the linear street in between these landmarks are filled with shops of all shapes and sizes which produce a transparent and visually stimulating experience that attracts pedestrian activity along the street making it active and safe. It can also be observed that maintenance and quality of construction did not significantly impact the street experience in this case.

Table 5.1 - Qualities of the secular 'prayer' street:

<p>Definition (मायना) The presence of the religious institutions and the bus station give this street a strong sense of definition.</p>	
<p>Complementarity (of uses) (क्रिया) Even though the street has several religious, commercial and residential buildings, all of them seemed to coexist and contribute positively to the vitality of the street.</p>	

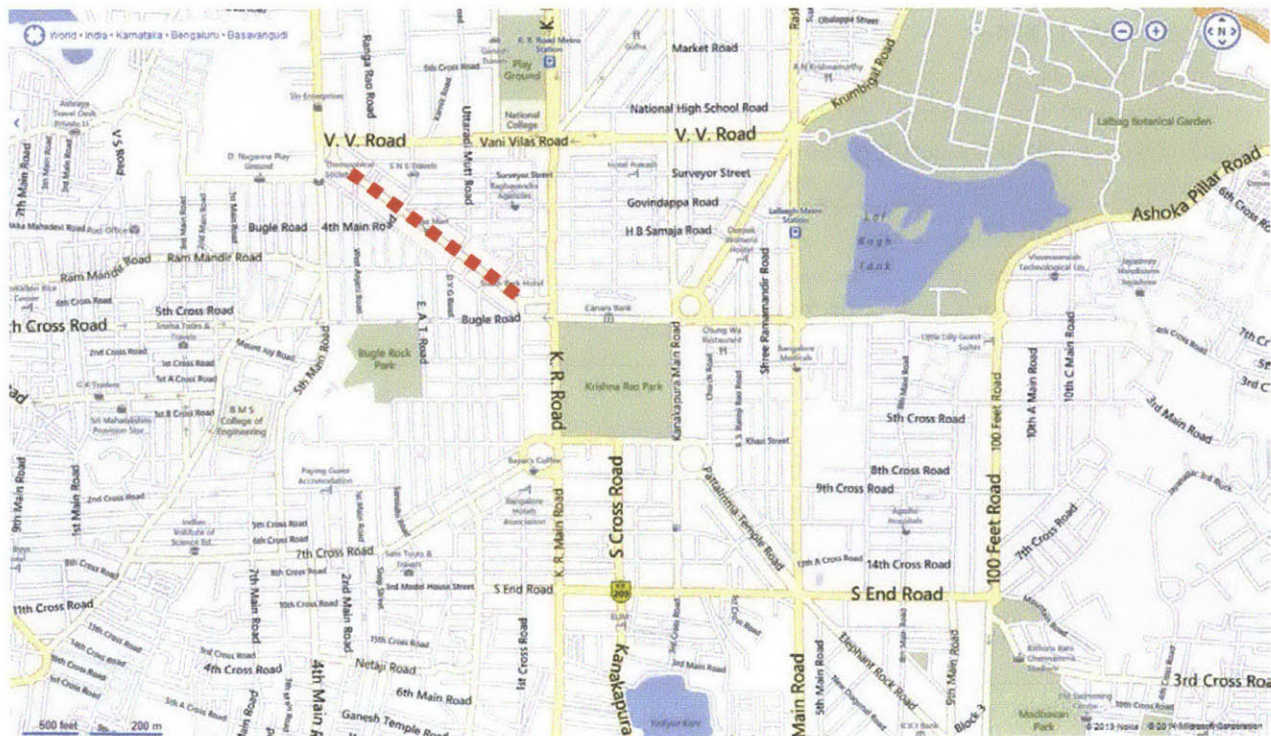
<p>Sensory qualities – sight, sound, smells (अनुभव) The architecture and the signage offers strong visual stimulation while the vehicular traffic provides sound, and the food vending provides some olfactory stimulation.</p>	
<p>Relation to the Human Scale (आकार) The building heights, the merchandise spilling out from the streets, and the narrowness of the street made it very proportional to the human scale.</p>	
<p>Linearity/Punctuation (अन्तराल) The street was punctuated by intersections and religious buildings that created relief from the linearity of the street. The streets curvature also helped in doing the same.</p>	
<p>Perception of Safety (सुरक्षा) The street was well lit at all times of day and was active throughout the day, especially due to its proximity to the bus station.</p>	
<p>Transparency (पारदर्शिता) The ground floor of most buildings consisted of shops that were open and accessible to the public.</p>	
<p>Places for people to linger/shop/wait/interact (अवसर) The street provides frontage and access to several religious institutions and shops that allow for people to spend time on the street instead of just pass by.</p>	
<p>Physical comfort (आराम) The street does not have much vegetation along it but its narrowness and the presence of awnings outside most shops create a relatively comfortable environment during most times of the day and year.</p>	
<p>Flexibility (अनुकूलनीयता) The absence of fences allowed for the street to be flexible in accommodating more or less pedestrian and vehicular flows.</p>	
<p>Places for people to walk (रास्ता) The street is narrow but functions as a major connector. This results in it receiving heavy pedestrian and vehicular flows which often makes it difficult to walk along.</p>	
<p>Maintenance (अनुरक्षण) The street was considered by many shopkeepers as an extension of their shops which made them maintain it to some extent.</p>	
<p>Quality of construction (गुणवत्ता) Being an old street, the quality of construction was inconsistent in terms of materials used and their longevity.</p>	

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10

Gandhi Bazar Road, Basavangudi – The daily 'shopping' street

Why this street? - Having a dedicated lane for street vendors that runs along the sidewalk for about half the length of the street, along with shops, small bazaars, and showrooms, this street is unique for its spatial structure and its social essence where people perform their daily ritual of buying flowers, fruits and vegetables from local sellers for their home. Patrons of these shops change throughout the day with the morning and evening consisting of men, women and families partaking in this daily ritual of selecting, haggling, and buying, while during the day women linger buying their daily goods but also stealing glances at sarees and jewellery that spill out of the stores.



Street experience - Gandhi Bazar road runs along the north western diagonal of the Basavangudi street grid. It is a major thoroughfare for cars and buses but is also a street that is bustling with activity throughout the day. It has fenced-off, raised sidewalks with shop frontages along one side and vendor stalls along the other. The street is lined by narrow buildings having upto 4 floors with mostly commercial activities along the ground floor and offices and residential uses on the upper floors. Parked cars, large trees, and in some areas vendors and tyre puncture fixers create a buffer between the active vehicular carriageway and the sidewalks. Major intersections are marked by statues of prominent political figures and the symbolic pole covered in red and yellow, which are the colors of the flag of Karnataka state, stating that the area is proudly and predominantly Kannadiga.

The pedestrian walkway is relatively narrow and often one has to excuse themselves and squeeze by people stopping intermittently to buy fruits, vegetables or flowers from the vendors lining the fences on the sidewalks. The street is rich with sensory stimulations of sight, smell and sound generated by the street fronted restaurants, the fruit, vegetable and flower stalls and the hustle-bustle of people shopping, eating, travelling and celebrating.

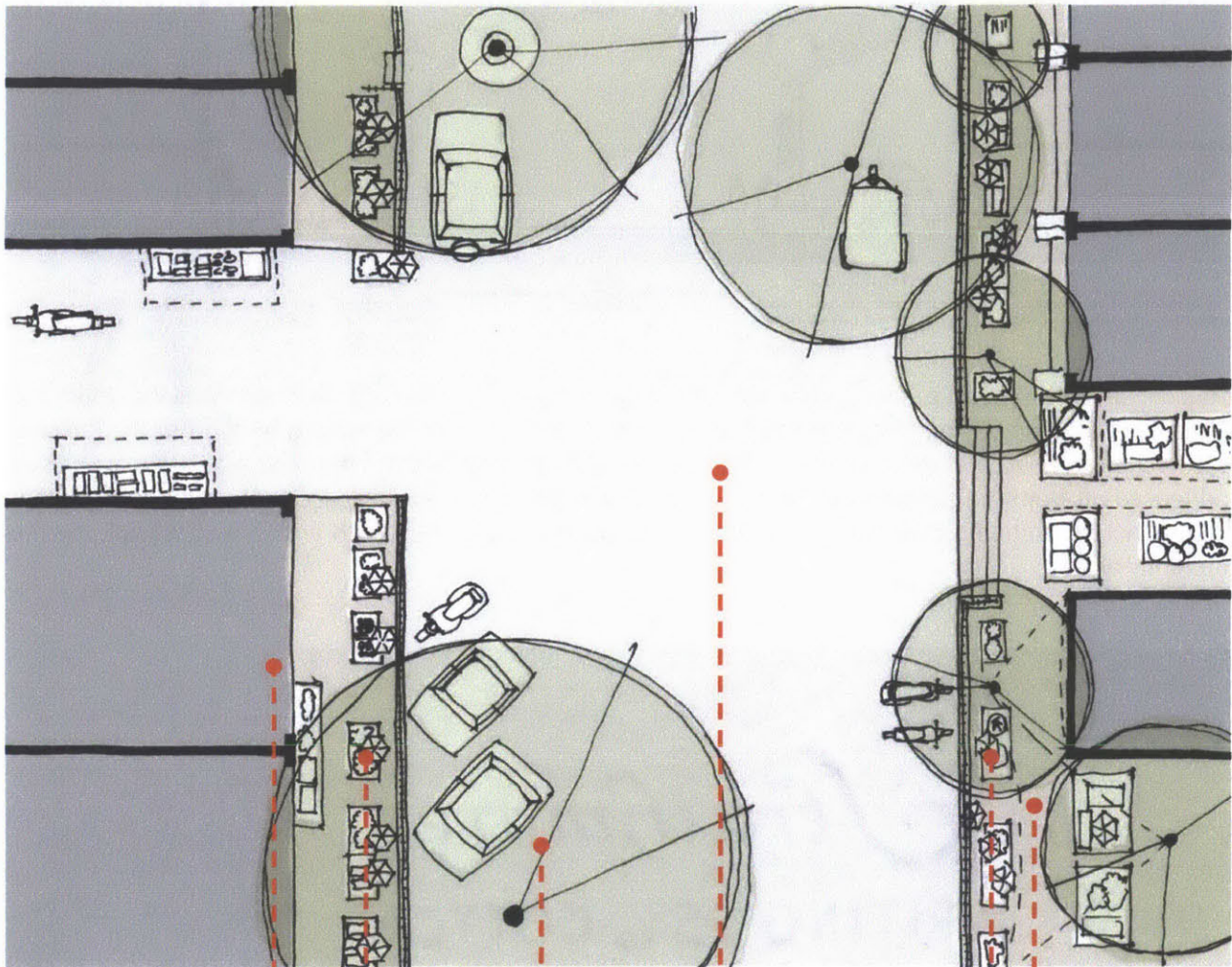
It is also one of the sites of the *Kadlekai Parishe*, the annual groundnut festival that is celebrated around the time of December every year when the street is closed for cars all the way from the Bull temple to the south, and is lined by groundnut farmers selling their produce on the street, on *thelas*, and in stalls throughout the length of the street.



Social life - This street stood out to me as the stage on which the mundane chores of daily life are carried out in a way such that the bare choreography of each individual's movements form a larger rhythm which changes throughout the day in terms of pace and sensory stimulation. Simple activities like haggling with vendors, eating at one of the high tables spilling out onto the street from *Darshinis* (local restaurants that mostly have only stand-up tables and offer only local delicacies), getting the tyre of one's car changed, or standing around a *paan* stall having a smoke, all seemingly mundane chores come together on this one street to form its hustle bustle.

The next section uses visual material to analyze the physical and spatial aspects of the street by using a plan of a part of the length of the street, followed by sections with photographs that add a level of dynamic to the static sections, and finally independent photographs that show other properties of the street that have not been shown in any of the drawings. Each of the visuals have extended captions and labels with subjective criticism on the appropriateness or misappropriateness of the various spatial properties of that street.

Visual analysis and interpretation



Buildings with shops selling various items such as clothes, personal accessories, household items, and food items on the ground floor and residential on the upper floors

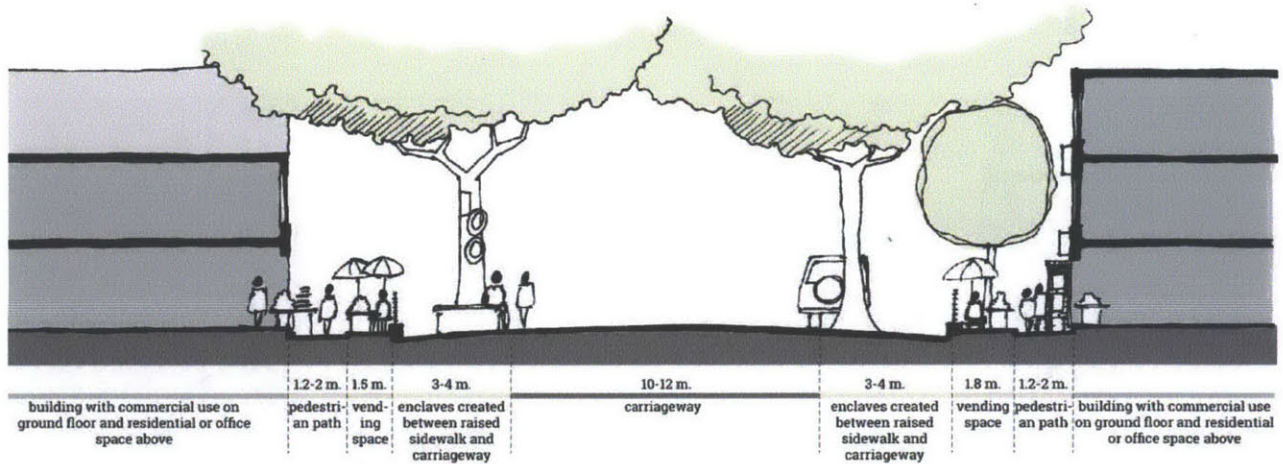
Goods on display outside shops that result in narrowing of the pedestrian-way

Carriage-way

Small enclaves formed by the trees that are used by parking or by street vendors. It forms a buffer between the sidewalk and the street in terms of activity and safety

Pedestrian path (1.5 to 2 m. wide) paved in red concrete

Space between the pedestrian path and the fence on the edge of the raised sidewalk lined by vendors with small stalls selling fruits, vegetables or flowers which create vibrancy.



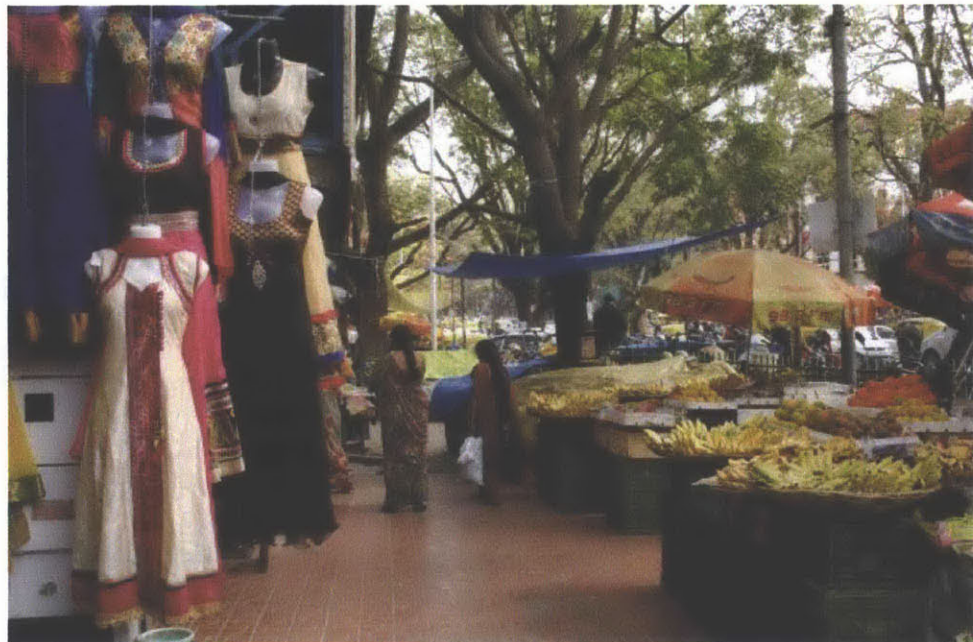
A typical section through a raised sidewalk with shops fronting the street, pedestrians walking down the pedestrian path and buying fruits from the street vendors sitting under the awning hung from the building façade and the trees, and more vendors lining the enclaves formed by the trees. The sidewalks are raised and fenced off from the carriageway. This helps to create interactive public spaces along the sidewalk but also restricts the streets in a much more permanent way along a linear path and is inaccessible by the differently-abled.



Trees with wide canopies line the street creating cool and shaded sidewalks that are comfortable to walk. The enclaves created by the trees form spaces that are safe to get dropped off by buses and cars, to walk and to linger. However these spaces are not deliberately separated from the carriageway in any way and this blurred boundary between the sidewalk and the carriageway can often create friction between vehicles and pedestrians.



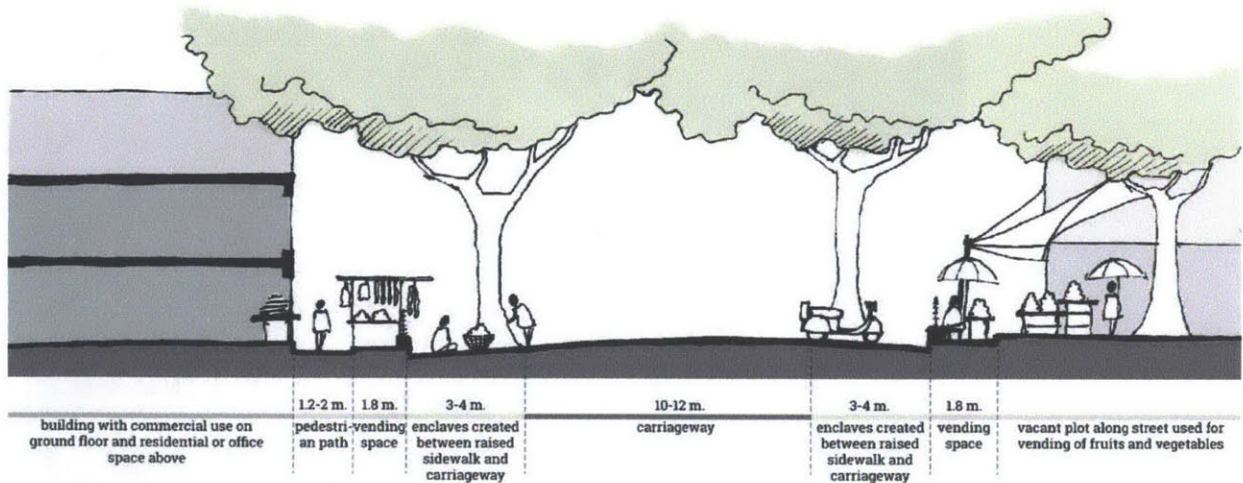
Poles colored with the Karnataka state colors often dominate the scene marking territory. Building facades are often covered with billboards. These often contribute to the sense of place by providing cues for orientation and memory, but in excess can also become visually displeasing. The narrow buildings provide visual variety along the street edge and provide for smaller but multiple shops along the street edge. The street corners at intersections provide spaces for people to linger.



Women walk along the sidewalk and frequently stop to purchase fruits, vegetables or flowers from the stalls, or merchandise from the shops. This provides for short encounters along the pedestrian path, but during the mornings and evenings and all day on weekends, this frontage results in disruption of pedestrian flows along the sidewalk since these sidewalks are fenced off.



Goods from the shops spill out onto the street to attract customers and shopkeepers and people working in the area use the steps outside closed shops or inside their own shops for an after-lunch chat or siesta. These details create flexible spaces that can adapt and accommodate activities based on time of day and pedestrian flows.



A section through the vegetable market on the street with single heighted vegetable shops lining one side of the street with stalls lining the other side. Tarpaulin pieces are hung for shade between the building and the trees. Deflated car and motorcycle tyres are hung from the tree barks at spots where car mechanics sit with their tools during the day to fix punctured tyres.



Make-shift awnings made out of tarpaulin are hung from the buildings and the trees to provide shade to the produce and the people. Vegetables are piled up high along the street to attract customers. Trees become important amenities for storage, hanging of lights, etc. This is one of the most frequented parts of the street and often creates a bottle-neck for pedestrians. It provides a great amenity for people living in the locality or passing through the street on their way home. However, it also generates a lot of organic waste which is often disposed off on the side of the sidewalk.



These vegetable stalls cater to all classes of people which is why it is active throughout the day. This helps make this street active and safe from the early hours of the morning to the late hours of the night.



The colorful gateway leading to the street that has the entrance to the temple on it. People gather around the area before or after prayers, and especially during festivals. The temples act as landmarks and events along the street that provide definition and punctuation along a linear path. They also instigate the vending of flowers around the corner. The presence of these vendors at the corners of these intersections often calm traffic.



Vendors selling flowers line the sidewalks outside the temple and along the length of the street. Political banners hung onto the fence, although not very pleasing visually, provide shade for the street vendors. They also provide definitions for memory along the linear sidewalk. For the vendors, the fences act as hangers for goods, and as back rests.

A man sits at the entrance to a building just off the street under a make-shift awning and tailors and alters clothes. These small events along the street are what make them social spaces where there is a high level of transparency along the edge.



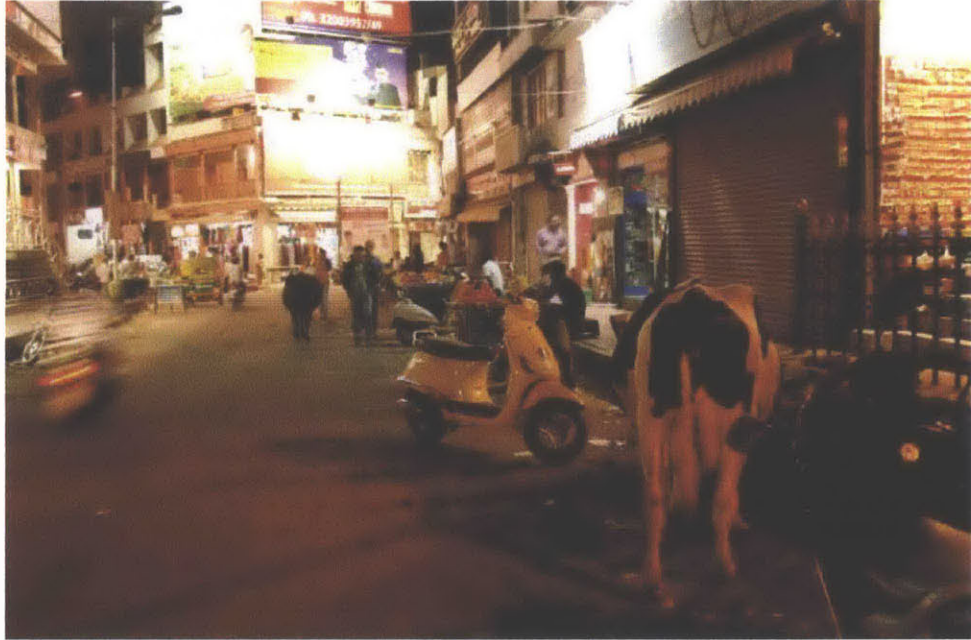
Old post boxes, electrical poles and other signs show the extent of the old carriageway which has been extended to form parking along the street. The *kattes* along the street form spaces for people to sit and linger. The trees also provide surfaces for people to hang signs. Most tree barks are covered by posters advertising anything from paying guest accommodation to political party agendas.



The fences along the edge of the raised sidewalk act as storage spaces and spaces for locking bicycles. They also create a permanent divider between the pedestrian sidewalk and the carriageway. This provides a safe path for pedestrians but also limits the flexibility of the space to accommodate higher pedestrian traffic. The sidewalks do not have any ramps and are thus inaccessible by the differently-abled.



Restaurants that line the street often set their buildings back from the property line in the front to provide for spill-over space where standing tables are placed. These spaces are very active during most times of the day and provide magnets along the path where people gather.



During the night, cows wander the street looking for the waste thrown out by the shopkeepers and vendors at the end of the day. The cows are often traffic hazards and also dirty the street by defecation.



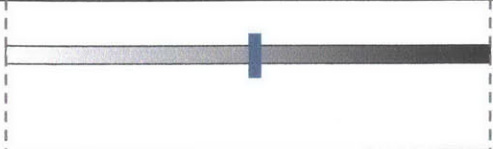
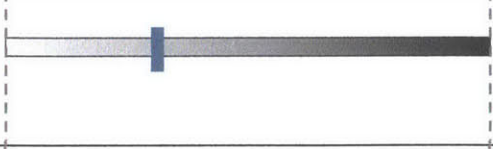
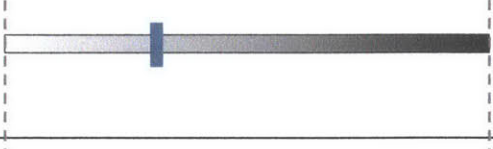
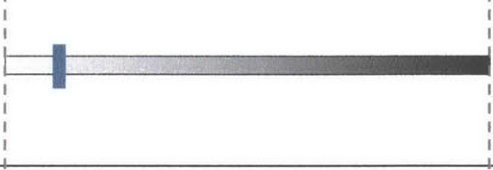

The street completely transforms during pongal, a major festival celebrated sometime in the month of January. Sugarcane and flower sellers line the street and pedestrian activity overflows onto the carriageway. During this time, the already active street bustles with activity and celebration.

The daily 'shopping' street – Interpretation

This street provides a case wherein the main binding factor of all the social interaction along it is the exchange of goods, services and conversations. This social phenomenon is facilitated by the physical space being one that offers a variety of sensory experiences where people can safely spend time comfortably as shown in table 5.2. The high level of transparency along the street and the spilling out of commercial activities onto the street also contributes to the creation of a bustling public space. In this case, the least impactful criteria were the flexibility and the presence of places for people to walk.

Table 5.2 - Qualities of the daily 'shopping' street:

<p>Places for people to linger/shop/wait/interact (अवसर) The shops and stalls along the street allow for lots of opportunities to linger and interact.</p>	
<p>Sensory qualities – sight, sound, smells (अनुभव) The presence of vendors selling all kinds of flowers, fruits and vegetables make this street very stimulating in terms of sights and smells.</p>	
<p>Complementarity (of uses) (क्रिया) The buildings were primarily commercial or mixed-use which along with the street vending made the street more like a bazar.</p>	
<p>Relation to the Human Scale (आकार) The buildings, trees, and vendors all help to break down the width and monumentality of the street.</p>	
<p>Perception of Safety (सुरक्षा) The street is bustling with activity throughout the day owing to its commercial activity and since it is surrounded by residential areas. This makes it relatively safe during most times of the day.</p>	
<p>Physical comfort (आराम) The large tree canopies of the trees along the street form shady spaces for people to walk through and linger.</p>	
<p>Transparency (पारदर्शिता) The ground floor of most buildings was occupied by shops which are publicly accessible.</p>	
<p>Quality of construction (गुणवत्ता) The street is relatively old but has been subject to changes like widening of the carriage-way which has resulted in it being updated in terms of materials and details.</p>	

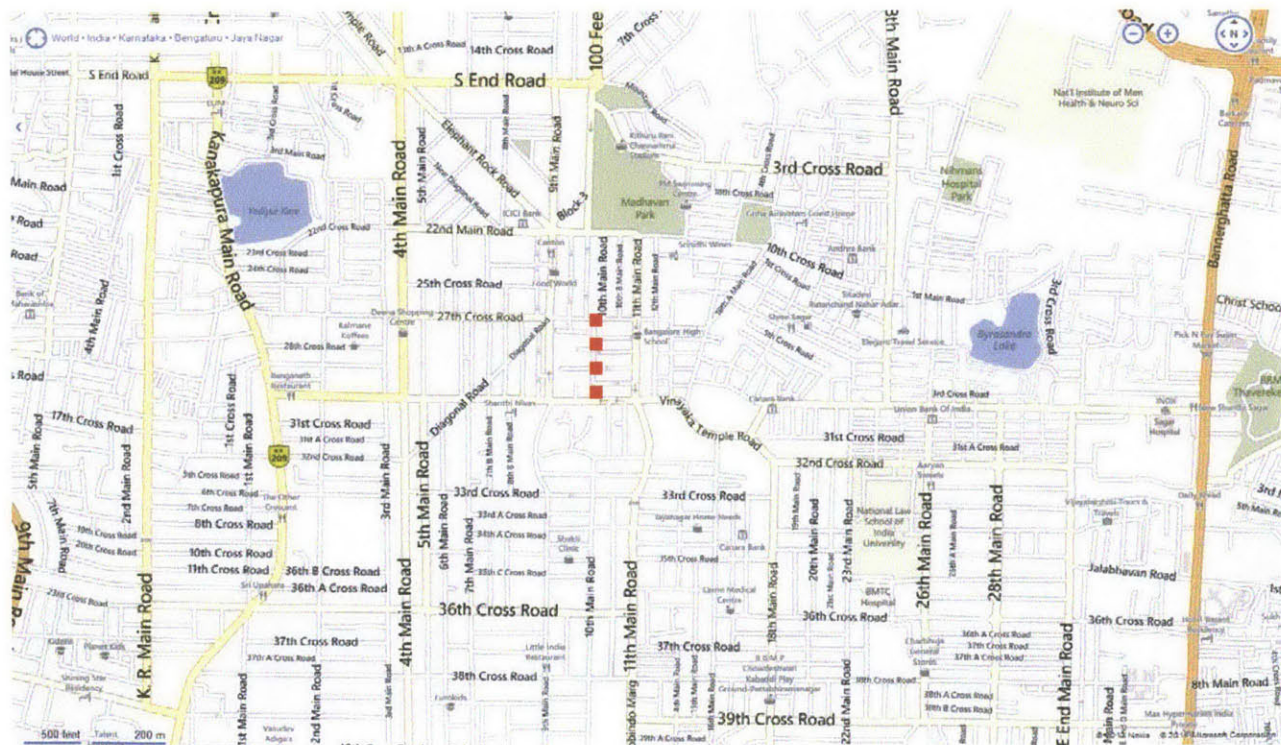
<p>Linearity/Punctuation (अन्तराल) This street is fairly long but is intersected by several narrower streets. These intersections often form the punctuation along its length.</p>	
<p>Definition (मायना) Even though the street is unique in its physical design, its length and monotony of spaces along that length makes it seem less defined.</p>	
<p>Maintenance (अनुरक्षण) The sidewalks are shared by the vendors and the pedestrians which is why there is no strong ownership of the street in terms of daily maintenance.</p>	
<p>Flexibility (अनुकूलनीयता) The sidewalk is lined by permanent fences throughout its length. This makes it very inflexible in terms of the spilling out of pedestrian activities onto the carriage-way when needed.</p>	
<p>Places for people to walk (रास्ता) The physical design and presence of vendors and shops along the street makes it difficult for pedestrians to walk through it quickly.</p>	

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10th Main, Jayanagar 4th Block – The carefree ‘meditation’ street

Why this street? - 10th Main in Jayanagar 4th Block is a unique street because it provides relief from the fast pace of the city and allows for opportunities to sit, linger, and interact under the cool shade of trees while watching cars, buses, and people whizz by. The street is unique in its position within the hierarchy of streets in the area, its spatial design, and its social ritual that to me seemed to correspond to the daily act of meditation and reflection on one's life.



Street experience - Jayanagar 4th block houses its bus station which is a bus node for connections from the south of the city northwards. 10th Main is the main street that faces the bus stop and is perpendicular to it. It is also adjacent to the B.D.A. (Bangalore Development Authority) Complex which is a local landmark. The presence of the B.D.A. complex contributes greatly to the character of this street which has several layers of access and social activity. The street is a one-way street which results in lower traffic volumes on the street that makes it friendly to the pedestrians. It is also a short street that does not go through and through the adjacent blocks. This also perhaps contributes in lowering the speed of traffic on the street. The street experience is almost divided into two parts along its two edges. On one side the street is intersected by several smaller one way streets which are either commercial or residential corridors. They are also lined with vendors selling fruits on *thelas*. The shops fronting the street are a mix of smaller local shops and medium-sized showrooms. The sidewalks have occasional vendors selling clothes and household items.

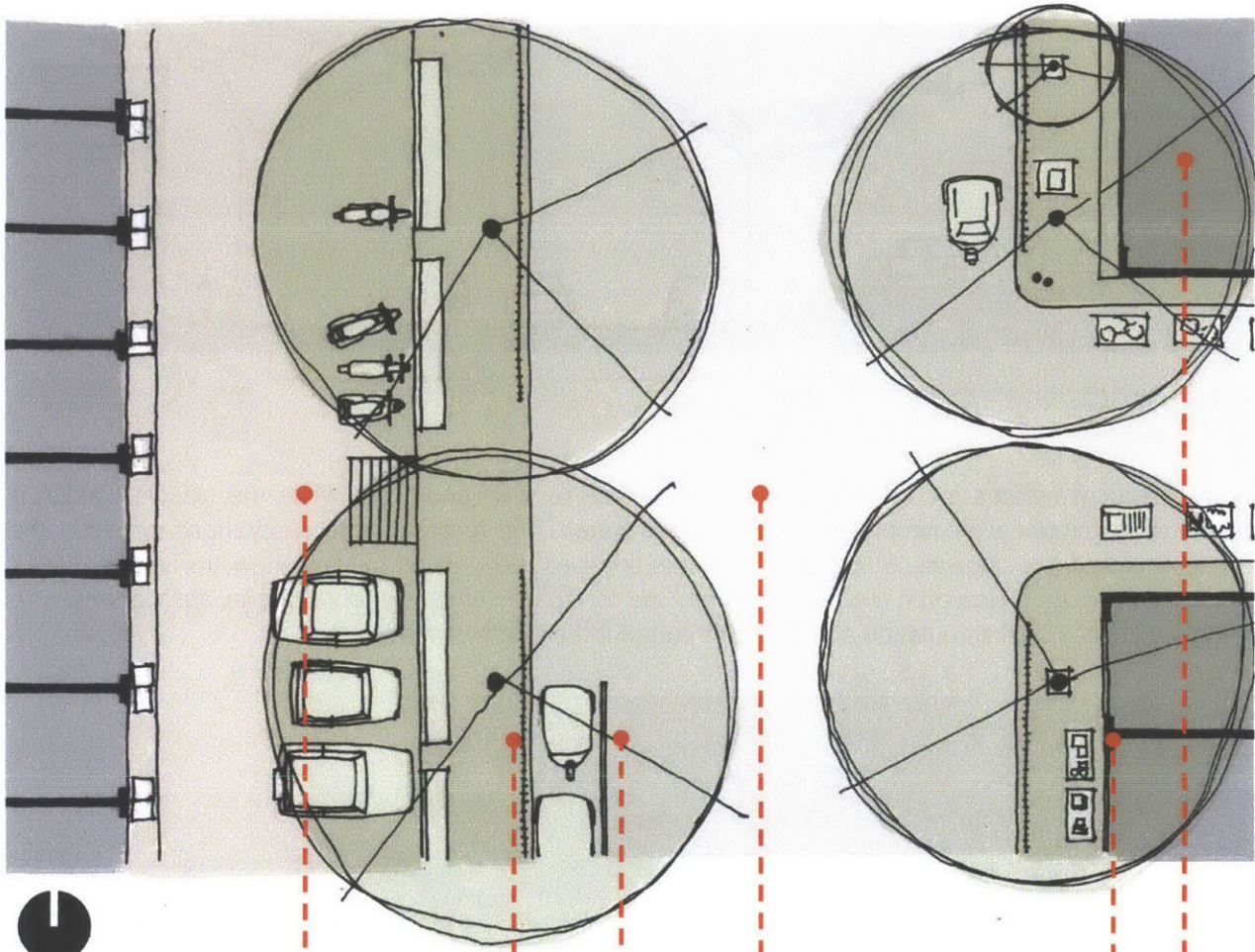
The other side has a smaller quasi street running along the carriageway. The B.D.A. complex shops open out into a pedestrian pathway lined by car and 2-wheeler parking that steps down into a secondary sidewalk along the edge of the street. The sidewalk is lined by trees and linear stone benches which are very populated throughout the day. This sidewalk is lined for a short distance by an auto-rickshaw stand. This quasi-street is very active with a mix of people shopping, walking to the bus station, or just sitting on the benches. The street also branches out into the vegetable market that spills out from the back of the B.D.A. complex and is adjacent to the elevated 4th block water tank. The street overall has a very calm and casual feel to it with a mix of local population and visitors. The possible reasons for this is its placement in the street structure of the area, its unidirectionality, and its proximity to two local nodes.



Social life - The daily life of an individual usually includes some time for reflection and meditation in a relaxed atmosphere. This daily ritual is what this street represented to me when I first walked through it during the reconnaissance study. It stood out as a unique island within the bustling metropolis that allowed for people to be outdoors among the presence of others going about their daily lives, but still be separated from them and engrossed within their minds.

The next section uses visual material to analyze the physical and spatial aspects of the street by using a plan of a part of the length of the street, followed by sections with photographs that add a level of dynamic to the static sections, and finally independent photographs that show other properties of the street that have not been shown in any of the drawings. Each of the visuals have extended captions and labels with subjective criticism on the appropriateness or misappropriateness of the various spatial properties of that street.

Visual analysis and interpretation



Shops from the B.D.A.complex overlooking a quasi-street with a pedestrian path lined by parking. This area is 1-1.2 m. higher than the sidewalk lining the carriageway

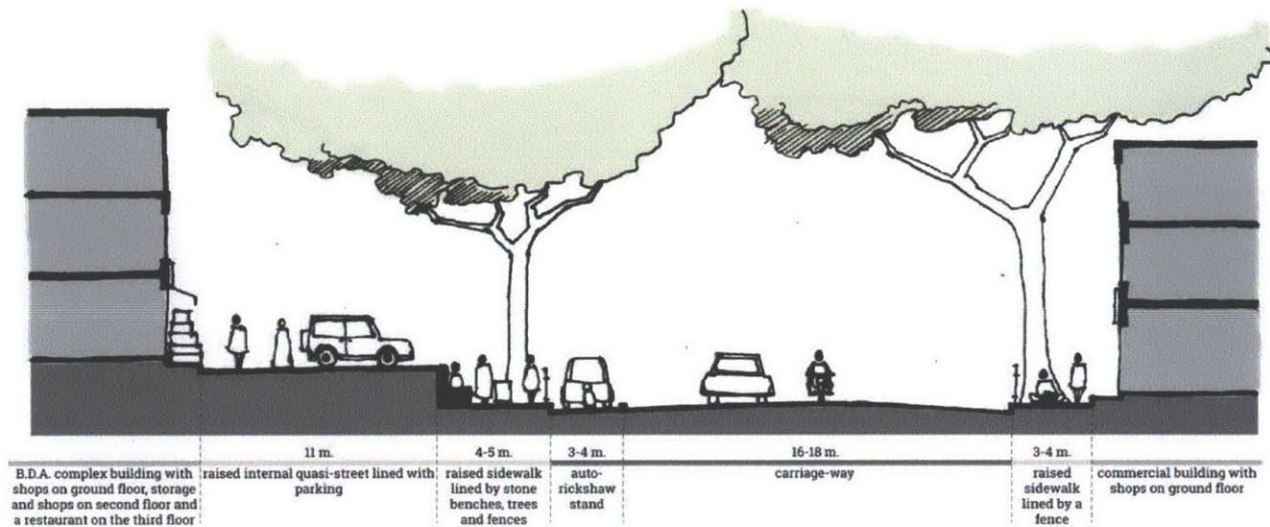
Raised sidewalk lining the carriage-way fenced on one side and lined with linear stone benches on the other. Trees lining this sidewalk create shady spaces and add to the visual experience of the street

Unidirectional (Southwards) Carriage-way

Vendors sell clothes and other household items along the sidewalk. They are usually located close to the fence, a tree or any unused building.

Auto-rickshaw stand lining the street

Thela-waalas with fruits and other food items line the intersecting streets, especially crowded around the street corners



The quasi-street creates a comfortable place for people to shop and linger while the sidewalk along it creates a shady place for people to sit and people-watch. The fences create separations between the carriageway and the sidewalk. Since this street has relatively slow speed medium flow traffic, the fences may not be required. However, the fences do provide for spaces where vendors display their goods. The trees provide for visual stimulation and shade throughout the length of the street.



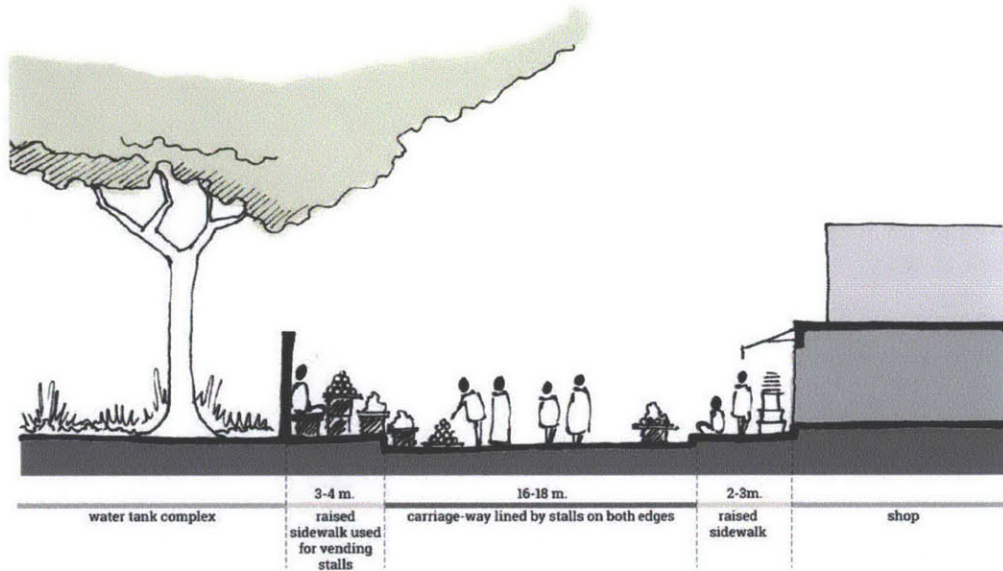
The fences create a separation between the carriageway lined with parking, and the raised sidewalk. In many areas this fence becomes a major physical barrier which is not required from a safety aspect, especially on this street. The benches provide cool and shady spaces for people to sit throughout the day.



These spaces are active throughout the day, especially because of the proximity of the street to the bus station which can be seen in the background.



The active quasi-street lined with parking with shops on one side. This provides unique spaces for pedestrians to walk and shop at a leisurely pace. However, the absence of trees makes it less active during the summer months.



The vegetable market lines the street behind the B.D.A. complex with stalls being set up early in the morning and staying open until 9-10 pm. The market is used by locals and visitors who are just connecting at the Jayanagar Bus Station.



Even though this street is relatively comfortable to walk on, it is shared by vehicles and pedestrians which can often become unsafe and unpleasant to walk on. These streets are also relatively dirty to walk on later at night due to the organic waste left on the street when the vegetable and fruit sellers have closed their stalls.



The street stays active throughout the day, often with the smaller vendors changing through the day.



The sidewalks are fenced off from the carriage-way. The fence does not necessarily contribute substantially to the safety aspects of the sidewalk but its presence stimulates other activities such as vending, temporary parking and spaces to lean on during an informal conversation.



The shops are relatively small and usually shops selling similar merchandise are clustered together. Competition and lack of space lead to merchandise spilling out substantially onto the street to attract customers. This narrows the pedestrian pathway resulting in people getting sandwiched between the fences and shops during peak hours and on weekends.



The paving patterns include concrete slabs over the drains, concrete pavers, and plain concrete. This could perhaps be a result of incremental growth of the sidewalk. The raintrees along the street are very old and have wide canopies that provide shade to almost the entire street



The street corners become active spaces especially during the evenings at the end of the work day. The *thelas* and unidirectionality of the streets, along with ground floor commercial use contribute to this activity. The location of the *thelas* often influences the prices of the fruits being sold on them with those closer to the street corners charging higher prices.

The carefree 'meditation' street – Interpretation

As described in the visual analysis above and the qualitative metrics in table 5.3 below, this street has a unique calmness to it in terms of the range and juxtaposition of the activities of lingering, relaxing and connecting that are taking place on it. These activities are instigated by adequate space provisions for walking and pausing along a place that is comfortable and stimulating to the senses, is safe and offers products and services that draw people to it, and has a sense of definition that provides a mental image of the street. Maintenance and Flexibility were the least important criteria for this street in terms of their impact on street experience and social life.

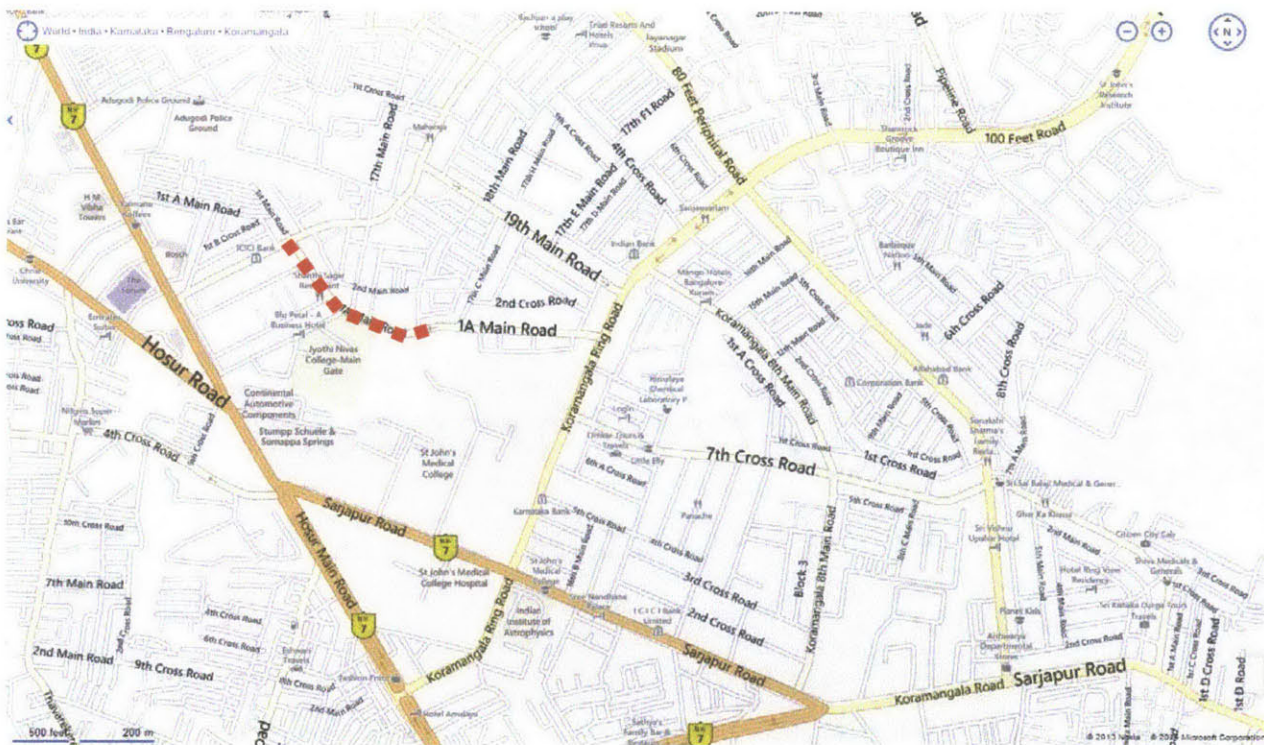
Table 5.3 - Qualities of the carefree 'meditation' street:

<p>Places for people to walk (रास्ता) The wide sidewalks and unidirectional vehicular traffic allow for pedestrians to pass through the street easily.</p>	
<p>Places for people to linger/shop/wait/interact (अवसर) The quasi-street and benches lining the street create separation from the vehicular traffic and provide places for people to sit and linger.</p>	

<p>Physical comfort (आराम) The street is shaded by old trees with wide canopies that creates a comfortable environment.</p>	
<p>Complementarity (of uses) (क्रिया) Commercial activity in all the buildings create a relatively homogeneous street.</p>	
<p>Perception of Safety (सुरक्षा) The street's proximity to the bus station makes it an active and well-lit street throughout the day.</p>	
<p>Relation to the Human Scale (आकार) The street is lined by 3-4 floors high buildings and the trees, fences, and benches all help in reducing the scale of the street.</p>	
<p>Linearity/Punctuation (अन्तराल) Intersections create some punctuation along the street but otherwise the section does not change drastically through its length.</p>	
<p>Definition (मायना) There are physical characteristics like the differences in elevation that define the street in some ways but its short length makes it lack a strong sense of definition.</p>	
<p>Sensory qualities – sight, sound, smells (अनुभव) The length of the street that is close to the vegetable market allows for strong visual and olfactory stimulation.</p>	
<p>Transparency (पारदर्शिता) The change in elevation creates a visual barrier along the street.</p>	
<p>Quality of construction (गुणवत्ता) The street is relatively old and the materials relatively worn out.</p>	
<p>Maintenance (अनुरक्षण) The vendors along the street leave trash along the street during the nights which is collected at different times during the next day.</p>	
<p>Flexibility (अनुकूलनीयता) The sidewalks are fenced off on both sides which reduces the amount of flexibility of the street.</p>	
	<p>0 10</p>

1A Main Road, Koramangala 5th Block – The passive ‘recreation’ street

Why this street? - Koramangala is an area that houses a large young population. 1A Main Road in the 5th Block in Koramangala is home to several shops and restaurants that cater to the international tastes of that population. This street presents a unique case where the city has adapted to the changing lifestyles and traditions of the population while still being able to create social streets. It stood out to me during the reconnaissance study because to me it represented the daily ritual of recreation that forms an important part of one’s daily life.



Street experience - 1A Main Road is a primarily commercial street with gymnasiums, shops, restaurants and cafes lining it. A couple of residential buildings and a mosque complex also form

a part of the street. The street is bustling with activity all day on weekends and during lunch time and dinner on weekdays. Many restaurants and cafes have spill out spaces outside their stores and most of the population that patronizes these eateries are younger non-locals. The sidewalks are relatively wide and tree-lined which make them comfortable to walk on. The street meanders and fronts a few vacant vegetated plots. The street accommodates unidirectional vehicular traffic with parking along both sides. The form and unidirectionality coupled with the large volumes of pedestrian traffic help to reduce the speed of the vehicular traffic, hence making this street a pleasant one to walk and spend time on.

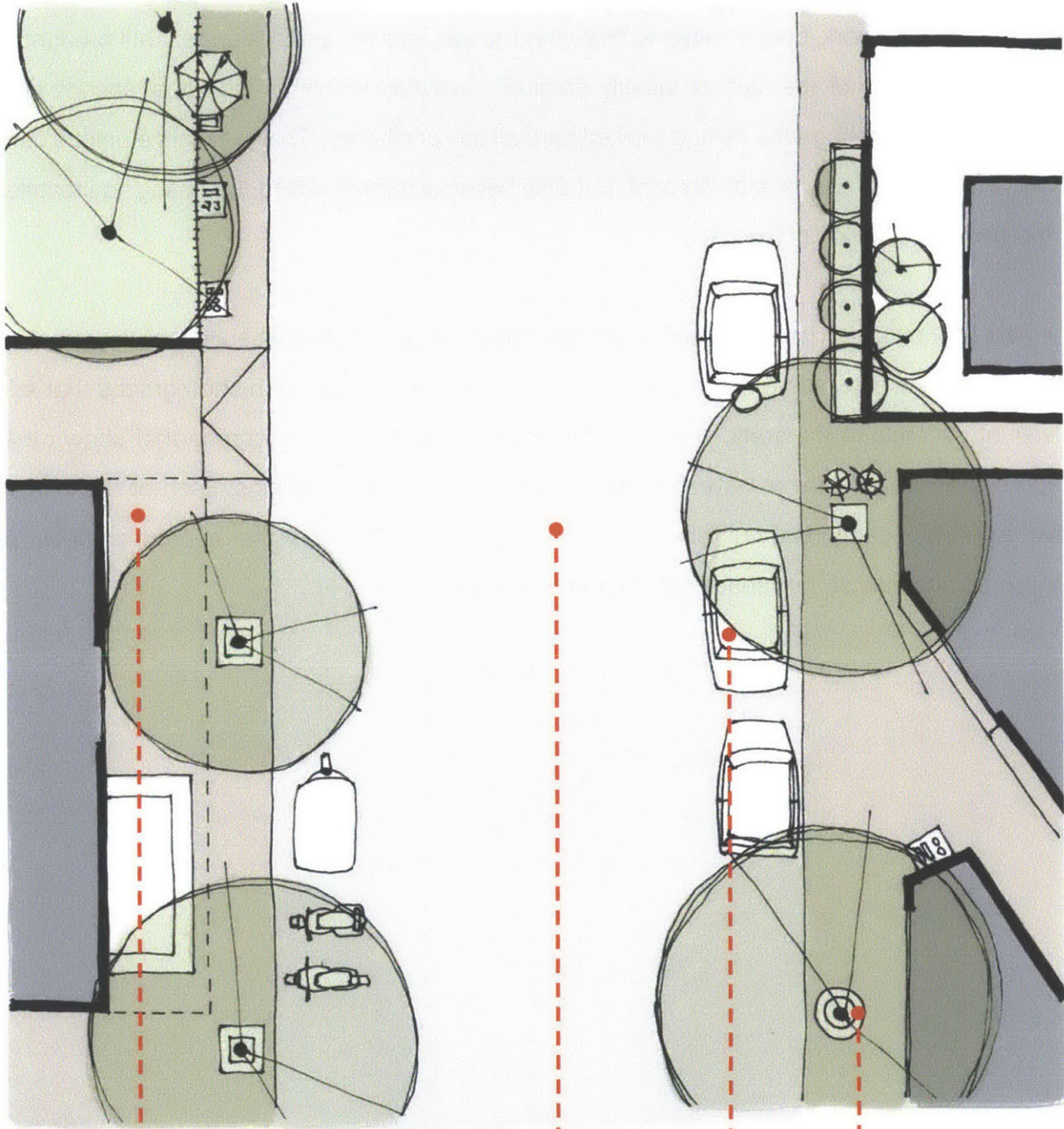
The buildings lining the street are one to six storeys tall. During the evenings most of these buildings, along with the trees in front of them, are adorned with colorful lights that add a festive mood to the street. Wall paintings adorn some of the boundary walls along the edges and a few food and *paan* vendors can be found intermittently lining the street. The restaurants along the street range from smaller local restaurants to large high end restaurants. Several stores have awnings and sign boards that form a large part of the visual streetscape.



Social life - The liveliness of the street was visible in the faces of the people and the twinkling of the lights adorning the building fronts and the trees. Walking along the street it was clear that after a hard day's work, people came to this street to eat, interact and celebrate. This brought to my mind analogies of the daily or weekly ritual of recreation where an individual spends time relaxing and celebrating after having worked hard all day or all week. This presents a unique case not only because of festive environment, but also because it responds to the changing lifestyles of the newer population of the city.

The next section uses visual material to analyze the physical and spatial aspects of the street by using a plan of a part of the length of the street, followed by sections with photographs that add a level of dynamic to the static sections, and finally independent photographs that show other properties of the street that have not been shown in any of the drawings. Each of the visuals have extended captions and labels with subjective criticism on the appropriateness or misappropriateness of the various spatial properties of that street.

Visual Analysis and Interpretation

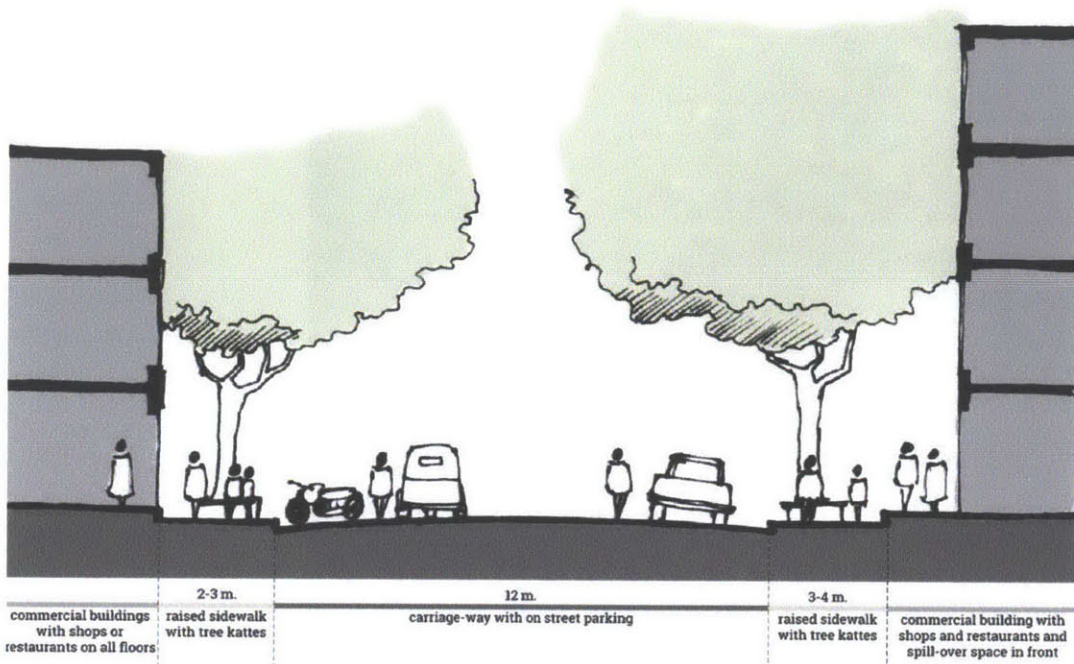


Carriage-way

The front setbacks of the buildings act as spill over spaces from restaurants. In some areas outdoor food counters are located within these areas.

Trees along the sidewalk with *kattes* for seating.

Parking lines the street along both edges.



The parking along the street edges, coupled with trees and seating areas along the sidewalk contribute to a safe pedestrian-friendly environment on the street.



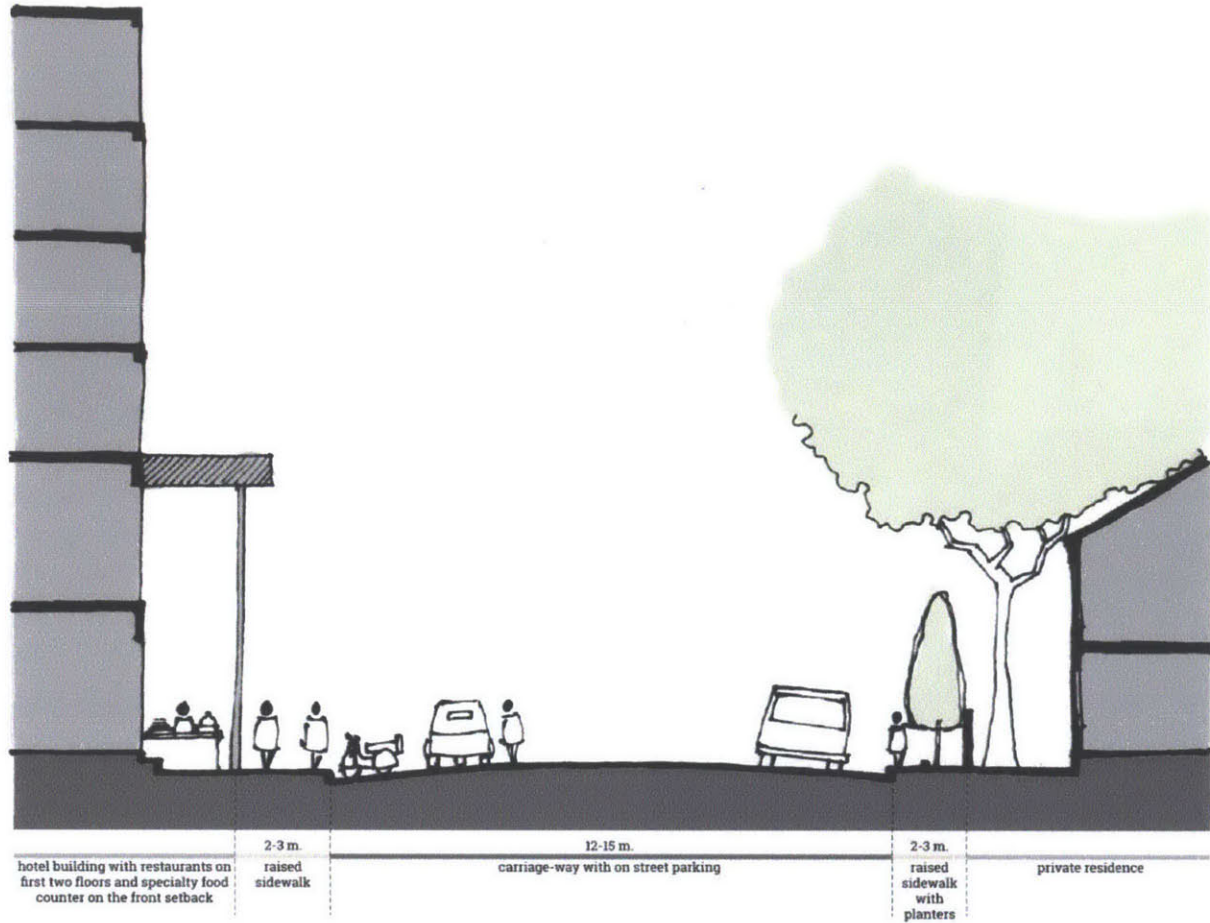
The slow speed traffic on the street allows for auto-rickshaws to stop along the edges to pick up customers. During lunch time people spill out from restaurants onto the sidewalk.



Small *paan* stalls line the street outside restaurants and create catalysts for people to gather while chewing *Maghai paan* (a delicacy that is local to the region) or smoking.



A few vacant plots lie along the street edge where the boundary walls act as canvases for artists to express themselves. This wall had several paintings that spoke to the spirit of feminism.



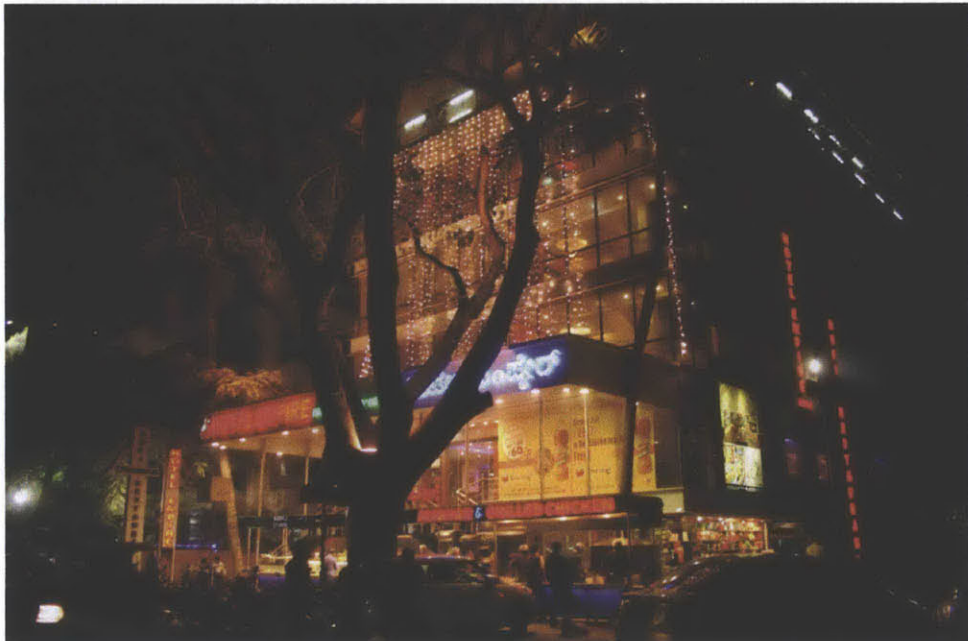
Canopies provide definition to the spill over spaces in front of restaurants where food counters invite people into the space. Individual bungalows help to bring in a variety in terms of architecture and scale.



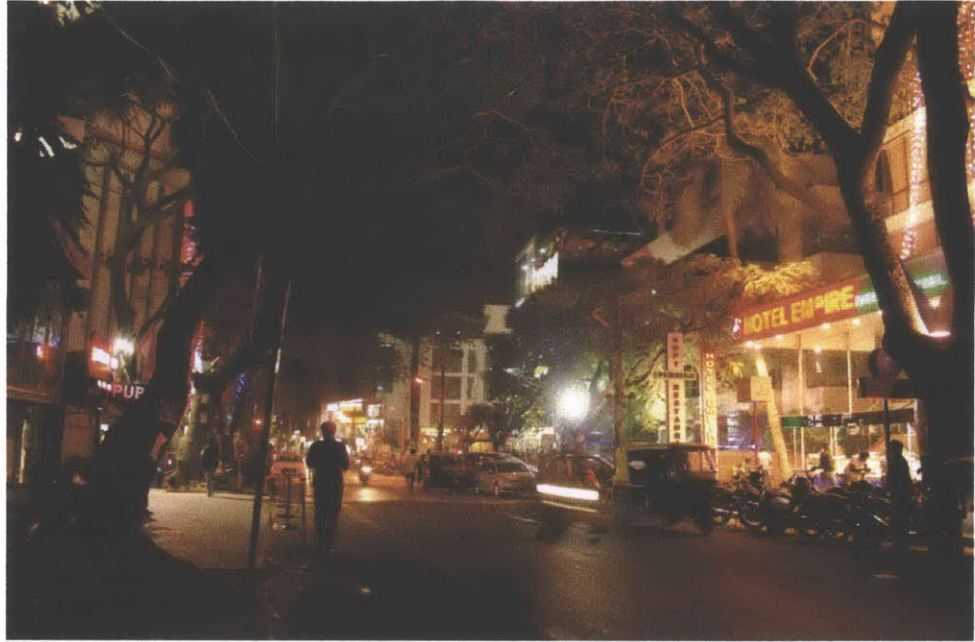
The restaurants generate a lot of the activity on the street. Simple signage provides way-finding without creating an overwhelming streetscape.



International fast food chains like McDonalds are located in localities like Koramangala which are inhabited by a younger population.



Lit up signs and building fronts create a festive atmosphere along the street during the peak evening hours. It also contributes to the street being perceived as safe.



The unidirectionality of the carriage-way makes the street pedestrian friendly.







Restaurant complexes like this one has lit up signage, which along with colorful lights wrapped around trees and draped along shop fronts help attract customers and generate a very festive environment.

The passive 'recreation' street – Interpretation

As shown in the visuals above and the qualitative metrics provided in table 5.4 below, the criteria that majorly contributed towards the social life of this street as a place for recreation, interaction and celebration revolve around providing safe spaces for people to spend time through ground floor uses which draw people to the area and spatial design that is not very monumental, comfortable, transparent and overall pleasant to be on. In this case, the relative absence of a sense of definition and sensory stimulation did not take away greatly from the street's experience and culture.

Table 5.4 - Qualities of the passive 'recreation' street:

<p>Places for people to linger/shop/wait/interact (अवसर) Spaces outside restaurants act as spill-over spaces where people spend time lingering and chatting.</p>	
<p>Complementarity (of uses) (क्रिया) The presence of shops and restaurants makes the character of the street relatively homogeneous.</p>	
<p>Relation to the Human Scale (आकार) The scale of taller buildings along the street is broken by canopies, awnings, trees, and street furniture.</p>	
<p>Perception of Safety (सुरक्षा) The street is active only during certain times of the day on weekdays which make it relatively less safe.</p>	
<p>Physical comfort (आराम) The street is lined with trees that provide for cool shady spots along the street. However, due to the relatively wide front setbacks of the buildings along the street, it often gets sunny and uncomfortably hot.</p>	
<p>Quality of construction (गुणवत्ता) The street is relatively new which is why several buildings and street furniture is relatively well constructed.</p>	
<p>Linearity/Punctuation (अन्तराल) The meandering form of the street reduces its linearity and open plots help create some level of punctuation.</p>	
<p>Flexibility (अनुकूलनीयता) The absence of any physical barriers along the sidewalks allow for flexibility for the sidewalk to shrink and expand.</p>	
<p>Places for people to walk (रास्ता) The wide sidewalks allow for quick passage through the street. During high pedestrian volumes, people also tend to spill out and walk along the edges of the carriage-way.</p>	

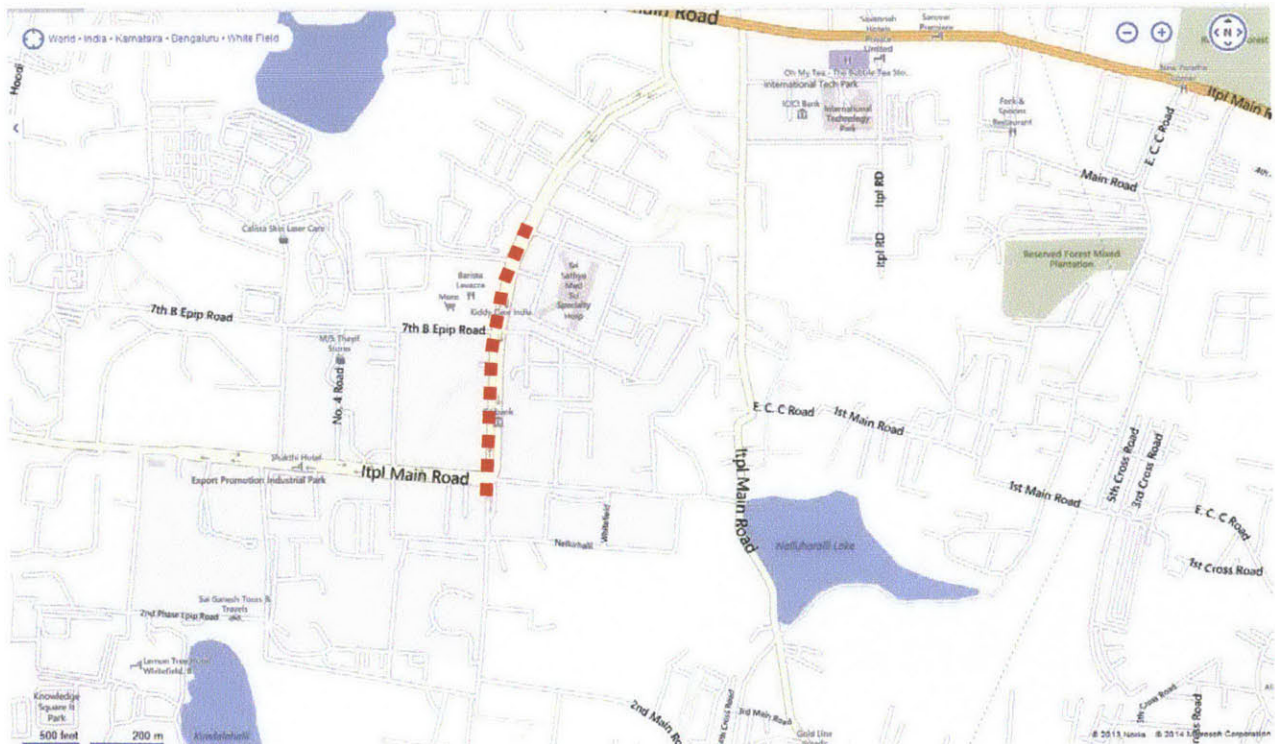
<p>Transparency (पारदर्शिता) The street is lined by stores and boundary walls of buildings complexes.</p>	
<p>Maintenance (अनुरक्षण) The stores along the street are relatively newer than in other parts of the city which is perhaps why they do not feel a strong sense of ownership for the street.</p>	
<p>Definition (मायना) The street does not have any special characteristics in terms of landmarks or physical characteristics that distinguish it from other streets in the locality.</p>	
<p>Sensory qualities – sight, sound, smells (अनुभव) Unlike other streets in the city, most of the stores along the street are enclosed and air-conditioned. The signage, trees, and lights provide visual stimulation but there is a relative lack of olfactory and audible stimuli.</p>	

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8th Road, EPIP Zone, Whitefield – The non-social street

Why this street? - This street provides a typical example of the relatively newer developments within and on the outskirts of the city whose design and planning has been majorly influenced by the economic forces at play. This has resulted in standard sections of roads that are geared primarily towards the generation of high speed vehicular corridors. The sidewalks are wide but the monumentality of the carriage-ways and medians coupled with the absence of any street fronting activity result in a severe lack of pedestrians and thus a lack of a social life.



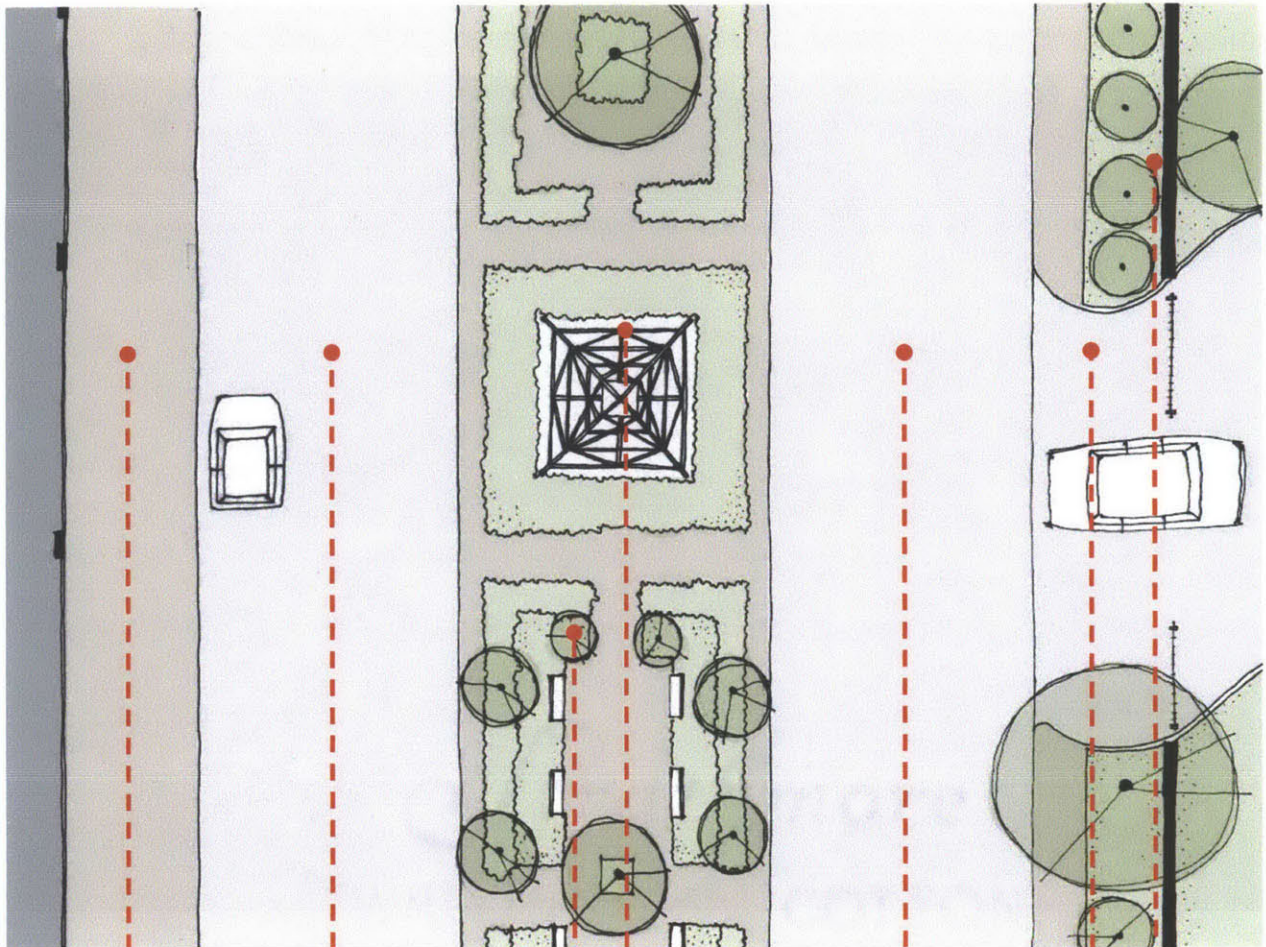
Street Experience - The street is lined by commercial and institutional campuses with high, opaque boundary walls along its edges. An electric line runs through the center of the street which has resulted in a wide median through the middle of the carriage-way. Monumental

electric pylons line the middle of the street with landscaped seating areas in between. Several large open plots line the street along its length. Several of the side streets in the area also share similar characteristics with narrower carriage-ways but a sheer lack of pedestrian traffic.



Social life - Streets similar to this form form the public realm of many of the localities that have been developed since the mid 1990s. Since most of the buildings and campuses, including commercial and residential campuses, have an introverted typology with several amenities provided within the campus itself, there is a major disconnect between the private and public spaces within these localities. These are the areas which according to me are in the most severe need for more contextual design and planning. The next section uses visual material to analyze the physical and spatial aspects of the street by using a plan of a part of the length of the street, followed by sections with photographs that add a level of dynamic to the static sections, and finally independent photographs that show other properties of the street that have not been shown in any of the drawings. Each of the visuals have extended captions and labels with subjective criticism on the appropriateness or misappropriateness of the various spatial properties of that street.

Visual analysis and interpretation:



Wide raised sidewalk lining the carriage-way

Carriage-way

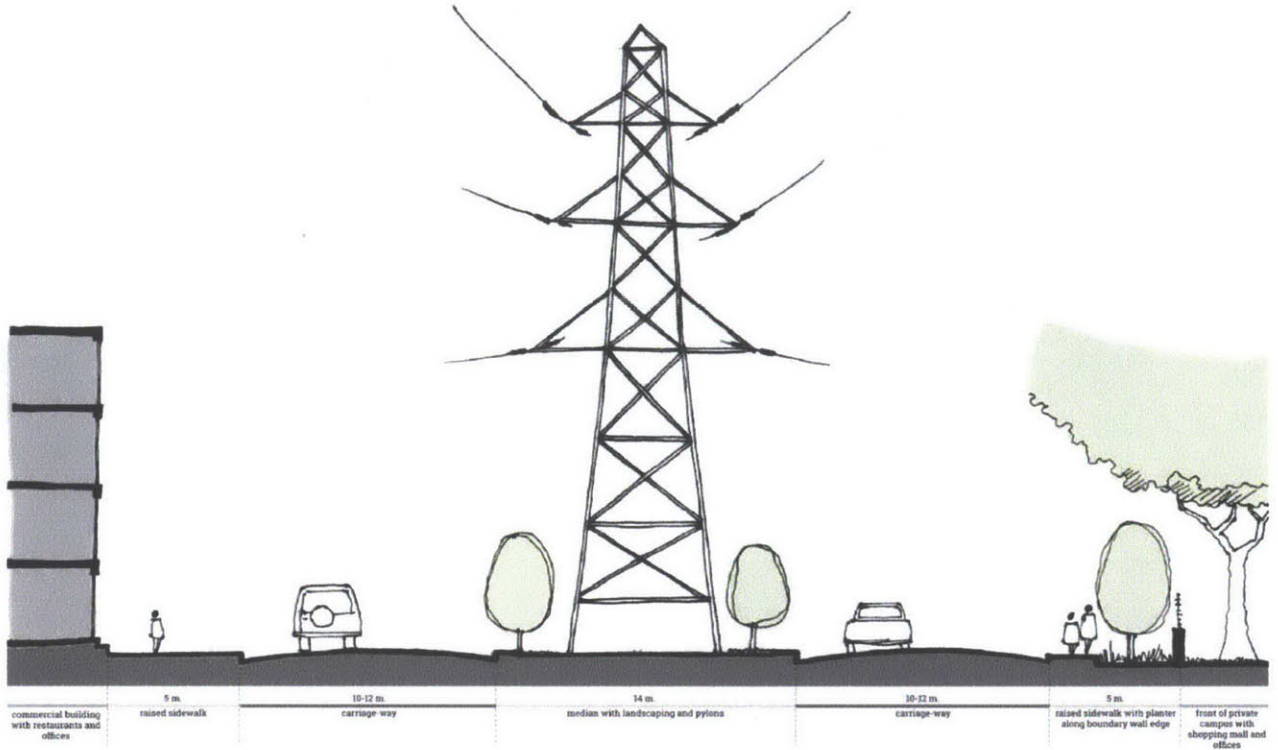
Electric pylons running through the middle of the wide median

Landscapes areas with seating along the center of the median

Carriage-way

Drive-way to access the commercial campus lining the road

Manicured landscaping along the boundary wall of the campus



Massive electric pylons run along the center of the median. The spaces between the pylons are landscaped with seating areas which are not very accessible through the high speed traffic on both sides of the median. The road is lined either by relatively taller buildings, open plots, or high boundary walls into private campuses, hence creating a sense of exclusivity along the 'public' realm.



The buildings, the road width, the streetlights all contribute to the lack of a human-scale.



The massive electric pylons along the median create visual barriers along the middle of the road.



Large heavy vehicles coupled with wide carriage-ways make the street less pedestrian-friendly.



Large buildings along the road create a sense of monumentality that is not inviting to pedestrians.



The lack of benches along the sidewalks forces people to cross the high-speed traffic on both sides to use the benches on the median. Most of the population seen using these benches is the lower income population that is employed for mechanical or menial jobs in the 'exclusive' campuses along the road.

The non-social street – Interpretation





As shown through the visual material above and the qualitative metrics in table 5.5 below for the criteria for 'great' streets based on the social aspects of street life, this street stands out only for its level of maintenance and quality of construction. It is not conducive to most of the social activities that create the culture of a street. This presents an example of a street which is primarily geared towards vehicles.

Table 5.5 - Qualities of the non-social street:

<p>Maintenance (अनुरक्षण) Since this street provides the front face of the campuses along it, most private corporations ensure that the sidewalks, boundary walls and vegetation within the property are cared for.</p>	
<p>Quality of construction (गुणवत्ता) Since the street is a result of major influence from the private sector companies along it, the materials used and the quality of construction is relatively high.</p>	
<p>Places for people to walk (रास्ता) Even though the sidewalks are wide enough to accommodate large volumes of traffic, the street does not have any activities that promote pedestrian presence.</p>	
<p>Flexibility (अनुकूलनीयता) The high speed vehicular corridor creates a major barrier for pedestrians that reduces the flexibility of the street that is allowed for by its spatial design.</p>	
<p>Physical comfort (आराम) The sidewalks are not lined by trees and are wide and unshaded. This makes it too hot to walk on this street for four to six months in a year.</p>	
<p>Places for people to linger/shop/wait/interact (अवसर) There are no activities that spill out onto the street which results in a lack of spaces for people to linger or interact.</p>	
<p>Definition (मायना) The street is very long and there is no change in terms of the section along its length which make it less defined.</p>	
<p>Sensory qualities – sight, sound, smells (अनुभव) There are no activities along the street that provide any kind of sensory stimulation.</p>	
<p>Complementarity (of uses) (क्रिया) The uses of the buildings along the street are completely isolated from each other and do not even interact with each other.</p>	

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<p>Linearity/Punctuation (अन्तराल) The extended length of the street is not majorly punctuated in any way.</p>	
<p>Perception of Safety (सुरक्षा) The high speed traffic and lack of street-side activity make the street highly unsafe for pedestrians.</p>	
<p>Transparency (पारदर्शिता) The high boundary walls with restricted access to the campuses makes the street edge highly opaque.</p>	
<p>Relation to the Human Scale (आकार) The tall buildings, wide carriage-way and electric pylons make the street highly monumental and much larger than the human-scale.</p>	

5.4 Findings and Implications – Qualities that define ‘great’ streets in Bangalore

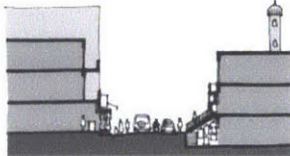
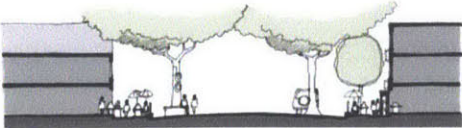
Comparisons of selected cases:

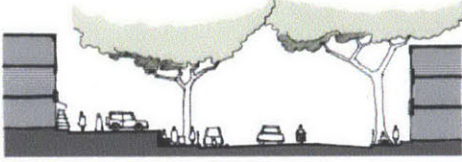
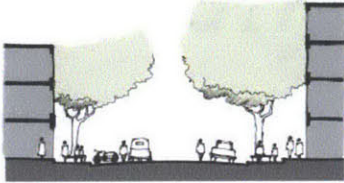
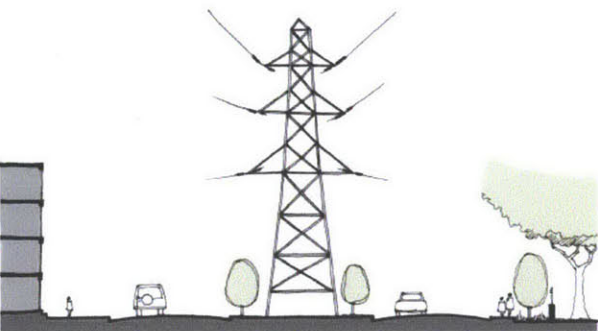
The streets selected for this study form a very small sample of cases from the city. The cases were specifically selected because of their presence within their respective localities as social anchors where the activities that are played out on the streets correspond to daily rituals that one performs in their daily lives. These cases include rituals like prayer (or remembrance), shopping (or daily chores), meditation (or carefree lingering), and recreation (or eating out), which were the activities that stood out the most to me while spending time on these streets during my field research. However, there are several other such daily rituals like active recreation (or playing cricket) and eating, and other forms of the above mentioned rituals like performing pujas (prayer rituals) that can begin to form categories that relate directly to the social activities that form the culture of specific streets. From these cases we can learn the ways in which people respond to certain stimuli along a street that help to create its culture and identity. Using this underlying hypothesis, after looking at the individual cases, I also attempted to juxtapose these cases (plans, sections, and top five criteria) in order to understand how they compare in terms of physical and spatial design.

The comparison below yields some similarities in terms of spatial design and important criteria. The scales of the first four cases, which have a rich culture, are similar in terms of the ratio of the width of the street to the height of the adjacent buildings. Commercial activities along the ground floor, along with street vending along the sidewalks are other common features that can be observed in all four of the social streets. The buildings along the first four streets also tended to have more variety in terms of floor plan units, thus encouraging a diversity of shops and other uses along the ground floor. Most of these streets also had unique design features like tree *kattes*, fences, signage etc., that created visual interest and acted as furniture that was used by the users of the streets in various creative ways. From the top five criteria for each of the streets also there are recurring patterns that emerge. Complementarity of uses, Relation to the Human-Scale, Sensory Qualities, Places for people to linger/shop/wait/interact, and Perception of Safety were criteria that were repeated in many of the cases. In sharp contrast, the same features like

scale, use, design features, diversity of architecture were very visibly absent from the fifth case of the street in Whitefield. The criteria that were important for that street were maintenance and quality of construction which go along with their aspiration to make the city look like the 'ideal' model of Singapore, but did not respond to any of the social and cultural needs of the area.



Street name	Sections	Top five criteria
<p>1- The secular 'prayer' street</p> <p>Meenakshi Koil Street, Shivaji Nagar</p>		<ul style="list-style-type: none"> • Definition, • Complementarity (of uses), • Sensory qualities, • Relation to the human-scale, • Linearity/Punctuation
<p>2- The daily 'shopping' street</p> <p>Gandhi Bazar Road, Basavangudi</p>		<ul style="list-style-type: none"> • Places for people to linger/shop/wait/interact, • Sensory qualities, • Complementarity (of uses), • Relation to the human scale, • Perception of safety

Street name	Sections	Top five criteria
<p>3- The carefree 'meditation' street</p> <p>10th Main, Jayanagar 4th Block</p>		<ul style="list-style-type: none"> • Places for people to walk, • Places for people to linger/shop/wait/interact, • Physical comfort, • Complementarity (of uses), • Perception of safety
<p>4- The passive 'recreation' street</p> <p>1A Main Road, 5th Block Koramangala –</p>		<ul style="list-style-type: none"> • Places for people to linger/shop/wait/interact, • Complementarity (of uses), • Relation to the human scale, • Perception of safety, • Physical comfort
<p>5- The non-social street</p> <p>8th Road, EPIP Zone, Whitefield</p>		<ul style="list-style-type: none"> • Maintenance, • Quality of construction, • Places for people to walk, • Flexibility, • Physical comfort

Qualities that contribute and criteria that make 'great' streets in India

In order to facilitate context-specific design for streets while still providing some level of standardization and optimization for the planning process that is the underlying reason behind the formulation of design guidelines, it is essential to be able to have a specific list of qualities that contribute to and criteria that assess the greatness of a street. These criteria, in combination with the categories of spatial urban contexts proposed in chapter 4, can be used as a

comprehensive tool for planning within the local context of Bangalore. In order to be able to analyze and understand streets, there are certain physical qualities of the street that need to be observed. These are the physical qualities that together create the spatial and sensory experience for a user of the street. Allan B. Jacobs identifies thirteen such qualities through his case studies of several American and European city streets. During my field research, using his list as a starting point, I created an initial list of such qualities for Indian streets. This list was initially developed before the field research was carried out and the qualities and criteria used during the field research for the purpose of analysis and observation. This process helped to add to and subtract from the list which is finally presented below in a comprehensive format. The first table below lists the physical qualities as defined by Allan B. Jacobs alongside those listed by me based on my field research and analysis. In the second table below, the left column contains the list proposed in his book 'Great Streets', and the right column contains the re-ordered list generated by me along with an explanation of each physical quality and how it compares to that proposed by Allan B. Jacobs.

<p>Physical qualities listed by Allan B. Jacobs:</p> <ol style="list-style-type: none"> 1. Trees 2. Beginnings and Endings 3. Diversity of Buildings 4. Special Design Features 5. Places 6. Accessibility 7. Density 8. Diversity 9. Length 10. Slope 11. Parking 12. Contrast 13. Time 	<p>Physical qualities listed by me (for the context of Bangalore):</p> <ul style="list-style-type: none"> • Vegetation • Beginnings, Endings, and crossings/intersections • Architecture of Buildings • Diversity of buildings and ground floor – Use • Special Design Features • Places • Accessibility • Density of population • Lengths • Changes in planes (horizontal and
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	vertical) <ul style="list-style-type: none"> • Parking • Contrast • Time • Widths • Vending – Food • Vending – Other • Pedestrian Flows
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These physical qualities relate to specific spatial parameters that contribute to the physical realm that make 'great' streets. The list stated by Allan B. Jacobs was added to, subtracted from, re-ordered and some qualities redefined by me during and after my field research to create a new list that is more context specific. The qualities that have been added by me have been underlined, those subtracted have been struck through and those changed or redefined have been highlighted in a grey color. The ones adopted directly from Allan B. Jacobs' list are indicated with an *.The ordering of the new list corresponds to two structuring mechanisms – the experiential properties of a street in the order in which they are perceived, and the importance of those qualities in contributing to the criteria for great streets that is listed in the consecutive section.

Physical qualities to observe as defined by Allan B. Jacobs: <ol style="list-style-type: none"> 1. Trees 2. Beginnings and Endings 3. Diversity of Buildings 4. Special Design Features 5. Places 	Proposed by me: <ol style="list-style-type: none"> 1. Special Design Features* Details like gates, fountains, benches, kiosks, paving, lights, signs, and canopies form the list that Allan B. Jacobs mentions contribute 'mightily' to streets. In addition to these, in the Indian context several temporary elements contribute to the street experience which become a part of the street during the day and are stowed away at night. Elements of the buildings along the streets like the front steps or the boundary walls or fences also contribute to these experiences by being
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<ul style="list-style-type: none"> 6. Accessibility 7. Density 8. Diversity (of use) 9. Length 10. Slope 11. Parking 12. Contrast 13. Time 	<p>used for afternoon siestas, informal conversations, and storage.</p> <p>2. Diversity of Buildings and Ground Plane – use, especially ground floor use</p> <p>The ground floor use is especially important in the case of streets as it is the main generator of activity along the street. In the case of Indian streets this extends to the ground plane of the street as well because that is where most of the vending takes place.</p> <p>3. Changes in planes (horizontal and vertical)</p> <p>Allan B. Jacobs mentions that “topography and slope help by increasing views and adding drama.” In addition to this, since the ceiling plane in the form of temporary awnings made of sheets of white, blue, green or yellow tarpaulin, trees, overhead cables and lights, etc. are a large part of the visual experience of an Indian street, the elevation of these elements also need to be observed.</p> <p>4. Vegetation</p> <p>Trees are useful along streets for multiple reasons including shade, separation from vehicular traffic and effects on the air quality and micro-climate in the area. In addition to trees, other forms of vegetation like grass, flowering bushes and hedges also contribute to the sensory experience of the street.</p> <p>5. Places*</p> <p>These are the spaces along a street “that provide stopping places, pauses, reference points along the path.”⁵¹ This holds true for Indian streets as well, several of which are narrow and lined by tall buildings where often these places provide orientation and breaks.</p>
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⁵¹ Ibid.

6. **Accessibility***

Allan B. Jacobs mentions accessibility as a quality that contributes in terms of the accessibility to the street from the other parts of the city. In addition to this, it is also very important to understand accessibility along a street in terms of access to buildings and the sidewalks.

7. **Widths**

In addition to the qualities outlined by Allan B. Jacobs, street widths play an important role in terms of accessibility, use and visual interest. Changes in widths often make streetscapes much more interesting and memorable.

8. **Architecture of buildings**

Many rather than few buildings along a street provide visual interest and give reference points like "markings on a ruler, that gives a sense of scale."⁵² In addition to this, especially in the Indian context, the smaller plot sizes and narrow buildings with minimum side setbacks also provide for small alleyways.

9. **Pedestrian Flows**

The flows of people on streets is the basic factor that contributes to the vibrancy of streets in India and these are often very direct clues to the success or failure of street design.

10. **Vending – Food**

Food is one of the biggest attractions in any city and street foods form an essential part of urban life in India. The location of food vendors in shops, stalls or *thelas* along streets play an important role in the street experience.

⁵² Ibid.

11. Vending – Other items

Street vendors – both stationery and moving – are major stakeholders in the design dialogue for Indian streets.

They are one of the primary reasons for the difference between Indian streets and streets in American or European cities.

12. Beginnings, Endings, and crossings/intersections

Beginnings and Endings provide boundaries or reference points for users, as per Allan B. Jacobs. However, in the Indian context, it is often street corners or intersections that provide these references along a path in the form of statues, tea shops, fruit vendors, or *paan* (a digestive made out of betel leaves and spices) stalls.

13. Length*

As suggested by Allan B. Jacobs, “at some points along a long street some changes are necessary if interest is to be sustained.”⁵³ This is especially important because if streets are laid out as per engineering standards for cars, they tend to be straight and long, which makes it an unpleasant experience for a pedestrian.

14. Parking*

Parking along the street edge reduces the vehicular carriageway and the pavement space. However it forms a safe barrier between the carriageway and the sidewalk and also increases ease of access. In the Indian context these spaces also often become vending spaces.

15. Density of Population*

Population density contributes since “streets with many

⁵³ Ibid.

	<p>people living along them or near them are more likely to have people on them than those do not."⁵⁴ This applies just the same to streets in India as well.</p> <p>16. Time*</p> <p>The age and evolution of a street contributes to the experience due to the diversity of architecture that comes with incremental growth and the diversity in terms of the population that uses the streets. It also provides landmarks for cities such as the oldest temple or the oldest sweet center in the city.</p> <p>17. Contrast</p>
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Using the physical qualities listed above, a set of criteria in terms of experience and use of streets can be formulated in order to understand and qualify streets as being 'great' for public life. These criteria differ from the physical qualities because they include the socio-economic qualities of these streets which contribute to their culture. The table below enlists these criteria defined by Allan B. Jacobs, in the left column, and myself, in the right column.

<p>Criteria for 'Great Streets' defined by Allan B. Jacobs:</p> <ul style="list-style-type: none"> • Places for people to walk with some leisure • Physical comfort • Definition • Qualities that engage the eyes • Transparency • Complementarity (of buildings) • Maintenance • Quality of construction and design 	<p>Criteria for 'Great Streets' in India proposed by me:</p> <ul style="list-style-type: none"> • Places for people to walk • Places for people to linger/shop/wait/interact • Physical comfort • Definition • Sensory qualities – sights, sounds, smells • Transparency • Complementarity (of uses)
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⁵⁴ Ibid.

	<ul style="list-style-type: none"> • Maintenance • Quality of construction • Linearity/Punctuation • Flexibility • Relation to the human-scale • Perception of safety
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Although Allan B. Jacobs does not specify a certain reason for the order in which he lists these criteria and mentions that each and every one of these are equally important, I believe that there may be some value in trying to order them in terms of their importance in order to define a certain hierarchy that can be useful when defining design guidelines for cities. The ordering of the criteria in my proposed list is a result of the aggregation of observed qualities in the four examples of 'great' streets that have been analyzed earlier in this chapter. Even though these criteria were not explicitly kept in mind during the field research, there were certain observable and perceivable characteristics that drew me to study those specific cases. These characteristics when formulated into these criteria provide a certain sense of hierarchy such that the higher the placement of the street on the spectrum, the higher the importance of that criteria in the perception of socialness of the street. It can be observed that the criteria on which the four 'social' streets scored the highest were the same where the fifth case scored the lowest. Since my sample size was relatively small, the ordering is relatively skewed, but I have put forth this ordering just to establish a process that can, when further developed, create a stronger ordering based on a much more extensive list of cases. In the table below, the left column enlists the criteria defined by Allan B. Jacobs and the right contains those defined by me, followed by a brief explanation. A Hindi transliteration has also been provided along with the criteria which situate them better in the context of the country and allow for a different set of interpretations of the criteria themselves. The criteria that have been added by me have been underlined and those changed or redefined have been highlighted in a grey color. Those adopted directly from Allan B. Jacobs' list are indicated by a *.

<p>Criteria for 'Great Streets' defined by Allan B. Jacobs:</p> <ul style="list-style-type: none"> • Places for people to walk with some leisure • Physical comfort • Definition • Qualities that engage the eyes • Transparency • Complementarity (of buildings) • Maintenance • Quality of construction and design 	<p>Proposed by me:</p> <ol style="list-style-type: none"> 1. Complementarity (of uses) - क्रिया As compared to the American and European context, in the case of Indian streets more than the complementarity of architecture it is the complementarity of uses that creates a great street. 2. Perception of Safety - सुरक्षा Safety, especially for women, in the Indian context contributes greatly to the presence of people on a street which in turn is a strong contributor to the social life and culture of a specific street. 3. Relation to the human-scale - आकार One of the major issues observed with contemporary streets in India, especially Bangalore, that are wide and lined with high boundary walls, is the absence of pedestrians. One of the reasons for this is perhaps the daunting monumentality of the street. Thus, human-scale design is one of the qualities that contribute to making a great street for public life. 4. Places for people to linger/shop/wait/interact - अवसर Streets provide access. In the Indian context they also provide spaces where people socialize. This property of the Indian street is one that is often not designed for and needs to take over the space that is designed for the cars which results in disruption of vehicular traffic. 5. Physical comfort* - आराम Shade, comfortable temperatures, clean air, safety – all of these factors contribute to the physical comfort of streets which make people want to come out and be a part of the space.
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6. Sensory qualities – sight, sound, smells - अनुभव

In addition to the qualities that Allan B. Jacobs says 'engage the eyes', in the case of Indian streets it is not only the eyes but also the senses of smell and touch that are stimulated. In the Indian context it is necessary to provide regulations that accommodate the activities that generate these stimulations without letting them take over the street.

7. Linearity/Punctuation - अन्तराल

A pedestrian experience is greatly influenced by the way in which the streetscape changes in terms of the floor and ceiling planes and the walls. Linearity and Punctuation are properties of this quality that need to be balanced in order to achieve a great street.

8. Transparency* - पारदर्शिता

"The best streets have about them a quality of transparency at their edges, where the public realm of the street and the less public, often private realm of property and buildings meet." This holds true for Indian streets as well.

9. Places for people to walk - रास्ता

Since streets are corridors of mobility, it is essential for great streets to provide comfortable paths and connections for pedestrians.

10. Definition* - मायना

Definition is that property of great streets that make it a place – boundaries and edges – and keep "the eyes on and in the street."⁵⁵ In a sense these features give the street an identity that is memorable and sets it apart

⁵⁵ Ibid.

	<p>from other streets.</p> <p>11. Quality of construction - गुणवत्ता</p> <p>In the case of urban streets in India, design is often not a part of the process that goes into constructing streets. This is a major issue. However, the quality of construction in terms of materials used and the construction details greatly affects the longevity of the street and its experience.</p> <p>12. Flexibility - अनुकूलनीयता</p> <p>In the Indian context, most of the activities and the uses that are undergoing on streets every day during different times of the day are temporary and ad-hoc. Hence, flexibility to adapt and accommodate these uses and activities is an essential quality for any great street.</p> <p>13. Maintenance* - अनुरक्षण</p> <p>Maintenance very directly affects the spatial and sensory experience of a street and is an essential quality of a great street.</p>
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The physical qualities listed earlier define the spatial parameters that need to be observed because of their contribution to making the streets culture-friendly. These very directly relate to the criteria defined in the table above. Combinations of physical qualities contribute to the conditions that relate to each of the above criteria. These relationships of physical qualities to the socio-economic 'essence' of 'great' streets are to some extent subjective. However, if this work is carried out at a larger level with more cases studied by teams of two or more individuals with community interaction, these qualitative assessments can be used to get meaningful results, especially if used in conjunction with quantitative data. My thesis shows that it is possible to use a qualitative study approach to get results that can contribute to the design of streets that are more inclusive of social life culture.

In addition to these, there needs to be more thorough research done on the dimensional aspects of the various parts of the streets and thus can contribute to the understanding of modules and units that can be used as a base for the development of templates for street sections.

CHAPTER 6: CONCLUSION

The solutions developed in this thesis provide starting points for further development by planners and city authorities to plan and design living streets in Indian cities, especially cities like Bangalore that are witnessing rapid growth due to the large influx of private sector companies. This conclusion summarizes the main findings and puts forth a set of next steps for the development of a comprehensive set of street design guidelines, especially acknowledging the social and cultural features of streets, for rapidly urbanizing cities in India.

Indian cities are unique in the way that they respond to diverse cultures and traditions, and it is essential that the physical environment of the city continues to allow them to do so. Planners need to be sensitive to the way in which they conceptualize and plan interventions, extensions and new developments in the city such that they respond to the local physical, socio-economic and ecological context within which they are located in order to maintain the urban identity and image.

There is a need for understanding the city at multiple scales and the ways in which these scales interact with each other in order to create plans and designs for the city that respond to its existing image and identity. Through this thesis I developed an approach that can serve functional needs but starts with three levels of place-based enquiry. I realized that each of these levels contributed significantly to the understanding of the city and its streets, but none of them could individually provide comprehensive insight into this issue.

Since urban planning in India and elsewhere tends to include top-down processes while the perception and experience of the city happens at a very individual, ground level, it is essential to understand the progression of scale of research from city to locality to street while letting on-ground perceptions and observations govern the way in which the information is processed and formulated. This results in the formation of a feedback loop which ensures that planning processes are not ignorant of the existing ground conditions and needs of its inhabitants. Starting with a preconceived process of study, the observations altered my understanding of the city and the forces that contribute to the

ways in which the physical form of a city develops, and led me to adjust my analysis and interpretation at each level. This continuous overlap between the scaling up and scaling down of analysis allowed me to develop a better understanding of the ways in which forces influence cities at the levels of planning and perception.

The analyses carried out at the various scales of the city, locality and street, shows different ways in which the various parts of cities have changed, adapted, and responded to the changing culture and lifestyles of the population living and visiting those areas; which can be used as guiding principles for planning for existing parts of the city as well as newer developments within similar urban regions.

Forces like real estate, religion, political influence and social customs have all played a part in the incremental growth of the localities over time. This, contrasted with the examples of localities developed rapidly within short spans of time, highlight the richness in terms of social life that defines the older developments within the city. The newer developments tend to be introverted, 'global' and de-contextualized. As a continuation to the reconnaissance study in this thesis, further investigation can be carried out to analyze the impacts of these forces on the urban form. These impacts can help establish relationships between the perceived image of a city and the invisible forces at play which can help in a comprehensive understanding of the urban morphology of the city.

There is a need for a system of categorization or urban typologies within cities in order to understand, analyse, assess and plan for change and growth within them. The typologies provide a structuring mechanism in the way that they outline the basic characteristics of the urban form and socio-economic conditions within each of those typologies that point to the needs and preferences of the population living within each of them. Elements of typologies can also be used in combinations to develop proposals for newer developments that aim to attract all classes and sections of people. Even though the list proposed by me is by no means exhaustive, it provides a direction in the way that city authorities can delineate urban districts, similar to the idea of the transect proposed by the New Urbanists in the US, and generate plans and designs that respond to their respective characteristics.

There is a need for a re-classification of streets and re-definition of nomenclature and hierarchies in order to be able to generate street plans and designs that are more specific to their local context and city structure. In most Indian cities, streets in urban areas are classified as 'urban roads' and in the context of Bangalore they are broken down further into local and sub-local roads. Each of these classifications are defined by widths and their primary function of either connection or access. Standard templates for various widths within each of these categories are used for the construction of all urban streets. This results in inappropriate street sections throughout the city which, in some cases, hinder even the primary functions of connectivity and accessibility. Detailed analysis of street patterns and networks within each of the localities within the city as an extension to those carried out by me in chapter four, in combination with spatial analyses of streets within each of those localities similar to those in chapter five, can provide a better understanding of street characters and hierarchies which can provide new local categories, structures and definitions for streets within the city.

At the spatial level there is a need for development of a list of qualities for designing streets that are reflective of the specific qualities of urban streets in Indian neighborhoods. Streets in Indian cities are often assessed and designed based on physical elements and qualities of streets of the 'ideal' city. These cities have much higher levels of car ownership and are often much more 'ordered' than those in Indian cities where the chaos and sensory overload define the character and image of the streets. In order to address this issue, through this thesis I propose a comprehensive list of physical qualities and criteria to assess and generate design proposals for streets that are reflective of the local context. The list is based on a qualitative analysis of a small sample of cases for Bangalore. The criteria are as follows:

- Complementarity (of uses) - क्रिया
- Perception of Safety - सुरक्षा
- Relation to the human-scale - आकार
- Places for people to linger/shop/wait/interact - अवसर
- Physical comfort - आराम
- Sensory qualities – sight, sound, smells - अनुभव

- Linearity/Punctuation - अन्तराल
- Transparency - पारदर्शिता
- Places for people to walk - रास्ता
- Definition - मायना
- Quality of construction - गुणवत्ता
- Flexibility - अनुकूलनीयता
- Maintenance - अनुरक्षण

This list of criteria can be further developed through a similar detailed, qualitative, spatial analyses of other streets within the city, in teams of two or more people, during different times of the day and the year, in order to develop a comprehensive list that can be used by city authorities and planners to design streets that better respond to their specific local contexts. This list will need to be manipulated for different Indian cities based on similar studies within their local contexts. This study helps to postulate the need for such a list that is specifically developed based on an Indian example and provides a starting point for the development of a new tool for street life planning in the urban areas in the country.

Indian cities, especially those that are undergoing rapid change and growth, need organizations that advocate for better planning and design within the city which use local knowledge to develop proposals and guidelines that are deeply rooted within the local context. The Tender S.U.R.E. guidelines in the case of Bangalore are one of the rare cases in Indian cities that have, in my opinion, been able to iron out several of the issues that arise with the multiplicity of agencies that need to work together in order to implement any infrastructural project in the city. However, the design parts of these guidelines falls short of being contextual due to the preference given by the organization to the idea of standardization. These guidelines need to delve further into the finer fabric of streets within the existing city, understand and categorize them based on arteriability and specific local typological contexts in order to create a much more comprehensive set of guidelines that provides innovative ways in which streets can be designed to have strong social lives within their local cultural contexts.

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